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As filed with the Securities and Exchange Commission on February 10, 2006

Registration No. 333-

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM S-1
REGISTRATION STATEMENT

Under
The Securities Act of 1933

LUNA INNOVATIONS INCORPORATED

(Exact name of Registrant as specified in its charter)

Delaware	8731	54-1560050
(State or other jurisdiction of incorporation or organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification Number)

10 South Jefferson Street, Suite 130
Roanoke, Virginia 24011
(540) 552-5128

(Address, including zip code, and telephone number, including area code, of Registrant's principal executive offices)

Kent A. Murphy, Ph.D.
President, Chief Executive Officer and Chairman
Luna Innovations Incorporated
10 South Jefferson Street, Suite 130
Roanoke, Virginia 24011
(540) 552-5128

(Name, address, including zip code, and telephone number, including area code, of agent for service)

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Approximate date of commencement of proposed sale to the public: As soon as practicable after the effective date of this Registration Statement.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box. ☐

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Proposed Maximum Aggregate Offering Price(1)(2)	Amount of Registration Fee
Common Stock, $0.001 par value	**$57,500,000**	**$6,152.50**

(1) In accordance with Rule 457(o) under the Securities Act of 1933, the number of shares being registered and the proposed maximum offering price per share are not included in this table.
(2) Estimated solely for the purpose of computing the amount of the registration fee pursuant to Rule 457(o) under the Securities Act of 1933.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the

Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

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The information contained in this preliminary prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This preliminary prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

PRELIMINARY PROSPECTUS **SUBJECT TO COMPLETION, DATED FEBRUARY 10, 2006**

Shares
Common Stock
$ per Share

This is the initial public offering of shares of common stock by Luna Innovations Incorporated.

We are offering shares of our common stock. We expect the initial public offering price to be between $ and $ per share. Prior to this offering, there has been no public market for our common stock.

We have applied to have the common stock included for quotation on the Nasdaq National Market under the symbol "LUNA."

Investing in our common stock involves risks. See " Risk factors" beginning on page 7 to read about factors you should consider before buying shares of our common stock.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

	Per Share	Total
Initial public offering price	$	$
Underwriting discount	$	$
Proceeds, before expenses, to Luna Innovations Incorporated	$	$

We have granted the underwriters the right to purchase up to an additional shares of common stock from us at the initial public offering price less the underwriting discount to cover any over-allotments. The underwriters can exercise this right at any time within 30 days after the offering. We expect that delivery of the shares will be made to investors on or about , 2006.

ThinkEquity Partners LLC

WR Hambrecht + Co

Merriman Curhan Ford & Co.

, 2006

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You should rely only on the information contained in this prospectus. We have not, and the underwriters have not, authorized anyone to provide you with different information. We are not making an offer of these securities in any state where the offer or sale is not permitted. You should not assume that the information contained in this prospectus is complete and accurate as of any date other than the date on the front cover, regardless of the time of delivery, of this prospectus.

We obtained statistical data and certain other industry forecasts used throughout this prospectus from publicly available information, including market research and industry publications. Industry publications generally state that they obtain their information from sources that they believe to be reliable, but they do not guarantee the accuracy and completeness of the information. Similarly, while we believe that the statistical and industry data and forecasts and market research used herein are reliable, we have not independently verified such data. We have not sought the consent of the sources to refer to their reports in this prospectus.

Until , all dealers that effect transactions in these securities, whether or not participating in this offering, may be required to deliver a prospectus. This is in addition to the dealers' obligation to deliver a prospectus when acting as underwriters and with respect to their unsold allotments or subscriptions.

Prospectus summary

This summary highlights information contained elsewhere in this prospectus. This summary does not contain all of the information you should consider before buying shares in this offering. Therefore, you should read this entire prospectus carefully, including the “Risk factors” section beginning on page 7 and our consolidated financial statements and the related notes. Unless the context requires otherwise, the words “we,” “us” and “our” refer to Luna Innovations Incorporated and its consolidated subsidiaries.

Overview

We research, develop and commercialize innovative technologies in two primary areas: molecular technology solutions and sensing solutions. We have a disciplined and integrated business model that is designed to accelerate the process of bringing new and innovative products to market. We identify disruptive technology that can fulfill identified market needs and then take this technology from the applied research stage through commercialization in our two areas of focus:

- **Molecular Technology Solutions.** We develop new polymers, nanomaterials and reagents with enhanced performance characteristics by harnessing chemical, physical and biological properties of novel combinations of matter. Examples of our solutions in this area include disease-targeting contrast agents for magnetic resonance imaging, or MRI, nanomaterials for solar cell enhancement, flame retardants and multi-functional protective coatings.
- **Sensing Solutions.** We develop integrated sensing solutions to measure, monitor and control chemical, physical and biological properties and have particular expertise in optical, acoustic and wireless technologies. Examples of our solutions in this area include medical monitoring products and industrial instrumentation for aerospace, energy generation and distribution and defense applications.

We have a successful track record in executing our market-driven business model. Our aggregate revenues from the beginning of 2002 through September 30, 2005 were $67.0 million, consisting of $46.4 million in contract research revenues and $20.6 million in product sales and license revenues. Since our inception, we have developed more than a dozen products serving various industries including energy, telecommunications, life sciences and defense. We have created five companies in our areas of focus, sold two of them to industry leaders in their fields, raised private capital for two of our companies, formed one joint venture and entered into four licensing agreements.

Our company is organized into three main groups: our Contract Research Group, our Commercialization Strategy Group and our Products Group. These groups work closely together to turn ideas into products.

Contract Research Group. Our Contract Research Group provides applied research to customers in our areas of focus. Our engineers and scientists collaborate with our network of government, academic and industry experts to identify technologies and ideas with promising market potential. After these promising technologies are identified, our Contract Research Group competes to win fee-for-service contracts from government agencies and industrial clients who seek innovative solutions to practical problems that require new technology. We focus primarily on contract research opportunities where we can retain partial or full rights to the intellectual property developed, and generally obtain full funding of the costs of contracts we undertake from our customers. This approach allows us to cover the costs of early-stage technology development with contract research revenues. Since 2002, our contract research revenues have grown 24.8% in the two-year period ending December 31, 2004, and our Contract Research Group seeks to continually supply our product pipeline with new opportunities.

Commercialization Strategy Group. Our Commercialization Strategy Group works closely with our network of federal and industrial customers to identify new market opportunities for our technologies. After ideas are driven to proof of concept in the Contract Research Group, our Commercialization Strategy Group develops detailed business plans for commercially viable products. It is at this stage that we first consider investing our own funds to finance the continued development of a product, which is then managed in our Products Group.

Products Group. Our Products Group currently consists of the following three divisions:

- **Luna Advanced Systems Division.** Most new product opportunities that are approved for further development by our management team are initially allocated to our Luna Advanced Systems Division. Products currently managed in this division include medical diagnostic instruments using our innovative ultrasound technologies, non-destructive industrial testing and homeland security devices, remote and secure wireless asset monitoring systems, flame retardants, multi-functional protective coating systems and blast and ballistic resistant materials. We transfer products to existing or new divisions within our Products Group with the resources needed for the successful commercialization of the technology if we determine that a product line is broad enough or that the market opportunity is sufficiently large.
- **Luna nanoWorks Division.** Our Luna nanoWorks Division develops and commercializes innovative products based on carbon nanomaterials that have broad potential applications. This division is developing disease-targeting MRI contrast agents that are designed to be potentially safer than, and technically superior to, contrast agents currently on the market. We currently supply nanomaterials to research laboratories and plan to supply proprietary high value-added carbon nanomaterials to customers who manufacture products such as solar cells, strong and light-weight composites and coatings to shield devices from electromagnetic interference.
- **Luna Technologies Division.** Our Luna Technologies Division manufactures and markets test and measurement equipment and integrated sensing solutions. This division's products are used for process and control monitoring in telecommunications, manufacturing, power generation and distribution, down-hole oil and gas production, aerospace and defense applications. Our products have won numerous awards and are sold and distributed throughout North America, Europe, the Middle East and Asia.

We expect that the capital raised in this offering will provide us greater flexibility in funding the commercialization of new technologies and will provide us the opportunity to increase the speed, quality and volume of products that we can develop.

Our Growth Strategy

We have the following key strategies to achieve our goal of accelerating the development and commercialization of innovative technologies and to create successful products in our areas of focus:

- **Focus on developing and commercializing a growing portfolio of innovative products.** We intend to build and commercialize a growing portfolio of high value-added products using innovative technologies and utilize our existing relationships to identify, prioritize and allocate resources to respond rapidly to market needs, and shorten the time to market for new products.
- **Transition our mix of revenues to a higher percentage of product sales and license revenues.** We plan to commercialize a growing number of products in order to increase the amount of revenues that we generate from product sales and license payments. To this end, we will seek to expand our distribution network and our ability to service our customers. We will also seek to allocate resources to improve our ability to manufacture and shorten the cycle time from idea to market and to monetize our intellectual property portfolio by licensing our technologies. As a result, we believe that product sales and license revenues will comprise a greater portion of our total revenues in the future.
- **Continue to strengthen our Contract Research Group.** We will seek to strengthen our Contract Research Group through increased resource allocation and hiring and by expanding our network of relationships with federal laboratories, major research universities and industry leaders. These steps will provide us the opportunity to grow our applied research business, remain informed of the latest technological advances and increase the quality and volume of high potential technologies that will support our product pipeline.

- **Expand our intellectual property portfolio in our areas of focus.** We will seek to expand our intellectual property portfolio by applying our disciplined processes to generate know-how and intellectual property through our network of relationships and our own research and development efforts. By continuing to expand our intellectual property, we will seek to enhance our competitive position and develop additional products in these areas.

Company Information

We were incorporated as a Virginia corporation in July 1990. In December 1998 we changed our name from FEORC, Inc. to F&S Technologies, Inc., and in July 1999, we changed our name to Luna Innovations Incorporated. In April 2003, we reincorporated through a merger as a Delaware corporation and retained the name Luna Innovations Incorporated. Our principal offices are located at 10 South Jefferson Street, Suite 130, Roanoke, Virginia 24011. Our telephone number is (540) 552-5128. You can access our web site at www.lunainnovations.com. Information contained on our website does not constitute part of this prospectus.

LUNA INNOVATIONS is a registered trademark in the United States. Our unregistered trademarks include: our logo (a black and white image of a moth design); TRIMETASPHERES; and ACCELERATING THE INNOVATION PROCESS.

The Offering

Proposed Nasdaq National Market symbol	"LUNA"
Common stock offered by us	shares
Common stock outstanding after this offering	shares
Use of proceeds	We intend to use the net proceeds from this offering for general corporate purposes, which may include working capital, capital expenditures, other corporate expenses and potential acquisitions of complementary products, technologies or businesses. See "Use of proceeds."

The number of shares of common stock that will be outstanding after this offering is based on 10,630,935 shares outstanding as of December 31, 2005 and excludes:

- 7,033,517 shares of common stock issuable upon exercise of options outstanding at a weighted-average exercise price of $0.38 per share, which includes 5,246,017 shares of common stock issuable upon exercise of options outstanding at an exercise price of $0.20 per share, 200,000 shares of common stock issuable upon exercise of options outstanding at an exercise price of $0.22 per share and 1,587,500 shares of common stock issuable upon exercise of options outstanding at an exercise price of $1.00 per share;
- 409,860 shares of common stock reserved for future issuance upon the exercise of options available for grant under our 2003 Stock Plan;
- 6,494 shares of common stock issuable upon exercise of warrants (not subject to escrow) outstanding at a weighted-average exercise price of $12.92 per share, which includes 3,858 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of $21.06 per share and 2,636 shares of common stock issuable upon exercise at an exercise price of $1.00 per share;
- 1,885,490 shares of common stock issuable upon the conversion of the principal amount outstanding under convertible notes issued to Carilion Health System on December 30, 2005 and, assuming we elect to convert all of the accrued interest on these notes into shares of common stock after these notes remain outstanding for a maximum period of up to eight years, up to an additional 905,035 shares of common stock; and
- 122,745 shares of common stock issued or reserved for issuance in connection with the acquisition of Luna Technologies, Inc. that were held in escrow on that date, and 429 shares of common stock issuable upon the exercise of warrants at an exercise price of $21.06 held in escrow as of that date.

Since December 31, 2005, we granted options to purchase an additional 1,537,250 shares pursuant to our 2003 Stock Plan at an exercise price of $1.00 per share. We also adopted our 2006 Equity Incentive Plan, subject to stockholder approval, which will be effective upon the completion of this offering. In addition, on February 8, 2006, we issued warrants to purchase 101,773 shares at an exercise price of $1.00 per share.

Unless otherwise indicated, all information in this prospectus assumes:

- a -for- split of our common stock, to be effected immediately prior to the effectiveness of this offering;
- the conversion, in accordance with our certificate of incorporation, of all our shares of outstanding Class A Common Stock, Class B Common Stock and Class C Common Stock into shares of our common stock;
- that the underwriters do not exercise their over-allotment option; and
- the adoption of our amended and restated certificate of incorporation and bylaws.

Summary historical and pro forma financial data

The following table presents summary historical and unaudited pro forma consolidated financial data. We derived the summary consolidated statements of operations data for the years ended December 31, 2002, 2003 and 2004 from our audited consolidated financial statements. The summary consolidated balance sheet data as of September 30, 2005 and the summary consolidated statements of operations data for the nine months ended September 30, 2004 and September 30, 2005 are unaudited. We have prepared this unaudited information on the same basis as the audited consolidated financial statements and have included all adjustments, consisting only of normal recurring adjustments, that we consider necessary for a fair presentation of our financial position and operating results for such periods.

The pro forma consolidated statements of operations data give effect to our September 30, 2005 purchase of Luna Technologies, Inc. and the issuance of shares of our common stock to former Luna Technologies stockholders in connection with that transaction as if it had occurred on January 1, 2004. Our pro forma adjustments do not include the effects of an additional financing that occurred on December 30, 2005 in which we received $5.0 million in aggregate proceeds from the sale of senior convertible promissory notes and $3.0 million in aggregate proceeds from the sale of Class C Common Stock to Carilion Health System.

You should read the following information together with the more detailed information contained in “Selected consolidated financial data,” “Management’s discussion and analysis of financial condition and results of operations,” and our consolidated financial statements and the accompanying notes included elsewhere in this prospectus.

(in thousands, except share and per share data)	Years Ended December 31,			Nine Months Ended September 30,	
	2002	2003	2004	2004	2005
					(unaudited)
Consolidated Statements of Operations Data:					
Revenues:					
Contract research revenues	$11,084	$10,358	$13,835	$10,159	$11,112
Product sales and license revenues	4,643	7,234	8,752	6,199	—
Total revenues	15,726	17,592	22,587	16,357	11,112
Cost of revenues:					
Contract research costs	9,143	8,949	10,985	7,682	8,540
Product sales and license costs	3,884	1,543	2,881	2,773	—
Total cost of revenues	13,027	10,492	13,866	10,455	8,540
Gross profit	2,699	7,099	8,721	5,902	2,572
Operating expense	4,491	4,856	4,190	3,135	2,953
Operating income (loss)	(1,792)	2,243	4,532	2,768	(381)
Other income (expense)(1)	41	(138)	(257)	(147)	—
Interest income (expense), net	(469)	(87)	(90)	(70)	(75)
Income (loss) before income taxes	(2,220)	2,018	4,184	2,551	(456)
Income tax expense (benefit)	(652)	886	128	77	(187)
Net income (loss)	$(1,568)	$1,132	$4,056	$2,474	$(269)
Net income (loss) per common share:					
Basic	$(0.31)	$0.23	$0.79	$0.48	$(0.05)
Diluted	$(0.31)	$0.22	$0.59	$0.36	$(0.05)
Weighted-average shares:					
Basic	5,092,545	5,030,428	5,136,001	5,134,984	5,713,926
Diluted	5,092,545	5,141,003	6,902,405	6,946,825	5,713,926

(1) Includes minority interests and excludes interest expense.

Summary historical and pro forma financial data

(in thousands, except share and per share data)	Pro Forma Year Ended December 31, 2004	Pro Forma Nine Months Ended September 30, 2005
		(unaudited)
Pro Forma Consolidated Statements of Operations Data:		
Revenues	$24,316	$13,300
Cost of revenues	14,683	9,614
Gross profit	9,633	3,686
Operating expense	6,028	4,445
Operating income (loss)	3,605	(759)
Other income (expense)(1)	(259)	(—)
Interest income (expense), net	(121)	(87)
Income (loss) before income taxes	3,225	(846)
Income tax expense (benefit)	128	(187)
Net income (loss)	$3,097	$(659)
Net income (loss) per common share:		
Basic	$0.60	$(0.12)
Diluted	$0.45	$(0.12)
Weighted-average number of shares used in per share calculations:		
Basic	5,136,001	5,713,926
Diluted	6,902,405	5,713,926

(1) Includes minority interests and excludes interest expense.

The following table presents selected balance sheet data as of September 30, 2005 on an actual basis and on an as adjusted basis to give effect to the sale by us of shares of our common stock in this initial public offering at an assumed price of $ per share, the mid-point of the range on the front cover of this prospectus, after deducting the underwriting discount and estimated offering expenses.

(in thousands)	As of September 30, 2005	
	Actual	As Adjusted
		(unaudited)
Consolidated Balance Sheet Data:		
Cash and cash equivalents	$6,564	$
Working capital (deficit)	7,581	
Total assets	16,111	
Total current liabilities	4,689	
Total debt(1)	549	
Stockholders' equity	9,557	

(1) Includes capital lease obligations and excludes $1.5 million outstanding under our senior secured revolving credit facility, which is reflected in total current liabilities.

Risk factors

An investment in our common stock offered by this prospectus involves a substantial risk of loss. You should carefully consider these risk factors, together with all of the other information included in this prospectus, before you decide to purchase shares of our common stock. We believe the risks and uncertainties described below are the most significant but not the only risks we face. The occurrence of any of the following risks could harm our business. In that case, the trading price of our common stock could decline, and you may lose part or all of your investment. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our operations.

Risks Related to Our Business and Technologies

If we are unable to manage our growth effectively, our revenues and profits could be adversely affected.

While historically we have developed and commercialized only a few products at a time, we plan to grow by developing and commercializing multiple products concurrently across many industries, technologies and markets. Our ability to grow by developing and commercializing multiple products simultaneously requires that we manage a diverse range of projects, expand our personnel resources and broaden our geographic presence. Our inability to do any of these could prevent us from successfully implementing our growth strategy, and our revenues and profits could be adversely affected.

As of December 31, 2005, we had 68 research contracts covering a broad range of technologies, industries and markets. To advance the development of multiple promising potential products concurrently, we need to manage effectively the logistics of maintaining the requisite corporate, operational, administrative and financing functions for each of these products. Expanding our operations into new geographic areas and relying on multiple facilities to develop and manufacture different products concurrently pose additional challenges. We have little experience in managing these functions simultaneously for multiple projects in development or in building new infrastructure and integrating the operations of various facilities. If we cannot manage this process successfully, we may be subject to operating difficulties, additional expenditures and reduced revenues.

We need to expand our personnel resources to grow our business effectively. We believe that sustained growth at a higher rate will place a strain on our management, as well as on our other human resources. To manage this growth, we must continue to attract and retain qualified management, professional, scientific and technical and operating personnel. If we are unable to do so, we may be unable to staff and manage projects adequately, which may slow the development process, result in the commercialization of fewer products or compromise the quality of our work.

We have incurred recent losses, and because our strategy for expansion may be costly to implement, we may experience continuing losses which may be significant.

We incurred consolidated net losses of approximately $269 thousand for the nine months ended September 30, 2005. We expect to continue to incur significant additional expenses as we expand our business, including increased expenses for research and development, sales and marketing, manufacturing, finance and accounting personnel and expenses associated with being a public company. We may also grow our business in part through acquisitions of additional companies and complementary technologies which could cause us to incur greater than anticipated transaction expenses, amortization or write-offs of intangible assets and other acquisition-related expenses. As a result, we expect that we may likely continue to incur losses for the foreseeable future, and these losses could be substantial.

Because of the numerous risks and uncertainties associated with our business and our expansion strategy, we are unable to predict when or if we will be able to achieve profitability again. If our revenues do not increase, or if our expenses increase at a greater rate than our revenues, we will continue to experience losses. Even if we do achieve profitability, we may not be able to sustain or increase our profitability on a quarterly or annual basis.

We may not be successful in identifying market needs for new technologies and developing new products to meet those needs.

The success of our business model depends on our ability to identify correctly market needs for new technologies. We intend to identify new market needs, but we may not always have success in doing so, in part, because our contract research largely centers on technologies characterized by constant change and unpredictable markets. Furthermore, we must identify the most promising technologies from a sizable pool of projects. For example, we had 68 contract research projects as of December 31, 2005. If our Commercialization Strategy Group fails to identify the projects with the highest commercial potential or if management does not ensure that only the highest potential projects advance to the commercialization stage, we may not successfully commercialize new products and grow our revenues.

Our growth strategy requires that we not only identify new technologies that meet market needs, but that we also develop successful commercial products that address those needs. We face several challenges in developing successful new products. Many of our existing products and those currently under development—including our Trimetasphere™ carbon nanomaterials products—are technologically innovative and require significant and lengthy product development efforts, including planning, designing, developing and testing at the technological, product and manufacturing-process levels. These activities require us to make significant investments. Although there are many potential applications for our technologies, our resource constraints require us to focus on specific products and to forgo other opportunities. We expect that one or more of the potential products we choose to develop will not be technologically feasible or will not achieve commercial acceptance, and we cannot predict which, if any, of our products we will successfully develop or commercialize. The technologies we research and develop are new and steadily changing and advancing. The products that are derived from these technologies may not be applicable or compatible with the state of technology or demands in existing markets. Our existing products and technologies may become uncompetitive or obsolete if our competitors adapt more quickly than we do to new technologies and changes in customers' requirements. Furthermore, we may not be able to identify if and when new markets will open for our products given that future applications of any given product may not be readily determinable, and we cannot reasonably estimate the size of any markets that may develop. If we are not able to successfully develop new products, we may be unable to increase our product revenues.

We rely and will continue to rely on contract research for a significant portion of our revenues. Any decrease in these revenues, including Small Business Innovation Research, or SBIR, revenues, or our inability to continue to qualify for SBIR contracts and grants, could adversely affect our business.

We derive a significant portion of our revenues from contract research which we perform for third parties. Contract research accounted for approximately 61.3% and 100.0% of our consolidated total revenues for the year ended December 31, 2004 and the nine months ended September 30, 2005, respectively. SBIR revenues accounted for approximately 43.3% and 65.9% of our consolidated total revenues for the year ended December 31, 2004 and the nine months ended September 30, 2005, respectively, and 40.2% and 55.0% of our pro forma consolidated revenues, which include the operations of Luna Technologies for the year ended December 31, 2004 and the nine months ended September 30, 2005, respectively. Contract research will remain a significant portion of our consolidated total revenues for the foreseeable future. Our strategy for developing innovative technologies and products depends in large part on our ability to continue to enter into and generate revenues from contract research, including SBIR contracts. Our contract research customer base includes government agencies, academic institutions and corporations. Our customers are not obligated to extend their agreements with us and in certain cases, may terminate the funding prior to expiration, regardless of whether we have demonstrated technological feasibility or have met specified milestones. In addition, we may not be successful in securing future contracts. Our customers' priorities regarding funding for certain projects may change and funding resources may no longer be available at previous levels.

In addition, we may not qualify to participate in the Small Business Administration's, or SBA, SBIR program or receive an SBIR award from any federal agency in the future. In order to qualify for SBIR contracts and grants, at least 51% of our equity

must be owned and controlled by U.S. citizens or permanent resident aliens, or by another entity that is at least 51% owned and controlled by U.S. citizens or permanent resident aliens. In determining whether we satisfy the 51% equity ownership requirement, agreements to merge, stock options, convertible debt and other similar instruments are given "present effect" by the SBA as though the underlying security were actually issued unless the exercisability or conversion of such securities is speculative, remote or beyond the control of the security holder. We therefore believe our outstanding options and warrants held by eligible individuals may be counted as and our convertible debt may be excluded from outstanding equity for purposes of meeting the 51% equity ownership requirement. As of December 31, 2005, giving present effect to our outstanding options, approximately 73% of our equity was owned by U.S. citizens or permanent residents. Upon the completion of this offering, approximately % of our equity will be owned by U.S. citizens or permanent residents (and approximately % assuming exercise of the underwriters' over-allotment option). In addition, to be eligible for SBIR contracts, the number of our employees, including those of any entities that are considered to be affiliated with us, cannot exceed 500. As of December 31, 2005, we, including all of our divisions, had 131 full-time and 12 part-time employees. In determining whether we have 500 or fewer employees, the SBA may count the number of employees of entities that are large stockholders who are "affiliated", or have the power to control us. The SBA presumes that a large stockholder of ours has the power to control us absent evidence rebutting that presumption. With respect to Carilion Health System, our only large institutional stockholder, we believe we would not be required to count the employees of Carilion Health System. We believe the relative beneficial ownership of our individual stockholders rebuts the presumption of control by Carilion Health System because the shares held by our executive officers and directors constitute the controlling voting interest in us. We believe that we are currently in compliance with the SBIR eligibility criteria but we cannot provide assurance that the SBA will interpret its regulations in our favor. We must be able to certify that we meet the SBIR ownership and size requirements as of the time we enter into each SBIR contract or grant. As we grow our business, it is foreseeable that we will eventually exceed the SBIR eligibility limitations and may need to find other sources to fund our research and development efforts. If we are unsuccessful in obtaining additional contracts or funding grants because we cannot meet the eligibility requirements or if our customers decide to reduce or discontinue support of our projects, we may be required to seek alternative sources of revenues or capital.

We depend on government-funded research contracts for most of our contract research revenues, and a decline in government funding of existing or future government research contracts could adversely affect our revenues and cash flows and our ability to fund our growth.

Government-funded research accounted for approximately 93.3% and 96.5% of our contract research revenues and 57.2% and 96.5% of our total revenues for the year ended December 31, 2004 and the nine months ended September 30, 2005, respectively. On a pro forma consolidated basis, which includes the results of operations of Luna Technologies as if acquired on January 1, 2004, government-funded research accounted for 53.0% and 80.6% of our pro forma consolidated revenues for the year ended December 31, 2004 and the nine months ended September 30, 2005, respectively. As a result, we are vulnerable to adverse changes in our revenues and cash flows if a significant number of our government research contracts and subcontracts are simultaneously delayed or canceled for budgetary, performance or other reasons. The U.S. government may cancel these contracts at any time without cause and without penalty or may change its requirements, programs or contract budget, any of which could reduce our revenues and cash flows from U.S. government research contracts. Our revenues and cash flows from U.S. government research contracts could also be reduced by declines or other changes in U.S. defense, homeland security and other federal agency budgets. In addition, we compete as a small business for some of these contracts, and in order to maintain our eligibility to compete as a small business, we (together with any affiliates) must continue to meet size and revenue limitations established by the U.S. government.

In addition to contract cancellations and changes in agency budgets, our future financial results may be adversely affected by curtailment of the U.S. government's use of contract research providers, including curtailment due to government budget reductions and related fiscal matters. These or other factors could cause U.S. defense and other federal agencies to conduct research internally rather than through commercial research organizations, to reduce their overall contract research requirements or to exercise their rights to terminate contracts. Any of these actions could limit our ability to obtain new contract awards and adversely affect our revenues and cash flows and our ability to fund our growth.

If we cannot successfully transition our revenues mix from contract research revenues to product sales and license revenues, we may not be able to fully execute our business model or grow our business.

Our business model and future growth depend on our ability to transition to a revenues mix that contains significantly larger product sales and license revenues components. Product sales and license revenues potentially offer greater scalability than services-based contract research revenues. Our current plan is to increase our portfolio of commercial products and, accordingly, we expect that our future product sales and license revenues will represent a larger percentage of total revenues. However, if we are unable to develop and grow our product sales and license revenues to augment our contract research revenues, our ability to execute our business model or grow our business could suffer.

We face and will face substantial competition in several different markets that may adversely affect our results of operations.

We face or will face substantial competition from a variety of companies in several different markets. Our competitors in contract research include, but are not limited to, companies such as General Dynamics Corporation, Lockheed Martin Corporation, SAIC, Inc. and SRA International, Inc. In the molecular technology solutions products market, our competitors include, but are not limited to, large public manufacturers such as The Dow Chemical Company, E.I. du Pont de Nemours and Company, Rohm and Haas Company and 3M Company, as well as emerging companies. In addition, in the MRI contrast agent market our competitors include Amersham Plc, Berlex Laboratories, Inc., Bracco Diagnostics, Inc., and Mallinckrodt Inc. In the sensor solutions products market, our competitors include, but are not limited to, large companies such as Agilent Technologies, Inc., Analog Devices, Inc., Freescale Semiconductor, Inc., JDS Uniphase Corp., Robert Bosch GmbH and Silicon Sensing, as well as emerging companies.

The products that we have developed or are currently developing will compete with other technologically innovative products as well as products incorporating conventional materials and technologies. We expect that our products will compete with companies in a wide range of industries, including semiconductors, electronics, biotechnology, textiles, alternative energy, military, defense, healthcare, telecommunications, industrial measurement, security applications and consumer electronics.

Many of our competitors have longer operating histories, greater name recognition, larger customer bases and significantly greater financial, sales and marketing, manufacturing, distribution, technical and other resources than we do. These competitors may be able to adapt more quickly to new or emerging technologies and changes in customer requirements. In addition, current and potential competitors have established or may establish financial or strategic relationships among themselves or with existing or potential customers or other third parties. Accordingly, new competitors or alliances among competitors could emerge and rapidly acquire significant market share. We cannot assure you that we will be able to compete successfully against current or new competitors, in which case our net revenues may fail to increase or may decline.

A substantial portion of our technology is subject to retained rights of our licensors, and we may not be able to prevent the loss of those rights or the grant of similar rights to third parties.

A substantial portion of our technology is licensed from academic institutions, corporations and government agencies. Under these licensing arrangements, a licensor may obtain rights over the technology, including the right to require us to grant a license to one or more third parties selected by the licensor or that we provide licensed technology or material to third parties for non-commercial research. For example, under the Trimetasphere™ nanomaterials license, we have been required to supply Trimetasphere™ nanomaterials to three foreign and five domestic university research institutions and one corporate industrial research laboratory and may be required to supply such materials to other organizations for non-commercial research. The grant of a license for any of our core technologies to a third party could have a material and adverse effect on our business. In addition, our licensors retained certain rights under the licenses including the right to grant additional licenses to a substantial portion of our core technology to third parties for noncommercial academic and research use. It is difficult to monitor and enforce such noncommercial academic and research uses, and we cannot predict whether the third party

licensees would comply with the use restrictions of such licenses. We could incur substantial expenses to enforce our rights against them. We also may not fully control the ability to assert or defend those patents or other intellectual property which we have licensed from other entities, or which we have licensed to other entities.

In addition, some of our licenses with academic institutions give us the right to use certain technology previously developed by researchers at these institutions. In certain cases we also have the right to practice improvements on the licensed technology to the extent they are encompassed by the licensed patents and within our field of use. Our licensors may currently own and may in the future obtain additional patents and patent applications that are necessary for the development, manufacture and commercial sale of our anticipated products. We may be unable to agree with one or more academic institutions from which we have obtained licenses that certain intellectual property developed by researchers at these academic institutions is covered by our existing licenses. In the event that the new intellectual property is not covered by our existing licenses, we would be required to negotiate a new license agreement. We may not be able to reach agreement with current or future licensors on commercially reasonable terms, if at all, or the terms may not permit us to sell our products at a profit after payment of royalties, which could harm our business.

Some of our patents may cover inventions that were conceived or first reduced to practice under, or in connection with, U.S. government contracts or other federal funding agreements. With respect to inventions conceived or first reduced to practice under a federal funding agreement, the U.S. government may retain a nonexclusive, non-transferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the invention throughout the world. We may not have succeeded in our efforts to retain title in patents, maintain ownership of intellectual property or in limiting the U.S. government's rights in our proprietary technologies and intellectual property whether such intellectual property was developed in the performance of a federal funding agreement or developed at private expense.

Our proprietary rights may not adequately protect our technologies.

Our commercial success will depend in part on our obtaining and maintaining patent, trade secret, copyright and trademark protection of our technologies in the United States and other jurisdictions as well as successfully enforcing this intellectual property and defending this intellectual property against third-party challenges. We will only be able to protect our technologies from unauthorized use by third parties to the extent that valid and enforceable intellectual property protections, such as patents or trade secrets, cover them. In particular, we place considerable emphasis on obtaining patent and trade secret protection for significant new technologies, products and processes. Furthermore, the degree of future protection of our proprietary rights is uncertain because legal means afford only limited protection and may not adequately protect our rights or permit us to gain or keep our competitive advantage. Moreover, the degree of future protection of our proprietary rights is uncertain for products that are currently in the early stages of development—such as the Trimetasphere™ carbon nanomaterials products—because we cannot predict which of these products will ultimately reach the commercial market or whether the commercial versions of these products will incorporate proprietary technologies.

Our patent position is highly uncertain and involves complex legal and factual questions. Accordingly, we cannot predict the breadth of claims that may be allowed or enforced in our patents or in third-party patents. For example:

- we or our licensors might not have been the first to make the inventions covered by each of our pending patent applications and issued patents;
- we or our licensors might not have been the first to file patent applications for these inventions;
- others may independently develop similar or alternative technologies or duplicate any of our technologies;
- it is possible that none of our pending patent applications or the pending patent applications of our licensors will result in issued patents;

- our issued patents and issued patents of our licensors may not provide a basis for commercially viable technologies, or may not provide us with any competitive advantages, or may be challenged and invalidated by third parties; and
- we may not develop additional proprietary technologies that are patentable.

Patents may not be issued for any pending or future pending patent applications owned by or licensed to us, and claims allowed under any issued patent or future issued patent owned or licensed by us may not be valid or sufficiently broad to protect our technologies. Moreover, protection of certain of our intellectual property may be unavailable or limited in the United States or in foreign countries, and certain of our products—including our Trimetasphere™ carbon nanomaterials products—do not have foreign patent protection. Any issued patents owned by or licensed to us now or in the future may be challenged, invalidated, or circumvented, and the rights under such patents may not provide us with competitive advantages. In addition, competitors may design around our technology or develop competing technologies. Intellectual property rights may also be unavailable or limited in some foreign countries, and in the case of certain products no foreign patents were filed or can be filed. This could make it easier for competitors to capture or increase their market share with respect to related technologies. Although we are not currently involved in any legal proceedings related to intellectual property, we could incur substantial costs to bring suits in which we may assert our patent rights against others or defend ourselves in suits brought against us. An unfavorable outcome of any such litigation could have a material adverse effect on our business and results of operations.

We also rely on trade secrets to protect our technology, especially where we believe patent protection is not appropriate or obtainable. However, trade secrets are difficult to protect. We vigorously pursue confidentiality agreements and contractual provisions with our collaborators, employees, and consultants to protect our trade secrets and proprietary know-how. These agreements may be breached and or may not have adequate remedies for such breach. While we use reasonable efforts to protect our trade secrets, our employees, consultants, contractors or scientific and other advisors, or those of our strategic partners, may unintentionally or willfully disclose our information to competitors. If we were to enforce a claim that a third party had illegally obtained and was using our trade secrets, our enforcement efforts would be expensive and time consuming, and the outcome would be unpredictable. In addition, courts outside the United States are sometimes unwilling to protect trade secrets. Moreover, if our competitors independently develop equivalent knowledge, methods and know-how, it will be more difficult for us to enforce our rights and our business could be harmed.

If we are not able to defend the patent or trade secret protection position of our technologies, then we will not be able to exclude competitors from developing or marketing competing technologies, and we may not generate enough revenues from product sales to justify the cost of development of our technologies and to achieve or maintain profitability.

We also rely on trademarks to establish a market identity for Luna and Luna products. We currently have one registered trademark in the United States and three pending trademark applications filed with the U.S. Patent and Trademark Office. To maintain the value of our trademarks, we might have to file lawsuits against third parties to prevent them from using trademarks confusingly similar to or dilutive of our registered or unregistered trademarks. Also, we might not obtain registrations for our pending trademark applications, and might have to defend our registered trademark and pending trademark applications from challenge by third parties. Enforcing or defending our registered and unregistered trademarks might result in significant litigation costs and damages, including the inability to continue using certain trademarks.

Third parties may claim that we infringe their intellectual property, and we could suffer significant litigation or licensing expense as a result.

Various U.S. and foreign issued patents and pending patent applications, which are owned by third parties, exist in our technology areas. Such third parties may claim that we infringe their patents. Because patent applications can take several years to result in a patent issuance, there may be currently pending applications, unknown to us, which may later result in issued patents that our technologies may infringe. For example, we are aware of competitors with patents in technology areas

applicable to our optical test equipment products. Such competitors may allege that we infringe these patents. There could also be existing patents of which we are not aware that our technologies may inadvertently infringe. If third parties assert claims against us alleging that we infringe their patents or other intellectual property rights—including third parties that have asserted claims against businesses that we have acquired prior to our acquisition of these businesses—we could incur substantial costs and diversion of management resources in defending these claims, and the defense of these claims could have a material adverse effect on our business, financial condition, and results of operations. In addition, if third parties assert claims against us and we are unsuccessful in defending against these claims, these third parties may be awarded substantial damages, as well as injunctive or other equitable relief against us, which could effectively block our ability to make, use, sell, distribute, or market our products and services in the United States or abroad. For example, we acquired a business that had received a letter in 2002 from a competitor alleging infringement of certain patents. The competitor sent an additional letter on January 14, 2004 to the business that we acquired, again alleging infringement of the competitor's patents. Neither we nor the business that we acquired have received any further communications from this third party. We cannot currently predict whether this third party, or any other third party, will assert a claim against us, or whether any third parties that have asserted such claims against businesses that we have acquired will assert claims or pursue infringement litigation against us; nor can we predict the ultimate outcome of any such potential claims or litigation.

Commercial application of nanotechnology is new and the scope and breadth of patent protection is uncertain. Consequently, the patent positions of companies involved in nanotechnology have not been tested and complex legal and factual questions for which important legal principles will be developed or may remain unresolved. In addition, it is not clear whether such patents will be subject to interpretations or legal doctrines that differ from conventional patent law principles. Changes in either the patent laws or in interpretations of patent laws in the United States and other countries may diminish the value of our nanotechnology-related intellectual property. Accordingly, we cannot predict the breadth of claims that may be allowed or enforced in our nanotechnology-related patents or in third party patents.

In the event that a claim relating to intellectual property is asserted against us, or third parties not affiliated with us hold pending or issued patents that relate to our products or technology, we may seek licenses to such intellectual property or challenge those patents. However, we may be unable to obtain these licenses on commercially reasonable terms, if at all, and our challenge of the patents may be unsuccessful. Our failure to obtain the necessary licenses or other rights could prevent the sale, manufacture, or distribution of our products and, therefore, could have a material adverse effect on our business, financial condition, and results of operations.

For example, we are a party to an exclusive license agreement with NASA for certain patented ultrasound technology. The field of this license is limited to measurement of intracranial pressure and compartment syndrome. We currently engage in ultrasound product development activities in bone strength measurement, embolus detection and detection of concealed weapons. To the extent that these activities are covered by the licensed NASA patents, we may be required to acquire an additional license from NASA. We cannot currently predict whether NASA would grant an additional license to us for these fields of use, if such a license were required.

As a provider of contract research to the U.S. government, we are subject to federal rules, regulations, audits and investigations, the violation or failure of which could adversely affect our business.

We must comply with and are affected by laws and regulations relating to the award, administration and performance of U.S. government contracts. Government contract laws and regulations affect how we do business with our government customers and, in some instances, impose added costs on our business. A violation of specific laws and regulations could result in the imposition of fines and penalties or the termination of our contracts or debarment from bidding on contracts. In some instances, these laws and regulations impose terms or rights that are more favorable to the government than those typically available to commercial parties in negotiated transactions. For example, the U.S. government may terminate any of our government contracts and, in general, subcontracts, at their convenience, as well as for default based on performance.

In addition, U.S. government agencies, including the Defense Contract Audit Agency and the Department of Labor, routinely audit and investigate government contractors. These agencies review a contractor's performance under its contracts, cost structure and compliance with applicable laws, regulations and standards. The U.S. government also may review the adequacy of, and a contractor's compliance with, its internal control systems and policies, including the contractor's purchasing, property, estimating, compensation and management information systems. Any costs found to be improperly allocated to a specific contract will not be reimbursed, while such costs already reimbursed must be refunded. If an audit uncovers improper or illegal activities, we may be subject to civil and criminal penalties and administrative sanctions, including termination of contracts, forfeiture of profits, suspension of payments, fines and suspension or prohibition from doing business with the U.S. government. In addition, we could suffer serious reputational harm if allegations of impropriety were made against us.

In March 2003, the Office of Inspector General of the Department of Commerce advised us that the government was investigating anonymous allegations of contract improprieties. We have cooperated fully and extensively with that investigation through interviews and document production. In April 2003, the government advised our regulatory counsel that to date no wrongdoing had been identified, although the government indicated that we may not have fully complied with contractual reporting requirements in one or two instances, which the government did not specify. We believe that the investigation has been resolved favorably, based on statements by the government investigator to our employees in June 2003, and that this matter effectively is at an end absent any advice or communication from the government to the contrary. However, there can be no assurance as to how or whether our relationships, business, financial condition or results of operations will ultimately be affected, if at all, by the investigation.

On November 9, 2004, we received a subpoena from the Department of Defense's Office of the Inspector General covering certain government research contracts awarded to us between January 1, 1998 and November 9, 2004 to determine if we had duplicated work in our submission of project reports to the government. In connection with the investigation, the government alleged that duplication occurred in three research reports that we prepared under the contracts. We submitted a response to the Inspector General in September 2005 challenging the government's findings. On November 15, 2005, we entered into a settlement agreement with the government and received a general release with respect to the civil and administrative claims in this matter in return for a payment of $165,333.

In addition to the risk of government audits and investigations, U.S. government contracts and grants impose requirements on contractors and grantees relating to ethics and business practices, which carry civil and criminal penalties ranging from monetary fines, assessments, loss of the ability to do business with the U.S. government and certain other criminal penalties.

We may also be prohibited from commercially selling certain products that we develop under our Contract Research Group or related products based on the same core technologies if the U.S. government determines that the commercial availability of those products could pose a risk to national security. For example, certain of our wireless technologies have been classified as secret by the U.S. government and as a result we cannot sell them commercially. Any of these determinations would limit our ability to generate product sales and license revenues.

We are subject to significant foreign and domestic government regulations, including environmental and health and safety regulations, and failure to comply with these regulations could harm our business.

Our facilities and current and proposed activities involve the use of a broad range of materials that are considered hazardous under applicable laws and regulations. Accordingly, we are subject to a number of foreign, federal, state, and local laws and regulations relating to health and safety, protection of the environment, and the storage, use, disposal of, and exposure to, hazardous materials and wastes. We could incur costs, fines and civil and criminal penalties, personal injury and third party property damage claims, or could be required to incur substantial investigation or remediation costs if we were to violate or become liable under environmental, health and safety laws. Moreover, a failure to comply with environmental laws could result in fines and the revocation of environmental permits, which could prevent us from conducting our business. Liability

under environmental laws can be joint and several and without regard to fault. There can be no assurance that violations of environmental health and safety laws will not occur in the future as a result of the inability to obtain permits, human error, equipment failure or other causes. Environmental laws could become more stringent over time, imposing greater compliance costs and increasing risks and penalties associated with violations, which could harm our business. Accordingly, violations of present and future environmental laws could restrict our ability to expand facilities, pursue certain technologies, and could require us to acquire costly equipment, or to incur potentially significant costs to comply with environmental regulations.

The European Union Directive 2002/96/EC on Waste Electrical and Electronic Equipment, known as the "WEEE Directive," requires producers of certain electrical and electronic equipment, including monitoring instruments, to be financially responsible for specified collection, recycling, treatment and disposal of past and present covered products placed on the market in the European Union. As a manufacturer of covered products, we may be required to register as a producer in some European Union countries, and we may incur some financial responsibility for the collection, recycling, treatment and disposal of both new product sold, and product already sold prior to the WEEE Directive's enforcement date, including the products of other manufacturers where these are replaced by our own products. European Union Directive 2002/95/EC on the Restriction of the use of Hazardous Substances in electrical and electronic equipment, known as the "RoHS Directive," restricts the use of certain hazardous substances, including mercury, lead and cadmium in specified covered products; however, the RoHS Directive currently exempts monitoring instruments from its requirements. If the European Commission were to remove this exemption in the future, we would be required to change our manufacturing processes and redesign products regulated under the RoHS Directive in order to be able to continue to offer them for sale within the European Union. For some products, substituting certain components containing regulated hazardous substances may be difficult, costly or result in production delays. We will continue to review the applicability and impact of both directives on the sale of our products within the European Union, and although we cannot currently estimate the extent of such impact, they are likely to result in additional costs and could require us to redesign or change how we manufacture our products, any of which could adversely affect our operating results. Failure to comply with the directives could result in the imposition of fines and penalties, inability to sell covered products in the European Union and loss of revenues.

Compliance with foreign, federal, state and local environmental laws and regulations represents a small part of our present budget. If we fail to comply with any such laws or regulations, however, a government entity may levy a fine on us or require us to take costly measures to ensure compliance. Any such fine or expenditure may adversely affect our development. We are committed to complying with and, to our knowledge, are in compliance with, all governmental regulations. We cannot predict the extent to which future legislation and regulation could cause us to incur additional operating expenses, capital expenditures, or restrictions and delays in the development of our products and properties.

Our ability to develop and market certain of our current and potential products may be hindered as a result of FDA regulatory requirements and a lengthy and expensive approval process.

Certain of our current and potential products will require regulatory clearances or approvals prior to commercialization. In particular, our Trimetasphere™ nanomaterial-based MRI contrast agent and our ultrasonic diagnostic devices for measuring certain medical conditions will be considered a drug and medical devices, respectively, under the Federal Food, Drug & Cosmetic Act, or FDC Act. Drugs and medical devices are subject to rigorous preclinical testing and other approval requirements by the Food and Drug Administration, or FDA, pursuant to the FDC Act, and regulations under the FDC Act, as well as by similar health authorities in foreign countries. Various federal statutes and regulations also govern or influence the testing, manufacturing, safety, labeling, packaging, advertising, storage, registration, listing and recordkeeping related to marketing of these products. The process of obtaining these clearances or approvals and the subsequent compliance with appropriate federal statutes and regulations require the expenditure of substantial resources. We cannot be certain that any required FDA or other regulatory approval will be granted or, if granted, will not be withdrawn. Our failure to obtain the necessary regulatory approvals, or our failure to obtain them in a timely manner, will prevent or delay our commercialization of new products and our business could suffer.

Our failure to attract, train and retain skilled employees would adversely affect our business and operating results.

The availability of highly trained and skilled technical and professional personnel is critical to our future growth and profitability. Competition for scientists, engineers, technicians and professional personnel is intense and competitors aggressively recruit key employees. Because of our growth and increased competition for experienced personnel, particularly in highly specialized areas, it has become more difficult to meet all of our needs for these employees in a timely manner. Although we intend to continue to devote significant resources to recruit, train and retain qualified employees, we may not be able to attract and retain these employees. Any failure to do so would have an adverse effect on our business.

In addition, our future success depends in a large part upon the continued service of key members of our senior management team. In particular, our Chairman, CEO and founder, Kent A. Murphy, Ph.D., is essential to our overall management as well as the development of our technologies, our culture and our strategic direction. All of our executive officers and key employees are at-will employees, and, except with respect to Kent A. Murphy, Ph.D., we do not maintain any key-person life insurance policies. The loss of any of our management or key personnel could seriously harm our business.

We might require additional capital to support business growth, and this capital might not be available.

We intend to continue to make investments to support our business growth and may require additional funds to respond to business challenges, including the need to develop new products or enhance our existing products, enhance our operating infrastructure, complete our development activities, build our commercial scale manufacturing facilities and acquire complementary businesses and technologies. Accordingly, we may need to engage in equity or debt financings to secure additional funds for these investments. If we raise additional funds through issuances of equity or convertible debt securities, our existing stockholders could suffer significant dilution, and any new equity securities we issue could have rights, preferences and privileges superior to those of holders of our common stock, including shares of common stock sold in this offering. Furthermore, such financings may jeopardize our ability to apply for SBIR grants or qualify for SBIR contracts or grants, and our dependence on SBIR grants may restrict our ability to raise additional outside capital. Our ability to obtain additional capital could be restricted by the covenants in our existing senior secured credit facility with First National Bank. Among other things, these covenants restrict us, without the prior approval of First National Bank, from guaranteeing the debt of an affiliate or subsidiary or incurring in excess of $200 thousand non-First National Bank debt annually. Any debt financing obtained by us in the future could involve restrictive covenants relating to our capital raising activities and other financial and operational matters, which may make it more difficult for us to obtain additional capital and to pursue business opportunities, including potential acquisitions. In addition, we may not be able to obtain continued SBIR funding, or other additional financing on terms favorable to us, if at all. In order to retain SBIR eligibility, we may be restricted in our ability to raise certain forms of equity capital from institutional investors. For example, in connection with the closing of our financing with Carilion Health System on December 30, 2005, we were not able to raise all proceeds through the issuance of equity without potentially jeopardizing our SBIR eligibility. We therefore were required to issue debt in the amount of $5.0 million of the total $8.0 million raised in such financing to maintain SBIR eligibility. Under the terms of these notes, we agreed that we will not draw down any amount under our existing senior secured credit facility with First National Bank or incur additional indebtedness other than under certain limited conditions. If we are unable to obtain adequate financing or financing on terms satisfactory to us, when we require it, our ability to continue to support our business growth and to respond to business challenges could be significantly limited.

We have limited experience manufacturing our products in commercial quantities in a cost-effective manner, which could adversely impact our business.

Because we have only limited experience in manufacturing our products in commercial quantities, we may encounter unforeseen situations, including the need to develop or in-license Trimetasphere™ nanomaterial purification and isolation

technology, which would result in manufacturing delays or shortfalls. We may encounter difficulties and delays in manufacturing our products for the following reasons:

- we plan to expand our manufacturing operations, and our production processes may have to change to accommodate this growth;
- to increase our manufacturing output significantly, we will have to attract and retain qualified employees, who are in short supply, for the assembly and testing operations;
- we might have to sub-contract to outside manufacturers which might limit our control of costs and processes; and
- our manufacturing operations may have to comply with government specifications including FDA regulations.

If we are unable to keep up with demand for our products, our revenues could be impaired, market acceptance for our products could be adversely affected and our customers might instead purchase our competitors' products. Moreover, failure to develop and maintain a U.S. market for goods developed with U.S. government-licensed technology may result in the cancellation of the relevant U.S. government licenses. Our inability to manufacture our products successfully would have a material adverse effect on our revenues.

Even if we are able to manufacture our products on a commercial scale, the cost of manufacturing our products may be higher than we expect. If the costs associated with manufacturing are not significantly less than the prices at which we can sell our products, we may not be able to operate at a profit.

We depend on third-party vendors for specialized components in our manufacturing operations, making us vulnerable to supply shortages and price fluctuations that could harm our business.

We primarily rely on third-party vendors for the manufacture of the specialized components used in our products. For example, we are aware of only two manufacturers that produce the special lasers used in our optical test equipment. Our reliance on these vendors subjects us to a number of risks that could impact our ability to manufacture our products and harm our business, including interruption of supply.

Any significant delay or interruption in the supply of components, or our inability to obtain substitute components or materials from alternate sources at acceptable prices in a timely manner, could impair our ability to meet the demand of our customers and harm our business.

Our nanotechnology-enabled products are new and may be, or may be perceived as being, harmful to human health or the environment.

We intend to develop and sell carbon-based nanomaterials as well as products that include nanomaterials as a component to enhance those products' performance. Some of these nanomaterials contain carbon nanostructures and some contain carbon nanospheres in which certain rare earth elements are incorporated. Nanotechnology-enabled products have a limited historical safety record. Because of the size or shape of the nanostructures or because they may contain harmful elements, such as gadolinium and other rare-earth metals, our products could pose a safety risk to human health or the environment. In addition, some countries have adopted regulations prohibiting or limiting the use of certain products that contain certain chemicals, which may inhibit our ability to sell some end user products containing those materials. The regulation and limitation of the kinds of materials used in or to develop our products could harm our business and impair our ability to develop commercially viable products.

The subject of nanotechnology has received negative publicity and has aroused public debate. Government authorities could, for social or other purposes, prohibit or regulate the use of nanotechnology. Ethical and other concerns about nanotechnology could adversely affect acceptance of our potential products or lead to government regulation of nanotechnology-enabled products.

We face risks associated with our international business.

Our Luna Technologies Division and our Luna nanoWorks Division currently conduct business internationally and we might considerably expand our international activities in the future. Our international business operations are subject to a variety of risks associated with conducting business internationally, including:

- changes in or interpretations of foreign regulations that may adversely affect our ability to sell our products, perform services or repatriate profits to the United States;
- the imposition of tariffs;
- hyperinflation or economic or political instability in foreign countries;
- imposition of limitations on or increase of withholding and other taxes on remittances and other payments by foreign subsidiaries or joint ventures;
- conducting business in places where business practices and customs are unfamiliar and unknown;
- the imposition of restrictive trade policies;
- the imposition of inconsistent laws or regulations;
- the imposition or increase of investment and other restrictions or requirements by foreign governments;
- uncertainties relating to foreign laws and legal proceedings;
- having to comply with a variety of U.S. laws, including the Foreign Corrupt Practices Act;
- having to comply with U.S. export control regulations and policies that restrict our ability to communicate with non-U.S. employees and supply foreign affiliates and customers; and
- having to comply with licensing requirements.

We do not know the impact that these regulatory, geopolitical and other factors may have on our international business in the future.

Risks Related to This Offering

Our common stock has never been publicly traded, and we expect that the price of our common stock will fluctuate substantially.

Before this initial public offering, there has been no public market for our common stock. An active public trading market may not develop after completion of this offering or, if developed, may not be sustained. The initial public offering price may not be indicative of prices that will prevail in the trading market. The public trading price for our common stock after this offering will be affected by a number of factors, including:

- changes in earnings estimates, investors' perceptions, recommendations by securities analysts or our failure to achieve analysts' earning estimates;
- changes in our status as an entity eligible to receive SBIR contracts and grants;
- quarterly variations in our or our competitors' results of operations;
- general market conditions and other factors unrelated to our operating performance or the operating performance of our competitors;
- announcements by us, or our competitors, of acquisitions, new products, significant contracts, commercial relationships or capital commitments;

- commencement of, or involvement in, litigation;
- any major change in our board of directors or management;
- changes in governmental regulations or in the status of our regulatory approvals;
- announcements related to patents issued to us or our competitors and to litigation;
- a lack of, limited or negative industry or security analyst coverage; and
- developments in our industry.

In addition, the stock prices of many technology companies have experienced wide fluctuations that have often been unrelated to the operating performance of those companies. These factors may materially and adversely affect the market price of our common stock.

New investors in our common stock will experience immediate and substantial dilution.

Our initial public offering price is substantially higher than the book value per share of our common stock. If you purchase common stock in this offering, you will incur immediate dilution of $ in net tangible book value per share of common stock, based on an assumed initial public offering price of $ per share, the mid-point of the range on the front cover of this prospectus. In addition, the number of shares available for issuance under our stock plans may increase annually without further stockholder approval. Investors will incur additional dilution upon the exercise of stock options and warrants. See “Dilution.”

If there are substantial sales of our common stock, our stock price could decline.

If our existing stockholders sell a large number of shares of our common stock or the public market perceives that these sales may occur, the market price of our common stock could decline. Upon the closing of this offering, assuming no outstanding options are exercised prior to the closing of this offering, we will have approximately shares of common stock outstanding. The shares to be sold under this prospectus will be freely tradable without restriction or further registration under the federal securities laws, unless purchased by our affiliates. Taking into consideration the effect of the 180-day lock-up agreements that have been entered into by certain of our stockholders, we estimate that the remaining shares of our common stock outstanding upon the closing of this offering will be available for sale pursuant to Rule 144, Rule 144(k) and Rule 701, as follows:

- shares will be immediately eligible for sale in the public market without restriction pursuant to Rule 144(k);
- additional shares will be eligible for sale in the public market under Rule 144 or Rule 701 beginning 90 days after the date of this prospectus, subject to volume, manner of sale, and other limitations under those rules;
- additional shares will become eligible for sale, subject to the provisions of Rule 144, Rule 144(k) or Rule 701, beginning 180 days after the date of this prospectus, upon the expiration of agreements not to sell such shares entered into between the underwriters and such stockholders; and
- additional shares will be eligible for sale from time to time thereafter upon expiration of their respective one-year holding periods, but could be sold earlier if the holders exercise any available registration rights. Of such shares subject to the provisions of Rule 144, 2,639,688 and 1,131,294 shares may be sold by Carilion Health System beginning August 4, 2006 and December 30, 2006, respectively, and 183,120 shares may be sold by three individuals beginning November 22, 2006.

Existing stockholders holding an aggregate of shares of common stock (including shares of our common stock purchasable pursuant to warrants to purchase our common stock), based on shares outstanding as of December 31, 2005,

have rights with respect to the registration of these shares of common stock with the SEC. See “Description of capital stock—Registration Rights.” If we register these shares of common stock, these holders will be able to sell immediately those shares in the public market.

Within three months following the completion of this offering, we intend to file a registration statement to register 12,715,000 shares of common stock reserved for issuance under our 2003 Stock Plan (including an increase of 1,715,000 shares since December 31, 2005) and 2006 Equity Incentive Plan, thus permitting the resale of such shares. As of December 31, 2005, shares were subject to outstanding options, of which options were vested.

Once we register these shares, they can be freely sold in the public market upon issuance, subject to the underwriter lock-up agreements, our stock purchase restriction agreements and restrictions on our affiliates.

In addition, holders of warrants exercisable for up to shares of common stock may exercise those rights and subsequently sell the underlying shares in the public market.

ThinkEquity Partners LLC, on behalf of the underwriters, may in its sole discretion, at any time without notice, release all or any portion of the shares subject to the lock-up agreements, which would result in more shares being available for sale in the public market at earlier dates. Sales of common stock by existing stockholders in the public market, the availability of these shares for sale, our issuance of securities or the perception that any of these events might occur could materially and adversely affect the market price of our common stock.

In addition, employees holding options exercisable for shares of our common stock have entered into an agreement not to sell more than 20.0% of such shares in any year during the five years following the effective date of this offering, provided, any share subject to such annual limit not sold in a year may be sold in subsequent years notwithstanding such limitation. Certain members of our management holding options exercisable for shares of our common stock have entered into an agreement not to sell more than 15.0% of such shares in any year during the five years following the effective date of this offering, provided, any share subject to such annual limit not sold in a year may be sold in subsequent years notwithstanding such limitation. We have the right to waive any of these resale restrictions for employees and management at our discretion, and in such instance, the shares would become freely tradable.

Our management will have broad discretion over the use of the proceeds to us from this offering and might not apply the proceeds of this offering in ways that increase the value of your investment.

Our management will have broad discretion to use the net proceeds from this offering, and you will be relying on the judgment of our management regarding the application of these proceeds. They might not apply the net proceeds of this offering in ways that increase the value of your investment. We expect to use the net proceeds from this offering for general corporate purposes, which may include working capital, capital expenditures, other corporate expenses and potential acquisitions of complementary products, technologies or businesses. We have not allocated these net proceeds for any specific purposes. Our management might not be able to yield a significant return, if any, on any investment of these net proceeds.

Our directors and management will collectively control over % of our outstanding common stock.

Immediately after this offering, our directors and executive officers and their affiliates will collectively control approximately % of our outstanding common stock or approximately % if the underwriters exercise their over-allotment option in full. As a result, these stockholders, if they act together, will be able to influence our management and affairs and all matters requiring stockholder approval, including the election of directors and approval of significant corporate transactions. You and other stockholders will have minimal influence over these actions. This concentration of ownership may have the effect of delaying or preventing a change in control of our company and might adversely affect the market price of our common stock.

Our financial results may vary significantly from period to period which may reduce our stock price.

Our financial results may fluctuate as a result of a number of factors, many of which are outside of our control, which may cause the market price of our common stock to fall. For these reasons, comparing our operating results on a period-to-period basis may not be meaningful, and you should not rely on our past results as an indication of our future performance. Our financial results may be negatively affected by any of the risk factors listed in this "Risk factors" section and, in particular, the following risks:

- a reduction of contract research funding;
- decisions by government agencies, academic institutions or corporations not to exercise contract options or to modify, curtail or terminate our major contracts;
- failure to estimate or control contract costs;
- adverse judgments or settlements in legal disputes;
- expenses related to acquisitions, mergers or joint ventures; and
- other one-time financial charges.

We will incur increased costs as a result of being a public company.

As a public company, we will incur significant legal, accounting and other expenses that we did not incur as a private company. We will incur costs associated with our public company reporting requirements. We also anticipate that we will incur costs associated with corporate governance requirements, including requirements under the Sarbanes-Oxley Act of 2002, as well as new rules implemented by the SEC and the National Association of Securities Dealers, Inc., or NASD. We expect these rules and regulations to increase our legal and financial compliance costs and to make some activities more time-consuming and costly. We also expect these rules and regulations may make it more difficult and more expensive for us to obtain director and officer liability insurance and we may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. As a result, it may be more difficult for us to attract and retain qualified individuals to serve on our board of directors or as executive officers. We cannot predict or estimate the amount of additional costs we may incur or the timing of such costs.

Investors could lose confidence in our financial reports, and our stock price may be adversely affected, if our internal control over financial reporting are found not to be effective by management or by an independent registered public accounting firm or if we make disclosure of existing or potential significant deficiencies or material weaknesses in those controls.

Beginning with our Annual Report for the year ending December 31, 2007, Section 404 of the Sarbanes-Oxley Act of 2002 requires us to include an internal control report with our Annual Report on Form 10-K. That report must include management's assessment of the effectiveness of our internal control over financial reporting as of the end of the fiscal year. Additionally, our independent registered public accounting firm will be required to issue a report on management's assessment of our internal control over financial reporting and a report on their evaluation of the operating effectiveness of our internal control over financial reporting.

We continue to evaluate our existing internal control over financial reporting against the standards adopted by the Public Company Accounting Oversight Board, or PCAOB. During the course of our ongoing evaluation of the internal controls, we may identify areas requiring improvement, and may have to design enhanced processes and controls to address issues identified through this review. Remedying any deficiencies, significant deficiencies or material weaknesses that we or our independent registered public accounting firm may identify, may require us to incur significant costs and expend significant time and management resources. We cannot assure you that any of the measures we implement to remedy any such

deficiencies will effectively mitigate or remedy such deficiencies. Investors could lose confidence in our financial reports, and our stock price may be adversely affected, if our internal controls over financial reporting are found not to be effective by management or by an independent registered public accounting firm or if we make disclosure of existing or potential significant deficiencies or material weaknesses in those controls.

Our independent auditors have identified material weaknesses and significant deficiencies in our internal controls, and if we are unable to develop, implement and maintain appropriate controls we will not be able to comply with applicable regulatory requirements imposed on reporting companies.

In connection with the audit of our financial statements for each of the three years in the period ended December 31, 2004, our independent registered public accounting firm identified certain weaknesses in our internal control over financial reporting, which they considered to be material weaknesses and significant deficiencies. Specifically, because we lack appropriate resources and personnel with sufficient experience, our independent registered public accounting firm noted weaknesses in our ability to account for certain complex accounting transactions relating to business combinations and consolidation matters, to account for share-based payments to employees and consultants, as well as weaknesses in our ability to prepare timely consolidated financial statements in accordance with U.S. generally accepted accounting principles and Regulation S-X under the Securities Exchange Act of 1934, as amended. We also lack adequate cutoff and accrual procedures which materially affected recognition of expenses and, in certain instances, related revenues. These weaknesses led to significant audit adjustments for each of the three years in the period ended December 31, 2004 which had a material effect on our financial statements.

Our business operations were relatively small for several years and, as a result, we have operated with very limited staffing of key accounting functions. Such limited staffing made it difficult for us to segregate certain accounting functions. Because of these circumstances, we have relied on outside consultants to supplement our internal accounting staff and to meet our financial reporting obligations.

We are actively recruiting key senior accounting and finance employees to include a new Chief Financial Officer, Chief Accounting Officer/Corporate Controller and other accounting staff to enhance our internal control and procedures over financial reporting. Upon hiring a new Chief Financial Officer, our current Chief Financial Officer will continue to serve as our Vice President, Corporate Development. We also intend to establish new and enhanced systems of internal control that we believe will be necessary to allow management to report on, and our independent auditors to attest to, our internal controls. We will continue to perform system and process evaluation and testing and any necessary remediation of our internal control system on an ongoing basis.

While we anticipate being able to implement fully the requirements relating to internal controls and all other applicable requirements of the Sarbanes-Oxley Act of 2002 in a timely fashion, we cannot be certain as to the timing of the completion of our evaluation and testing and any necessary remediation or the impact of the same on our operations. Our development, implementation and maintenance of appropriate internal controls will depend materially both on our successful hiring and retention of key senior accounting personnel. If we are not able to complete the assessment required under Section 404 in a timely manner, we and our independent registered public accounting firm would be unable to conclude that our internal control over financial reporting is effective as of December 31, 2007.

If we are unable to attract and retain qualified personnel, to implement and integrate financial reporting and accounting systems or if we are unable to scale these systems to our growth, we may not have adequate, accurate or timely financial information, and we may be unable to meet our reporting obligations or comply with the requirements of the SEC, the Nasdaq National Market or the Sarbanes-Oxley Act of 2002, which could result in the imposition of sanctions, including the suspension or delisting of our common stock from the Nasdaq National Market and the inability of registered broker dealers to make a market in our common stock, or investigation by regulatory authorities. Any such action or other negative results caused by our inability to meet our reporting requirements or comply with legal and regulatory requirements or by disclosure of an accounting, reporting or control issue could adversely affect the price of our class common stock. Further and continued determinations that

there are significant deficiencies or material weaknesses in the effectiveness of our internal control over financial reporting could also reduce our ability to obtain financing or could increase the cost of any financing we obtain and require additional expenditures to comply with applicable requirements.

Anti-takeover provisions in our amended and restated certificate of incorporation and bylaws and Delaware law could discourage a takeover.

Our amended and restated certificate of incorporation and bylaws and Delaware law contain provisions that might enable our management to resist a takeover. These provisions include:

- a classified board of directors;
- advance notice requirements to stockholders for matters to be brought at stockholder meetings;
- a supermajority stockholder vote requirement for amending certain provisions of our amended and restated certificate of incorporation and bylaws; and
- the right to issue preferred stock without stockholder approval, which could be used to dilute the stock ownership of a potential hostile acquirer.

These provisions might discourage, delay or prevent a change in control of our company or a change in our management. The existence of these provisions could adversely affect the voting power of holders of common stock and limit the price that investors might be willing to pay in the future for shares of our common stock. See “Description of capital stock.”

Changes in, or interpretations of, accounting rules and regulations, such as expensing of stock options, could result in unfavorable accounting charges or require us to change our compensation policies.

Accounting methods and policies, including policies governing revenues recognition, expenses, and accounting for stock options are subject to further review, interpretation and guidance from relevant accounting authorities, including the SEC. Changes to, or interpretations of, accounting methods or policies in the future may require us to reclassify, restate or otherwise change or revise our financial statements, including those contained in this prospectus. Prior to January 1, 2006, we were not required to record stock-based compensation charges if the employee’s stock option exercise price equals or exceeds the fair market value of our common stock at the date of grant.

On December 16, 2004, the FASB issued SFAS No. 123 (revised 2004), *Share-Based Payment*, which is a revision of SFAS No. 123, *Accounting for Stock-Based Compensation* (SFAS No. 123R). SFAS No. 123R supersedes APB Opinion No. 25, *Accounting for Stock Issued to Employees*, and amends SFAS No. 95, *Statement of Cash Flows*. Generally, the approach in SFAS No. 123R is similar to the approach described in SFAS No. 123. However, SFAS No. 123R requires all share-based payments to employees, including grants of employee stock options, to be recognized in the income statement based on their fair values. Pro forma disclosure is no longer an alternative. We are required to adopt SFAS No. 123R on January 1, 2006, and have adopted it as of that date.

As permitted by SFAS No. 123, we accounted for share-based payments to employees through December 31, 2005 using APB Opinion No. 25’s intrinsic value method and, as such, generally recognized no compensation cost for employee stock options. Accordingly, the adoption of SFAS No. 123R’s fair value method will have a significant impact on the presentation of our results of operations, although it will have no impact on our overall financial position. The impact of adoption of SFAS No. 123R cannot be predicted at this time because it will depend on levels of share-based payments granted in the future and the assumptions for the variables which impact the computation.

We rely heavily on stock options to motivate existing employees and to attract new employees. When we are required to expense stock options, we may then choose to reduce our reliance on stock options as a motivation tool. If we reduce our use of stock options, it may be more difficult for us to attract and retain qualified employees. If we do not reduce our reliance on stock options, our reported earnings will decrease.

Information regarding forward-looking statements

This prospectus, including the sections entitled “Summary,” “Risk factors,” “Management’s discussion and analysis of financial condition and results of operations” and “Business” may contain forward-looking statements. These statements may relate to, but are not limited to, expectations of future operating results or financial performance, capital expenditures, introduction of new products, regulatory compliance, plans for growth and future operations, as well as assumptions relating to the foregoing. Forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified. These risks and other factors include, but are not limited to, those listed under “Risk factors.” In some cases, you can identify forward-looking statements by terminology such as “may,” “will,” “should,” “could,” “expect,” “plan,” “anticipate,” “believe,” “estimate,” “predict,” “intend,” “potential,” “continue,” “seek” or the negative of these terms or other comparable terminology. These statements are only predictions. Actual events and/or results may differ materially.

We believe that it is important to communicate our future expectations to our investors. However, there may be events in the future that we are not able to accurately predict or control and that may cause our actual results to differ materially from the expectations we describe in our forward-looking statements. Except as required by applicable law, including the securities laws of the United States and the rules and regulations of the SEC, we do not plan to publicly update or revise any forward-looking statements after we distribute this prospectus, whether as a result of any new information, future events or otherwise. Potential investors should not place undue reliance on our forward-looking statements. Before you invest in our common stock, you should be aware that the occurrence of any of the events described in the “Risk factors” section and elsewhere in this prospectus could harm our business, prospects, operating results and financial condition. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance or achievements. The forward-looking statements contained in this prospectus are excluded from the safe harbor protection provided by the Private Securities Litigation Reform Act of 1995 and Section 27A of the Securities Act of 1933, as amended.

Use of proceeds

We estimate that the net proceeds from the sale of the shares of our common stock that we are selling in this offering will be approximately $ million, based on an assumed initial public offering price of $ per share, the mid-point of the range on the front cover of this prospectus, after deducting the underwriting discount and estimated offering expenses. If the underwriters' over-allotment option is exercised in full, we estimate that we will receive additional net proceeds of approximately $ million.

We will use the net proceeds from this offering for general corporate purposes, which may include working capital, capital expenditures, other corporate expenses and potential acquisitions of complementary products, technologies or businesses. We currently have no agreements or commitments to acquire any products, technologies or businesses. The timing and amount of our actual expenditures will be based on many factors, including cash flows from operations and the anticipated growth of our business. Pending these uses, we intend to invest the net proceeds of this offering primarily in short-term, investment-grade, interest-bearing instruments.

Dividend policy

We have never declared or paid any dividends on our capital stock. We anticipate that we will retain any earnings to support operations and to finance the growth and development of our business. Therefore, we do not expect to pay cash dividends in the foreseeable future. Any future determination relating to our dividend policy will be made at the discretion of our board of directors and will depend on a number of factors, including earnings, capital requirements, financial condition, prospects and other factors that our board of directors may deem relevant.

Capitalization

The following table sets forth our cash and cash equivalents and capitalization as of September 30, 2005:

- on an actual basis;
- on an as adjusted basis to give effect to the sale by us of shares of common stock at an assumed initial public offering price of $ per share, the mid-point of the range on the front cover of this prospectus, less the underwriting discount.

	As of September 30, 2005	
	Actual	As Adjusted
	(unaudited)	
Cash and cash equivalents	$6,564,010	
Line of credit	1,500,000	
Redeemable common stock, 548,896 shares issued and outstanding; shares issued and outstanding, as adjusted(1)	504,984	
Stockholders' equity:		
Common stock, $0.001 par value; 45,830,143 shares authorized, 8,655,467 shares issued and outstanding, actual; shares authorized, shares issued and outstanding, as adjusted	8,655	
Additional paid-in capital	7,909,280	
Retained earnings	1,638,648	
Total stockholders' equity and redeemable stock	10,061,567	
Total capitalization	$11,561,567	$

(1) Certain stockholders receiving shares of our Class B Common Stock in connection with our acquisition of Luna Technologies have the right to redeem a percentage of the outstanding shares issued pursuant to that transaction. This redemption right is extinguished upon the effectiveness of our offering.

The table above excludes, as of September 30, 2005:

- 6,276,448 shares of common stock issuable upon the exercise of outstanding options at a weighted-average exercise price of $0.29 per share, which includes 5,361,448 shares of common stock issuable upon the exercise of outstanding options at an exercise price of $0.20 per share, 200,000 shares of common stock issuable upon the exercise of outstanding options at an exercise price of $0.22 per share, and 715,000 shares of common stock issuable upon the exercise of outstanding options at an exercise price of $1.00 per share;
- 1,205,429 shares of common stock reserved for future issuance upon the exercise of options available for grant under our 2003 Stock Plan;
- 189,357 shares of common stock issuable upon exercise of outstanding warrants (not subject to escrow) at a weighted-average exercise price of $0.41 per share, which includes 183,120 shares of common stock issuable upon the exercise of outstanding warrants at an exercise price of $0.001 per share, 3,601 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of $21.06 per share and 2,636 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of $1.00 per share; and
- 196,403 shares of common stock issued or reserved for issuance and 686 shares of common stock issuable upon the exercise of warrants at an exercise price of $21.06 in connection with the acquisition of Luna Technologies, Inc., held in escrow as of that date.

Since December 31, 2005, we granted options to purchase an additional 1,537,250 shares pursuant to our 2003 Stock Plan at an exercise price of $1.00 per share. We also adopted our 2006 Equity Incentive Plan, subject to stockholder approval, which will be effective upon the completion of this offering. In addition, on February 8, 2006, we issued warrants to purchase 101,773 shares at an exercise price of $1.00 per share.

The table should be read in conjunction with "Management's discussion and analysis of financial condition and results of operations" and our consolidated financial statements and related notes included elsewhere in this prospectus.

Dilution

If you invest in our common stock, your interest will be diluted immediately to the extent of the difference between the assumed initial public offering price of $ per share of our common stock and the as adjusted net tangible book value per share of our common stock after this offering. Net tangible book value as of September 30, 2005 was $9.5 million, or $1.03 per share. Our net tangible book value per share set forth below represents our total tangible assets (total assets less intangible assets) less total liabilities, divided by the number of shares of our common stock outstanding on September 30, 2005.

Dilution per share to new investors represents the difference between the amount per share paid by new investors who purchase shares of common stock in this offering and the as adjusted net tangible book value per share of common stock immediately after the completion of this offering. Giving effect to the sale of shares of our common stock offered by us at the assumed initial public offering price of $ per share, the mid-point of the range on the front cover of this prospectus, and after deducting the underwriting discount and estimated offering expenses, our as adjusted net tangible book value as of September 30, 2005 would have been approximately $ million. This amount represents an immediate increase in net tangible book value of $ per share to our existing stockholders and an immediate dilution in net tangible book value of $ per share to new investors purchasing shares of our common stock in this offering. The following table illustrates this dilution:

Assumed initial public offering price per share		$
Net tangible book value per share as of September 30, 2005	$1.03	
Increase in net intangible book value per share attributable to this offering per share to existing investors		
As adjusted net tangible book value per share after this offering		
Dilution per share to new investors		$

The following table sets forth, on an as adjusted basis, as of December 31, 2005, the differences between the number of shares of common stock purchased from us, the total consideration paid, and the average price per share paid by existing stockholders and new investors purchasing shares of our common stock in this offering, before deducting the underwriting discount and estimated offering expenses at an assumed initial public offering price of $ per share, the mid-point of the range on the front cover of this prospectus.

	Shares Purchased		Total Consideration		
	Number	Percent	Amount	Percent	Average Price Per Share
Existing stockholders	10,630,935	%	$11,332,813	%	$ 1.07
New investors					
Total		100.0%	$	100.0%	

The table above excludes, as of December 31, 2005:

- 7,033,517 shares of common stock issuable upon exercise of options outstanding at a weighted-average exercise price of $0.38 per share, which includes 5,246,017 shares of common stock issuable upon exercise of options outstanding at an exercise price of $0.20 per share, 200,000 shares of common stock issuable upon exercise of options outstanding at an exercise price of $0.22 per share, and 1,587,500 shares of common stock issuable upon exercise of options outstanding at an exercise price of $1.00 per share;

- 409,860 shares of common stock reserved for future issuance upon the exercise of options available for grant under our 2003 Stock Plan;
- 6,494 shares of common stock issuable upon exercise of warrants (not subject to escrow) outstanding at a weighted-average exercise price of $12.92 per share, which includes 3,858 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of $21.06 per share and 2,636 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of $1.00 per share;
- 1,885,490 shares of common stock issuable upon the conversion of the principal amount outstanding under convertible notes issued to Carilion Health System on December 30, 2005 and, assuming we elect to convert all of the accrued interest on these notes into shares of common stock after these notes remain outstanding for a maximum period of up to eight years, up to an additional 905,035 shares of common stock; and
- 122,745 shares of common stock issued or reserved for issuance in connection with the acquisition of Luna Technologies that were held in escrow on that date, and 429 shares of common stock issuable upon the exercise of warrants at an exercise price of $21.06 per share held in escrow as of that date.

Assuming the conversion in full of the senior convertible promissory notes as well as exercise in full of all options and warrants outstanding or reserved for future issuance as of December 31, 2005 the number of shares purchased by existing stockholders would be increased by 10,363,570 shares to 20,994,505 shares, total consideration paid by them would be increased by approximately $2,773,624 to $14,106,437 and the average price per share paid by them would be decreased by $0.40 per share to $0.67 per share.

Since December 31, 2005, we granted options to purchase an additional 1,537,250 shares pursuant to our 2003 Stock Plan at an exercise price of $1.00 per share. We also adopted our 2006 Equity Incentive Plan, subject to stockholder approval which will be effective upon the completion of this offering. In addition, on February 8, 2006, we issued warrants to purchase 101,773 shares at an exercise price of $1.00 per share.

If the underwriters exercise their over-allotment option in full, the percentage of shares of common stock held by existing stockholders will decrease to approximately % of the total number of shares of our common stock outstanding after this offering, and the number of shares held by new investors will be increased to , or approximately % of the total number of shares of our common stock outstanding after this offering.

Within three months following the completion of this offering, we intend to file a registration statement under the Securities Act to register the issuance of 12,715,000 shares of common stock reserved for issuance under the 2003 Stock Plan (including an increase of 1,715,000 shares since December 31, 2005) and the 2006 Equity Incentive Plan.

Selected consolidated financial data

The tables below present selected consolidated statements of operations data for each of the five years ended December 31, 2000, 2001, 2002, 2003 and 2004 and the nine months ended September 30, 2004 and 2005 and selected consolidated balance sheet data as of December 31, 2000, 2001, 2002, 2003 and 2004 and September 30, 2005. The consolidated statements of operations data for the years ended December 31, 2002, 2003 and 2004 and consolidated balance sheet data as of December 31, 2002, 2003 and 2004 were derived from our audited consolidated financial statements and notes thereto, which are included elsewhere in this prospectus. The consolidated statements of operations data for the years ended December 31, 2000 and 2001 and the consolidated balance sheet data as of December 31, 2000 and 2001 were derived from our unaudited consolidated financial statements, which do not appear in this prospectus. The consolidated statements of operations data for the nine months ended September 30, 2004 and 2005 and consolidated balance sheet data as of September 30, 2005 were derived from unaudited consolidated financial statements included elsewhere in this prospectus. We have prepared this unaudited information on the same basis as the consolidated financial statements and have included all adjustments, consisting only of normal recurring adjustments that we consider necessary for a fair presentation of our financial position and operating results for such periods.

When you read this selected financial data, it is important that you also read the historical consolidated financial statements and related notes included in this prospectus, as well as the section of this prospectus entitled “Management’s discussion and analysis of financial condition and results of operations.” Historical results are not necessarily indicative of future results.

(In thousands, except share and per share data)	Years Ended December 31,					Nine Months Ended September 30,	
	2000	2001	2002	2003	2004	2004	2005
	(unaudited)					(unaudited)	
Consolidated Statement of Operations Data:							
Revenues:							
Contract research revenues	$5,506	$7,725	$11,084	$10,358	$13,835	$10,159	$11,112
Product sales and license revenues	—	—	4,643	7,234	8,752	6,199	—
Total revenues	5,506	7,725	15,726	17,592	22,587	16,357	11,112
Cost of revenues:							
Contract research costs	3,424	4,646	9,143	8,949	10,985	7,682	8,540
Product sales and license costs	—	—	3,884	1,543	2,881	2,773	—
Total cost of revenues	3,424	4,646	13,027	10,492	13,866	10,455	8,540
Gross profit	2,082	3,079	2,699	7,099	8,721	5,902	2,572
Operating expense	2,544	4,531	4,491	4,856	4,190	3,135	2,953
Operating income (loss)	(462)	(1,452)	(1,792)	2,243	4,532	2,768	(381)
Other income (expense)(1)	6	(101)	41	(138)	(257)	(147)	—
Interest income (expense), net	(32)	(263)	(469)	(87)	(90)	(70)	(75)
Income (loss) before income taxes	(488)	(1,816)	(2,220)	2,018	4,184	2,551	(456)
Income tax expense (benefit)	(184)	(582)	(652)	886	128	77	(187)
Net income (loss)	$(304)	$(1,234)	$(1,568)	$1,132	$4,056	$2,474	$(269)
Net income (loss) per common share:							
Basic	$(0.06)	$(0.23)	$(0.31)	$0.23	$0.79	$0.48	$(0.05)
Diluted	$(0.06)	$(0.23)	$(0.31)	$0.22	$0.59	$0.36	$(0.05)
Weighted-average number of shares used in per share calculations:							
Basic	5,363,318	5,363,318	5,092,545	5,030,428	5,136,001	5,134,984	5,713,926
Diluted	5,363,318	5,363,318	5,092,545	5,141,003	6,902,405	6,946,825	5,713,926

(1) Includes minority interests and excludes interest expense.

Selected consolidated financial data

(in thousands)	As of December 31,					As of September 30, 2005
	2000	2001	2002	2003	2004	
	(unaudited)	(unaudited)				(unaudited)
Consolidated Balance Sheet Data:						
Cash and cash equivalents	$5	$122	$1,293	$642	$610	$6,564
Working capital (deficit)	(531)	(1,762)	(5,325)	(3,008)	257	7,581
Total assets	2,041	1,967	6,807	5,497	7,747	16,111
Total current liabilities	1,832	3,610	9,802	7,211	4,474	4,689
Total debt(1)	4	0	24	286	303	549
Stockholders' equity	209	(1,221)	(3,088)	(1,932)	2,167	9,557

(1) Includes capital lease obligations and excludes amounts outstanding under our senior secured revolving credit facility, which is reflected in total current liabilities.

Management's discussion and analysis of financial condition and results of operations

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our consolidated financial statements and the related notes to those statements included elsewhere in this prospectus. In addition to historical financial information, the following discussion and analysis contains forward-looking statements that involve risks, uncertainties and assumptions. Our actual results and timing of selected events may differ materially from those anticipated in these forward-looking statements as a result of many factors, including those discussed under "Risk factors" and elsewhere in this prospectus.

Overview

We research, develop and commercialize innovative technologies in two primary areas: molecular technology solutions and sensing solutions. We have a disciplined and integrated business model that is designed to accelerate the process of bringing new and innovative products to market. We identify disruptive technology that can fulfill large and unmet market needs and then take this technology from the applied research stage through commercialization in our two areas of focus:

- **Molecular Technology Solutions.** We develop new polymers, nanomaterials and reagents with enhanced performance characteristics by harnessing chemical, physical and biological properties of novel combinations of matter. Examples of our solutions in this area include disease-targeting contrast agents for magnetic resonance imaging, or MRI, nanomaterials for solar cell enhancement, flame retardants and multi-functional protective coatings.
- **Sensing Solutions.** We develop integrated sensing solutions to measure, monitor and control chemical, physical and biological properties and have particular expertise in optical, acoustic and wireless technologies. Examples of our solutions in this area include medical monitoring products and industrial instrumentation for aerospace, energy generation and distribution and defense applications.

We have a successful track record in executing our market-driven business model. Our aggregate revenues from the beginning of 2002 through September 30, 2005 were $67.0 million, consisting of $46.4 million in contract research revenues and $20.6 million in product sales and license revenues. Since our inception, we have developed more than a dozen products serving various industries including energy, telecommunications, life sciences and defense. We have created five companies in our areas of focus, sold two of them to industry leaders in their fields, raised private capital for two of our companies, formed one joint venture and entered into four licensing agreements.

Our company is organized into three main groups: our Contract Research Group, our Commercialization Strategy Group and our Products Group. These groups work closely together to turn ideas into products.

Our annual revenues have grown from $15.7 million in 2002, to $17.6 million in 2003, and to $22.6 million for 2004. We generate revenues through contract research, product sales and license fees. Historically, our contract research revenues have accounted for a large and growing proportion of our total revenues, and we expect that they will continue to represent a significant portion of our total revenues for the foreseeable future. Contract research revenues have grown from $11.1 million in 2002 to $13.8 million in 2004, representing 24.8% growth in that two year period. As of December 31, 2005, our Contract Research Group was working on 68 contracts. In addition to these contracts, we regularly have a backlog of contracts for which work has been scheduled, but for which a specified portion of work has not yet been completed. We define backlog as the dollar amount of obligations payable to us under negotiated contracts upon completion of a specified portion of work that has not yet been completed, exclusive of revenues previously recognized for work already performed under these contracts, if any. The approximate value of our backlog was $16.2 million as of September 30, 2005 and $11.3 million as of December 31, 2004.

Revenues from product sales currently represent a small proportion of our total revenues, and, historically, we have derived most of these revenues from the sales of our fiber optic sensing systems and products. License revenues have been significant in the last three fiscal years due to the Luna Analytics, Luna Energy and Luna i-Monitoring transactions described below. Therefore, in the near future, we expect license revenues to represent a smaller portion of our total revenues, however, over time we intend to gradually increase such revenues. In the near term, we expect revenues from product sales to increase because of our acquisition of Luna Technologies on September 30, 2005. We also expect to increase our investments in product development and commercialization, which we anticipate will lead to increased product sales growth. In the future, we expect that revenues from product sales will represent a larger proportion of our total revenues and that as we develop and commercialize new products, these revenues will reflect a broader and more diversified mix of products.

In July 1998, we established Luna Technologies, and we funded its growth by raising venture capital, which diluted our equity ownership to as little as approximately 7% during our holding period and to approximately 10% as of September 2005. In line with our strategy of building a growing portfolio of businesses and products, we acquired all of the outstanding shares in Luna Technologies we did not already own in exchange for issuing shares of our common stock in September 2005.

In February 2002, we established a joint venture limited liability company, Luna Energy, LLC together with Baker Hughes Oilfield Operations, Inc. Baker Hughes agreed to pay up to $32.0 million in connection with this joint venture as follows: $12.0 million in working capital contributed to Luna Energy over an estimated three-year collaboration period beginning in February 2002; $10.0 million to us, which we recognized as license revenues ratably over the expected collaboration period; and up to $10.0 million, which we earned including $1.5 million, $3.0 million and $3.5 million during the years ended December 31, 2002, 2003 and 2004, respectively, upon achievement of such milestones. In December 2004, Baker Hughes acquired our remaining equity interest in Luna Energy and the license arrangement was terminated. We are entitled to receive payments from Baker Hughes in connection with product sales from the technology we assisted in developing beginning in 2007.

In October 2003, IHS Energy Group, Inc. acquired all of our equity interest in Luna i-Monitoring, Inc. and certain non-intellectual property assets related to Luna i-Monitoring. Concurrently, IHS Energy Innovations, Inc., a subsidiary of IHS Energy Group, acquired from us certain intellectual property rights related to Luna i-Monitoring. In connection with these transactions, IHS Energy Group agreed to pay the following amounts: $2.0 million in total working capital contributed to Luna i-Monitoring during the five years subsequent to the agreement; $1.0 million to us, which we recognized as license revenues in 2003; and up to an aggregate of $9.0 million to us based on a percentage of Luna i-Monitoring's sales from December 1, 2003 through November 30, 2008, of which we had received no amounts through September 30, 2005.

In December 2003, we entered into a product development agreement between our Luna Analytics, Inc. subsidiary and a biotechnology company. In connection with this arrangement, the biotechnology company agreed to pay the following amounts: $2.0 million contributed in working capital to Luna Analytics in 2004; $1.0 million to us, which we recognized as license revenues over the collaboration period from December 2003 to December 2004; and up to an aggregate of $6.0 million to us upon the achievement of certain milestones. We are entitled to receive certain payments in connection with sales of Luna Analytics products through December 2013. The aforementioned biotechnology company terminated its product development work as provided by the terms of the product development agreement on December 31, 2004. We have not received any payments pursuant to the terms of this agreement, and, as a result of the termination of the product development work, we do not currently expect to receive any payments in the future.

In June 2005, Luna Technologies entered into a joint cooperation agreement with Luna Energy. Under this agreement, both parties will cooperate to develop a fiber optic sensing system product. Upon successful completion of product development, Luna Energy will be required to make payments to Luna Technologies with respect to revenues derived from products sold that utilize certain of Luna Technologies' intellectual property through 2017. The product development is ongoing, and Luna Energy has not yet made any payments pursuant to the joint cooperation agreement.

In connection with becoming a public company, we expect that we will incur significant additional expenses such as audit fees, professional fees, increased directors' and officers' insurance, advisory board and board of directors compensation, and expenses related to hiring additional personnel and expanding our administrative functions. Many of these expenses were not incurred by us as a private company. We began to incur some of these expenses during the three-month period ended September 30, 2005, and we expect that these expenses will continue to increase. In addition, upon receiving the net proceeds from our initial public offering, we intend to implement a strategy for expansion that will significantly increase our operating expenses and will likely create substantial losses. We incurred consolidated net losses of approximately $269 thousand for the nine months ended September 30, 2005. We expect to continue to incur significant additional expenses as we expand our business, including increased expenses for research and development, sales and marketing, manufacturing, finance and accounting personnel and expenses associated with being a public company. We may also grow our business in part through acquisitions of additional companies and complementary technologies which could cause us to incur greater than anticipated transaction expenses, amortization or write-offs of intangible assets and other acquisition-related expenses. As a result, we expect that we may likely continue to incur losses for the foreseeable future, and these losses could be substantial.

Description of Our Revenues, Costs and Expenses

Revenues

We generate revenues from contract research, product sales and license payments. We derive contract research revenues from providing research and development services to third parties, including government entities, academic institutions and corporations, and from achieving milestones established by some of these contracts and in collaboration agreements. In general, we complete contracted research over periods ranging from six months to three years, and recognize these revenues over the life of the contract as costs are incurred or upon the achievement of certain milestones built into the contracts. Our product revenues reflect amounts that we receive from sales of our products and currently represent a small portion of our total revenues. Our license revenues comprise up-front license fees paid to us in connection with licenses or sublicenses of certain patents and other intellectual property.

Cost of Revenues

Cost of revenues associated with contract research revenues consists of research contract costs, including direct labor, amounts paid to subcontractors and overhead allocated to contract research activities.

Cost of revenues associated with product sales and license revenues consists of license fees for use of certain technologies; product manufacturing costs including all direct material and direct labor costs; amounts paid to our contract manufacturers; manufacturing, shipping and handling; provisions for product warranty; and inventory obsolescence, as well as overhead allocated to these activities. Product manufacturing activity is not yet a significant cost element due to our relatively low product sales activity in comparison with our other activities.

Operating Expense

Operating expense consists of selling, general and administrative expenses, as well as expenses related to research and development, depreciation of fixed assets and amortization of intangible assets. These expenses also include: compensation for employees in executive and operational functions; facilities costs; professional fees; salaries, commissions, travel expense and related benefits of personnel engaged in sales, product management and marketing activities; costs of marketing programs and promotional materials; salaries, bonuses and related benefits of personnel engaged in our own research and development beyond the scope and activities of our Contract Research Group; product development activities not covered by contracted research; and overhead costs related to these activities.

After completion of this offering, we anticipate our operating expenses will increase due to increased administrative costs for insurance, professional fees, external reporting requirements, Sarbanes-Oxley compliance and investor relations activities associated with operating as a publicly-traded company. These increases will also include the hiring of additional personnel.

Interest Expense

Interest expense relates primarily to interest we paid under our senior secured revolving credit facility. As of December 31, 2005, there was no amount outstanding on our credit facility, and we do not expect to draw on that facility in the near term. In 2002, interest expense also included interest and financing costs associated with a $1.5 million promissory note issued by Luna Analytics to a private investor that has since been repaid.

Critical Accounting Policies and Estimates

Our discussion and analysis of our financial condition and results of operations are based on our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates, assumptions and judgments that affect the amounts reported in our financial statements and the accompanying notes. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances. Actual results may differ from these estimates under different assumptions or judgments. While our significant accounting policies are described in more detail in the notes to our consolidated financial statements included in this prospectus, we believe the following accounting policies to be critical to the judgments and estimates used in the preparation of our consolidated financial statements.

Contract Research Revenues

We perform research and development for federal government agencies, educational institutions and commercial organizations under cost-reimbursable, time and material and firm fixed price contracts. Revenues on cost-reimbursable contracts are recorded as costs are incurred and fees are earned. Revenues on time and material contracts are recognized by applying contractually defined billing rates to direct labor hours expended. Revenues on fixed price contracts are recognized under the percentage of completion method. Losses on contracts, if any, are recognized in the period in which they become known based upon the projects' costs incurred to total estimated costs to complete.

Intellectual Property License Revenues

Amounts received from third parties for licenses to our intellectual property are recognized when earned under the terms of the agreements. Revenues are recognized upon transfer of the license unless we have continuing obligations for which fair value cannot be established, in which case the revenues are recognized over the period of the obligation. If there are extended payment terms, license fee revenues are recognized as these payments become due and collectibility is probable. We consider all arrangements with payment terms extending beyond 12 months not to be fixed and determinable.

Certain of our license arrangements have required us to enter into research and development agreements. We apply the guidance from the Emerging Issues Taskforce Consensus on Issue 00-21, *Revenue Arrangements with Multiple Deliverables* (EITF 00-21). Accordingly, we will allocate our arrangement fees to the various elements based upon vendor specific objective evidence (VSOE) of fair value, if available. For those arrangements in which VSOE of fair value is not available we will defer revenues from any up-front payments and recognize them over the service period in the arrangement. Certain of these arrangements also include the payment of performance bonuses based upon the achievement of specific milestones. Generally, there are no assurances at the onset of these arrangements that the milestones will be achieved. As such, fees related to such milestones are excluded from the initial allocation of the arrangement fee in accordance with EITF 00-21 and are recognized upon achievement of the milestone provided that such fees are non-refundable and collection is probable.

Product Sales Revenues

Revenues from product sales are generated by the sale of commercial products and services under various sales programs to the end user and through distribution channels. We sell fiber optic sensing systems to end users for use in numerous fiber-optic based measurement applications.

Revenues from product sales that require no ongoing obligations are recognized as revenues when shipped to the customer, title has passed and collection is reasonably assured. In transactions where a right of return exists, revenues are deferred until acceptance has occurred and the period for the right of return has lapsed.

Deferred Taxation

We estimate our tax liability through calculations we perform for the determination of our current tax liability, together with assessing temporary differences resulting from the different treatment of items for tax and accounting purposes. These differences result in deferred tax assets and liabilities, which are recorded on our balance sheet. Management then assesses the likelihood that deferred tax assets will be recovered in future periods. To the extent that we cannot conclude that it is more likely than not that the benefit of such assets will be realized, we establish a valuation allowance to adjust the net carrying value of such assets. The carrying value of our net deferred tax assets assumes that we will be able to generate sufficient future taxable income, based on estimates and assumptions. These estimates and assumptions take into consideration future taxable income and ongoing feasible tax strategies in determining the recoverability of such assets. Our valuation allowance will change based upon revisions to such estimates and assumptions.

Stock-Based Compensation

In connection with the grant of stock options to employees, we have recorded compensation expense under the intrinsic value method, pursuant to APB 25 and related interpretations, whenever the exercise price of an option grant is less than the fair market value of our common stock on the grant date. We have also recorded compensation expense whenever we have modified the terms of an option grant or directly or indirectly repriced outstanding options.

In August 2003, our board of directors authorized an option exchange program whereby holders of options for Class A Common Stock were given the opportunity to exchange their options for options to purchase Class B Common Stock on a one-for-one basis. The new options grants were immediately vested on September 29, 2003, the date of exchange, had an exercise price of $0.20 and a life of 10 years from the date of grant. All of the outstanding options issued under this exchange program had exercise prices in excess of the fair value of our Class A Common Stock as of the date of the exchange. As such, the option exchange was accounted for as a repricing in accordance with FIN 44. We are required to apply variable plan accounting to the replacement grant and measure compensation based on the change in fair value of the common stock at each reporting period. A total of shares subject to such options exchanged under this program remain outstanding as of January 31, 2006. We will continue to incur a non-cash charge or benefit each quarter based upon the increase or decrease in fair value of our common stock, until such options are exercised, forfeited or expire. Assuming a fair value of $ per share for our common stock, the mid-point of the range of the estimated offering price in this offering, this non-cash charge would be $ for the quarter ending March 31, 2006, provided that this amount could increase or decrease subject to the actual trading price of our common stock.

On January 1, 2006, we were required to adopt SFAS No. 123 (revised 2004), *Share-Based Payment* ("SFAS No. 123R"). SFAS No. 123R supersedes APB Opinion No. 25, *Accounting for Stock Issued to Employees*. SFAS No. 123R requires all share-based payments to employees, including grants of employee stock options, to be recognized in the income statement based on their fair values. Accordingly, the adoption of SFAS No. 123R's fair value method will have a significant impact on the presentation of our results of operations, although it will have no impact on our overall financial position. The impact of adoption of SFAS No. 123R cannot be predicted at this time because it will depend on levels of share-based payments granted in the future and the assumptions for the variables which impact the computation.

Results of Operations

Nine Months Ended September 30, 2005 Compared to Nine Months Ended September 30, 2004

Revenues

Total revenues decreased 32.1% to $11.1 million for the nine months ended September 30, 2005 from $16.4 million for the nine months ended September 30, 2004. The decrease is a result of declining license revenues relating to our arrangement with Baker Hughes attributable to the satisfaction of our right to receive certain milestone payouts in connection with this arrangement and as a result of the sale of our interest in Luna Energy to Baker Hughes in December 2004. This decrease is offset in part by an increase in contract revenues during the nine months ended September 30, 2005 as compared with the same period in 2004. We are not currently receiving significant license payments for our technologies, and we do not expect license revenues comparable to those in 2002, 2003 and 2004 in the near term. We do, however, expect that product revenues will increase in the near term as a result of our acquisition of Luna Technologies, Inc. on September 30, 2005. The acquisition of Luna Technologies is consistent with our strategy to transition our revenues mix from contract research revenues to product sales and license revenues.

Although total revenues decreased due to the cessation of revenues from the Luna Energy joint venture in December 2004, contract research revenues increased 9.4% to $11.1 million for the nine months ended September 30, 2005 from $10.2 million for the same period in 2004. This increase reflects our continued short-term commitment to steady and consistent growth of our contract research business while, at the same time, we seek to increase our product sales both in absolute terms and as a proportion of total revenues.

Cost of Revenues

Cost of revenues decreased 18.3% to $8.5 million for the nine months ended September 30, 2005 from $10.5 million for the nine months ended September 30, 2004. Consistent with our decrease in revenues, the decline is primarily driven by the lack of licensing revenues as our licensing arrangement with Baker Hughes neared completion.

Contract research costs of revenues increased 11.2% to $8.5 million for the nine month period ended September 30, 2005 from $7.7 million in the same period in 2004. This increase is due to the continued growth in contract research activity, the corresponding revenues for which also increased from September 30, 2004 to September 30, 2005.

Operating Expense

Operating expense decreased 5.8% to $3.0 million for the nine months ended September 30, 2005 from $3.1 million for the nine months ended September 30, 2004. The decrease in operating expense is primarily attributable to professional fees and other transaction costs incurred in the 2004 period in connection with the sale of our interest in Luna Energy. Although we were involved in significant transactions beyond our regular activities, including the investment by Carilion Health System in August 2005 and the acquisition of Luna Technologies in September 2005, these transactions did not result in the same level of costs as the Luna Energy transaction during 2004. The transactions we completed in 2005 are in line with our strategy of building a growing portfolio of businesses and products. We expect that our operating expenses will also increase in the coming months due to the costs of our initial public offering and continued compliance with the various reporting requirements of being a publicly-traded company.

Other Income (Expense)

The decrease in other expense was a result of not having basis to absorb losses from our equity investment in Luna Technologies. As previously discussed, we acquired the remaining equity in Luna Technologies on September 30, 2005 that we did not already own.

Interest expense remained consistent between 2004 and 2005. Our line of credit permits us to borrow up to $2.5 million. The total amount outstanding under our credit line at September 30, 2005 was $1.5 million. As of the end of 2005, we have repaid the outstanding balance on our line of credit, and we do not anticipate a need to draw on that line of credit in the near term given the funds raised from our August and December 2005 financing rounds with Carilion Health System, as well as the generation of proceeds from this offering.

Year Ended December 31, 2004 Compared to Year Ended December 31, 2003

Revenues

Total revenues increased 28.4% to $22.6 million in 2004 from $17.6 million in 2003. This increase was largely driven by growth in our volume of research contracts. Contract research revenues increased 33.6% to $13.8 million in 2004 as compared with $10.4 million in 2003. During 2003, we undertook an initiative to improve our ability to obtain additional contracts by devoting increased resources to support our Contract Research Group. Much of the result from these efforts in 2003 is reflected in our 2004 revenues because of a lengthy bidding process and because our contract research may take several months and sometimes years to complete. The length of our contract research efforts under a typical contract ranges from six months to three years. In addition to the growth of our existing contract research, we also experienced a significant increase in research contract volume in connection with the creation of our Luna nanoWorks Division.

Product sales and license revenues also contributed significantly to our total revenues growth during this period. Product sales and license revenues increased 21.0% to $8.8 million in 2004 from $7.2 million in 2003. Much of this increase is the result of achieving milestones under the Luna Energy license agreement. As a result of the sale of our remaining interest in Luna Energy to Baker Hughes in December 2004, we do not expect license revenues to be significant in the near term. Revenues related to product sales represent a small proportion of our total revenues in 2004 and 2003. During that period, we continued to remain focused on our contract research business.

Cost of Revenues

Cost of revenues increased 32.1% to $13.9 million in 2004 from $10.5 million in 2003, with most of the increase directly attributable to increased volume of research contracts. Cost of contract research revenues, however, increased at a slightly lower rate of 22.7%, from costs of $8.9 million in 2003 to costs of $11.0 million in 2004. As our contract research volume increased, the costs related to these contracts also increased. However, as the volume of contracts increase, we also benefit from economies of scale. Accordingly, our costs of contract research for this period increased at a lower rate than the corresponding revenue growth.

In addition to our increased contract research activity, we also incurred increased license costs due to certain bonuses accrued and paid in 2004 to contributors and providers of intellectual property related to the Luna Energy joint venture. In December 2004, we sold our remaining interest in Luna Energy to Baker Hughes. In connection with that sale and the receipt of payments for achievement of certain milestones in connection with that venture, we paid bonuses to the technology partners from whom we licensed part of the intellectual property for the venture. Accordingly, the cost of our product sales and license revenues increased 86.7% to $2.9 million in 2004 as compared with $1.5 million in 2003. Although this increase outpaced the percentage increase in license and royalty revenues between 2003 and 2004, it is consistent with the overall growth in license and royalty revenues between 2002 and 2004, during which period the Luna Energy joint venture took place.

Operating Expense

Operating expenses decreased 13.7% to $4.2 million in 2004 from $4.9 million in 2003 as we were able to increase revenues year-over-year with no significant changes in our operating infrastructure as well as incurring fewer costs related to outside transactions. In 2003, we sold our interest in Luna i-Monitoring. No similar transactions occurred in 2004. Additionally, as our

operations have become more mature, we have been able to substantially reduce operating expenses due to the increased use of long-term contracts and leases as well as to our improved ability to predict the needs of our operations.

Other Income (expense)

Our share of losses from equity method investees increased approximately $107 thousand as a result of advances made to such investees during the year which provided us basis to record such cases.

Interest expense remained consistent for the years ended December 31, 2004 and 2003.

Year Ended December 31, 2003 Compared to Year Ended December 31, 2002

Revenues

Total revenues increased 11.9% to $17.6 million in 2003 from $15.7 million in 2002, primarily due to increased license and royalty revenues, offset by a slight decrease in contract research revenues. The level of our contract research activity remained approximately the same in 2003 as in 2002. Contract research revenues declined 6.6% to $10.4 million in 2003 from $11.1 million in 2002. Although we focused our efforts to improve our ability to obtain new contracts in 2003, a substantial portion of the impact of such efforts did not materialize until after 2003. We have since had steady growth in 2004 and the nine months ended September 30, 2005 in our contract research revenues. Product sales and license revenues increased 55.8% to $7.2 million in 2003 from $4.6 million in 2002. This increase is largely driven by the results of the joint venture that we established in February 2002 between Luna Energy and Baker Hughes, which required certain license fees to be paid to us for use of various intellectual property assets. As the specified milestones were reached in 2003, we became entitled to additional license revenues from Baker Hughes. Revenues related to product sales represent a small proportion of our total revenues in 2002 and 2003.

Cost of Revenues

Cost of revenues decreased 19.5% to $10.5 million in 2003 from $13.0 million in 2002 as fewer bonuses were paid in 2003 than in 2002 to contributors of intellectual property to the company. Over the same period, cost of revenues related to contract research declined only slightly, consistent with lower contract research revenues in 2003 than in 2002. Cost of contract research revenues decreased 2.1% to $8.9 million in 2003 from $9.1 million in 2002. This is consistent with our decline in contract research revenues during the same period. Our cost of product sales and license revenues decreased 60.3% to $1.5 million in 2003 from $3.9 million in 2002. Such decline is mostly attributable to the Luna Energy joint venture, for which we incurred the initial costs of obtaining licenses to intellectual property from research partners in 2002 in order to initiate the joint venture. However, as the joint venture continued, we required fewer new intellectual property licenses to sustain it. As such, cost of product sales and license revenues declined substantially in 2003.

Operating Expense

Operating expense remained approximately the same between 2002 and 2003, increasing 8.1% to $4.9 million in 2003 from $4.5 million in 2002. We had more transactions outside of our regular operations in 2003 as compared with 2002; in 2003, we sold our interest in Luna i-Monitoring and also continued our joint venture in Luna Energy, both of which led to increased transaction costs mostly due to professional services fees. Some of these transaction costs were capitalized, but not all expenses could be capitalized.

Interest Expense

Interest expense decreased 81.5% to $87 thousand in 2003 from $469 thousand in 2002. The decrease in interest expense is attributable to the repayment of a $1.5 million note issued by our subsidiary, Luna Analytics. We incurred significant interest and financing charges on such note in 2002.

Liquidity and Capital Resources

Prior to August 2005, our primary source of liquidity had been cash provided by operations and divestitures of certain assets and businesses. In August 2005, we completed our first outside equity financing and raised $7.0 million through an equity investment by Carilion Health System. Carilion Health System invested an additional $8.0 million in December 2005 in the form of $5.0 million aggregate principal amount of convertible promissory notes and $3.0 million in additional equity. Our principal uses of cash have been to fund our expansion, including facilities, personnel, working capital and other capital expenditures.

We have a $2.5 million senior secured revolving credit facility with First National Bank that is collateralized by a security interest in substantially all of our assets. The interest rate on borrowings under our secured revolving credit facility is equal to the prime rate, limited to no less than 6.0% and no greater than 10.0% per annum, and the interest accrued is payable monthly. Under the terms of the senior secured revolving credit facility, the outstanding principal is payable in full on demand or at maturity on May 30, 2006. The senior secured revolving credit facility contains covenants which require us to maintain $1.0 to $2.0 million in liquidity depending on our outstanding balance. Additionally, without First National Bank's prior approval, we may not make a direct loan to an affiliate or subsidiary of ours exceeding $500 thousand annually, guaranty the debt of our affiliate or subsidiary or incur debt in excess of $200 thousand non-First National Bank debt annually. Finally, we are obligated to continue to provide First National Bank an assignment of life insurance in a minimum amount of $1.0 million on the life of Kent A. Murphy, covering all of our indebtedness to First National Bank. As of September 30, 2005, we had $1.5 million outstanding under our secured revolving credit facility. As of the end of 2005, we have repaid the outstanding balance on our line of credit, and we do not anticipate a need to draw on that line of credit in the near term given the funds raised from our August and December 2005 financing rounds with Carilion Health System as well as the proceeds from this offering. With the exception of our obligations under our senior secured revolving credit facility and our capital lease, we have no other debt outstanding.

Discussion of Cash Flows

We generated approximately $3.4 million in cash from operating activities during the year ended December 31, 2004. A significant portion of this amount was generated from milestone payments and a non-refundable payment of approximately $990 thousand for selling our remaining rights and interests in Luna Energy and certain intellectual property to Baker Hughes.

In March 2004, we received a grant of $900 thousand from the city of Danville, Virginia under a Grant Agreement to support the expansion of economic and commercial growth within the city. Under the Grant Agreement, we agreed to locate a nanomaterials manufacturing and research facility and maintain its operations in Danville until March 25, 2009. We agreed under the Grant Agreement to invest by September 25, 2006 at least $5.2 million in capital equipment expenditures and $1.2 million in certain facilities and to maintain such investments in our Danville facility until March 25, 2009. We also agreed to create by September 25, 2006 at least 54 new full-time jobs at the Danville facility at an average annual wage of at least $39 thousand plus benefits, and to maintain these jobs at such facility until March 25, 2009. If we fail to make these capital expenditures and create these jobs by September 25, 2006, we will be obligated to repay the city all or a portion of the funds based on a formula of the pro rata shortfall of such expenditures and jobs falling below such required levels. These contractual requirements will restrict the use of significant assets and could obligate us to an annual payroll obligation exceeding $2.0 million until March 25, 2009. To the extent such hiring results in salaries in excess of the required minimum wages, our annual payroll obligation could be substantially greater than $2.0 million.

For the nine months ended September 30, 2005, we used approximately $500 thousand of cash in operations. This was mainly attributed to a lack of increased revenue for the period.

Cash used in investing activities for the year ended December 31, 2004 and the nine months ended September 30, 2005 related primarily to the purchase of property and equipment and legal fees associated with securing patent rights to certain technology. During 2004, we also advanced approximately $348 thousand to certain of our affiliates.

Cash flows from financing activities for the year ended December 31, 2004 were primarily from net borrowings on our line of credit. For the nine months ended September 30, 2005, we received proceeds of $7.0 million from the equity financing arrangement with Carilion Health System.

Total cash and cash equivalents were approximately $6.6 million at September 30, 2005. We believe that cash on hand, availability under our line of credit agreement and proceeds from our initial public offering will be sufficient to fund operations for the next 12 months.

Summary of Contractual Obligations

We lease our facilities in Blacksburg, Charlottesville, Danville, Hampton, McLean and Roanoke, Virginia under operating leases that expire between February 2006 and August 2011 or under a month-to-month arrangement. Upon expiration of the leases, we may exercise certain renewal options as specified in the leases.

We also lease certain computer equipment and software under a capital lease agreement that expires in February 2008. The assets subject to these obligations are included in property and equipment on our consolidated balance sheet.

Set forth below is information concerning our known contractual obligations as of December 31, 2004 that are fixed and determinable. As of December 31, 2004, we did not have contractual obligations that extended beyond May 2009.

	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Operating facility leases	$ 1,378,000	$ 511,000	$632,000	$ 235,000	$ —
Capital equipment and software lease	326,692	107,177	194,712	24,803	—
Total	$1,704,692	$ 618,177	$ 826,712	$ 259,803	$ —

Quantitative and Qualitative Disclosures about Market Risk

Market risk represents the risk of loss that may impact our financial position due to adverse changes in financial market prices and rates. We do not hold or issue financial instruments for trading purposes or have any derivative financial instruments. To date, all payments made under our research contracts are denominated in United States dollars. Our exposure to market risk is limited to interest rate fluctuations due to changes in the general level of United States interest rates, particularly because the interest rate on our line of credit is variable between 6.0% and 10.0% based on the current prime rate of interest. As of December 31, 2005, our cash reserves were maintained in money market investment accounts and were not exposed to material market risks.

Business

Overview

We research, develop and commercialize innovative technologies in two primary areas: molecular technology solutions and sensing solutions. We have a disciplined and integrated business model that is designed to accelerate the process of bringing new and innovative products to market. We identify disruptive technology that can fulfill large and unmet market needs and then take this technology from the applied research stage through commercialization in our two areas of focus:

- **Molecular Technology Solutions.** We develop new polymers, nanomaterials and reagents with enhanced performance characteristics by harnessing chemical, physical and biological properties of novel combinations of matter. Examples of our solutions in this area include disease-targeting contrast agents for magnetic resonance imaging, or MRI, nanomaterials for solar cell enhancement, flame retardants and multi-functional protective coatings.
- **Sensing Solutions.** We develop integrated sensing solutions to measure, monitor and control chemical, physical and biological properties and have particular expertise in optical, acoustic and wireless technologies. Examples of our solutions in this area include medical monitoring products and industrial instrumentation for aerospace, energy generation and distribution and defense applications.

We have a successful track record in executing our market-driven business model. Our aggregate revenues from the beginning of 2002 through September 30, 2005 were $67.0 million, consisting of $46.4 million in contract research revenues and $20.6 million in product sales and license revenues. Since our inception, we have developed more than a dozen products serving various industries including energy, telecommunications, life sciences and defense. We have created five companies in our areas of focus, sold two of them to industry leaders in their fields, raised private capital for two of our companies, formed one joint venture and entered into four licensing agreements.

Our company is organized into three main groups: our Contract Research Group, our Commercialization Strategy Group and our Products Group. These groups work closely together to turn ideas into products.

Contract Research Group. Our Contract Research Group provides applied research to customers in our areas of focus. Our engineers and scientists collaborate with our network of government, academic and industry experts to identify technologies and ideas with promising market potential. After these promising technologies are identified, our Contract Research Group competes to win fee-for-service contracts from government agencies and industrial clients who seek innovative solutions to practical problems that require new technology. We focus primarily on contract research opportunities where we can retain partial or full rights to the intellectual property developed, and generally obtain full funding of the costs of contracts we undertake from our customers. This approach allows us to cover the costs of early-stage technology development with contract research revenues. Since 2002, our contract research revenues have grown 24.8% in the two-year period ending December 31, 2004. These revenues have been a growing part of our business from inception, and our Contract Research Group seeks to continually supply our product pipeline with new opportunities.

Commercialization Strategy Group. Our Commercialization Strategy Group works closely with our network of federal and industrial customers to identify new market opportunities for our technologies. After ideas are driven to proof of concept in the Contract Research Group, our Commercialization Strategy Group develops detailed business plans for commercially viable products. It is at this stage that we first consider investing our own funds to finance the continued development of a product, which is then managed in our Products Group.

Products Group. Our Products Group currently consists of the following three divisions:

- **Luna Advanced Systems Division.** Most new product opportunities that are approved for further development by our management team are initially allocated to our Luna Advanced Systems Division. Products currently managed in this division include medical diagnostic instruments using our innovative ultrasound technologies, non-destructive industrial testing and homeland security devices, remote and secure wireless asset monitoring

systems, flame retardants, multi-functional protective coating systems and blast and ballistic resistant materials. We transfer products to existing or new divisions within our Products Group with the resources needed for the successful commercialization of the technology if we determine that a product line is broad enough or that the market opportunity is sufficiently large.

- **Luna nanoWorks Division.** Our Luna nanoWorks Division develops and commercializes innovative products based on carbon nanomaterials that have broad potential applications. This division is developing disease-targeting MRI contrast agents that are designed to be potentially safer than, and technically superior to, contrast agents currently on the market. We currently supply nanomaterials to research laboratories and plan to supply proprietary high value-added carbon nanomaterials to customers who manufacture products such as solar cells, strong, light-weight composites and coatings to shield devices from electromagnetic interference.
- **Luna Technologies Division.** Our Luna Technologies Division manufactures and markets test and measurement equipment and integrated sensing solutions. This division's products are used for process and control monitoring in telecommunications, manufacturing, power generation and distribution, down-hole oil and gas production, aerospace, and defense applications. These products have won numerous awards and are sold and distributed throughout North America, Europe, the Middle East and Asia.

We expect that the capital raised in this offering will provide us greater flexibility in funding the commercialization of new technologies and will provide us the opportunity to increase the speed, quality and volume of products that we can develop.

We have knowledge and experience in molecular technology solutions and sensing solutions and, as of December 31, 2005, we owned or had exclusive rights to use 32 issued U.S. patents and 63 additional pending U.S., international and foreign patent applications. As of December 31, 2005, approximately 76 of our 143 employees are directly engaged in research, of whom 21 hold Ph.D.s and 27 hold advanced degrees.

Industry Background and Market Opportunity

Molecular Technology Solutions

Our molecular technology solutions generally utilize advanced materials with enhanced performance characteristics. These materials are produced by harnessing unique chemical, physical and biological properties through novel combinations of matter and include metals, ceramics, polymers, nanostructures and composites. Nanotechnology, which focuses on manipulating materials at the atomic scale to create advanced materials with novel properties, is itself a broad field and many national governments have made a priority of supporting nanoscience research and development. Since the inception of the U.S. National Nanotechnology Initiative in 2001, the U.S. government has invested $4 billion to support nanotechnology research and development activities.

In general, advanced materials enable significant improvements in the performance, cost and functionality of existing products and allow the development of products not previously possible. Such materials have potential applications in many industries, including semiconductors, electronics, biotechnology, textiles, alternative energy and defense. Some advanced material products that are currently being developed include: very high density and cost efficient digital memories; smart sensors; pharmaceuticals; drug delivery systems; cost efficient fuel cells, solar cells and light sources; stain resistant textiles; lightweight, high strength composites for civil and military applications; and wear resistant and anti-corrosion coatings for industrial applications.

In 2004, the market sizes of the following advanced material subsectors—coatings, ceramics, flame retardants and composites—were estimated to be approximately $9.4 billion, $2.3 billion, $1.6 billion and $4.8 billion, respectively.

Sensing Solutions

Our sensing solutions involve the integration of multiple technologies to design, manufacture and commercialize new products. Such products require a broad range of expertise and technical competencies, including research and development,

engineering design, software programming and product testing. Our optical, ultrasound and wireless sensing solutions address a wide variety of end markets including defense and military, healthcare, telecommunications, industrial measurement, security applications and consumer electronics. We believe that Homeland Security-related applications are one of the most attractive sensing solutions markets given recent increases in government investment in this area. For example, the research and development budget of the U.S. Department of Defense has increased by approximately 70.0% since 2002 and was expected to reach $70.0 billion by 2005.

Examples of sensing solutions products include industrial and military sensors to increase equipment operating efficiency, perimeter and impact detection systems, diagnostic systems for telecommunications networks, devices to measure physical properties of materials for medical and industrial applications and secure wireless communication systems.

Many of these end markets represent very large opportunities. For example, in 2004, the market sizes of the following sensing solutions sub-sectors—small office and home security systems, industrial security and access systems, industrial sensors and electromechanical actuator systems—were estimated to be approximately $2.1 billion, $3.8 billion, $4.2 billion and $7.1 billion, respectively.

Opportunity to Accelerate the Commercialization of Technology

Technology innovation is a key engine for growth in an increasingly global and competitive marketplace. According to published research, over $300.0 billion was spent in research and development in the United States in 2004 as follows: $93.0 billion by federal agencies, $187.0 billion by the private sector, $12.0 billion by academic institutions and $9.0 billion by not-for-profit organizations.

However, the transition from technology discovery to commercialization is challenging, and government agencies, academic institutions and corporations frequently lack formal processes to enable timely commercialization of technologies in response to marketplace demands. One problem is that research and development is often done in isolation, without input or feedback from the marketplace. In addition, due to the inherent complexity of new technologies, cross-disciplinary and integration issues are often not addressed because researchers, engineers and product developers have very specialized areas of expertise. Moreover, research organizations may be unable to commercialize technologies because their networks may not be broad or deep enough to connect them expeditiously with partners, investors and customers. Development efforts can also fail for a host of other reasons, such as inability to manufacture at commercial scale, unanticipated competition or poorly understood customer needs.

Technology innovation in areas such as molecular technology solutions and sensing solutions is particularly susceptible to these challenges because it requires expertise across a number of technical disciplines, which are often isolated from each other. We have developed a model for technology innovation that addresses these issues and that we believe has the potential to significantly accelerate the creation and commercialization of new technologies.

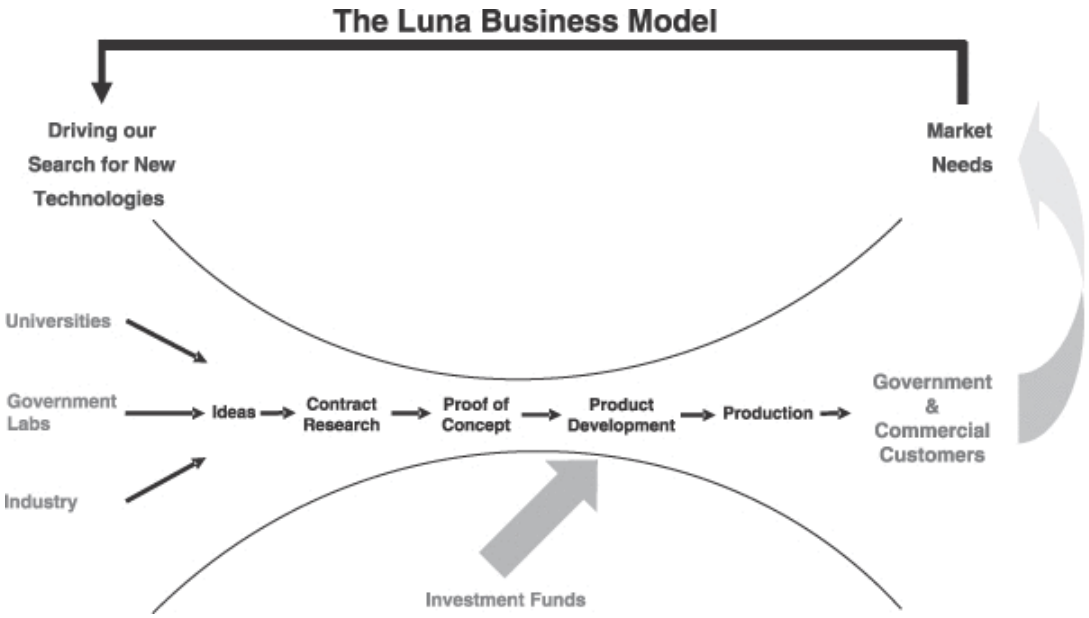
Our Business Model

We have developed a disciplined and integrated process to accelerate the development and commercialization of innovative technologies. Our business model employs a market-driven approach and provides the infrastructure, resources and know-how throughout the process of developing and commercializing new products. To manage a diverse set of products effectively across a range of development stages, we are organized into three main groups: our Contract Research Group, our Commercialization Strategy Group and our Products Group. These groups work together through all product development stages, including:

- Searching for emerging technologies based on market needs;
- Conducting applied research;

- Developing and commercializing innovative products; and
- Applying proven technologies and products to new market opportunities.

The graphic below illustrates our business model:



The strength of our business model is exemplified by our track record in taking innovative technologies from the applied research stage through product development and ultimately to the creation of independent businesses. For example, we have created five companies in our areas of focus, sold two of them to industry leaders in their fields, raised private capital for two of our companies and formed one joint venture. In addition, we have developed more than a dozen products serving several industries including energy, telecommunications, life sciences and defense. We describe below three examples of independent businesses that we have created:

- **Luna Analytics, Inc.** In June 1999, we created Luna Analytics to commercialize analytical instruments that improve the assessment of protein interactions. Luna Analytics' devices are being developed to provide advanced disease diagnostics, treatment and drug discovery. We currently own approximately 39% of Luna Analytics.
- **Luna Energy, LLC.** In February 2002, we created Luna Energy to commercialize real-time, state-of-health pipeline monitoring sensors for the oil and gas industry. Luna Energy was acquired in December 2004 by Baker Hughes Oilfield Operations Inc., a leader in oil field services. We no longer have an ownership interest in Luna Energy, but we are entitled to receive payments in connection with future product sales beginning in 2007.
- **Luna i-Monitoring, Inc. (now IHS i-Monitoring).** In May 2002, we created Luna i-Monitoring to commercialize a suite of highly integrated wireless sensors called iNodes for cost-effective remote monitoring and Internet accessibility for the oil and gas marketplace. Luna i-Monitoring was acquired by IHS Energy, Inc. in October 2003. We have no ownership in Luna i-Monitoring, but we are entitled to receive payments in connection with future product sales through November 2008.

Our Growth Strategy

We have the following key strategies to achieve our goal of accelerating the development and commercialization of innovative technologies and to create successful products in our areas of focus:

- **Focus on developing and commercializing a growing portfolio of innovative products.** We intend to build and commercialize a growing portfolio of high value-added products using innovative technologies and utilize our existing relationships to identify, prioritize and allocate resources to respond rapidly to market needs and shorten the time to market for new products.
- **Transition our mix of revenues to a higher percentage of product and license revenues.** We plan to commercialize a growing number of products in order to increase the amount of revenues that we generate from product sales and license payments. To this end, we will seek to expand our distribution network and our ability to service our customers. We will also seek to allocate resources to improve our ability to manufacture and shorten the cycle time from idea to market and to monetize our intellectual property portfolio by licensing our technologies. As a result, we believe that product sales and license revenues will comprise a greater portion of our total revenues in the future.
- **Continue to strengthen our Contract Research Group.** We will seek to strengthen our Contract Research Group through increased resource allocation and hiring and by expanding our network of relationships with federal laboratories, major research universities and industry leaders. These steps will provide us the opportunity to grow our applied research business, remain informed of the latest technological advances and increase the quality and volume of high potential technologies that will support our product pipeline.
- **Expand our intellectual property portfolio in our areas of focus.** We will seek to expand our intellectual property portfolio by applying our disciplined processes to generate know-how and intellectual property through our network of relationships and our own research and development efforts. By continuing to expand our intellectual property, we will seek to enhance our competitive position and develop additional products in these areas.

Contract Research Group

Our Contract Research Group provides applied research to customers in our areas of focus – molecular technology solutions and sensing solutions. Our Contract Research Group competes to win contracts in these areas on a fee-for-service basis. This group has a successful track record of evaluating innovative technologies to address the needs of our customers. We identify these needs by utilizing our knowledge of the markets in our areas of focus and by consulting with major government entities, leading research universities and large corporations. We also use this network to obtain favorable technology transfer agreements, contract research revenues and strategic partnerships for the products that we develop based on our applied research.

Currently, we are working with over 60 corporate, academic and government collaborators, including:

- **Universities.** The College of William and Mary, Drexel University, Duke University, Johns Hopkins University, Mayo Clinic College of Medicine, The Ohio State University, State University of New York at Stony Brook, University of Arizona, University of California, San Diego, University of Pennsylvania, University of Pittsburgh, the University of Virginia, Washington University in St. Louis and Virginia Polytechnic Institute and State University, or Virginia Tech;
- **Government entities.** Defense Advanced Research Projects Agency, Defense Threat Reduction Agency, Environmental Protection Agency, National Aeronautics and Space Administration, National Institutes of Health, National Institute of Standards and Technology, National Science Foundation, United States Air Force, United States Army, United States Department of Agriculture, United States Department of Commerce, United States Department of Defense, United States Department of Energy, United States Department of Transportation and United States Navy; and

- **Corporations.** Agilent Technologies, Inc., Alion Science and Technology Corporation, Anteon International Corporation, Applied Research Associates, Inc., Dana Corporation and Northrop Grumman Corporation.

We seek to continue to maximize the benefits we derive from our contract research business, including revenues generation and identification of promising technologies for further development. For example, we proactively target selected projects with the highest commercialization potential. Also, we take a disciplined approach to contract research to ensure that in general the costs of any contract we undertake are fully covered. This approach enables us to cover the costs of riskier stage technology development with outside funding. We believe that this model is cost efficient and reduces our risk significantly.

As of December 31, 2005, our Contract Research Group was engaged in 68 separate active contracts that typically last from six months to three years. These projects span a wide range of applications across our areas of focus. The table below illustrates the type of research that these contracts encompass:

Competency/Platform Technology	Number of Contracts	Examples of Potential Products
Molecular Technology Solutions	26	Disease-targeting MRI contrast agents; flame retardants; coatings to shield devices from electromagnetic interference; multi-functional protective coating systems; and blast and ballistic resistant materials
Sensing Solutions	42	Medical diagnostic and monitoring instruments for heart and lung bypass operations, compartment syndrome and bone strength measurement; non-destructive industrial testing systems; and wireless remote and secure asset monitoring
Total	68	

Although we conduct our applied research on a fee-for-service basis for third parties, we seek to retain full or partial rights to the technologies and patents developed under those contracts and to continuously enlarge and strengthen our intellectual property portfolio. Often, a new technology that we develop complements existing technologies and enables us to develop applications and products that were not previously possible. In addition, the technologies we develop are often applicable to commercial markets beyond what was originally contemplated in the contract research of such technologies and we endeavor to capture the value of those opportunities.

As of December 31, 2005, our Contract Research Group team consisted of 76 people, 21 with Ph.D.s and 27 with advanced degrees. Our Contract Research Group also utilizes the knowledge and experience of researchers employed through the academic institutions, corporations and government agencies with which we subcontract. The Contract Research Group is organized into subgroups according to the area of technology, with each subgroup managed by its own director responsible for its financial performance. In addition, our Contract Research Group has in place disciplined processes designed to ensure quality control of proposal preparation, program reviews, pipeline reviews, revenues tracking and financial reporting.

Our Contract Research Group has a reputation for excellence and outstanding performance on Small Business Innovation Research, or SBIR, contracts. SBIR contracts include Phase I feasibility contracts of up to $100 thousand and Phase II proof-of-concept contracts, which can be as high as $750 thousand. We have a high historical success rate in winning bids for SBIR contracts, and we have won two National Tibbett's Awards for outstanding SBIR performance. We also have been successful at winning contracts outside the SBIR program from corporations and government entities. Such contracts have no financial limit and typically have a longer duration, ranging from 12 to 24 months. As we continue to grow, one of our goals is to derive a larger portion of our contract research revenues from contracts outside the SBIR program.

Commercialization Strategy Group

Our Commercialization Strategy Group works with our Contract Research Group to identify technologies that have demonstrated proof of concept and that are ready for further development. After a detailed review, it is at this stage that we first consider investing our own funds to finance continued development. To this end, we have rigorous processes to evaluate the merits of further developing any given technology.

Initially, the Commercialization Strategy Group prepares proposals for selected high-potential proof-of-concept technologies for consideration by our internal investment committee. These proposals have the basic elements of a business plan, including detailed market, competitive, sales, marketing, distribution, financing and intellectual property analyses. Our internal investment committee, which is composed of key members of our management team and experts in the fields relevant to each opportunity, evaluates the merits of each proposal and makes recommendations to our management. Once qualified opportunities are approved by management, resources are allocated and the prototyping and development of a commercial product begins. During the product development process, the Commercialization Strategy Group and our internal investment committee regularly review progress and evaluate whether or not to allocate additional resources to, and to continue funding, development.

Our Commercialization Strategy Group includes personnel with a mix of intellectual property, technical and business backgrounds, including individuals who have experience with venture capital-backed companies and others who have successfully run major divisions of large corporations. In addition, we plan to consult with members of our advisory board with respect to product development matters from time to time. We believe that this combination of skills and experience is critical to the success of the product development process.

We have a successful track record, having developed more than a dozen products serving industries including energy, telecommunications, life sciences and defense. We believe our Commercialization Strategy Group is positioned to continue that success.

Products Group

Overview

Our Products Group currently consists of the Luna Advanced Systems Division, the Luna nanoWorks Division and the Luna Technologies Division.

- **Luna Advanced Systems Division.** Most new product opportunities that are approved for further development by our management team are initially allocated to our Luna Advanced Systems Division. Products currently managed in this division include medical diagnostic instruments using our innovative ultrasound technologies, non-destructive industrial testing and homeland security devices, remote and secure wireless asset monitoring systems, flame retardants, multi-functional protective coating systems, and blast and ballistic resistant materials. We transfer products to existing or new divisions within our Products Group with the resources needed for the successful commercialization of the technology if we determine that a product line is broad enough or that the market opportunity is sufficiently large.
- **Luna nanoWorks Division.** Our Luna nanoWorks Division develops and commercializes innovative products based on carbon nanomaterials that have broad potential applications. This division is developing disease-targeting MRI contrast agents that are designed to be potentially safer than, and technically superior to, contrast agents currently on the market. We currently supply nanomaterials to research laboratories and plan to supply proprietary high value-added carbon nanomaterials to customers who manufacture products such as solar cells, strong, light-weight composites and coatings to shield devices from electromagnetic interference.
- **Luna Technologies Division.** Our Luna Technologies Division manufactures and markets test and measurement equipment and integrated sensing solutions. This division's products are used for process and control monitoring in telecommunications, manufacturing, power generation and distribution, down-hole oil and

gas production, aerospace, and defense applications. These products have won numerous awards and are sold and distributed throughout North America, Europe, the Middle East and Asia.

We provide a description of these divisions below.

Luna Advanced Systems Division

Some of the technologies that we develop and products that we commercialize can be supported by the existing infrastructure of our Luna Advanced Systems Division, which has experienced business development and sales and marketing teams. The Luna Advanced Systems Division also provides product development resources to a number of programs in transition from the Contract Research Group to a division within our Products Group. Below we describe some of the products in our development pipeline.

Ultrasonic Technologies

We are developing a number of new devices that use high frequency sound waves, commonly known as ultrasound or ultrasonic waves, to evaluate the physical properties of materials. Our devices can determine the physical condition of an object by analyzing numerical measurements taken from ultrasonic waves that interact with such object. Our quantitative ultrasonic signal processing technology is designed to be extremely sensitive, detecting changes in the physical properties of the object studied. Our instruments report a numerical signature, not an image that is subject to interpretation and sometimes requires an expert consultant. Our technology provides information that cannot be obtained by traditional ultrasound methodologies and has applications in medical diagnosis, non-destructive industrial testing and homeland security.

Medical Monitoring and Diagnostic Devices

Ultrasound is an important, non-invasive tool for diagnosing disease inside the body. Roughly 700,000 procedures utilizing ultrasound devices are performed each day worldwide. Our quantitative ultrasound supplements other diagnostic tools, providing a numerical readout of certain physical properties of the body part being analyzed, such as pressure or strain, which helps physicians diagnose certain disease conditions. We are developing medical device products with our ultrasound platform technology for the diagnosis of the following:

- **Compartment syndrome.** Compartment syndrome is a buildup of pressure within muscles or other body parts following a severe traumatic blow. Such pressure buildup is often undetectable without surgery or other invasive procedures and the reduced blood flow from the disease can lead to debilitating injuries. QUS-1000CS is our compartment syndrome diagnostic device that is currently under development and is being designed to enable the doctors' office or emergency room nursing staff to easily and consistently monitor this condition using a non-invasive method.
- **Bone strength.** Bone loss due to osteoporosis is presently determined using x-ray techniques that measure the density of calcium in the bone. Our ultrasonic technology measures the stiffness of the bone and can detect the difference between a bone bearing weight and one that is not. This measurement reflects the load bearing capacity, which is data that current devices in the market do not provide. QUS–1000BQ is our bone strength measurement device that is currently under development and is being designed to allow the monitoring of bone integrity and provide diagnostic information to improve the care of patients with osteoporosis.
- **Intracranial pressure buildup.** A heavy blow to the head can cause internal pressure that builds up rapidly and can cause morbidity and death if not treated. This condition is typically diagnosed by evaluating a patient's response to external stimuli, which is not possible if the patient is unconscious. Our ultrasonic technology can detect such pressure buildup rapidly in non-responsive patients by using a non-invasive device that reports a numerical readout and that does not require expert interpretation. QUS-1000ICP is our intracranial pressure measurement device that is currently under development and is being designed to enable trauma personnel to diagnose and monitor such a condition.

All three products, the QUS-1000CS, the QUS-1000BQ and the QUS-1000ICP, share common components, but also have customized interfaces specific to each application. The pathway to market for medical diagnostic devices requires approval by government agencies. For example, we are required to obtain certification for safety through international standards as well as approval from the FDA through a 510(k) registration which we do not anticipate before the end of 2007. We are currently developing our marketing and distribution strategy for these products.

Non-Destructive Industrial Testing and Homeland Security Applications

We are developing a multi-purpose diagnostic instrument for the United States Army's initiative to improve field service for deployed vehicles. Our multi-purpose diagnostic device measures the physical integrity of parts in the field based on their responses to an ultrasonic probe. Each part has its own distinct acoustic response to an ultrasonic probe which our device can read. A response falling outside a specified range indicates the part will not perform as required. Our device can test the integrity of a large number of replaceable vehicle parts having various uses and made of various materials. Other potential markets for this product include materials laboratories and manufacturing quality assurance departments.

We are also developing homeland security products based on our ultrasonic platform technology, such as an ultrasonic wand to detect weapons concealed beneath clothing and a product that identifies vehicles on the highway system that might be transporting weapons of mass destruction. We plan to continue to develop these homeland security products through our Contract Research Division until we have completed prototype testing, which we anticipate will take at least one year. We intend to market these products, should they prove viable, to government entities and corporations.

Remote and Secure Asset Monitoring

We are developing innovative applications integrating fiber optic sensors, software and hardware components to provide remote and secure asset monitoring solutions and products. These products integrate several technologies such as:

- Fiber optic sensors that collect vital information, such as temperature, pressure, strain, movement, moisture, sound or other changes where they are deployed. We are particularly well-regarded for developing sensors that operate in harsh environments.
- Encryption technology that scrambles wireless communications to provide security for military or industrial uses. We are designing a card that plugs into the network slot of a laptop or other portable wireless device and serves as a receptacle for any standard network card, converting the wireless communication into a secure, encrypted transmission that can only be unscrambled by a receiver with a similar card.
- Wireless transmission technology to send the data from remote sensors to a central monitoring station, enabling a customer to maintain real time, sensitive contact information about the health of machinery, or other equipment without the expense and inconvenience of installing cable-connected sensors.
- Secure wireless technology that encrypts the data from wireless sensors prior to transmission for settings where the customer needs security.

We are developing cost-effective remote and secure asset monitoring products that are simple to install and that offer industrial customers the ability to gather data critical to the performance of their equipment and to increase the reliability and performance of their machinery. These sensors are designed to work in harsh environments or in difficult to reach sites to monitor critical data, such as temperature, pressure and a number of other variables.

We also are developing products for military secure wireless communication applications. For example, we are working with the U.S. Navy to enable handheld wireless devices to communicate securely with a ship or submarine network. In addition, we are developing a sophisticated system that is designed to detect security breaches.

Flame Retardants

We are developing a proprietary flame retardants that can be mixed with other components into fire resistant composites or spray-on coatings for textiles. Originally developed to provide the U.S. Navy with fire resistant ammunition packages, our flame retardant produces a non-combustible surface under fire condition and slows heat transfer through the material. Unlike many flame retardants used today, we believe that our product is environmentally sound in both its manufacture and disposal and that it does not produce toxic fumes if it eventually burns. We plan to collaborate with a leading manufacturer and marketer of textile products to continue development of our flame retardant coating technology.

Multi-Functional Protective Coating Systems

We are developing a family of multi-functional protective coating products to meet numerous market opportunities. Our approach involves the combination of innovative resin systems with commercially available and proprietary additives to create high performance primers and topcoats. Our engineered coating systems are designed to have a variety of key performance attributes, including anti-corrosion, self-healing, rapid cure, non-skid, and tailored dielectric properties. In addition to coatings, we are also developing other complementary products, such as surface cleaners and pretreatments that will improve the performance of the entire coating system. We plan to engage with large coatings manufacturers for the eventual production and distribution of our coating systems through established channels.

Blast and Ballistic Resistant Materials

We are developing a variety of blast and ballistic resistant coatings, materials and composites for critical defense and homeland security applications. We combine resins, polymers, fibers, fabrics and composites that we have developed with commercially-available components to create high strength, lightweight and flexible materials that range in application from soldiers to ships. Specific examples include a new ammunition packaging system to protect both ordnance and soldiers; a flexible blast resistant polymer to improve the integrity of ship deck coating systems and to prevent interior shrapnel in the event of an explosive blast; and lightweight, transparent, ballistic resistant polymers for use in next generation military visors.

Luna nanoWorks Division

Overview

Our Luna nanoWorks Division develops and commercializes advanced carbon nanomaterials, which are molecular structures consisting of carbon atoms in distinctive geometric shapes. Advanced carbon nanomaterials include: Trimetasphere™ nanomaterials, a new class of materials that we describe in more detail below; fullerenes, which are carbon spheres that resemble a soccer ball; and carbon nanotubes, which are carbon rings shaped like a cylinder.

A Trimetasphere™ nanomaterial is a carbon sphere with three metal atoms enclosed inside. Using different combinations of a group of 17 rare earth metals, we can develop thousands of different types of Trimetasphere™ nanomaterials, each with distinctive properties and performance characteristics and each potentially marketable as a separate product. Through our collaborative relationship with Virginia Tech, we have obtained an exclusive license to commercialize Trimetasphere™ nanomaterials under an issued U.S. patent and pending U.S. and foreign applications. We recently were awarded the Nano 50 Products Award by NASA's Tech Briefs publication for our Trimetasphere™ nanomaterials.

Each type of Trimetasphere™ nanomaterial has distinctive chemical, physical or biological properties due to the properties of the metals enclosed in its carbon cage. We can further customize Trimetasphere™ nanomaterials for specific applications by attaching different atoms or molecules to the surface of their carbon spheres. In some cases, this modification process may also provide us with new intellectual property covering carbon nanomaterials other than Trimetasphere™ nanomaterials, further expanding our inventory of potential new products.

We have won a number of government contracts funding new applications of nanotechnology totaling approximately $11.0 million. These contracts are partially funding our development of manufacturing processes to produce nanomaterials in large

quantities. Furthermore, we are researching and developing new applications exploring the physical properties of nanomaterials. As of December 31, 2005, we had invested nearly $3.0 million of our own funds in these activities and we plan to continue to compete for additional research contracts to support our Luna nanoWorks Division.

Our Luna nanoWorks Division will focus on business opportunities in which we are well-positioned to have a strong intellectual property position in the United States and for which our products are likely to command premium pricing. We believe these opportunities exist in materials supply and medical applications. Our Luna nanoWorks Division plans to supply advanced carbon nanomaterials to customers in different industries where our nanomaterials will enable and become components of our customers' products. Our Luna nanoWorks Division is also identifying medical application products utilizing Trimetasphere™ nanomaterials.

Medical Imaging

Magnetic resonance imaging, or MRI, has been established as the imaging technology of choice for a broad range of applications, including the identification and diagnosis of a variety of medical disorders. MRI provides three-dimensional images that enable physicians to diagnose and manage disease in a minimally invasive manner. MRI contrast agents, used in about 40% of MRI procedures, improve the resolution of MRI images by enhancing the contrast in the organ or tissue in the body where the contrast agent circulates. Most of the contrast agents approved by the FDA use gadolinium, a toxic metal. To neutralize gadolinium's toxicity, contrast agents use organic compounds called chelates that wrap around the gadolinium, shielding the patient from its toxicity. However, chelates cannot neutralize the gadolinium if it escapes into the bloodstream. Hence, the longer the agent circulates, the greater the risk of toxicity. As a result, the contrast agents currently in use need to be eliminated from the body quickly, making it difficult to produce high quality images.

Our Luna nanoWorks Division is developing a Trimetasphere™ nanomaterial-based MRI contrast agent. We believe our Trimetasphere™ nanomaterial-based contrast agent offers two potential advantages: lower risk of toxicity and higher image contrast. Due to the strength of the Trimetasphere™ nanomaterial's carbon cage enclosing the gadolinium, our Trimetasphere™ nanomaterial-based contrast agent can neutralize gadolinium for a longer period of time, and therefore allow the contrast agent to remain safely in the body longer. Experiments have also shown that Trimetasphere™ nanomaterials provide a stronger contrast effect than the other contrast agents currently on the market. The first compound in this program is in preclinical development, with an investigational new drug application, or IND, planned for the end of 2006.

In addition, we are developing various modifications to the Trimetasphere™ nanomaterials to target them for specific tissues or physiological conditions. We believe that, using the Trimetasphere™ nanomaterials, a complete family of disease-targeting diagnostic agents can be created to enhance the capabilities of MRI imaging and significantly expand its applications.

Medical contrast agents for human use must be approved by the FDA or similar foreign regulatory agencies before they can be marketed, which we do not expect before 2009. We are in the early stages of developing a marketing strategy for our MRI contrast agent.

Materials Supply Business

Our Luna nanoWorks Division has two goals for its materials supply business: to identify new product opportunities by supplying carbon nanomaterials to research laboratories in academia, government and industry; and to develop customized products with specialized performance characteristics for use in industrial applications.

Luna nanoWorks sells reagent kits to academic, federal and private laboratories. These kits consist of carbon nanomaterials and are sold to dedicated researchers with the objective of encouraging the discovery of new applications such as nano-scale circuit components, memory storage devices and biological tracers. Should these researchers discover an important new use, we expect that our proprietary position surrounding the relevant material will position us to negotiate favorable terms with the inventors of such new use.

We also have active research programs investigating the enhancement of various industrial materials, including:

- **High performance solar panels.** Solar panels are designed to capture light and convert its energy into electrical power. Solar panels currently on the market face limitations in efficiently converting solar energy into electrical power. We are in the early stages of developing a product that uses the electrical properties of Trimetasphere™ nanomaterials to increase the overall efficiency of solar panels.
- **Stronger and lighter composites.** Polymer composite structures have replaced many metal structures for use in military body and vehicle armor due to their greater strength and lighter weight. We are investigating the use of enhanced carbon nanotubes to further reduce the weight and enhance the strength of these composites.
- **Coatings to shield devices from electromagnetic interference .** Carbon nanomaterials provide the strength of carbon fibers and are lightweight and highly conductive, making them suitable for use in coatings designed to shield electronics and electrical equipment from radio waves.

Luna Technologies Division

We reacquired Luna Technologies, Inc. in September 2005, and currently operate it as our Luna Technologies Division. We established Luna Technologies, Inc. in July 1998 and funded its growth by raising venture capital. Such financing activities diluted our equity ownership to as little as approximately 7% during our holding period and to approximately 10% prior to September 2005. In line with our strategy of building a growing portfolio of products, we purchased all of the stock of Luna Technologies, Inc. that we did not own in exchange for shares of our common stock in September 2005. Our acquisition of Luna Technologies is expected to enhance our development and production of fiber-optic technology.

Test and Measurement Equipment

Our test and measurement products monitor the integrity of fiber optic network components and subassemblies. Luna Technologies Division's products are targeted at manufacturers and suppliers of optical components and sub-assemblies and allow them to reduce costs and improve the quality of their products. Most manufacturers and suppliers of optical components and modules currently use a combination of different types of optical test equipment to identify and measure failures in optical networks, such as bad splices, bends, crimps and other reflective and non-reflective events. Our optical test equipment products replace the need for these multiple test products and address all stages of the end user's product development life cycle including: design verification, component qualification, assembly process verification and failure analysis.

Our Luna Technologies Division has two flagship product lines—our Optical Vector Analyzer, or OVA, and our Optical Backscattering Reflectometer, or OBR. Our award winning OVA platform allows manufacturers and suppliers of optical components and sub-assemblies to reduce costs and time-to-market by replacing multiple, time consuming and expensive measurement platforms with a single, integrated and easy-to-use instrument. Our most recent version of OVA operating software provides customers with faster testing times, advanced data analysis options and an extended dynamic range relative to previous versions.

Our OBR is a highly sensitive diagnostic device that allows data and telecommunications companies and the service providers who maintain their own fiber optic networks to reduce test time and improve product quality. Our OBR introduces the ability to inspect metropolitan fiber networks with higher resolution and better sensitivity than previously possible. Its user-friendly graphical user interface also makes the OBR product suitable for both research and manufacturing applications.

We expect to increase sales of our optical test equipment products by expanding our customer base beyond the telecommunications industry into avionics, defense and academic research laboratories.

In 2005, Luna Technologies Division received the Frost & Sullivan "Award for Product Line Strategy" for its OVA product and the Frost & Sullivan "Optical Product of the Year Award" for its OBR product.

In June 2005, Luna Technologies Division entered into a joint cooperation agreement with Luna Energy, a subsidiary of Baker Hughes Oilfield Operations, Inc. Under the agreement, both parties will cooperate to develop a fiber optic sensing system product. Upon successful completion of development and through 2017, Luna Energy will make payments to Luna Technologies Division with respect to revenues derived from products sold, which utilize certain of Luna Technologies Division's intellectual property. As the product development is ongoing, Luna Energy has not yet made any payments pursuant to the joint cooperation agreement.

Integrated Sensing Solutions

We have significant knowledge and experience in Distributed Sensing Systems, or DSS, which are products comprised of multiple sensors whose input is integrated through a fiber optic network and software. Our DSS products use fiber optic sensing technology with an innovative monitoring system that allows several thousand sensors to be networked along a single optical fiber. Some key applications, markets and technical advantages of our DSS are described below.

- **Distributed Strain.** Potential markets for our DSS products include the airframe industry, integrated structural monitoring on civil structures and space applications. For example, a major air frame manufacturer deployed our DSS products during fatigue tests to measure strain through a network of sensors distributed throughout an aircraft. Our distributed strain measurement technology can also provide three-dimensional shape measurement. We are developing this technology for use in robotic tethers and for wing structures. We have sold our shape-sensing probes to a major aircraft manufacturer for measuring shape on an aerodynamic surface.
- **Distributed Temperature.** We sell a network of distributed temperature sensors to a major manufacturer of electrical generators. This DSS product enables the direct monitoring of temperature, which helps to prolong generator life and to increase operational efficiency. We have also sold our DSS temperature sensors to NASA for both ultra-cold and extremely high-temperature measurements. Potential markets include industrial process control and electrical system monitoring.

Competition

We compete for government, university and corporate research contracts relating to a broad range of technologies. We also compete in the materials supply sensing and fiber optic network testing markets. In addition, we plan to develop and commercialize multiple molecular technology and sensing solutions products across many industries, technologies and markets. As a result, we compete, or will compete, with a variety of companies in several different markets.

Competition for contract research is intense and the industry has few barriers to entry. We compete against a number of in-house research and development departments of major corporations, as well as a number of small, limited-service contract research providers. The contract research industry continues to experience consolidation, which has resulted in greater competition for clients. Increased competition might lead to price and other forms of competition that could harm our operating results.

We compete for contract research on the basis of a number of factors, including reliability, past performance, expertise and experience in specific areas, scope of service offerings, technological capabilities and price. Although there can be no assurance that we will continue to do so, we believe that we compete favorably in these areas. If in the future we are unable to effectively compete in these areas, we could lose business to our competitors, which could harm our operating results. Our competitors in contract research include, but are not limited to, companies such as General Dynamics Corporation, Lockheed Martin Corporation, SAIC, Inc. and SRA International, Inc.

In the molecular technology solutions products market, our competitors include, but are not limited to, large public manufacturers such as The Dow Chemical Company, E.I. du Pont de Nemours and Company, Rohm and Haas Company and 3M Company, as well as emerging advanced materials companies.

In addition, in the MRI contrast agent market, our competitors include Amersham plc, Berlex Laboratories, Inc., Bracco Diagnostics, Inc. and Mallinckrodt Inc.

In the sensor solutions products market, our competitors include, but are not limited to, large companies such as Agilent Technologies, Inc., Analog Devices, Inc., Freescale Semiconductor, Inc., JDS Uniphase Corp., Robert Bosch GmbH and Silicon Sensing, as well as emerging companies developing innovative sensing technologies.

The products that we have developed or are currently developing will compete with other technologically innovative products, as well as products incorporating conventional materials and technologies. We expect that our products will compete with companies in a wide range of industries, including semiconductors, electronics, biotechnology, textiles, alternative energy, military, defense, healthcare, telecommunications, industrial measurement, security applications and consumer electronics.

Intellectual Property

We seek patent protection on inventions that we consider important to the development of our business. We rely on a combination of patent, trademark, copyright and trade secret laws in the United States and other jurisdictions, as well as confidentiality procedures and contractual provisions to protect our proprietary technology and our brand. We control access to our proprietary technology and enter into confidentiality and invention assignment agreements with our employees and consultants and confidentiality agreements with other third parties.

Our success depends in part on our ability to develop patentable products and obtain, maintain and enforce patent and trade secret protection for our products, as well as successfully defend these patents against third party challenges both in the United States and in other countries. We will only be able to protect our technologies from unauthorized use by third parties to the extent that we own or have licensed valid and enforceable patents or trade secrets that cover them. Furthermore, the degree of future protection of our proprietary rights is uncertain because legal means afford only limited protection and may not adequately protect our rights or permit us to gain or keep our competitive advantage.

Currently, we own or license numerous U.S. patents and patent applications, and we intend to file, or request that our licensors file, additional patent applications for patents covering our products. However, patents may not be issued for any pending or future pending patent applications owned by or licensed to us. Claims allowed under any issued patent or future issued patent owned or licensed by us may not be valid or sufficiently broad to protect our technologies. Any issued patents owned by or licensed to us now or in the future may be challenged, invalidated or circumvented, and, in addition, the rights under such patents may not provide us with competitive advantages. In addition, competitors may design around our technology or develop competing technologies. Intellectual property rights may also be unavailable or limited in some foreign countries, which could make it easier for competitors to capture or increase their market share with respect to related technologies. Although we are not currently involved in any legal proceedings related to intellectual property, we could incur substantial costs to defend ourselves in suits brought against us or in suits in which we may assert our patent rights against others. An unfavorable outcome of any such litigation could have a material adverse effect on our business and results of operations.

As of December 31, 2005, we owned or had rights to use at least 32 issued U.S. patents and at least 63 additional pending U.S., international and foreign patent applications. As of December 31, 2005, we did not have any issued or granted foreign patents. In particular, as of December 31, 2005, we owned or had exclusive license to the following issued patents and applications as they relate to specific products:

- 2 issued U.S. patents, 3 pending U.S. patent applications, and 1 pending foreign patent applications relating to our OVA and OBR products;
- 3 issued U.S. patents, 6 pending U.S. patent applications, and 11 pending foreign patent applications relating to our carbon nanomaterials, including Trimetasphere™ nanomaterials;
- 3 pending U.S. patent applications and 1 pending foreign patent application relating to our DSS technology;
- 10 issued U.S. patents, 3 pending U.S. patent applications and 1 pending foreign patent application relating to our ultrasonic technologies for medical applications;

- 3 pending U.S. patent applications and 2 pending foreign applications relating to our ultrasonic technologies for weapons detection and non-destructive industrial testing technologies;
- 5 issued U.S. patents and 2 pending U.S. patent application relating to our remote and secure asset monitoring technologies;
- 6 pending U.S. patent applications and 7 pending foreign patent applications relating to our flame retardant, impact indicator coatings and multifunctional protective coatings; and
- 12 issued U.S. patents and 14 pending U.S. and foreign patent applications relating to our various other technologies.

Patents and patent applications covering a substantial portion of our core technologies are owned by third parties. The rights to such technologies are acquired through license agreements with such third-party licensors, which include educational institutions, government agencies and for-profit companies. For example, we currently license technology relating to Trimetasphere™ nanomaterials on an exclusive basis from Virginia Tech. We also currently license patents relating to ultrasonic technologies and DSS technology from NASA, and we license technologies relating to DSS from United Technologies Corporation.

We may not fully control the ability to assert or defend those patents or other intellectual property which we have licensed from other entities or which we have licensed to other entities. For example, in the Exclusive License agreement DE-384 with the U.S. government through NASA, dated October 28, 2004, in which certain ultrasound technology fields are licensed to us on an exclusive basis, our right to bring and prosecute an infringement claim against a third party is subject to the U.S. government's right to bring suit or intervene. In the Amended and Restated License Agreement between us and Virginia Tech Intellectual Properties, Inc., or VTIP, dated March 19, 2004, in which certain technology relating to endohedral metallofullerenes, or Trimetasphere™ nanomaterials, is exclusively licensed to us, VTIP has the first right to institute an action for infringement of the licensed intellectual property; we can bring an infringement claim against third parties only if VTIP elects not to.

We may not be able to prevent third parties from obtaining rights from our licensor that are identical to ours. For example, we have two non-exclusive licenses from NASA to practice under certain patents that relate to fiber Bragg grating and fiber optic strain sensing. We also have a non-exclusive license from a third party to conduct research under certain patents relating to ultrasonic technology. As these licenses are non-exclusive, others, including our competitors, may obtain rights from our licensor that are identical to ours.

The development of some of our intellectual property, including software, may have been funded by the U.S. Government including under, or in connection with, U.S. government contracts and other federal agreements. Similarly, some of our patents may cover inventions that were conceived or first reduced to actual practice under, or in connection with, U.S. government contracts or other federal funding agreements. The U.S. government may constrain the use of intellectual property, including patents and software that was developed through or under U.S. government contracts, federal funding agreements or other federal agreements. In addition, in instances where the U.S. government has provided funding of, or for, the development of intellectual property, the U.S. government typically retains a non-exclusive, royalty-free, world-wide license to use the intellectual property in any manner it deems appropriate including, in some specific circumstances, providing it to our competitors. When we work on U.S. government contracts, federal funding agreements and other federal instruments, we seek to protect our proprietary technologies and intellectual property developed at private expense by taking steps to maintain ownership of such intellectual property, as well as steps intended to limit the U.S. government's rights in such intellectual property to the extent permitted by applicable statutes, rules and regulations. We may not have succeeded in our efforts to maintain title in patents or ownership or in limiting the U.S. government's rights in our proprietary technologies and the intellectual property whether developed in the performance of a federal funding agreement or developed at private expense.

In addition to patent and trade secret protection, we also rely on several registered and unregistered trademarks to protect our brand. LUNA INNOVATIONS is a registered trademark in the United States. Our unregistered trademarks include: our logo (a black and white image of a moth design); TRIMETASPHERES; and ACCELERATING THE INNOVATION PROCESS.

Our intellectual property policy is to protect our products, technology and processes by asserting our intellectual property rights where appropriate and prudent. However, we currently have no foreign issued patents and only three pending foreign applications in the field of endohedral metallofullerenes, and any pending or future pending patent applications owned by or licensed to us (in the United States or abroad) may not be allowed or may in the future be challenged, invalidated or circumvented, and the rights under such patents may not provide us with competitive advantages. Any significant impairment of our intellectual property rights could harm our business or our ability to compete. Protecting our intellectual property rights is costly and time consuming. Any increase in the unauthorized use of our intellectual property could make it more expensive to do business and harm our operating results.

There is always the risk that third parties may claim that we are infringing upon their intellectual property rights and, if successful in proving such claims, we could be prevented from selling our products or services. For example, we are aware of competitors with patents in technology areas applicable to our optical test equipment products. Such competitors may allege that we infringe these patents. In addition, we acquired a business that had received a letter in 2002 from a competitor alleging infringement of certain patents. The competitor sent an additional letter on January 14, 2004 to the business that we acquired, again alleging infringement of the competitor's patents. Neither we nor the business that we acquired have received any further communications from this third party. We cannot currently predict whether this third party, or any other third party, will assert a claim against us, or whether any third parties that have asserted such claims against businesses that we have acquired will assert claims or pursue infringement litigation against us; nor can we predict the ultimate outcome of any such potential claims or litigation.

Even if such claims are unfounded, we could suffer significant litigation or licensing expenses as a result of such claims. Companies in the molecular technology solutions, advanced materials, nanotechnology, systems integration, sensing and fiber optics industries own numerous patents, copyrights and trademarks and frequently enter into litigation based on allegations of infringement or other violations of intellectual property rights. As we face increasing competition, the possibility of intellectual property claims against us grows. Our technologies may not be able to withstand any third-party claims or rights against their use.

In recent years, numerous patent applications have been filed by others with the United States Patent and Trademark Office that refer to molecular technology solutions, advanced materials, nanotechnology, systems integration, sensing, fiber optics and our other core technologies. Information contained in patent applications is generally not publicly available. Consequently, we are unable to evaluate the underlying intellectual property until these patent applications become issued or published. The process to issue patents is long and certain innovations that have not yet resulted in issued patents could have been developed prior to our intellectual property. These patents, if and when issued, may predate our patents and may have superior claims or superior rights or otherwise be in conflict with our technology or business processes.

For additional, important information related to our intellectual property, please review the information set forth in "Risk factors—Risks Related to Our Business and Technologies."

Government Regulation

Small Business Innovation Research Qualifications

We presently benefit from our status as qualifying for the U.S. Government's Small Business Innovation Research, or SBIR, program administered by the U.S. Small Business Administration, or SBA. SBIR is a highly competitive program that encourages small businesses to explore their technological potential and provides them incentive to profit from the commercialization of technologies. Each year, ten federal agencies and departments, including NASA, the Department of

Defense and the National Institutes of Health, are required to set aside a portion of their grant awards for SBIR-qualified organizations. SBIR contracts include Phase I feasibility contracts of up to $100 thousand and Phase II proof-of-concept contracts, which can be as high as $750 thousand. Several of our research contracts have used this program as a key source of project funding to develop new technologies.

We must continue to qualify for the SBIR program in order to be eligible to receive future SBIR awards. The eligibility requirements are:

- **Ownership.** The company must be at least 51 percent owned and controlled by U.S. citizens or permanent resident aliens, or owned by an entity that is itself at least 51 percent owned and controlled by U.S. citizens or permanent resident aliens; and
- **Size.** The company, including its affiliates, cannot have more than 500 employees.

These requirements are set forth in the SBA's regulations and are interpreted by the SBA's Office of Hearings and Appeals. In determining whether we satisfy the 51% equity ownership requirement, agreements to merge, stock options, convertible debt and other similar instruments are given "present effect" by the SBA as though the underlying security were actually issued unless the exercisability or conversion of such securities is speculative, remote or beyond the control of the security holder. We therefore believe our outstanding options and warrants held by eligible individuals may be counted as outstanding equity for purposes of meeting the 51% equity ownership requirement. As of December 31, 2005, giving present effect to our outstanding options, at least approximately 73% of our equity was owned by U.S. citizens or permanent residents. Upon the completion of this offering, approximately % of our equity will be owned by U.S. citizens or permanent residents (and approximately % assuming exercise of the underwriters' over-allotment option). In addition, to be eligible for SBIR contracts, the number of our employees, including those of any entities that are considered to be affiliated with us, cannot exceed 500. As of December 31, 2005, we, including all of our divisions, had 131 full-time and 12 part-time employees. In determining whether we have 500 or fewer employees, the SBA may count the number of employees of entities that are large stockholders who are "affiliated", or have the power to control us. In determining whether two or more firms are affiliated, the SBA will look at indicia such as stock ownership or common management, but ultimately will make its determination based on the "totality of the circumstances." The SBA presumes that a large stockholder of ours has the power to control us absent evidence rebutting that presumption. With respect to Carilion Health System, our only large institutional stockholder, we believe we would not be required to count the employees of Carilion Health System. We believe the relative beneficial ownership of our individual stockholders rebuts the presumption of control by Carilion Health System because the shares held by our executive officers and directors constitute the controlling voting interest in us. Eligibility protests can be raised to the SBA by a competitor or by the awarding contracting agency. Accordingly, a company can be declared ineligible for a contract award as a result of a competitor's protest to the SBA or as a result of questioning by the awarding contracting agency. We believe that we are currently in compliance with the SBIR eligibility criteria, but we cannot provide assurance that the SBA will interpret its regulations in our favor. As we grow larger, and as our ownership becomes more diversified, we may no longer qualify for the SBIR program, and we may be required to seek alternative sources and partnerships to fund some of our research and development costs. See "Risk factors—Risks Related to Our Business and Technologies."

Environmental

Our facilities and current and proposed activities involve the use of a broad range of materials that are considered hazardous under applicable laws and regulations. Accordingly, we are subject to a number of foreign and domestic laws and regulations relating to health and safety, protection of the environment, product labeling and product take back, and the storage, use, disposal of, and exposure to, hazardous materials and wastes. We could incur costs, fines and civil and criminal penalties, personal injury and third party property damage claims, or we could be required to incur substantial investigation or remediation costs if we were to violate or become liable under environmental, health and safety laws. Moreover, a failure to comply with environmental laws could result in fines and the revocation of environmental permits, which could prevent us from conducting our business. Liability under environmental laws can be joint and several and without regard to fault. There can be no assurance that violations of environmental health and safety laws will not occur in the future as a result of the inability to obtain permits, human error, equipment failure or other causes. Environmental laws could become more stringent over time, imposing greater compliance costs and increasing risks and penalties associated with violations, which could harm our

business. Further, violations of present and future environmental laws could restrict our ability to expand facilities, pursue certain technologies, and could require us to acquire costly equipment, or to incur potentially significant costs to comply with environmental regulations.

The European Union Directive 2002/96/EC on Waste Electrical and Electronic Equipment, known as the "WEEE Directive," requires producers of certain electrical and electronic equipment, including monitoring instruments, to be financially responsible for specified collection, recycling, treatment and disposal of past and present covered products placed on the market in the European Union. As a manufacturer of covered products, we may be required to register as a producer in some European Union countries, and we may incur some financial responsibility for the collection, recycling, treatment and disposal of both new products sold, and products already sold prior to the WEEE Directive's enforcement date, including the products of other manufacturers where these are replaced by our own products. European Union Directive 2002/95/EC on the Restriction of the Use of Hazardous Substances in electrical and electronic equipment, known as the "RoHS Directive," restricts the use of certain hazardous substances, including mercury, lead and cadmium in specified covered products; however, the RoHS Directive currently exempts monitoring instruments from its requirements. If the European Commission were to remove this exemption in the future, we would be required to change our manufacturing processes, and redesign products regulated under the RoHS Directive in order to be able to continue to offer them for sale within the European Union. For some products, substituting certain components containing regulated hazardous substances may be difficult or costly, or result in production delays. We will continue to review the applicability and impact of both directives on the sale of our products within the European Union. Although we cannot currently estimate the extent of such impact, they are likely to result in additional costs, and could require us to redesign or change how we manufacture our products, any of which could adversely affect our operating results. Failure to comply with the directives could result in the imposition of fines and penalties, inability to sell covered products in the European Union and loss of revenues.

We have made, and will continue to make, expenditures to comply with current and future environmental laws. We anticipate that we could incur additional capital and operating costs in the future to comply with existing environmental laws and new requirements arising from new or amended statutes and regulations. In addition, because the applicable regulatory agencies have not yet promulgated final standards for some existing environmental programs, we cannot at this time reasonably estimate the cost for compliance with these additional requirements. The amount of any such compliance costs could be material. We cannot predict the impact that future regulations will impose upon our business.

FDA Regulation of Products

Some of the products that we are developing are subject to regulation under the FDC Act. In particular, our Trimetasphere™ nanomaterial-based MRI contrast agent and our ultrasonic diagnostic devices for measuring certain medical conditions will be considered a drug and medical devices, respectively, under the FDC Act. Both the statutes and regulations promulgated under the FDA Act govern, among other things, the testing, manufacturing, safety efficacy, labeling, storage, recordkeeping, advertising and other promotional practices involving the regulation of drug and devices.

New Drugs

Obtaining FDA approval for a new drug has historically been a costly and time consuming process. Generally, in order to gain FDA premarket approval, a developer first must conduct preclinical studies in the laboratory and in animal model systems to gain preliminary information on an agent's efficacy and to identify any safety problems. The results of these studies are submitted as a part of an investigational new drug, or IND, application which the FDA must review before human clinical trials of an investigational drug can start. The IND application includes a detailed description of the clinical investigations to be undertaken. In order to commercialize any drug, we must sponsor and file an IND application and be responsible for initiating and overseeing the clinical studies to demonstrate the safety, efficacy and potency that are necessary to obtain FDA approval of any of the products. We will be required to select qualified investigators to supervise the administration of the products and ensure that the investigations are conducted and monitored in accordance with FDA regulations. Clinical trials are normally done in three phases, although the phases may overlap. Phase I trials are concerned primarily with the safety and preliminary effectiveness of the drug, involve fewer than 100 subjects and may take from six months to over one year. Phase II trials typically involve a few hundred patients and are designed primarily to demonstrate effectiveness in treating or diagnosing the disease or condition for which the drug is intended, although short-term side effects and risks in people whose health is

impaired may also be examined. Phase III trials are expanded clinical trials with larger numbers of patients which are intended to evaluate the overall benefit-risk relationship of the drug and to gather additional information for proper dosage and labeling of the drug. The process of clinical trials generally takes two to five years to complete, but may take longer. The FDA receives reports on the progress of each phase of clinical testing, and it may require the modification, suspension or termination of clinical trials if it concludes that an unwarranted risk is presented to patients.

If clinical trials of a new product are completed successfully, the sponsor of the product may seek FDA marketing approval. If the product is regulated as a drug, the FDA will require the submission and approval of a new drug application, or NDA, before commercial marketing of the drug. The NDA must include detailed information about the drug and its manufacture and the results of product development, preclinical studies and clinical trials. The testing and approval processes require substantial time and effort, and we cannot guarantee that any approval will be granted on a timely basis, if at all. If questions arise during the FDA review process, approval can take more than five years. Even with the submissions of relevant data, the FDA may ultimately decide that the NDA does not satisfy its regulatory criteria for approval and deny approval or require additional clinical studies. In addition, the FDA may condition marketing approval on the conduct of specific post-marketing studies to further evaluate safety and effectiveness. Even if FDA regulatory clearances are obtained, a marketed product is subject to continual review. Later discovery of previously unknown problems or failure to comply with the applicable regulatory requirements may result in restrictions on the marketing of a product or withdrawal of the product from the market as well as possible civil or criminal sanctions.

Medical Devices

Any device products that we may develop are likely to be regulated by the FDA as medical devices rather than drugs. The nature of the FDA requirements applicable to devices depends on their classification by the FDA. A device developed by us would be automatically classified as a Class III device, requiring pre-market approval, unless the device was substantially equivalent to an existing device that has been classified in Class I or Class II or to a pre-1976 device that has not yet been classified or we convince the FDA to reclassify the device as Class I or Class II. Class I or Class II devices require registration through the 510(k) exemption. If we were unable to demonstrate such substantial equivalence and unable to obtain reclassification, we would be required to undertake the costly and time-consuming process, comparable to that for new drugs, of conducting preclinical studies, obtaining an investigational device exemption to conduct clinical tests, filing a pre-market approval application, and obtaining FDA approval.

If the device were a Class I product, the general controls of the Federal Food, Drug, and Cosmetic Act, chiefly adulteration, misbranding and good manufacturing practice requirements, would nevertheless apply. If substantial equivalence to a Class II device could be shown, the general controls plus special controls, such as performance standards, guidelines for safety and effectiveness, and post-market surveillance, would apply. While demonstrating substantial equivalence to a Class I or Class II product is not as costly or time-consuming as the pre-market approval process for Class III devices, it can in some cases also involve conducting clinical tests to demonstrate that any differences between the new device and devices already on the market do no affect safety or effectiveness. If substantial equivalence to a pre-1976 device that has not yet been classified has been shown, it is possible that the FDA would subsequently classify the device as a Class III device and call for the filing of pre-market approval applications at that time. If the FDA took that step, then filing an application acceptable to the FDA would be a prerequisite to remaining on the market.

Employees

As of December 31, 2005, we employed 143 people, including 131 people on a full-time basis, 129 in the United States and two internationally. Of these, 28 employees hold Ph.D.s and 38 hold advanced degrees. We have experienced no work stoppages and believe that our employee relations are good.

Facilities

Our corporate headquarters are located in Roanoke, Virginia, and, in late 2006, we will move into 20,000 square feet of leased office space currently under construction at the Riverside Center in Roanoke, Virginia. Additional administrative

functions currently located in 14,700 square feet of space in Blacksburg, Virginia, under a lease expiring June 30, 2006 will be moved to the corporate headquarters when construction is complete.

We lease an additional 15,000 square feet of space in Blacksburg, Virginia for research, development, manufacturing and administrative functions. Our Luna Technologies Division occupies an additional 6,310 square foot facility space in Blacksburg, Virginia, also for research, development, manufacturing and administrative functions.

Our Luna nanoWorks Division occupies a 24,000 square foot facility in Danville, Virginia for nanomaterials manufacturing and research and development.

Our facility in Charlottesville, Virginia currently occupies approximately 8,000 square feet for research and development of molecular technology solutions. Our facility in Hampton, Virginia, which is located near the NASA Langley Research Center, occupies approximately 10,000 square feet for research and development of non-destructive evaluation and certain ultrasonic technologies. We also maintain additional office space in McLean, Virginia.

We believe that our existing facilities are adequate for our current needs and suitable additional or substitute space will be available as needed to accommodate expansion of our operations.

Legal Proceedings

We are not party to any material legal proceedings, nor are we currently aware of any threatened material proceedings. From time to time, we may become involved in litigation in relation to claims arising out of our operations in the normal course of business. While management currently believes the amount of ultimate liability, if any, with respect to these actions will not materially affect our financial position, results of operations, or liquidity, the ultimate outcome of any litigation is uncertain. Were an unfavorable outcome to occur, or if protracted litigation were to ensue, the impact could be material to us.

In March 2003, the Office of Inspector General of the Department of Commerce advised us that the government was investigating anonymous allegations of contract improprieties. We have cooperated fully and extensively with that investigation through interviews and document production. In April 2003, the government advised our regulatory counsel that to date no wrongdoing had been identified, although the government indicated that we may not have fully complied with contractual reporting requirements in one or two instances, which the government did not specify. We believe that the investigation has been resolved favorably, based on statements by the government investigator to company employees in June 2003, and that this matter effectively is at an end absent any advice or communication from the government to the contrary. However, if the government pursues this investigation further, there can be no assurance as to how or whether our relationships, business, financial condition or results of operations will ultimately be affected.

On November 9, 2004, we received a subpoena from the Department of Defense’s Office of the Inspector General covering certain government research contracts awarded to us between January 1, 1998 and November 9, 2004 to determine if we had duplicated work in our submission of project reports to the government. In connection with the investigation, the government alleged that duplication occurred in three research reports that we prepared under the contracts. We submitted a response to the Inspector General in September 2005 challenging the government’s findings. On November 15, 2005, we entered into a settlement agreement with the government and received a general release with respect to the civil and administrative claims in this matter in return for a payment of $165,333.

In July 2005, we received a letter from legal counsel retained by a former employee that such law firm is investigating whether such former employee has any claims against us, including breaches of contract, fiduciary duty, implied covenants of good faith and fair dealing as well as potential violations of minority stockholder rights that such former employee may have as a stockholder in one of our subsidiaries. Although we believe none of these potential claims has merit, we cannot currently predict whether such former employee will file litigation against us or the ultimate outcome of any such potential litigation.

Advisory Board

We have assembled a thirteen member advisory board of leaders with backgrounds in government, academia and industry with which we consult on a formal basis regarding strategic and technical matters. In general, they serve on an exclusive basis within a defined field of collaboration. In connection with their appointment to and as consideration for their service on the advisory board, each advisor receives a stock option grant to purchase 5,000 shares of our common stock.

Our advisory board members include:

Frank Bonsal, Jr. is co-founder of the venture capital firm New Enterprise Associates, or NEA, where he has focused on the development of its early stage companies. He is also a co-founder of Red Abbey Venture Partners in Lutherville, Maryland and he is a special limited partner of Amadeus Capital Partners, Boulder Ventures, Novak Biddle Venture Partners, Trellis Ventures and Windward Ventures. Mr. Bonsal's current board memberships include Advertising.com, Inc., AmCare Labs International, COVEGA Corporation, CeraTech and Cibernet Corporation. Mr. Bonsal is also a member on the Johns Hopkins Hospital Endowment Board. Prior to founding NEA, Mr. Bonsal was a general partner of Alex. Brown & Sons Inc.

Terry Brady was most recently employed by Oridion Systems Ltd. to launch a new division in the United States. Prior to joining Oridion Systems Ltd., Mr. Brady founded Array Medical, Inc., where he served as President and Chief Executive Officer. Before founding Array Medical, Inc., Mr. Brady was President of International Technidyne Corporation Commercial Group.

Ronald E. Carrier, Ph.D. is currently president emeritus of James Madison University, where he served previously as President for 27 years. During his presidency, James Madison University changed from a teachers' college to a major comprehensive university. Dr. Carrier has been active on a number of national and state commissions and has been a board member of several companies that have been acquired by Fortune 200 companies.

John F. Hay is currently a principal with P3 Consulting, LLC in Washington, D.C. Mr. Hay has over 40 years of experience in the national security arena having served twelve years as an industry executive and thirty one years in uniform with the Department of the Navy. In 2000, Mr. Hay was appointed to the Bush-Cheney Transition Advisory Committee and subsequently served as an advisor to the Secretary of Defense and the NASA Administrator. He currently serves as an advisor to the Secretary of the Army and is a member of the Army Science Board. During his time in industry, Mr. Hay was Senior Vice President, Corporate and International Affairs for Westinghouse Electric and CBS Corporation. Before joining Westinghouse, Mr. Hay spent five years as a Congressional Affairs Officer in the Office of the Secretary of the Army. During the previous twenty-six years, his military service included serving in the Chief of Staff of the Army's Office and a series of command and staff assignments in Infantry, Special Operations, Intelligence and Military Police units. Mr. Hay received his bachelors degree from the University of Nebraska, his masters degree from Wichita State University and is a graduate of the U.S. Army Command and Staff College and the FBI National Academy

Charles Edward Hamner, Jr. DVM, Ph.D. is currently the President and CEO of Hamner Advisory Service; he specializes in management in the pharmaceutical and health care industries and academic administration. From 1988-2002 Dr. Hamner served as President and CEO of the North Carolina Biotechnology Center, and was a Research Professor in the OB/GYN Department at the University of North Carolina at Chapel Hill. He has also worked as Associate Vice President for Health Affairs at the University of Virginia Medical Center (1978-1988), and served as Interim Executive Director for the Center in 1981. Dr. Hamner received his bachelors degree in Animal Science from Virginia Tech and his masters degree in Chemistry, DVM in Veterinary Medicine and Ph.D. in Bio-Chemistry from the University of Georgia.

Bobbie Kilberg is currently the President of the Northern Virginia Technology Council, or NVTC, the largest technology council in the United States. In addition, she has also served as a member of President George W. Bush's President's Council of Advisors on Science and Technology, the Virginia House of Delegates' Citizens' Advisory Committee on Legislative Compensation, and the Virginia General Assembly's Joint Judicial Advisory Committee. Ms. Kilberg previously served as Deputy Assistant to the President for Public Liaison for President George H.W. Bush, as Associate Counsel to President

Gerald R. Ford, and as Vice President and General Counsel of the Roosevelt Center for American Policy Studies. Ms. Kilberg received her law degree from Yale University, and has also earned a masters degree in Political Science from Columbia University and a bachelors degree from Vassar College.

Sir Harold W. Kroto is one of the co-recipients of the 1996 Nobel Prize in Chemistry. Dr. Kroto's Nobel Prize was based on his co-discovery of buckminsterfullerene, a form of pure carbon better known as "buckyballs." Dr. Kroto earned his Doctorate in chemistry from the University of Sheffield. He started his academic career at the University of Sussex at Brighton in 1967, where he became a professor in 1985 and, in 1991 was made a Royal Society Research Professor.

The Honorable John O. Marsh Jr. is currently a Senior Fellow at the National Center for Technology and Law and a Distinguished Adjunct Professor at the George Mason University School of Law. Prior to that, Mr. Marsh served in the U.S. House of Representatives for Virginia, as Secretary of the Army for eight years, and as National Security Advisor to Vice President and, later, President Gerald R. Ford. Mr. Marsh is also the former Chairman and interim Chief Executive Officer of Novavax, Inc., a specialty biopharmaceutical company. Mr. Marsh received his law degree from Washington and Lee University.

John B. Noftsinger, Jr., Ph.D. is currently the Associate Vice President of Academic Affairs for Research and Program Innovation, the Executive Director of the Institute for Infrastructure and Information Assurance, and an Associate Professor of Integrated Science and Technology and Education at James Madison University, where he specializes in interdisciplinary program and grant development. Dr. Noftsinger is also the Co-Chair of the Virginia Research and Technology Advisory Committee and the Chair of the Virginia Technology Alliance.

Jay Sculley, Ph.D. is the Chairman Emeritus and former Chairman, President and Chief Executive Officer of The Allied Defense Group, Inc. Dr. Sculley was previously the Director of Advanced Studies and Technologies at Grumman Corporation. Dr. Sculley served as the Assistant Secretary for Research and Development for the U.S. Army during President Ronald Reagan's administration. In addition, Dr. Sculley was a professor and Dean of the Department of Civil Engineering at the Virginia Military Institute, where he also served as a member of the Board of Visitors.

Jerre Stead is currently Chairman of IHS, Inc. and is the former Chairman and Chief Executive Officer of Ingram Micro Inc. He previously served as Chief Executive Officer of Legent Corporation, Chairman and Chief Executive Officer of AT&T Global Information Solutions, and Chairman, President, and Chief Executive Officer of Square D Company. Mr. Stead also serves on the board of directors of TBG, Armstrong World Industries, Inc., Brightpoint, Inc., Conexant Systems, Inc., Mindspeed Technologies, Inc., and Mobility Electronics, Inc.

G. Kim Wincup is senior vice president of Science Applications International Corporation. Mr. Wincup previously served as counsel to the U.S. House of Representatives Armed Services Committee and U.S. House of Representatives Veterans Affairs Committee, as staff director of the U.S. House of Representatives Armed Services Committee and the Joint Committee on the Organization of Congress, and as Assistant Secretary of both the Air Force and the Army. Mr. Wincup has a bachelors degree in Political Science from DePauw University, and received a law degree from the University of Illinois School of Law.

General Larry D. Welch was formally the U.S. Air Force Chief of Staff. As Chief, he served as the senior uniformed Air Force Officer responsible for the organization, training and equipage of a combined active duty, Guard, Reserve and civilian force serving at locations in the United States and overseas. As a member of the Joint Chiefs of Staff, he and the other service chiefs functioned as the principal military advisers to the secretary of defense, National Security Council and the President. General Welch received a bachelor's degree in Business Administration from the University of Maryland and a masters degree in International Relations from the George Washington University. General Welch completed Armed Forces Staff College at Norfolk, Va., in 1967, and National War College at Fort Lesley J. McNair, Washington, D.C., in 1972.

Management

Executive Officers and Directors

The following table sets forth certain information concerning our current executive officers and directors:

Name	Age	Position	Director or Executive Officer Since
Kent A. Murphy, Ph.D.	47	President, Chief Executive Officer, Secretary, Treasurer and Chairman of the Board of Directors	1990
Scott A. Graeff	39	Chief Financial Officer, Vice President, Corporate Development and Director	2005
John T. Goehrke	48	Chief Operating Officer	2005
Scott A. Meller	38	President, Contract Research Group	2000
Kenneth D. Ferris	58	President, Luna Advanced Systems Division	2005
Robert P. Lenk, Ph.D.	57	President, Luna nanoWorks Division	2005
John C. Backus, Jr.(1)(2)	47	Director	2005
Edward G. Murphy, M.D.(1)(3)	50	Director	2005
Richard W. Roedel(1)(2)(3)	56	Director	2005
Paul E. Torgersen, Ph.D.(2)(3)	74	Director	2000

(1) Member of our nominating and corporate governance committee.
(2) Member of our audit committee.
(3) Member of our compensation committee.

Kent A. Murphy, Ph.D., founder of the company, has served as our President, Chief Executive Officer, Secretary, Treasurer and Chairman of the Board since 1992. Dr. Murphy received his Ph.D. in Electrical Engineering from Virginia Polytechnic Institute and State University and is formerly a tenured professor in Virginia Tech's Bradley Department of Engineering, where he filed for over 35 patents. In 2001, he was named SBIR Entrepreneur of the Year and in 2004 was named Outstanding Industrialist of the Year by Virginia's Governor Warner. Dr. Murphy is the founding member of The Accelerating Innovation Foundation, a non-profit organization whose goal is to promote and facilitate development of a technology innovation cluster in the Mid-Atlantic region. Dr. Murphy is not related to Edward G. Murphy, M.D., a member of our board of directors.

Scott A. Graeff has served as our Chief Financial Officer since July 2005 and has been a member of our Board of Directors since August 2005. In addition, he currently serves as our Vice President, Corporate Development. From December 1999 to June 2001, Mr. Graeff served as Chief Financial Officer of Liquidity Link, a software development company. From June 2001 to August 2002, Mr. Graeff served as President and Chief Financial Officer of Autumn Investments. From August 2002 until July 2005, Mr. Graeff served as a Managing Director for Gryphon Capital Partners, a venture capital investment group. From August 2003 until July 2005, Mr. Graeff also served as the Acting Chief Financial Officer of Luna Technologies, Inc. Mr. Graeff is presently a member of the Board of Directors of Provox Technologies Corporation, a provider of speech recognition-based medical documentation and workflow management systems, a position he has held since June 2004. Mr. Graeff holds a B.S. in Commerce from the University of Virginia.

John T. Goehrke has served as our Chief Operating Officer since September 2005. From August 2003 to September 2005, Mr. Goehrke served as President and Chief Executive Officer of Luna Technologies, Inc. From April 2000 to April 2003, Mr. Goehrke served as General Manager of the Access Division of Acterna, LLC, a provider of communications test solutions for telecommunications and cable network operators. Mr. Goehrke holds a B.S. in Electrical Engineering from the University of Connecticut and a M.B.A. from the University of Pittsburgh.

Scott A. Meller has served as our President, Contract Research Group, since September 2005. From May 2004 to September 2005, Mr. Meller served as our Chief Operating Officer. From October 2002 to May 2004, Mr. Meller served as our Vice President of Research and Development and previously served as Director of Engineering from September 2000 to October 2002. Mr. Meller joined Luna Innovations in 1996 and was a major contributor to early research that led to spin-offs and new products, including Luna Technologies, Inc. Mr. Meller holds a B.S. in Electrical Engineering from Clemson University, a M.S. in Electrical Engineering from Virginia Tech, and is a licensed Professional Engineer. He also holds three patents in optical fiber sensors and devices.

Kenneth D. Ferris has served as President of our Luna Advanced Systems Division since December 2005. Prior to joining Luna iMonitoring as Director in 2002, Ken was with Carrier Access, where as VP and General Manger of Broadband Terminal Products, he was responsible for Product Development and Product Management activities. Ken joined Carrier Access in August of 2000 when Carrier acquired Millennia Systems, a company he co-founded with Dr. Phil Couch. Prior to starting Millennia in 1998, Ken was a Vice President for FiberCom, as part of the team who developed the company from infancy to maturity. Prior to joining FiberCom he was with ITT -EOPD in Roanoke for 3 years. Ken spent the first 10 years of his career in the U.S. Department of Defense performing systems engineering and program management for a variety of projects. Ken led the partnership of Luna iMonitoring with IHS in 2003. Mr. Ferris holds a B.S. in Electrical Engineering from Virginia Tech.

Robert P. Lenk, Ph.D. has served as President of our Luna nanoWorks Division since August 2005. Since December 2003, Dr. Lenk has served as President of Oncovector Inc., a biopharmaceutical company. Dr. Lenk has also served as a member of Oncovector's Board of Directors since May 2003. From July 1999 to September 2003, Dr. Lenk was President and Chief Executive Officer of Therapeutics 2000, an inhalation pharmaceutical research company. Dr. Lenk holds a Ph.D. in Cell Biology from the Massachusetts Institute of Technology.

John C. Backus, Jr. has served as a member of our board of directors since September 2005. Mr. Backus is a member of our audit committee and chairman of our nominating and corporate governance committee. Since 1999, Mr. Backus has served as a Managing Director and Partner at Draper Atlantic, an early stage information technology venture capital firm based in Northern Virginia which he co-founded. Prior to founding Draper Atlantic, Mr. Backus was a founder and the President and Chief Executive Officer of InteliData Technologies Corporation, a developer of software products and services for the financial services industry. Mr. Backus earned a B.A. in Economics and an M.B.A. from Stanford University.

Edward G. Murphy, M.D. has served as a member of our board of directors since September 2005. Dr. Murphy is chairman of our compensation committee and a member of our nominating and corporate governance committee. Since January 2001, Dr. Murphy has served as President and Chief Executive Officer of Carilion Health System, where he served as Executive Vice President and Chief Operating Officer from January 2000 until January 2001. Dr. Murphy holds a B.S. in Biochemistry and Economics from the University of New York at Albany and an M.D. from Harvard Medical School. Dr. Murphy is not related to Kent A. Murphy, Ph.D., our President, Chief Executive Officer, Secretary, Treasurer and Chairman of our Board of Directors.

Richard W. Roedel has served as a member of our board of directors since September 2005. Mr. Roedel is chairman of our audit committee and a member of our nominating and corporate governance and compensation committees. From 1985 through 2000, he was employed by BDO Seidman, LLC as an Audit Partner, later being promoted in 1990 to Managing Partner in Chicago and then Managing Partner in New York in 1994 and finally in 1999 to Chairman and Chief Executive Officer. In October of 2002, he joined the Board of Directors of Take-Two Interactive Software, Inc. (TTWO) as Chairman of the Audit Committee and served in several capacities through June 2005, including Chairman and Chief Executive Officer. Mr. Roedel is currently a member of the Board of Directors and Chairman of the Audit Committees of two Nasdaq traded companies, Brightpoint, Inc. (CELL) and Dade Behring Holdings, Inc. (DADE), and a member of the Board of Directors of IHS, Inc., a NYSE traded company. He is also a member of the Board of Directors of the Association of Audit Committee Members, Inc., a not-for-profit organization dedicated to strengthening the audit committee by developing best practices. Mr. Roedel holds a B.S. in Accounting and Economics from The Ohio State University and is a Certified Public Accountant.

Paul E. Torgersen, Ph.D. has served as a member of our board of directors since 2000. Dr. Torgersen is a member of our audit and compensation committees. Dr. Torgersen is President Emeritus of Virginia Tech where he has served as the John W. Hancock Chair in Engineering since January 2000. From 1993 until 2000, Dr. Torgersen served as President of Virginia Tech. Dr. Torgersen currently serves on the board of directors of Electrical Distribution Design and formerly served on the board of Roanoke Electric Steel Corporation. Dr. Torgersen holds a B.S. in Industrial Engineering from Lehigh University and a M.S. and Ph.D. in Industrial Engineering from The Ohio State University.

Significant Employees

Certain of our key employees who are not also executive officers or directors are as follows:

Name	Age	Position
Mark Froggatt, Ph.D.	36	Chief Technology Officer
Joseph S. Heyman, Ph.D.	62	Chief Scientific Officer
Kenneth L. Walker, Ph.D.	53	Executive Vice President of Luna nanoWorks Division
Stephen R. Wilson, Ph.D.	59	Chief Technical Officer of Luna nanoWorks Division

Mark Froggatt, Ph.D. has been our Chief Technology Officer since September 2005. He co-founded Luna Technologies in the fall of 2000 to develop instrumentation for fiber optic devices. Dr. Froggatt is the primary inventor of the technology used in the OVA and a leading expert in the field of interferometric measurement. Before joining Luna Technologies, Dr. Froggatt worked at the NASA Langley Research Center developing ultrasonic and optical instrumentation for which he received eight patents. He received his B.S. and M.S. degrees in Electrical Engineering from Virginia Tech and a Ph.D. from the University of Rochester Institute of Optics.

Joseph S. Heyman, Ph.D. has served as our Chief Scientific Officer since May 2003. Dr. Heyman has over 30 patents and the distinction of winning 4 international IR-100 awards as one of the 100 most significant technology developments of the year. Dr. Heyman served as Vice President and Chief Technology Officer of Nascent Technology Solutions from July 2001 to May 2003. He had a 36 year career at the NASA Langley Research Center, retiring as the Langley Chief Technologist for the Director. Dr Heyman is an Adjunct Professor of Physics and Applied Science at The College of William and Mary. He received his B.A. in Physics from Northeastern University and his M.A. in Solid State Physics and Physical Acoustics and his Ph.D. in Solid State Physics and Ultrasonics at Washington University.

Kenneth L. Walker, Ph.D. has served as Executive Vice President of our Luna nanoWorks Division since May 2005. Dr. Walker founded a specialty photonic devices business within Lucent Technologies Inc. which grew from a concept to a business with over $200.0 million in revenues. Upon the divestiture of this business to Furukawa Co., Ltd., Dr. Walker continued as President of the division. Dr. Walker received his undergraduate degree from the California Institute of Technology and his Ph.D. degree from Stanford University.

Stephen R. Wilson, Ph.D. has served as Chief Technical Officer of our Luna nanoWorks Division since May 2004 and served as acting Chief Executive Officer of our Luna nanoWorks Division from May 2004 until May 2005. From 1985 through 2004, he served in a tenured faculty position in the Chemistry department at New York University. He founded and served as Chief Executive Officer of Sphere Biosystems, Inc., a fullerene biomedical company which was the predecessor of C Sixty Inc., a bionanotechnology company. Dr. Wilson is the author of more than 220 peer-reviewed articles, books, book chapters and patents. Dr. Wilson received his B.A. in Chemistry and M.S. and Ph.D. in Organic Chemistry from Rice University.

Executive Officers

Our executive officers are elected by, and serve at the discretion of, our board of directors.

Board of Directors

Our authorized number of directors is six. Upon completion of this offering, our amended and restated certificate of incorporation will provide that our board of directors will be divided into three classes, each with staggered three-year terms: Class I, Class II and Class III. As a result, only one class of directors will be elected at each annual meeting of our stockholders, with the other classes continuing for the remainder of their respective three-year terms. Dr. Edward Murphy and Dr. Kent Murphy have been designated as Class I directors, whose terms will expire at the 2006 annual meeting of stockholders. Mr. Scott Graeff and Dr. Paul Torgersen have been designated as Class II directors, whose terms will expire at the 2007 annual meeting of stockholders. Mr. John Backus and Mr. Richard Roedel have been designated as Class III directors, whose terms will expire at the 2008 annual meeting of stockholders. This classification of the board of directors may delay or prevent a change in control of our company or our management. See "Description of capital stock—Anti-Takeover Effects of Provisions of the Amended and Restated Certificate of Incorporation and Bylaws."

A majority of the members of our board of directors, who are John C. Backus, Jr., Edward G. Murphy, M.D., Richard W. Roedel and Paul E. Torgersen, Ph.D., are independent within the meaning of applicable Nasdaq rules.

Board Committees

Our board of directors has an audit committee, a compensation committee, and a nominating and corporate governance committee.

Audit Committee. The audit committee of our board of directors recommends the appointment of our independent auditors, reviews our internal accounting procedures and financial statements, and consults with and reviews the services provided by our independent auditors, including the results and scope of their audit. The audit committee is currently comprised of John C. Backus, Jr., Richard W. Roedel and Paul E. Torgersen, Ph.D., each of whom is independent, within the meaning of the requirements of the Sarbanes-Oxley Act of 2002, and applicable SEC and Nasdaq rules. Richard W. Roedel is chairman of our audit committee as well as our audit committee financial expert, as currently defined under the SEC rules implementing the Sarbanes-Oxley Act of 2002. We believe that the composition and functioning of our audit committee complies with all applicable requirements of the Sarbanes-Oxley Act of 2002, The Nasdaq National Market, and SEC rules and regulations.

Compensation Committee. The compensation committee of our board of directors reviews and recommends to our board of directors the compensation and benefits for all of our executive officers, administers our stock plans, and establishes and reviews general policies relating to compensation and benefits for our employees. The compensation committee is currently comprised of Edward G. Murphy, M.D., Richard W. Roedel and Paul E. Torgersen, Ph.D., each of whom is independent, within the meaning of Nasdaq rules. Edward G. Murphy, M.D is chairman of our compensation committee. We believe that the composition and functioning of our compensation committee complies with all applicable requirements of the Sarbanes-Oxley Act of 2002, The Nasdaq National Market, and SEC rules and regulations.

Nominating and Corporate Governance Committee. The nominating and corporate governance committee of our board of directors is responsible for:

- reviewing the appropriate size, function and needs of the board of directors;
- developing the board's policy regarding tenure and retirement of directors;
- establishing criteria for evaluating and selecting new members of the board, subject to board approval thereof;
- identifying and recommending to the board for approval individuals qualified to become members of the board of directors, consistent with criteria established by the committee and by the board;
- overseeing the evaluation of management and the board; and
- monitoring and making recommendations to the board on matters relating to corporate governance.

The nominating and corporate governance committee currently consists of John C. Backus, Jr., Edward G. Murphy, M.D., and Richard W. Roedel each of whom is independent, within the meaning of applicable Nasdaq rules. John C. Backus, Jr. is chairman of our nominating and corporate governance committee. We believe that the composition and functioning of our nominating and corporate governance committee complies with all applicable requirements of the Sarbanes-Oxley Act of 2002, The Nasdaq National Market, and SEC rules and regulations.

Compensation Committee Interlocks and Insider Participation

None of the members of our compensation committee has, at any time, been one of our officers or employees. None of our executive officers currently serves, or in the past year has served, as a member of the board of directors or compensation committee of any entity that has one or more executive officers serving on our board of directors or compensation committee.

Director Compensation

Our non-employee directors are reimbursed for certain of their out-of-pocket expenses incurred in connection with attending board and committee meetings. In the past, we have granted to our directors options to purchase our common stock pursuant to the terms of our 2003 Stock Plan. Our 2006 Equity Incentive Plan provides for the automatic grant of options to our non-employee directors. Each non-employee director appointed to the board after the completion of this offering will receive an initial option to purchase 100,000 shares of common stock upon such appointment except for those directors who become non-employee directors by ceasing to be employee directors. This option will vest as to 33,333 shares subject to the option on the first anniversary of the date of grant and as to 2,778 shares each month thereafter, subject to the director's continued service on each relevant vesting date. All options granted under the automatic grant provisions have a term of ten years and an exercise price equal to fair market value on the date of grant. See "—Benefit Plans" below for further information.

Executive Compensation

The following table sets forth the summary information concerning compensation during 2005 for the following persons: (i) our chief executive officer, (ii) those of our executive officers who received compensation during 2005 of at least $100 thousand and who were executive officers on December 31, 2005, and (iii) two additional former executive officers who would have been included under clause (ii) above if they had been executive officers on December 31, 2005. We refer to these persons as our "named executive officers" elsewhere in this prospectus. Except as provided below, none of our named executive officers received any other compensation required to be disclosed by law or in excess of 10% of their total annual compensation.

Summary Compensation Table

Name and Position	Year	Annual Compensation		Long Term Compensation Awards	All Other Compensation ($)
		Salary ($)	Bonus ($)	Securities Underlying Options (#)	
Kent A. Murphy, Ph.D. President, Chief Executive Officer, Secretary, Treasurer and Chairman of the Board of Directors	2005	$210,208	$32,120	200,000	$6,708(1)
Scott A. Graeff(2) Chief Financial Officer, Vice President, Corporate Development and Director	2005	76,318	26,250	400,000	1,181(3)
Scott A. Meller President, Contract Research Division	2005	125,401	609	—	4,410(4)
Robert P. Lenk, Ph.D.(5) President, Luna nanoWorks Division	2005	68,993	15,566	200,000	76,491(6)
Steven R. Wilson, Ph.D.(7) Chief Technical Officer, Luna nanoWorks Division	2005	200,641	974	150,000	11,546(8)
Michael F. Gunther(9) Vice President, Intellectual Property	2005	129,864	180,604(10)	—	5,026(11)

(1) Reflects $6,708 in 401(k) matching contributions made by us.
(2) On July 1, 2005, Mr. Graeff was appointed our Chief Financial Officer, Vice President, Corporate Development.
(3) Reflects $1,181 in 401(k) matching contributions made by us.
(4) Reflects $4,410 in 401(k) matching contributions made by us.
(5) On August 13, 2005, Dr. Lenk was appointed President of Luna nanoWorks Division.
(6) Reflects $75,000 in consulting fees paid prior to Dr. Lenk becoming a full time employee and relocation expense reimbursement.
(7) Dr. Wilson served as executive officer in charge of Luna nanoWorks until May 2005.
(8) Reflects $6,707 in 401(k) matching contributions made by us as well as relocation expense reimbursement.
(9) Mr. Gunther served as an executive officer (Vice President of Operations) until September 30, 2005.
(10) Reflects payment made pursuant to that certain Cash Bonus Agreement dated March 21, 2003, by and between us and Mr. Gunther, whereby we were obligated to pay Mr. Gunther a fixed cash bonus over a period of three years, of which $180,000 remained due and payable after December 31, 2005 and has since been paid.
(11) Reflects $5,026 in 401(k) matching contributions made by us.

Option Grants in Last Fiscal Year

In 2005, we granted options to purchase an aggregate of 4,555,374 shares of our common stock to our employees, directors, advisory board members and consultants, all of which were granted under the 2003 Stock Plan. These options generally vest at the rate of 25% after one year of service from the date of grant, and monthly thereafter, in equal amounts, generally over 36 additional months.

These options have terms of no more than ten years, but may terminate before their expiration dates if the optionee's status as an employee, director or consultant is terminated, or upon the optionee's death or disability. See "—Benefit Plans" for more detail regarding these options.

We granted 950,000 stock options to our named executive officers during 2005.

Option Grants in Last Fiscal Year

Name	Number of Securities Underlying Options Granted(#)	% of Total Options Granted to Employees In Fiscal Year	Exercise of Base Price ($/Sh)	Expiration Date	Potential Realizable Value at Assumed Annual Rates of Stock Price Appreciation for Options Term	
					5%	10%
Kent A. Murphy, Ph.D.	200,000	4.4%	$0.22	5/20/15	$16,000	$36,000
Scott A. Graeff	100,000	2.2%	0.20	5/20/15	10,000	20,000
	40,000	0.8%	0.20	6/3/15	4,000	8,000
	100,000	2.2%	0.20	7/1/15	10,000	20,000
	160,000	3.5%	0.20	8/1/15	16,000	32,000
Scott A. Meller	—	—	—	—	—	—
Robert P. Lenk, Ph.D.	100,000	2.2%	0.20	5/20/15	10,000	20,000
	100,000	2.2%	1.00	10/26/15	50,000	100,000
Steven R. Wilson, Ph.D.	150,000	3.3%	0.20	5/20/15	15,000	30,000
Michael F. Gunther	—	—	—	—	—	—

Aggregated Option Exercises in 2005 and Year-End Option Values

The following table sets forth certain information concerning the number and value of unexercised options held by each of the named executive officers, as of December 31, 2005. No options were exercised by the named executive officers in 2005. The value of in-the-money stock options represents the fair market value of the shares underlying the options, which is based upon the assumed initial public offering price of $ per share, minus the exercise price per share, multiplied by the number of shares underlying the options.

2005 Aggregated Option Exercises and Year-End Values

Name	Number of Securities Underlying Unexercised Options at December 31, 2005		Value of Unexercised In-The-Money Options at December 31, 2005	
	Exercisable	Unexercisable	Exercisable	Unexercisable
Kent A. Murphy, Ph.D.	—	200,000(1)		
Scott A. Graeff	300,000	100,000		
Scott A. Meller	416,248	63,752		
Robert P. Lenk, Ph.D.	—	200,000		
Steven R. Wilson, Ph.D.	—	150,000		
Michael F. Gunther	—	—		

(1) Excludes options to purchase 64,000 shares of common stock of Luna Analytics, Inc. at an exercise price of $0.11 per share granted on January 17, 2002, pursuant to the Luna Analytics, Inc. 2001 Stock Plan.

Benefit Plans

The following section provides more details concerning our 2003 Stock Plan and 2006 Equity Incentive Plan.

2003 Stock Plan

Our 2003 Stock Plan was adopted by our board of directors and approved by our stockholders, as amended, on March 16, 2004. Our 2003 Stock Plan provides for the grant of incentive stock options, within the meaning of Section 422 of the Internal Revenue Code, to our employees and our parent and subsidiary corporations' employees, and for the grant of nonstatutory stock options to our employees, directors and consultants and our parent and subsidiary corporations' employees and consultants. We will not grant any additional options under our 2003 Stock Plan following this offering. Instead, we will grant options and other equity-based awards under our 2006 Equity Incentive Plan.

As of December 31, 2005, we have reserved a total of 8,000,000 shares of our common stock for issuance pursuant to the 2003 Stock Plan, of which 556,623 shares have been issued upon exercise of options granted under the 2003 Stock Plan. Also as of December 31, 2005, options to purchase 7,033,517 shares of common stock were outstanding and 409,860 shares were available for future grant under this plan. The maximum aggregate number of shares that may be subject to option and sold under the 2003 Stock Plan is 8,000,000 shares, unless adjusted by the administrator. In February 2006, we increased the shares reserved and authorized to be issued under the 2003 Stock Plan by 1,715,000 shares to 9,715,000 shares.

Our compensation committee appointed by our board of directors administers our 2003 Stock Plan. The administrator has the power to determine the terms of the options, including the service providers who will receive awards, the number of shares subject to each such option, the exercisability of options and the form of consideration payable upon exercise.

In addition, the administrator determines the exercise price of options granted under our 2003 Stock Plan. With respect to all incentive stock options, the exercise price may not be less than the fair market value of our common stock on the date of grant. The term of an incentive stock option may not exceed ten years, except that with respect to any participant who owns more than 10% of the voting power of all classes of our outstanding stock, the term must not exceed five years and the exercise price may not be less than 110% of the fair market value on the grant date. The administrator determines the term of all other options.

After termination of an employee, director or consultant, he or she may exercise his or her option for the period of time as the administrator may determine. In the absence of a specified time, the option will remain exercisable for three months following termination other than by reason of death or disability and for twelve months following termination for death or disability. If, on the date of termination, the employee, director or consultant is not vested as to his or her entire option, the shares covered by the unvested portion of the option will revert to the 2003 Stock Plan.

Unless the administrator provides otherwise, our 2003 Stock Plan does not allow for the transfer of options other than by will or the laws of descent and distribution and only the recipient of an option may exercise an option during his or her lifetime.

Our 2003 Stock Plan provides that in the event of our "change in control," the successor corporation or its parent or subsidiary will assume or substitute an equivalent award for each outstanding option. If there is no assumption or substitution of outstanding options, the administrator will provide notice to the recipient that he or she has the right to exercise the option as to all of the shares subject to the option for a period of 15 days from the date of such notice. The option will terminate upon the expiration of that 15-day period.

Our 2003 Stock Plan will automatically terminate in 2014, unless we terminate it sooner. In addition, our board of directors has the authority to amend, suspend or terminate the 2003 Stock Plan, provided such action does not impair the rights of any participant. Our board of directors has decided to suspend the 2003 Stock Plan as of the completion of this offering.

2006 Equity Incentive Plan

Our board of directors recommended that our stockholders approve our 2006 Equity Incentive Plan on January 29, 2006, and the plan is pending their approval. Our 2006 Equity Incentive Plan provides for the grant of incentive stock options, within the meaning of Section 422 of the Internal Revenue Code, to our employees and our parent and subsidiary corporations' employees, and for the grant of nonstatutory stock options, restricted stock, stock appreciation rights, performance units and performance shares to our employees, directors and consultants and our parent and subsidiary corporations' employees and consultants.

We have reserved a total of 3,000,000 shares of our common stock for issuance pursuant to the 2006 Equity Incentive Plan plus (a) any shares remaining available for grant under our 2003 Stock Plan as of the effective date of this offering and (b) any shares that otherwise would have been returned to our 2003 Stock Plan on or after the effective date of this offering as a result of termination of options or the repurchase of shares issued under the 2003 Stock Plan. In addition, our 2006 Equity Incentive Plan provides for annual increases in the number of shares available for issuance thereunder on the first day of each fiscal year, beginning with our fiscal year 2007, equal to the least of:

- 10% of the outstanding shares of our common stock on the first day of the fiscal year;
- 3,000,000 shares; and
- such other amounts as our board of directors may determine.

Our compensation committee of our board of directors administers our 2006 Equity Incentive Plan. In the case of awards intended to qualify as "performance-based compensation" within the meaning of Section 162(m) of the Internal Revenue Code, the committee or a subcommittee of that committee granting the awards will consist of two or more "outside directors" within the meaning of Section 162(m) of the Code. The administrator has the power to determine the terms of the awards, including the exercise price, the number of shares subject to each such award, the exercisability of the awards and the form of consideration payable upon exercise. The administrator also has the authority to institute an exchange program whereby the exercise prices of outstanding awards may be reduced or outstanding awards may be surrendered in exchange for awards with a lower exercise price.

The administrator determines the exercise price of options granted under our 2006 Equity Incentive Plan, but with respect to all incentive stock options, the exercise price may not be less than the fair market value of our common stock on the date of grant. The term of an incentive stock option may not exceed ten years, except that with respect to any participant who owns more than 10% of the voting power of all classes of our outstanding stock, the term must not exceed five years and the exercise price may not be less than 110% of the fair market value on the grant date. The administrator determines the term of all other options.

No optionee may be granted in any fiscal year an option to purchase more than 750,000 shares. However, in connection with his or her initial service, an optionee may be granted an option to purchase up to 2,750,000 shares.

After termination of an employee, director or consultant, he or she may exercise his or her option for the period of time stated in the option agreement. Generally, if termination is due to death or disability, the option will remain exercisable for 12 months. In all other cases, the option will generally remain exercisable for three months. However, an option generally may not be exercised later than the expiration of its term.

Stock appreciation rights may be granted under our 2006 Equity Incentive Plan. Stock appreciation rights allow the recipient to receive the appreciation in the fair market value of our common stock between the date of grant and the exercise date. The administrator determines the terms of stock appreciation rights, including when such rights become exercisable and whether to pay the appreciation in cash or with shares of our common stock, or a combination thereof; however, stock appreciation rights expire under the same rules that apply to stock options.

Restricted stock may be granted under our 2006 Equity Incentive Plan. Restricted stock awards are shares of our common stock that vest in accordance with terms and conditions established by the administrator. The administrator will determine the number of shares of restricted stock granted to any participant. The administrator may impose whatever conditions to vesting

it determines to be appropriate. For example, the administrator may set restrictions based on the achievement of specific performance goals. Shares of restricted stock that do not vest are subject to our right of repurchase or forfeiture.

Performance units and performance shares may be granted under our 2006 Equity Incentive Plan. Performance units and performance shares are awards that will result in a payment to a participant only if performance goals established by the administrator are achieved or the awards otherwise vest. The administrator will establish organizational or individual performance goals in its discretion, which, depending on the extent to which they are met, will determine the number and/or the value of performance units and performance shares to be paid out to participants. Performance units will have an initial dollar value established by the administrator prior to the grant date. Performance shares will have an initial value equal to the fair market value of our common stock on the grant date. Payment for performance units and performance shares may be made in cash or in shares of our common stock with equivalent value, or in some combination, as determined by the administrator.

Our 2006 Equity Incentive Plan also provides for the automatic grant of options to our non-employee directors. Each non-employee director first appointed to the board after the completion of this offering will receive an initial option to purchase 100,000 shares of common stock upon such appointment except for those directors who become non-employee directors by ceasing to be employee directors. This option will vest as to 33,333 shares subject to the option on the first anniversary of the date of grant and as to 2,778 shares each month thereafter, subject to the director's continued service on each relevant vesting date. All options granted under the automatic grant provisions have a term of ten years and an exercise price equal to fair market value on the date of grant.

Unless the administrator provides otherwise, our 2006 Equity Incentive Plan does not allow for the transfer of awards and only the recipient of an award may exercise an award during his or her lifetime.

Our 2006 Equity Incentive Plan provides that in the event of our "change in control," the successor corporation or its parent or subsidiary will assume or substitute an equivalent award for each outstanding award. If there is no assumption or substitution of outstanding awards, the administrator will provide notice to the recipient that he or she has the right to exercise the option and stock appreciation right as to all of the shares subject to the award, all restrictions on restricted stock will lapse, and all performance goals or other vesting requirements for performance shares and units will be deemed achieved, and all other terms and conditions met. The option or stock appreciation right will terminate upon the expiration of the period of time the administrator provides in the notice. In the event the service of an outside director is terminated on or following a change in control, other than pursuant to a voluntary resignation, his or her options and stock appreciation rights will fully vest and become immediately exercisable, all restrictions on restricted stock will lapse, and all performance goals or other vesting requirements for performance shares and units will be deemed achieved, and all other terms and conditions met.

Our 2006 Equity Incentive Plan will automatically terminate in 2016, unless we terminate it sooner. In addition, our board of directors has the authority to amend, suspend or terminate the 2006 Equity Incentive Plan provided such action does not impair the rights of any participant.

Employment Agreements and Change in Control Arrangements

Employment at our company is at will. As discussed in note 14 of the Luna Technologies, Inc. 2004 financial statements included elsewhere in this prospectus, the president of that company previously had an employment agreement with Luna Technologies. In connection with our repurchase and consolidation of Luna Technologies, all employment agreements with employees in that subsidiary have been terminated. In the period from April 2005 through October 2005, we entered into officer employment letters with Scott A. Graeff, our Chief Financial Officer and Vice President, Corporate Development, Robert P. Lenk, Ph. D., President of our Luna nanoWorks Division, John T. Goerke, our Chief Operating Officer, Aaron S. Hullman, our Vice President and General Counsel and Kenneth D. Ferris, President of our Luna Advanced Systems Division. These officer employment letters provide the officers with monthly salaries, ranging from $10,834 to $16,667, bonuses payable upon achievement of certain conditions or milestones, stock option grants and rights to participate in benefits plans, including our 401(k) retirement plan, health insurance plan, dental plan and life insurance plan, all as generally available to our executives.

Certain relationships and related party transactions

We describe below the transactions and series of similar transactions that have occurred this year or during the last three fiscal years to which we or our subsidiaries were a party or will be a party, in which:

- the amounts involved exceeded or will exceed $60,000; and
- a director, executive officer, holder of more than 5% of our common stock or any member of their immediate family had or will have a direct or indirect material interest.

Luna Technologies Acquisition

In September 2005, we acquired all of the outstanding shares of common stock of Luna Technologies that we did not already own in exchange for 1,031,234 shares of our common stock, excluding 3,601 shares of common stock reserved for the exercise of warrants that were exchanged for warrants formerly issued by Luna Technologies. An additional 196,403 shares of common stock and 686 shares subject to warrants were held in escrow at closing pending completion of certain funding milestones with Carilion Health System, of which 73,658 shares and 257 shares subject to warrants were released from escrow on December 30, 2005 upon closing of an additional $3.0 million equity investment by Carilion Health System. The remaining 122,745 escrow shares and 429 shares subject to warrants are subject to either release from escrow or termination. In addition, the stockholders receiving shares of our Class B Common Stock in connection with our acquisition of Luna Technologies have a redemption right for a certain percentage of the outstanding shares issued pursuant to that transaction. That redemption right will be cancelled upon the effectiveness of our offering. Dr. Kent Murphy, our President, Chief Executive Officer, Secretary and Treasurer, was also Chairman of the Board of Directors of Luna Technologies immediately prior to the acquisition and a former stockholder of Luna Technologies. Shortly prior to this transaction, Dr. Murphy sold all of his shares of Luna Technologies stock to two other Luna Technologies stockholders for an aggregate purchase price of approximately $10,600; as a result, Dr. Murphy did not receive any additional shares of our common stock in connection with the transaction. Also, in connection with this transaction, John Goehrke, the Chief Executive Officer of Luna Technologies, became our Chief Operating Officer and Mark Froggatt, a founder and employee of Luna Technologies, became our Chief Technology Officer. All former employees of Luna Technologies as of September 30, 2005 who became employees of Luna Innovations after the transaction received options to purchase shares of our common stock, subject to a three year vesting schedule. An aggregate of 715,000 options were issued to former Luna Technologies employees in connection with this transaction. In addition, Mr. Goehrke received $75,000 from Luna Technologies as a bonus paid prior to close of that transaction, $150,000 from two other Luna Technologies stockholders and $25,000 from us as a signing bonus in connection with the transaction. Dr. Paul Torgersen, a member of our board of directors, was also a former stockholder in Luna Technologies and received common stock of Luna Innovations upon the same terms and conditions as other stockholders of Luna Technologies. Scott Graeff, a member of our board of directors, our Chief Financial Officer and Vice President, Corporate Development, was formerly acting Chief Financial Officer of Luna Technologies from August 2003 until July 2005. The number of shares of our common stock paid as consideration in the transaction were determined by arms-length negotiations with Columbia Capital, Novak Biddle Venture Partners and Envest Ventures, investors in and the three largest stockholders of Luna Technologies prior to the acquisition. A third-party appraiser estimated the value of Luna Technologies to be approximately $2.0 million as of September 30, 2005.

Financing Transactions

In August 2005, Carilion Health System purchased 2,639,688 shares of our Class C Common Stock for an aggregate purchase price of $7.0 million. In addition, Carilion Health System agreed to invest an additional $8.0 million in two tranches upon the achievement of certain milestones. Dr. Edward Murphy, Chairman and Chief Executive Officer of Carilion Health System became a member of our board of directors in connection with this transaction and was appointed chair of the Compensation Committee of our board of directors in October 2005. The purchase price for the securities were negotiated at arms length by the parties. In connection with this transaction, Scott Graeff, a member of our board of directors as of December 31, 2005 and our Chief Financial Officer and Vice President, Corporate Development received fully vested stock options to purchase 300,000 shares of our common stock.

In December 2005, we agreed with Carilion Health System to terminate the August 2005 Class C Common Stock Purchase Agreement, and Carilion Health System purchased an additional 1,131,294 shares of our Class C Common Stock for an aggregate purchase price of $3.0 million pursuant to a Class C Common Stock and Senior Convertible Promissory Note Purchase Agreement dated December 30, 2005. In addition, Carilion Health System invested $5.0 million aggregate principal amount in a series of senior convertible promissory notes. These notes accrue simple interest at a rate of 6.0% per year and are due and payable on December 30, 2009 or a later date if extended by the holders of a majority of the aggregate principal amount of the notes, absent acceleration due to an event of default. The holders of a majority of the aggregate principal amount of the notes may also extend the maturity date of these notes for one additional year by providing notice to us and may further extend the maturity date for up to an additional three consecutive one year periods if we are not eligible for or have elected not to pursue SBIR funding. After the first extension, if any, we will have the right to repay any accrued interest in cash rather than common stock. The holders of these notes have the option to convert their notes (subject to certain limitations) into shares of our common stock at maturity or upon the occurrence of certain events prior to this offering. In addition, the holders may convert their notes (subject to certain limitations) into shares of common stock if we are no longer eligible for SBIR grants or have not applied for an SBIR grant within the preceding 12 months. These notes entitle the holders to convert the principal amount of the notes into an aggregate of 1,885,490 shares of common stock and to convert accrued interest on the notes into up to an aggregate of 905,035 shares of our common stock. Under the terms of these notes, we agreed that we will not, without the prior written consent of the holders of a majority of the aggregate principal amount of the notes, draw down any amount under our existing senior secured revolving credit facility with First National Bank or incur additional indebtedness other than under certain limited conditions.

In addition, so long as Carilion Health System continues to hold any of the senior convertible promissory notes or 750,000 shares of voting common stock, and to the extent such technology is not restricted by other contractual arrangements in effect as of August 2, 2005, we have an obligation to disclose to Carilion Consolidated Laboratory for review on a confidential basis, that technology developed now or in the future by our employees or the employees of our affiliates which impacts, or has an application to, the clinical laboratory industry, at least sixty days prior to disclosing such technology to any third-party for purpose of commercialization. Carilion Consolidated Laboratory is an affiliate of Carilion Health System, and Dr. Edward Murphy, Chairman and Chief Executive Officer of Carilion Health System is a member of our board of directors.

Other Agreements with Executive Officers

Pursuant to that certain Cash Bonus Agreement dated March 21, 2003, by and between us and Michael Gunther, we were obligated to pay Mr. Gunther a fixed cash bonus over a period of three years, of which the last $180 thousand payment was made in January 2006. Mr. Gunther was formerly an executive officer, our Vice President of Operations, and he is currently our Vice President, Intellectual Property.

Lease

We have entered into an agreement with Carilion Medical Center to lease 20,000 square feet of office space currently being built at the Riverside Center in Roanoke, Virginia. The landlord of this property, Carilion Medical Center, is an affiliate of Carilion Health System, currently our second largest stockholder. Dr. Edward Murphy, Chairman and Chief Executive Officer of Carilion Health System became a member of our board of directors in connection with an investment by Carilion Health System in August 2005. Dr. Murphy was appointed chairman of the Compensation Committee of our board of directors in October 2005.

Registration Rights Agreements

In connection with the investment by Carilion Health System in August 2005 and their subsequent investment in December 2005, we entered into an amended and restated investor rights agreement dated as of December 30, 2005, with Carilion Health System and Dr. Kent Murphy. Dr. Murphy is our President, Chief Executive Officer, Secretary, Treasurer and

Chairman and is also our largest individual stockholder. Pursuant to this agreement, under certain circumstances Carilion Health System and Dr. Kent Murphy are entitled to require us to register their shares of common stock under the securities laws for resale.

In connection with the acquisition of Luna Technologies in September 2005, we granted the former stockholders of Luna Technologies certain registration rights in the event we elect to file a registration statement for our common stock. Such rights are set forth in that certain Stock Purchase Agreement dated as of September 30, 2005 with the former stockholders of Luna Technologies. Unlike Carilion Health System, the former Luna Technologies stockholders do not have the right to require us to register their shares of common stock for resale if we are not otherwise filing a registration statement to sell securities. For additional information, see “Description of capital stock—Registration Rights.”

Indemnification Agreements

We have entered into an indemnification agreement with each of our directors and officers. The indemnification agreements and our amended and restated certificate of incorporation and bylaws require us to indemnify our directors and officers to the fullest extent permitted by Delaware law.

Principal stockholders

The following table sets forth certain information with respect to beneficial ownership of our common stock, as of December 31, 2005, after giving effect to the conversion of our Class A Common Stock, Class B Common Stock and Class C Common Stock into shares of our common stock, by:

- each beneficial owner of 5% or more of the outstanding shares of our common stock;
- each of our directors;
- each of our named executive officers; and
- all of our executive officers and directors as a group.

Beneficial ownership is determined in accordance with the rules of the SEC. In computing the number of shares beneficially owned by a person and the percentage ownership of that person, shares of common stock subject to options or warrants held by that person that are currently exercisable or exercisable within 60 days of December 31, 2005 are deemed outstanding, but are not deemed outstanding for computing the percentage ownership of any other person. Percentage of beneficial ownership is based upon 10,630,935 shares of common stock outstanding as of December 31, 2005 after giving effect to the conversion of our Class A Common Stock, Class B Common Stock and Class C Common Stock into shares of our common stock. To our knowledge, except as set forth in the footnotes to this table and subject to applicable community property laws, each person named in the table has sole voting and investment power with respect to the shares set forth opposite such person's name. Except as otherwise indicated, the address of each of the persons in this table is c/o Luna Innovations Incorporated, 10 South Jefferson Street, Suite 130, Roanoke, Virginia 24011.

	Beneficial Ownership Before Offering		Beneficial Ownership After Offering			
			Excluding Exercise of Over-allotment Option		Including Exercise of Over-allotment Option	
Name and Address of Beneficial Owner	Number of Shares	%	Number of Shares	%	Number of Shares	%
Carilion Health System(1) c/o Carilion Roanoke Memorial Hospital First Floor Roanoke, Virginia 24033	3,770,982	35.5%				
Kent A. Murphy, Ph.D.	4,665,636	43.9%				
Scott A. Graeff(2)	300,000	2.8%				
Scott A. Meller(3)	416,248	3.8%				
Robert P. Lenk, Ph.D.	—	*				
John C. Backus, Jr.	—	*				
Edward G. Murphy, M.D.	—	*				
Richard W. Roedel	—	*				
Paul E. Torgersen, Ph.D.(4)	38,500	*				
Stephen R. Wilson, Ph.D.	—	*				
Michael F. Gunther	348,000	3.3%				
All executive officers and directors as a group (10 persons)(5)	5,420,384	47.6%				

* Represents less than 1% of the outstanding shares of common stock.

(1) Does not include $5.0 million aggregate principal amount of senior convertible promissory notes which convert into up to 1,885,490 shares of common stock or accrued interest on the notes into up to an aggregate of 905,035 shares of common stock.

(2) Includes 300,000 shares subject to options that are immediately exercisable or exercisable within 60 days of December 31, 2005.
(3) Includes 416,248 shares subject to options that are immediately exercisable or exercisable within 60 days of December 31, 2005.
(4) Includes 38,500 shares subject to options that are immediately exercisable or exercisable within 60 days of December 31, 2005.
(5) Includes 754,748 shares subject to options that are immediately exercisable or exercisable within 60 days of December 31, 2005.

Description of capital stock

The following information describes our common stock and preferred stock, as well as our convertible securities and options and warrants to purchase our common stock and provisions of our amended and restated certificate of incorporation and bylaws. This description is only a summary. You should also refer to our amended and restated certificate of incorporation and bylaws, which have been filed with the Securities and Exchange Commission as exhibits to our registration statement, of which this prospectus forms a part.

Upon the completion of this offering our authorized capital stock will consist of 100,000,000 shares of common stock with a $0.001 par value per share, and 5,000,000 shares of preferred stock with a $0.001 par value per share.

Common Stock

As of December 31, 2005, after giving effect to the conversion of all outstanding Class A Common Stock, Class B Common Stock and Class C Common Stock into shares of common stock, there were an aggregate of 10,630,935 shares of common stock outstanding that were held of record by 39 stockholders. An additional 122,745 shares of Class B Common Stock issued or reserved for issuance in connection with the acquisition of Luna Technologies, Inc. were held in escrow on that date and will be cancelled prior to the completion of this offering. After giving effect to the sale of common stock offered in this offering, there will be shares of common stock outstanding. As of December 31, 2005, there were outstanding options to purchase a total of 7,033,517 shares of our Class B Common Stock under our 2003 Stock Plan, which options will be automatically converted into options to purchase shares of our common stock upon completion of this offering. In addition, after December 31, 2005, we granted 1,537,250 additional options to purchase shares pursuant to our 2003 Stock Plan and adopted our 2006 Equity Incentive Plan.

Holders of common stock are entitled to one vote for each share held of record on all matters submitted to a vote of the stockholders. Our stockholders do not have cumulative voting rights in the election of directors. Accordingly, holders of a majority of the shares voting are able to elect all directors being elected at such time. Subject to preferences that may be granted to any then outstanding preferred stock, holders of common stock are entitled to receive ratably only those dividends as may be declared by the board of directors out of funds legally available therefor. See “Dividend policy.” In the event of our liquidation, dissolution or winding up, holders of common stock are entitled to share ratably in all of our assets remaining after we pay our liabilities and distribute the liquidation preference of any then outstanding preferred stock. Holders of common stock have no preemptive or other subscription or conversion rights. Upon the completion of this offering, there will be no redemption or sinking fund provisions applicable to the common stock.

Preferred Stock

Upon the completion of this offering, our board of directors will have the authority, without further action by the stockholders, to issue up to 5,000,000 shares of preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions thereof. These rights, preferences and privileges could include dividend rights, conversion rights, voting rights, terms of redemption, liquidation preferences, sinking fund terms and the number of shares constituting any series or the designation of such series, any or all of which may be greater than the rights of common stock. The issuance of preferred stock could adversely affect the voting power of holders of common stock and the likelihood that such holders will receive dividend payments and payments upon liquidation. In addition, the issuance of preferred stock could have the effect of delaying, deferring or preventing a change in our control or other corporate action. Upon completion of this offering, no shares of preferred stock will be outstanding, and we have no present plan to issue any shares of preferred stock.

Warrants

As of December 31, 2005, there were outstanding warrants (not subject to escrow) to purchase 6,494 shares of our common stock at a weighted-average exercise price of $12.92 per share held by two warrantholders of record. In addition, there were outstanding warrants to purchase 429 shares of common stock at an exercise price of $21.06 held in escrow as of December 31, 2005. On February 8, 2006, we granted warrants for 101,773 shares of our common stock with an exercise price of $1.00 per share to certain of our stockholders. No other warrants remain outstanding or will be exercisable following the completion of this offering.

Senior Convertible Promissory Notes

As of December 31, 2005, we had $5.0 million aggregate principal amount of a series of senior convertible promissory notes outstanding. The holders of these notes have the option to convert their notes (subject to certain limitations) into shares of common stock at maturity or upon the occurrence of certain events prior to this offering. In addition, the holders may convert their notes (subject to certain limitations) into shares of common stock if we are no longer eligible for SBIR grants or have not applied for an SBIR grant within the preceding 12 months. These notes entitle the holders to convert the principal amount of the notes into an aggregate of 1,885,490 shares of common stock and to convert accrued interest on the notes into up to an aggregate of 905,035 shares of our common stock.

Registration Rights

After the closing of this offering, the holders of approximately 9,541,510 shares of our common stock will be entitled to certain rights with respect to the registration of such shares under the Securities Act. All of these holders may require us to register the resale of all or a portion of their shares on Form S-3, subject to certain conditions and limitations. Of these holders, the holders of approximately 8,436,618 shares of our common stock have additional registration rights. For example, in the event that we propose to register any of our securities under the Securities Act, either for our own account or for the account of other security holders, the holders of these approximately 8,436,618 shares are entitled to notice of such registration and are entitled to include their common stock in such registration, subject to certain marketing and other limitations. Beginning 180 days after the closing of this offering, the holders of at least 50% of such 8,436,618 shares of our common stock have the right to require us, on not more than two occasions, to file a registration statement on Form S-1 under the Securities Act in order to register the resale of their shares of common stock. We may, in certain circumstances, defer such registrations and the underwriters have the right, subject to certain limitations, to limit the number of shares included in such registrations. In addition, these holders have certain “piggyback” registration rights. If we propose to register any of our equity securities under the Securities Act other than pursuant to the registration rights noted above or specified excluded registrations, these holders may require us to include all or a portion of their registrable securities in the registration and in any related underwriting. In an underwritten offering, the managing underwriter, if any, has the right, subject to specified conditions, to limit the number of registrable securities such holders may include. Additionally, such piggyback registrations are subject to delay or termination of the registration under certain circumstances. The underwriters named in this prospectus have notified us that no holders of registration rights will be permitted to include any of their shares in this offering.

Anti-Takeover Effects of Provisions of the Amended and Restated Certificate of Incorporation and Bylaws

Our amended and restated certificate of incorporation, to be effective upon completion of this offering, will provide for our board of directors to be divided into three classes, with staggered three-year terms. Only one class of directors will be elected at each annual meeting of our stockholders, with the other classes continuing for the remainder of their respective three-year terms. Because our stockholders do not have cumulative voting rights, our stockholders representing a majority of the shares of common stock outstanding will be able to elect all of our directors. Our amended and restated certificate of incorporation and bylaws, to be effective upon completion of this offering, will provide that only our board of directors, chairman of the board, chief executive officer or president (in the absence of a chief executive officer) may call a special meeting of stockholders. Our amended and restated certificate of incorporation, to be effective upon completion of this offering, will require a 66 2/3% stockholder vote for the amendment, repeal or modification of certain provision of our amended and restated certificate of incorporation and bylaws relating to the absence of cumulative voting, the classification of our board of directors, and the designated parties entitled to call a special meeting of the stockholders.

The combination of a classified board, the lack of cumulative voting and the 66 2/3% stockholder voting requirements will make it more difficult for our existing stockholders to replace our board of directors as well as for another party to obtain control of us by replacing our board of directors. Since our board of directors has the power to retain and discharge our

officers, these provisions could also make it more difficult for existing stockholders or another party to effect a change in management. In addition, the authorization of undesignated preferred stock makes it possible for our board of directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to change our control.

These provisions may have the effect of deterring hostile takeovers or delaying changes in our control or management. These provisions are intended to enhance the likelihood of continued stability in the composition of our board of directors and in the policies they implement, and to discourage certain types of transactions that may involve an actual or threatened change of our control. These provisions are designed to reduce our vulnerability to an unsolicited acquisition proposal. The provisions also are intended to discourage certain tactics that may be used in proxy fights. However, such provisions could have the effect of discouraging others from making tender offers for our shares and, as a consequence, they also may inhibit fluctuations in the market price of our shares that could result from actual or rumored takeover attempts. Such provisions may also have the effect of preventing changes in our management.

Section 203 of the General Corporation Law of the State of Delaware

We are subject to Section 203 of the General Corporation Law of the State of Delaware, which prohibits a Delaware corporation from engaging in any business combination with any interested stockholder for a period of three years after the date that such stockholder became an interested stockholder, with the following exceptions:

- before such date, the board of directors of the corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;
- upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction began, excluding for purposes of determining the voting stock outstanding (but not the outstanding voting stock owned by the interested stockholder) those shares owned (i) by persons who are directors and also officers and (ii) employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- on or after such date, the business combination is approved by the board of directors and authorized at an annual or special meeting of the stockholders, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock that is not owned by the interested stockholder.

In general, Section 203 defines business combination to include the following:

- any merger or consolidation involving the corporation and the interested stockholder;
- any sale, lease, exchange, mortgage, transfer, pledge or other disposition of 10% or more of either the assets or outstanding stock of the corporation involving the interested stockholder;
- subject to certain exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;
- any transaction involving the corporation that has the effect of increasing the proportionate share of the stock of any class or series of the corporation beneficially owned by the interested stockholder; or
- the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits by or through the corporation.

In general, Section 203 defines interested stockholder as an entity or person who, together with affiliates and associates, beneficially owns, or within three years prior to the determination of interested stockholder status did own, 15% or more of the outstanding voting stock of the corporation.

Nasdaq National Market Listing

Application has been made for quotation of our common stock on The Nasdaq National Market under the symbol “LUNA.”

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company. Its address is 59 Maiden Lane, Plaza Level, New York, NY 10038, and its telephone number is (800) 937-5449.

Shares eligible for future sale

We will have shares of common stock outstanding after the completion of this offering (shares if the underwriters' over-allotment is exercised in full). Of those shares, the shares of common stock sold in the offering (shares if the underwriters' over-allotment option is exercised in full) will be freely transferable without restriction, unless purchased by persons deemed to be our "affiliates" as that term is defined in Rule 144 under the Securities Act. Any shares purchased by an affiliate may not be resold except pursuant to an effective registration statement or an applicable exemption from registration, including an exemption under Rule 144 promulgated under the Securities Act. The remaining shares of common stock to be outstanding immediately following the completion of this offering are "restricted," which means they were originally sold in offerings that were not registered under the Securities Act. Restricted shares may be sold through registration under the Securities Act or under an available exemption from registration, such as provided through Rule 144, which rules are summarized below. Taking into account the 180-day lock up agreements described below, and assuming the underwriters do not release any stockholders from these agreements, shares of our common stock will be available for sale in the public market as follows:

- shares will be immediately eligible for sale in the public market without restriction pursuant to Rule 144(k);
- additional shares will be eligible for sale in the public market under Rule 144 or Rule 701 beginning 90 days after the date of this prospectus, subject to volume, manner of sale, and other limitations under those rules;
- additional shares will become eligible for sale, subject to the provisions of Rule 144, Rule 144(k) or Rule 701, beginning 180 days after the date of this prospectus, upon the expiration of agreements not to sell such shares entered into between the underwriters and such stockholders; and
- additional shares will be eligible for sale from time to time thereafter upon expiration of their respective one-year holding periods, but could be sold earlier if the holders exercise any available registration rights. Of such shares subject to the provisions of Rule 144, 2,639,688 and 1,131,294 shares may be sold by Carilion Health System beginning August 4, 2006 and December 30, 2006, respectively, and 183,120 shares may be sold by three individuals beginning November 22, 2006.

Rule 144

In general, under Rule 144, as currently in effect, beginning 90 days after the effective date of this offering, a person (or persons whose shares are aggregated), including an affiliate, who has beneficially owned shares of our common stock for one year or more, may sell in the open market within any three-month period a number of shares that does not exceed the greater of:

- one percent of the then outstanding shares of our common stock (approximately shares immediately after the offering); or
- the average weekly trading volume in the common stock on The Nasdaq National Market during the four calendar weeks preceding the sale.

Sales under Rule 144 are also subject to certain limitations on the manner of sale, notice requirements and the availability of our current public information.

Rule 144(k)

Under Rule 144(k), a person (or persons whose shares are aggregated) who is deemed not to have been our affiliate at any time during the 90 days preceding a sale by him and who has beneficially owned his shares for at least two years, may sell the shares in the public market without regard to the volume limitations, manner of sale provisions, notice requirements or the availability of current public information we refer to above.

Rule 701

Any of our employees, officers, directors or consultants who purchased his or her shares before the completion of this offering or who holds options as of that date pursuant to a written compensatory plan or contract is entitled to rely on the resale provisions of Rule 701, which permits non-affiliates to sell their Rule 701 shares without having to comply with the public information, holding period, volume limitation or notice provisions of Rule 144 and permits affiliates to sell their Rule 701 shares without having to comply with Rule 144's holding-period restrictions, in each case commencing 90 days after completion of this offering. Neither Rule 144, Rule 144(k) nor Rule 701 supersedes the contractual obligations of our security holders set forth in the lock-up agreements described below.

Stock Options

Within three months following the completion of this offering, we intend to file a registration statement on Form S-8 under the Securities Act to register 12,715,000 shares of common stock reserved for issuance under our 2003 Stock Plan (including an increase of 1,715,000 shares since December 31, 2005) and 2006 Equity Incentive Plan, thus permitting the resale of such shares.

Prior to the completion of this offering, there has been no public market for our common stock, and any sale of substantial amounts in the open market may adversely affect the market price of our common stock offered hereby.

Warrants

In addition, holders of warrants exerciseable for up to 101,773 shares of common stock may exercise their rights and subsequently sell the underlying shares in the public market.

Lock-Up Agreements

Subject to certain exceptions, each of our officers, directors and security holders have agreed not to offer to sell, sell, pledge, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right, or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, any shares of our common stock or any securities convertible into or exercisable or exchangeable for our common stock, or enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of our common stock, whether any transaction is to be settled by delivery of our common stock or other securities, in cash or otherwise, without the prior written consent of ThinkEquity Partners LLC for a period of 180 days after the date of this prospectus. Notwithstanding the foregoing, for the purpose of allowing the underwriters to comply with NASD Rule 2711(f)(4), if (1) during the last 17 days of the initial 180-day lock-up period, we release earnings results or material news or a material event relating to us occurs or (2) prior to the expiration of the initial 180-day lock-up period, we announce that we will release earnings results during the 16-day period beginning on the last day of the initial 180-day lock-up period, then in each case the initial 180-day lock-up period will be extended until the expiration of the 18-day period beginning on the date of release of the earnings results or the occurrence of the material news or material event, as applicable.

Stock Sale Restriction Agreements

In addition, employees holding options exercisable for shares of our common stock have entered into an agreement not to sell more than 20.0% of such shares in any year during the five years following the effective date of this offering, provided, any share subject to such annual limit not sold in a year may be sold in subsequent years notwithstanding such limitation. Certain members of our management holding options exercisable for shares of our common stock have entered into an agreement not to sell more than 15.0% of such shares in any year during the five years following the effective date of this offering, provided, any share subject to such annual limit not sold in a year may be sold in subsequent years notwithstanding such limitation. We have the right to waive any of these resale restrictions for employees and management at our discretion, and in such instance, the shares would become freely tradable.

Registration Rights

After the offering, the holders of approximately 8,436,618 shares of our common stock will be entitled to registration rights. For more information on these registration rights, see "Description of capital stock—Registration Rights."

U.S. federal income and estate tax consequences to non-U.S. holders

This section summarizes certain material U.S. federal income and estate tax considerations relating to the ownership and disposition of common stock by non-U.S. holders. This summary does not provide a complete analysis of all potential tax considerations. The information provided below is based on existing authorities. These authorities may change, or the IRS might interpret the existing authorities differently. In either case, the tax considerations of owning or disposing of common stock could differ from those described below. For purposes of this summary, a "non-U.S. holder" is any holder other than a citizen or resident of the United States, a corporation organized under the laws of the United States or any state, a trust that is (i) subject to the primary supervision of a U.S. court and the control of one of more U.S. persons or (ii) has a valid election in effect under applicable U.S. Treasury regulations to be treated as a U.S. person or an estate whose income is subject to U.S. income tax regardless of source. If a partnership or other flow-through entity is a beneficial owner of common stock, the tax treatment of a partner in the partnership or an owner of the entity will depend upon the status of the partner or other owner and the activities of the partnership or other entity. The summary generally does not address tax considerations that may be relevant to particular investors because of their specific circumstances, or because they are subject to special rules. Finally, the summary does not describe the effects of any applicable foreign, state or local laws.

INVESTORS CONSIDERING THE PURCHASE OF COMMON STOCK SHOULD CONSULT THEIR OWN TAX ADVISORS REGARDING THE APPLICATION OF THE U.S. FEDERAL INCOME AND ESTATE TAX LAWS TO THEIR PARTICULAR SITUATIONS AND THE CONSEQUENCES OF FOREIGN, STATE, OR LOCAL LAWS AND TAX TREATIES.

Dividends

Any dividend paid to a non-U.S. holder on our common stock will generally be subject to U.S. withholding tax at a 30% rate. The withholding tax might not apply, however, or might apply at a reduced rate, if the non-U.S. holder satisfies the applicable conditions under the terms of an applicable income tax treaty between the United States and the non-U.S. holder's country of residence. A non-U.S. holder must demonstrate its entitlement to treaty benefits by providing a properly completed Form W-8BEN or appropriate substitute form to us or our paying agent. If the holder holds the stock through a financial institution or other agent acting on the holder's behalf, the holder will be required to provide appropriate documentation to the agent. The holder's agent will then be required to provide certification to us or our paying agent, either directly or through other intermediaries. For payments made to a foreign partnership or other flowthrough entity, the certification requirements generally apply to the partners or other owners rather than to the partnership or other entity, and the partnership or other entity must provide the partners' or other owners' documentation to us or our paying agent. Special rules, described below, apply if a dividend is effectively connected with a U.S. trade or business conducted by the non-U.S. holder.

Sale of Common Stock

Non-U.S. holders will generally not be subject to U.S. federal income tax on any gains realized on the sale, exchange, or other disposition of common stock. This general rule, however, is subject to several exceptions. For example, the gain would be subject to U.S. federal income tax if:

- the gain is effectively connected with the conduct by the non-U.S. holder of a U.S. trade or business (in which case the special rules described below under the caption "Dividends or Gains Effectively Connected with a U.S. Trade or Business" apply);
- the non-U.S. holder was a citizen or resident of the United States and thus is subject to special rules that apply to expatriates;
- subject to certain exceptions, the non-U.S. holder is an individual who is present in the United States for 183 days or more in the year of disposition, in which case the gain would be subject to a flat 30% tax, which may be offset by U.S. source capital losses, even though the individual is not considered a resident of the U.S.; or
- the rules of the Foreign Investment in Real Property Tax Act, or FIRPTA, described below, treat the gain as effectively connected with a U.S. trade or business.

The FIRPTA rules may apply to a sale, exchange or other disposition of common stock if we are, or were within five years before the transaction, a "U.S. real property holding corporation," or USRPHC. In general, we would be a USRPHC if interests in U.S. real estate comprised most of our assets. We do not believe that we are a USRPHC or that we will become one in the future.

Dividends or Gain Effectively Connected With a U.S. Trade or Business

If any dividend on common stock, or gain from the sale, exchange or other disposition of common stock, is effectively connected with a U.S. trade or business conducted by the non-U.S. holder, then the dividend or gain will be subject to U.S. federal income tax at the regular graduated rates. If the non-U.S. holder is eligible for the benefits of an income tax treaty between the United States and the holder's country of residence, any "effectively connected" dividend or gain would generally be subject to U.S. federal income tax only if it is also attributable to a permanent establishment or fixed base maintained by the holder in the United States. Payments of dividends that are effectively connected with a U.S. trade or business, and therefore included in the gross income of a non-U.S. holder, will not be subject to the 30 percent withholding tax. To claim exemption from withholding, the holder must certify its qualification, which can be done by filing a Form W-8ECI. If the non-U.S. holder is a corporation, that portion of its earnings and profits that is effectively connected with its U.S. trade or business would generally be subject to a "branch profits tax" in addition to any regular U.S. federal income tax on the dividend or gain. The branch profits tax rate is generally 30 percent, although an applicable income tax treaty might provide for a lower rate.

U.S. Federal Estate Tax

The estates of nonresident alien individuals are generally subject to U.S. federal estate tax on property with a U.S. situs. Because we are a U.S. corporation, our common stock will be U.S. situs property and therefore will be included in the taxable estate of a nonresident alien decedent. The U.S. federal estate tax liability of the estate of a nonresident alien may be affected by a tax treaty between the United States and the decedent's country of residence.

Backup Withholding and Information Reporting

The Code and the Treasury regulations require those who make specified payments to report the payments to the IRS. Among the specified payments are dividends and proceeds paid by brokers to their customers. The required information returns enable the IRS to determine whether the recipient properly included the payments in income. This reporting regime is reinforced by "backup withholding" rules. These rules require the payors to withhold tax from payments subject to information reporting if the recipient fails to cooperate with the reporting regime by failing to provide his taxpayer identification number to the payor, furnishing an incorrect identification number, or repeatedly failing to report interest or dividends on his returns. The withholding tax rate is currently 28 percent. The backup withholding rules do not apply to payments to corporations, whether domestic or foreign.

Payments to non-U.S. holders of dividends on common stock will generally not be subject to backup withholding, and payments of proceeds made to non-U.S. holders by a broker upon a sale of common stock will not be subject to information reporting or backup withholding, in each case so long as the non-U.S. holder certifies its nonresident status. Some of the common means of certifying nonresident status are described under "—Dividends." We must report annually to the IRS any dividends paid to each non-U.S. holder and the tax withheld, if any, with respect to such dividends. Copies of these reports may be made available to tax authorities in the country where the non-U.S. holder resides.

Any amounts withheld from a payment to a holder of common stock under the backup withholding rules can be credited against any U.S. federal income tax liability of the holder.

THE PRECEDING DISCUSSION OF U.S. FEDERAL INCOME TAX CONSIDERATIONS IS FOR GENERAL INFORMATION ONLY IT IS NOT TAX ADVICE. EACH PROSPECTIVE INVESTOR SHOULD CONSULT ITS OWN TAX ADVISOR REGARDING THE PARTICULAR U.S. FEDERAL, STATE, LOCAL, AND FOREIGN TAX CONSEQUENCES OF PURCHASING, HOLDING, AND DISPOSING OF OUR COMMON STOCK, INCLUDING THE CONSEQUENCES OF ANY PROPOSED CHANGE IN APPLICABLE LAWS.

Underwriting

ThinkEquity Partners LLC is acting as sole book-runner of this offering, and, together with WR Hambrecht + Co, LLC and Merriman Curhan Ford & Co., are acting as representatives of the underwriters named below. Subject to the terms and conditions stated in the underwriting agreement, each underwriter named below has agreed to purchase, and we have agreed to sell to that underwriter, the number of shares of common stock set forth opposite that underwriter's names.

Underwriters	Number of Shares
ThinkEquity Partners LLC	
WR Hambrecht + Co, LLC	
Merriman Curhan Ford & Co.	
Total	

The underwriting agreement provides that the obligations of the underwriters to purchase the shares included in this offering are subject to approval of legal matters by counsel and to other conditions. The underwriters are obligated to purchase all the shares, other than those covered by the over-allotment option described below, if they purchase any of the shares.

The underwriters have advised us that they propose to offer the shares initially to the public at $ per share. The underwriters propose to offer the shares to certain dealers at the same price less a concession of not more than $ per share. The underwriters may allow and the dealers may reallow a concession of not more than $ per share on sales to certain other brokers and dealers. If all the shares are not sold at the initial public offering price, the representatives may change the offering price and other selling terms.

We have granted to the underwriters an over-allotment option to purchase up to an additional shares of our common stock from us at the same price as to the public, and with the same underwriting discount, as set forth on the front cover of this prospectus. The underwriters may exercise this option any time during the 30-day period after the date of this prospectus, but only to cover over-allotments, if any. To the extent the underwriters exercise the option, each underwriter will become obligated, subject to certain conditions, to purchase approximately the same percentage of the additional shares as it was obligated to purchase under the underwriting agreement.

Each underwriter has represented, warranted and agreed that:

- it has not offered or sold and, prior to the expiry of a period of 12 months from the closing date, will not offer or sell any shares included in this offering to any persons in the United Kingdom other than to qualified investors (within the meaning of 586(7) of the Financial Services and Markets Act 2000, or FSMA, or otherwise in circumstances which do not comprise an offer of transferable securities to the public for the purposes of 585(1) FSMA;
- it has only communicated and caused to be communicated and will only communicate or cause to be communicated any invitation or inducement to engage in investment activity (within the meaning of section 21 of the Financial Services and Markets Act 2000 ("FSMA")) received by it in connection with the issue or sale of any shares included in this offering in circumstances in which section 21(1) of the FSMA does not apply to us; and
- it has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the shares included in this offering in, from or otherwise involving the United Kingdom.

We have applied to have our common stock included for quotation on The Nasdaq National Market under the symbol "LUNA."

Underwriting

The following table shows the underwriting discount and commissions to be paid to the underwriters in connection with this offering. These amounts are shown assuming both no exercise and full exercise of the over-allotment option.

	No Exercise	Full Exercise
Per share	$	$
Total to be paid by us	$	$

We estimate that the total expenses of this offering payable by us, excluding the underwriting discount and commissions, will be approximately $. We have agreed to indemnify the underwriters against certain liabilities that may be based upon an untrue statement of material fact contained in this prospectus, including civil liabilities under the Securities Act, or to contribute to payments that the underwriters may be required to make in respect of those liabilities.

The underwriters have informed us that neither they, nor any other underwriter participating in the distribution of this offering, will make sales of our common stock offered by this prospectus to accounts over which they exercise discretionary authority without the prior specific written approval of the customer.

The offering of our shares of common stock is made for delivery when and if accepted by the underwriters and subject to prior sale and to withdrawal, cancellation, or modification of this offering without notice. The underwriters reserve the right to reject an order for the purchase of shares in whole or part.

Subject to certain exceptions, we and each of our officers, directors and security holders, have agreed not to offer to sell, sell, pledge, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right, or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, any shares of our common stock or any securities convertible into or exercisable or exchangeable for our common stock, or enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of our common stock, whether any transaction is to be settled by delivery of common stock or other securities, in cash or otherwise, without the prior written consent of ThinkEquity Partners LLC for a period of 180 days after the date of this prospectus. Notwithstanding the foregoing, for the purpose of allowing the underwriters to comply with NASD Rule 2711(f)(4), if (1) during the last 17 days of the initial 180-day lock-up period, we release earnings results or material news or a material event relating to us occurs or (2) prior to the expiration of the initial 180-day lock-up period, we announce that we will release earnings results during the 16-day period beginning on the last day of the initial 180-day lock-up period, then in each case the initial 180-day lock-up period will be extended until the expiration of the 18-day period beginning on the date of release of the earnings results or the occurrence of the material news or material event, as applicable.

Prior to this offering, there has been no established trading market for our common stock. The initial public offering price for the shares of our common stock offered by this prospectus was negotiated between us and the underwriters immediately prior to this offering. Factors considered in determining the initial public offering price included:

- the history of, and the prospects for, the markets in which we compete;
- our past and present operations;
- our historical results of operations;
- our prospects for future earnings;
- the recent market prices of securities of generally comparable companies; and
- the general condition of the securities markets at the time of this offering and other relevant factors.

The initial public offering price of our common stock may not correspond to the price at which our common stock will trade in the public market subsequent to this offering, and an active public market for our common stock may never develop or, if it does develop, continue after this offering.

Underwriting

To facilitate this offering, the underwriters may engage in transactions that stabilize, maintain, or otherwise affect the price of our common stock during and after this offering. Specifically, the underwriters may over-allot or otherwise create a short position in our common stock for their own account by selling more shares of our common stock than have been sold to them by us. Short sales involve the sale by the underwriters of a greater number of shares than they are required to purchase in this offering. “Covered” short sales are sales made in an amount not greater than the underwriters’ option to purchase additional shares from us in this offering. The underwriters may close out any covered short position by either exercising their option to purchase additional shares or purchasing shares in the open market. In determining the source of shares to close out the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the over-allotment option. “Naked” short sales are sales in excess of this option. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of our common stock in the open market after pricing that could adversely affect investors who purchase in this offering.

In addition, the underwriters may stabilize or maintain the price of our common stock by bidding for or purchasing shares of our common stock in the open market and may impose penalty bids. If penalty bids are imposed, selling concessions allowed to syndicate members or other broker-dealers participating in this offering are reclaimed if shares of our common stock previously distributed in this offering are repurchased, whether in connection with stabilization transactions or otherwise. The effect of these transactions may be to stabilize or maintain the market price of our common stock at a level above that which might otherwise prevail in the open market. The imposition of a penalty bid may also affect the price of our common stock to the extent that it discourages resales of our common stock. The magnitude or effect of any stabilization or other transactions is uncertain. These transactions may be effected on The Nasdaq National Market or otherwise and, if commenced, may be discontinued at any time.

Other than in connection with this offering, the underwriters have not performed investment banking and advisory services for us. The underwriters may, from time to time, engage in transactions with and perform services for us in the ordinary course of their business.

A prospectus in electronic format may be made available on the Internet sites or through other online services maintained by the underwriters participating in this offering or by their affiliates. In those cases, prospective investors may view offering terms and this prospectus online and, depending upon the underwriter, prospective investors may be allowed to place orders online or through their financial advisor. The underwriters may agree with us to allocate a specific number of shares for sale to online brokerage account holders. Any such allocation for online distributions will be made by the underwriters on the same basis as other allocations.

Other than this prospectus in electronic format, the information on any underwriter’s website and any information contained in any other website maintained by the underwriters is not part of this prospectus or the registration statement of which the prospectus forms a part, has not been approved or endorsed by us or the underwriters in its capacity as underwriter and should not be relied upon by investors.

Legal matters

The validity of the shares of common stock offered hereby has been passed upon for Luna Innovations Incorporated by Wilson Sonsini Goodrich & Rosati, Professional Corporation, Reston, Virginia. Various legal matters relating to the offering will be passed upon for the underwriters by DLA Piper Rudnick Gray Cary US LLP, New York, New York.

Experts

Grant Thornton LLP, an independent registered public accounting firm, has audited our consolidated financial statements at December 31, 2003 and 2004, and for each of the three years during the period ended December 31, 2004, as set forth in their report. We have included our consolidated financial statements in this prospectus and elsewhere in the registration statement in reliance on Grant Thornton LLP's report, given on their authority as experts in accounting and auditing.

Brown, Edwards & Company, L.L.P., an independent registered public accounting firm, has audited the financial statements of Luna Technologies, Inc. at December 31, 2004, and for the year ended December 31, 2004 as set forth in their report. We have included the financial statements of Luna Technologies, Inc. in this prospectus and elsewhere in the registration statement in reliance on Brown, Edwards & Company, L.L.P.'s report, given on their authority as experts in accounting and auditing.

Where you can find more information

We have filed a registration statement on Form S-1 with the SEC for the stock we are offering by this prospectus. This prospectus does not include all of the information contained in the registration statement. You should refer to the registration statement and its exhibits for additional information. Whenever we make reference in this prospectus to any of our contracts, agreements or other documents, the references are not necessarily complete and you should refer to the exhibits attached to the registration statement for copies of the actual contract, agreement or other document. When we complete this offering, we will also be required to file annual, quarterly and special reports, proxy statements and other information with the SEC.

You can read our SEC filings, including the registration statement, over the Internet at the SEC's web site at www.sec.gov. You may also read and copy any document we file with the SEC at its public reference facilities at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. You may also obtain copies of the documents at prescribed rates by writing to the Public Reference Section of the SEC at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the public reference facilities.

Index to financial statements

Report of independent registered public accounting firm

Board of Directors and Shareholders

Luna Innovations Incorporated and Subsidiaries

We have audited the accompanying consolidated balance sheets of Luna Innovations Incorporated and Subsidiaries (the Company) as of December 31, 2003 and 2004, and the related consolidated statements of operations, changes in stockholders' equity and cash flows for each year of the three years in the period ended December 31, 2004. These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement. The Company is not required to have, nor were we engaged to perform an audit of its internal control over financial reporting. Our audits include consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the consolidated financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of Luna Innovations Incorporated and Subsidiaries as of December 31, 2003 and 2004, and the consolidated results of its operations and its cash flows for each of the three years in the period ended December 31, 2004, in conformity with accounting principles generally accepted in the United States of America.

/s/ Grant Thornton LLP

Vienna, Virginia
January 25, 2006

Luna Innovations Incorporated

Consolidated balance sheets

	December 31,		September 30,
	2003	2004	2005
			(unaudited)
Assets			
Current assets:			
Cash and cash equivalents	$642,177	$609,636	$6,564,010
Accounts receivable	1,790,869	3,023,205	4,325,169
Refundable income taxes	272,873	876,802	306,640
Deferred tax asset	1,352,764	—	—
Inventory	46,073	98,447	950,226
Other current assets	98,038	123,206	124,124
Total current assets	4,202,794	4,731,296	12,270,169
Property and equipment, net	934,651	2,045,648	2,677,622
Intangible assets, net	226,104	390,212	583,980
Deferred tax asset	47,883	472,855	477,213
Other assets	85,086	107,459	102,180
Total assets	**$5,496,518**	**$7,747,470**	**$16,111,164**
Liabilities and stockholders' equity (deficit)			
Current liabilities:			
Lines of credit	$1,000,000	$1,500,000	$1,500,000
Current portion of debt and capital lease obligation	68,530	96,177	88,163
Accounts payable	596,931	519,284	1,706,632
Accrued liabilities	735,836	1,742,094	932,327
Deferred tax liability	—	30,106	30,106
Deferred revenues	4,809,252	586,166	431,825
Total current liabilities	7,210,549	4,473,827	4,689,053
Long-term portion of debt and capital lease obligation	217,878	206,390	460,544
Deferred revenues	—	900,000	900,000
Total liabilities	7,428,427	5,580,217	6,049,597
Redeemable common stock, 548,896 shares at September 30, 2005	—	—	504,984
Stockholders' equity (deficit):			
Common stock; 45,830,143 shares authorized for the following classes:			
Class A voting Common Stock, par value $0.001; 5,015,318 shares, issued and outstanding at December 31, 2003 and 2004 and September 30, 2005	5,015	5,015	5,015
Class B non-voting Common Stock, par value $0.001; 118,750 shares issued and outstanding at December 31, 2003, 135,249 shares issued and outstanding at December 31, 2004, and 1,000,461 shares issued and outstanding at September 30, 2005	119	135	1,000
Class C voting Common Stock, par value $0.001; 2,639,688 issued and outstanding at September 30, 2005	—	—	2,640
Additional paid-in capital	211,954	254,918	7,909,280
Retained earnings (deficit)	(2,148,997)	1,907,185	1,638,648
Total stockholders' equity (deficit)	(1,931,909)	2,167,253	9,556,583
Total liabilities and stockholders' equity (deficit)	**$5,496,518**	**$7,747,470**	**$16,111,164**

The accompanying notes are an integral part of these consolidated financial statements.

Consolidated statements of operations

	Year Ended December 31,			Nine Months Ended September 30,	
	2002	2003	2004	2004	2005
				(unaudited)	
Revenues:					
Contract research revenues	$11,083,568	$10,358,044	$13,834,751	$10,158,874	$11,111,721
Product sales and license revenues	4,642,828	7,233,799	8,752,155	6,198,585	—
Total revenues	15,726,396	17,591,843	22,586,906	16,357,459	11,111,721
Cost of revenues:					
Contract research costs	9,143,421	8,949,378	10,985,164	7,681,981	8,539,567
Product sales and license costs	3,883,781	1,543,098	2,880,606	2,773,201	—
Total cost of revenues	13,027,202	10,492,476	13,865,770	10,455,182	8,539,567
Gross profit	2,699,194	7,099,367	8,721,136	5,902,277	2,572,154
Operating expense	4,491,241	4,856,110	4,189,629	3,134,548	2,952,666
Operating income (loss)	(1,792,047)	2,243,257	4,531,507	2,767,729	(380,512)
Other income (expense):					
Other income (expense)	21,719	705	117	109	(92)
Interest income (expense), net	(468,609)	(86,800)	(90,304)	(70,290)	(75,206)
Loss from equity method investees	(9,454)	(150,271)	(256,904)	(146,893)	—
Total other income (expense)	(456,344)	(236,366)	(347,091)	(217,074)	(75,298)
Income (loss) before minority interests and income taxes	(2,248,391)	2,006,891	4,184,416	2,550,655	(455,810)
Minority interests	28,485	11,265	—	—	—
Income (loss) before income taxes	(2,219,906)	2,018,156	4,184,416	2,550,655	(455,810)
Income tax expense (benefit)	(651,673)	885,882	128,234	76,520	(187,273)
Net income (loss)	$(1,568,233)	$1,132,274	$4,056,182	$2,474,135	$(268,537)
Net income (loss) per share:					
Basic	$(0.31)	$0.23	$0.79	$0.48	$(0.05)
Diluted	$(0.31)	$0.22	$0.59	$0.36	$(0.05)
Weighted average shares:					
Basic	5,092,545	5,030,428	5,136,001	5,134,984	5,713,926
Diluted	5,092,545	5,141,003	6,902,405	6,946,825	5,713,926

The accompanying notes are an integral part of these consolidated financial statements.

Consolidated statements of changes in stockholders' equity (deficit)

	Common Stock Class A		Common Stock Class B		Common Stock Class C		Additional Paid-in Capital	Retained Earnings (Deficit)	Total
	Shares	$	Shares	$	Shares	$			
Balance—December 31, 2001	5,363,318	$5,363	—	$—	—	$—	$193,975	$(1,713,038)	$(1,513,700)
Retirement of common stock	(348,000)	(348)	—	—	—	—	(5,652)	—	(6,000)
Net loss	—	—	—	—	—	—	—	(1,568,233)	(1,568,233)
Balance—December 31, 2002	5,015,318	5,015	—	—	—	—	188,323	(3,281,271)	(3,087,933)
Exercise of stock options	—	—	118,750	119	—	—	23,631	—	23,750
Net income	—	—	—	—	—	—	—	1,132,274	1,132,274
Balance—December 31, 2003	5,015,318	5,015	118,750	119	—	—	211,954	(2,148,997)	(1,931,909)
Exercise of stock options	—	—	16,499	16	—	—	3,284	—	3,300
Employee stock-based compensation	—	—	—	—	—	—	39,680	—	39,680
Net income	—	—	—	—	—	—	—	4,056,182	4,056,182
Balance—December 31, 2004	5,015,318	5,015	135,249	135			254,918	1,907,185	2,167,253
Exercise of stock options (unaudited)	—	—	382,874	383	—	—	76,192	—	76,575
Issuance of Class C Common Stock in conjunction with Carilion funding (unaudited)	—	—	—	—	2,639,688	2,640	6,997,360	—	7,000,000
Issuance of Class B Common Stock in conjunction with Luna Technologies acquisition (unaudited)	—	—	482,338	482	—	—	442,981	—	443,463
Stock based employee compensation (unaudited)	—	—	—	—	—	—	137,829	—	137,829
Net loss (unaudited)	—	—	—	—	—	—	—	(268,537)	(268,537)
Balance—September 30, 2005 (unaudited)	5,015,318	$5,015	1,000,461	$1,000	2,639,688	$2,640	$7,909,280	$1,638,648	$9,556,583

The accompanying notes are an integral part of these consolidated financial statements.

Consolidated statements of cash flows

	Year Ended December 31,			Nine Months Ended September 30,	
	2002	2003	2004	2004	2005
				(unaudited)	
Cash flows from (used in) operating activities:					
Net income (loss)	$(1,568,233)	$1,132,274	$4,056,182	$2,474,135	$(268,537)
Adjustments to reconcile to net cash provided by operating activities:					
Depreciation and amortization	276,151	346,937	381,052	269,140	355,026
Deferred income taxes	(2,458,092)	1,192,119	957,898	1,062,456	(4,358)
Loss on investments in and advances to affiliates	9,454	150,271	256,904	227,866	—
Minority interests	11,265	(11,265)	—	—	—
Stock based employee compensation	—	—	39,680	39,680	137,829
Change in:					
Accounts receivable	(478,787)	53,057	(1,232,336)	(1,103,317)	(509,743)
Refundable income taxes	—	(272,873)	(603,929)	192,740	570,162
Other assets	(49,080)	(70,857)	21,181	55,819	(406,035)
Accounts payable and accrued expenses	465,715	(592,299)	928,611	3,040,676	(175,595)
Deferred revenues	6,850,500	(2,041,248)	(3,323,086)	(2,821,341)	(154,341)
Net cash from (used in) operating activities	3,058,893	(113,884)	1,482,157	3,437,854	(455,592)
Cash flows from (used) in investing activities:					
Acquisition of property and equipment	(571,545)	(158,016)	(1,376,402)	(698,873)	(467,230)
Acquisition of intangible property	(47,177)	(156,906)	(192,101)	(195,423)	(159,749)
Net cash from acquisition of Luna Technologies	—	—	—	—	33,713
Investments in and advances to affiliates	—	(180,000)	(378,000)	(348,271)	—
Net cash used in investing activities	(618,722)	(494,922)	(1,946,503)	(1,242,567)	(593,266)
Cash flows from (used in) financing activities:					
Net change in line of credit	381,794	(2,331)	500,000	500,000	—
Principal payments on demand notes and capital lease obligation	(1,619,175)	(63,871)	(71,495)	(67,976)	(73,343)
Proceeds from exercise of stock options	—	23,750	3,300	3,300	76,575
Proceeds from issuance of common stock	—	—	—	—	7,000,000
Purchase of common stock	(6,000)	—	—	—	—
Net cash from (used in) financing activities	(1,243,381)	(42,452)	431,805	435,324	7,003,232
Net change in cash	1,196,790	(651,258)	(32,541)	2,630,611	5,954,374
Cash—beginning of period	96,645	1,293,435	642,177	642,177	609,636
Cash—end of period	$1,293,435	$642,177	$609,636	$3,272,788	$6,564,010
Supplemental disclosure of cash flow information					
Cash paid for interest	$500,575	$87,494	$95,967	$69,212	$72,151
Cash paid for income taxes	$1,141,700	$444,043	$30,000	$30,000	$25,927

The accompanying notes are an integral part of these consolidated financial statements.

Notes to consolidated financial statements

(Information for the nine months ended September 30, 2004 and 2005 is unaudited)

1. Organization and Summary of Significant Accounting Policies

Luna Innovations Incorporated ("Luna Innovations") was incorporated in the Commonwealth of Virginia in 1990 and subsequently reincorporated in the State of Delaware in April 2003. We are engaged in the research, development and commercialization of innovative technologies in the areas of molecular technology solutions and sensing solutions. We are organized into three main groups, which work closely together to turn ideas into products: our Contract Research Group, our Commercialization Strategy Group and our Products Group. We have a disciplined and integrated business model that is designed to accelerate the process of bringing new and innovative technologies to market. We identify disruptive technology that can fulfill identified market needs. We then take these solutions from the applied research stage through commercialization.

Unaudited Interim Financial Information

The accompanying unaudited consolidated financial statements as of September 30, 2005 and for the nine months ended September 30, 2004 and 2005 have been prepared in accordance with accounting principles generally accepted in the United States (US GAAP) and with the instructions to Form 10-Q and Article 10 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by US GAAP for complete financial statements. The unaudited consolidated financial statements have been prepared on the same basis as the annual financial statements and in the opinion of management, reflect all adjustments, consisting of only normal recurring accruals, considered necessary to present fairly our financial position as of September 30, 2005 and results of operations and cash flows for the nine months ended September 30, 2004 and 2005. The results of operations for the nine months ended September 30, 2005 are not necessarily indicative of the results that may be expected for the year ending December 31, 2005.

Basis of Presentation and Consolidation

Our consolidated financial statements are prepared in accordance with US GAAP. We consolidate all entities that we control by a majority voting interest. In accordance with FASB Interpretation No. 46 (FIN 46), *Consolidation of Variable Interest Entities*, we consolidate those companies where we do not have a majority voting interest but are required to provide significant financing to fund their operations.

We use the equity method to account for our investments for which we have the ability to exercise significant influence over operating and financial policies. Consolidated net income (loss) includes our share of the net earnings or losses of these companies. Our share of net losses of these companies is limited to our investment for or advances to such companies.

We eliminate from our financial results all significant intercompany transactions.

Use of Estimates

The preparation of our consolidated financial statements in accordance with US GAAP requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses and the disclosure of contingent assets and liabilities in our consolidated financial statements and accompanying notes. Although these estimates are based on our knowledge of current events and actions we may undertake in the future, actual results may differ from such estimates and assumptions.

Contract Research Revenues

We perform research and development for federal government agencies, educational institutions and commercial organizations under cost reimbursable, time and material and firm fixed price contracts. Revenues on cost

reimbursable contracts are recorded as costs are incurred and fees are earned. Revenues on time and material contract are recognized by applying contractually defined billing rates to direct labor hours expended. Revenues on fixed price contracts are recognized under the percentage of completion method. Losses on contracts, if any, are recognized in the period in which they become known based upon the projects costs incurred to total estimated costs to complete.

For the years ended December 31, 2002, 2003 and 2004 and the nine months ended September 30, 2005, contract research revenues approximated 70%, 59%, 61% and 100% of total revenues, respectively. Accounts receivable from contract research revenues as of December 31, 2003 and 2004 and September 30, 2005 approximated 80%, 79% and 81% of trade accounts receivable from contracts, respectively.

Intellectual Property License Revenues

Amounts received from third parties for licenses to our intellectual property are recognized when earned under the terms of the agreements. Revenues are recognized upon transfer of the license unless we have continuing obligations for which fair value cannot be established, in which case the revenues are recognized over the period of the obligation. If there are extended payment terms, license fee revenues are recognized as these payments become due and collectibility is probable. We consider all arrangements with payment terms extending beyond 12 months not to be fixed and determinable.

Certain of our license arrangements have required us to enter into research and development agreements. We apply the guidance from the Emerging Issues Taskforce Consensus on Issue 00-21, *Revenue Arrangements with Multiple - Deliverables* (EITF 00-21). Accordingly, we will allocate our arrangement fees to the various elements based upon vendor specific objective evidence (VSOE) of fair value, if available. For those arrangements in which VSOE of fair value is not available, we will defer revenues from any up-front payments and recognize them over the service period in the arrangement. Certain of these arrangements also include the payment of performance bonuses based upon the achievement of specific milestones. Generally, there are no assurances at the onset of these arrangements that the milestones will be achieved. As such, fees related to such milestones are excluded from the initial allocation of the arrangement fee in accordance with EITF 00-21 and are recognized upon achievement of the milestone provided that such fees are non-refundable and collection is probable.

Revenues derived from our arrangement with Baker Hughes Oilfield Operations, Inc., which is more fully described in Note 5, accounted for 30%, 37%, 35% and 0% of total revenues for the years ended December 31, 2002, 2003 and 2004 and nine months ended September 30, 2005, respectively.

Product Sales Revenues

Revenues from product sales are generated by the sale of commercial products and services under various sales programs to the end user and through distribution channels. We sell fiber optic sensing systems to end users for use in numerous fiber-optic based measurement applications.

Revenues from product sales that require no ongoing obligations are recognized as revenues when shipped to the customer, title has passed and collection is reasonably assured. In transactions where a right-of-return exists, revenues are deferred until acceptance has occurred and the period for the right-of-return has lapsed. As of December 31, 2002, 2003 and 2004, we have not entered into sales transactions where rights of return exist.

Allowance for Uncollectible Receivables

We review the status of our uncollected receivables on a regular basis. In determining the need for an allowance for uncollectible receivables, we consider our customers financial stability, past payment history and other factors that bear on the ultimate collection of such amounts. Given our favorable collection history, we have not considered it necessary to establish an allowance for uncollected receivables.

Cash Equivalents

We consider all highly liquid investments purchased with maturities of three months or less to be cash equivalents.

Fair Value of Financial Instruments

Our financial instruments include cash and cash equivalents, accounts receivables, accounts payable, a line-of-credit and accrued liabilities. The carrying amounts of financial instruments approximate fair value due to their short maturities. Additionally, the line-of-credit is subject to a variable interest rate based upon the prime rate as published by the Wall Street Journal.

Property and Equipment

Property and equipment are stated at cost less accumulated depreciation. We record depreciation using the straight-line method over the following estimated useful lives:

Equipment	3 – 7 years
Furniture and fixtures	7 years
Software	3 years
Leasehold improvements	Lesser of lease term or life of improvements

Intangible Assets

Intangible assets consist of patents related to certain intellectual property that we have developed or acquired. Such amounts are carried at cost and are amortized over a period of five years.

Research and Development

Research and development costs are expensed as incurred.

Valuation of Long-Lived Assets

We review the carrying value of long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying value of such assets may not be recoverable. Measurement of the impairment loss is based on the fair value of the asset, or group of assets. Generally, fair value will be determined using valuation techniques such as present value of expected future cash flows. No events or circumstances have occurred that would indicate such assets may be impaired.

Inventory

Inventory consists of finished goods and parts valued at the lower of cost (determined on the first-in, first-out basis) or market.

Net Income (Loss) Per Share

We compute net income (loss) per share in accordance with Statement of Financial Accounting Standards (SFAS) No. 128, *Earnings Per Share*. Basic per share data is computed by dividing income (loss) available to common stockholders by the weighted average number of shares outstanding during the period. Diluted per share data is computed by dividing income (loss) available to common stockholders by the weighted average shares outstanding during the period increased to include, if dilutive, the number of additional common share equivalents that would have been outstanding if potential common shares had been issued using the treasury stock method.

Basic and diluted net income (loss) per share were computed as follows for the periods indicated:

	December 31,			September 30,	
	2002	2003	2004	2004	2005
				(unaudited)	
Net income (loss)	$(1,568,233)	$1,132,274	$4,056,182	$2,474,135	$(268,537)
Weighted average shares - basic	5,092,545	5,030,428	5,136,001	5,134,984	5,713,926
Dilutive effect of common stock equivalents:					
Common stock equivalents	—	110,575	1,766,404	1,811,841	—
Weighted average shares - diluted	5,092,545	5,141,003	6,902,405	6,946,825	5,713,926
Net income (loss) per share - basic	$(0.31)	$0.23	$0.79	$0.48	$(0.05)
Net income (loss) per share - diluted	$(0.31)	$0.22	$0.59	$0.36	$(0.05)

The effect of 46,419,198 and 4,580,570 common stock equivalents are ignored for 2002 and for the nine months ended September 30, 2005, as they are antidilutive to earnings per share.

Stock-Based Compensation

We have a stock-based compensation plan, which is described further in Note 9. We account for stock-based employee compensation arrangements using the intrinsic value method in accordance with the provisions of Accounting Principles Board Opinion (APB) No. 25, *Accounting for Stock Issued to Employees* and related amendments and interpretations. We comply with the disclosure provisions of Statement of Financial Accounting Standards (SFAS) No. 123, *Accounting for Stock-based Compensation*, as amended by SFAS No. 148, *Accounting for Stock Based Compensation—Transition and Disclosure*, which requires fair value recognition for employee stock-based compensation. We account for equity instruments issued to non-employees in accordance with the provisions of SFAS 123 and Emerging Issues Task Force (EITF) Issue No. 96-18.

Generally, we award options to employees and directors with exercise prices equal to or greater than the estimated fair value of our common stock on the date of grant. As more fully described in Note 9, we entered into an option exchange with our employees in September 2003 that resulted in the new option grant being considered a re-pricing in accordance with FASB Interpretation No. 44, *Accounting for Certain Transactions Involving Stock Compensation* (FIN 44). We apply variable plan accounting to outstanding options related to this award and measure compensation expense at each reporting period.

Had compensation expense been measured under the fair value method prescribed by SFAS No. 123, our pro forma net income (loss), and pro forma net income (loss) per share would have been as follows:

	Years Ended December 31,			Nine Months Ended September 30,	
	2002	2003	2004	2004	2005
				(unaudited)	
Net income (loss):					
As reported	$(1,568,233)	$1,132,274	$ 4,056,182	$2,474,135	$(268,537)
Add - stock based employee compensation expense in reported net income (loss), net of related tax effects	—	—	39,680	—	137,829
Deduct - total stock based employee compensation (expense) benefit determined under Black-Scholes method for all awards	(678,557)	972,964	(118,096)	(88,572)	(111,137)
Pro forma	$(2,246,790)	$2,105,238	$3,977,766	$2,385,563	$(241,845)
Basic net income (loss) per common share:					
As reported	$(0.31)	$0.23	$0.79	$0.48	$(0.05)
Pro forma	$(0.44)	$0.42	$0.77	$0.46	$(0.04)
Diluted net income (loss) per common share:					
As reported	$(0.31)	$0.22	$0.59	$0.36	$(0.05)
Pro forma	$(0.44)	$0.41	$0.58	$0.34	$(0.04)

The $972,964 benefit in 2003 resulted from 505,396 unvested options being forfeited during the period.

The weighted average estimated fair values of stock options granted are described below. That determination of fair value assumes valuation using the Black-Scholes valuation model (with the assumptions of: no dividend yield; a risk-free interest rate ranging from 3.28 to 6.56%; volatility ranging from 62.0% to 74.0%; and an expected option life of 7 years). See Note 9 for our weighted average grant date fair value.

Advertising

We charge the cost of advertising to expenses as incurred. Such amounts have not been significant to our operations.

Income Taxes

We account for income taxes using the liability method. Deferred tax assets or liabilities are determined based on the difference between the financial statement and tax basis of assets and liabilities as measured by the enacted tax rates, which will be in effect when the differences reverse. A valuation allowance against net deferred assets is provided unless we conclude it is more likely than not that the deferred tax assets will be realized.

Recent Accounting Pronouncements

In December 2004, the FASB issued SFAS No. 123 (revised 2004), *Share-Based Payment*, which is a revision of SFAS No. 123, *Accounting for Stock-Based Compensation* (SFAS No. 123R). SFAS No. 123R supersedes APB Opinion No. 25, *Accounting for Stock Issued to Employees*, and amends SFAS No. 95, *Statement of Cash Flows*. Generally, the approach in SFAS No. 123R is similar to the approach described in SFAS No. 123. However, SFAS No. 123R requires all share-based payments to employees, including grants of employee stock options, to be recognized in the income statement based on their fair values. Pro forma disclosure is no longer an alternative. We are required to adopt SFAS No. 123R on January 1, 2006.

As permitted by SFAS No. 123, we currently account for share-based payments to employees using APB Opinion No. 25's intrinsic value method and, as such, generally recognize no compensation cost for employee stock options. Compensation expense determined under SFAS No. 123R will depend on the level of share-based payments granted in the future, the assumptions used in the determination of fair value, as well as our judgments and estimates regarding the exercise and forfeiture of employee option grants. Should we continue to use stock options as a means of compensating our employees, the impact is expected to have a material effect on our results of operations.

In November 2004, the FASB issued SFAS No. 151, *Inventory Costs,* an amendment of ARB No. 43, Chapter 4, to clarify the accounting for abnormal amounts of idle facility expense, freight, handling costs and wasted material (spoilage). This statement is effective October 1, 2005. We have determined that the effect of SFAS No. 151 on our financial position, results of operations and cash flows will be minimal.

In June 2005, the FASB issued SFAS No. 154, *Accounting Changes and Error Corrections*, which replaces APB Opinion No. 20, *Accounting Changes* and SFAS No. 3, *Reporting Accounting Changes in Interim Financial Statement*. SFAS No. 154 requires that a voluntary change in accounting principle be applied retrospectively with all prior period financial statements presented on the new accounting principle. SFAS No. 154 also requires that a change in method of depreciating or amortizing a long-lived non-financial asset be accounted for prospectively as a change in estimate, and correction of errors in previously issued financial statements should be termed a "restatement." SFAS No. 154 is effective for accounting changes and correction of errors made in fiscal years beginning after December 15, 2005. The implementation of SFAS No. 154 is not expected to have a material impact on our consolidated financial statements.

Reclassifications

Certain amounts in prior years have been reclassified to conform to the current year presentation.

2. Accounts Receivable—Trade

Accounts receivable consist of the following at:

	December 31,		September 30,
	2003	2004	2005
			(unaudited)
Billed	$1,007,532	$1,755,600	$3,693,067
Unbilled	777,726	1,199,843	620,172
Other	5,611	67,762	11,930
	$1,790,869	$3,023,205	$4,325,169

Unbilled receivables result from contract retainages and revenues that have been earned in advance of billing and can be invoiced at contractually defined intervals or milestones, or at completion of the contract. Advance payments on completed contracts amounts to $457,603, $420,652 and $431,825 for the periods ended December 31, 2003, 2004 and September 30, 2005, respectively. Such amounts are included in deferred revenues in our accompanying balance sheet.

3. Property and Equipment

Property and equipment consists of the following at:

	December 31,		September 30,
	2003	2004	2005
			(unaudited)
Equipment	$1,094,954	$1,368,855	$2,707,355
Furniture and fixtures	111,400	127,421	148,653
Software	482,950	521,590	648,863
Leasehold improvements	243,579	1,380,634	1,722,627
	1,932,883	3,398,500	5,227,498
Less—accumulated depreciation	(998,232)	(1,352,852)	(2,549,876)
	$934,651	$2,045,648	$2,677,622

Depreciation for the periods ended December 31, 2002, 2003, and 2004 and September 30, 2005 was approximately $271,000, $330,000, $353,000, and $226,000, respectively.

4. Intangible Assets

The following is a summary of intangible assets:

	December 31,		September 30,
	2003	2004	2005
			(unaudited)
Patent costs	$263,247	$439,498	$894,451
Accumulated amortization	(37,143)	(49,286)	(310,471)
	$226,104	$390,212	$583,980

Amortization for the periods ended December 31, 2002, 2003, and 2004 and September 30, 2005 was approximately $6,000, $17,000, $28,000 and $129,000, respectively.

Estimated aggregate amortization for each of the next five years is as follows:

Year Ended December 31,	
2005	$23,734
2006	46,257
2007	46,257
2008	46,257
2009	44,257
Thereafter	183,450

5. Investment in Affiliates

We had investments in two affiliates, Luna Technologies, Inc. (“Luna Technologies”) and Luna Energy, LLC (“Luna Energy”), which were accounted for using the equity method of accounting. As discussed in Note 1, our consolidated statements of operations includes our share of net earnings or losses of these companies to the extent of our investments in and advances to such companies.

Luna Technologies

Luna Technologies, formerly a wholly-owned subsidiary until 2000, is engaged in the development and production of optical fiber test equipment and data acquisition systems. In fiscal year 2000, the Board of Directors of Luna

Technologies approved a plan to spin-off Luna Technologies and raise additional equity financing in order for management to more fully execute Luna Technologies' business plan. We retained a minority interest in Luna Technologies of approximately 23.0% subsequent to the spin-off. Between December 2000 and March 2003, Luna Technologies had received additional equity financing from non-affiliated investors which diluted our ownership percentage to approximately 7.0%. Given our ability to exercise significant influence over the operations of Luna Technologies, we accounted for our interest under the equity method.

Our share of losses in Luna Technologies for the years ended December 2002, 2003, and 2004 were $0, $150,271 and $58,904, respectively. We also recognized $47,700, $32,000 and $3,000 in revenues from Luna Technologies for various administrative and consulting services in 2002, 2003 and 2004, respectively.

Following is a summary of financial position and results of operations of Luna Technologies as of and for the periods ended:

	December 31,	
	2003	**2004**
Current assets	$1,079,665	$1,567,988
Non-current assets	597,191	309,676
Total assets	1,676,856	1,877,664
Current liabilities	632,200	406,321
Non-current liabilities	265,115	214,953
Total liabilities	897,315	621,274
Stockholders' equity and redeemable preferred stock	779,541	1,256,390
Total liabilities and stockholders' equity	$1,676,856	$1,877,664
Revenues	$1,428,965	$1,775,082
Gross profit	$434,348	$958,011
Net loss	$(2,372,027)	$(959,632)

On September 30, 2005, we entered into an Agreement and Plan of Merger with Luna Technologies to acquire 100.0% of its outstanding capital stock through an exchange of our Class B common stock. We exchanged 1,031,234 of Class B common stock valued at $0.92 per share or $948,735 as determined by a third party appraisal firm, for all of the issued and outstanding shares of common and preferred stock of Luna Technology. An additional 193,488 shares of Class B common stock have been placed in escrow and are issuable upon achievement of certain conditions as defined in the agreement. Additionally, we exchanged 3,601 warrants with an aggregate value of approximately $3,300 and incurred direct costs of approximately $81,000 to arrive at an initial purchase price of approximately $1,033,000.

This transaction was accounted for as a purchase business combination in accordance with SFAS No. 141 *Business Combinations*. As such, the net assets acquired were recorded at fair value. The following table summarizes the estimated fair value of assets and liabilities assumed at the acquisition date:

	September 30, 2005
Current assets	$1,343,341
Property and equipment, net	286,134
Other assets	4,804
Intangible assets	166,726
Current liabilities	(553,176)
Long-term liabilities	(214,953)
Net Assets	$1,032,876

Intangible assets acquired in the transaction relate primarily to intellectual property rights which will be amortized over an estimated life of 5 years.

Luna Energy

We formed Luna Energy on February 12, 2002, for the purpose of transferring certain intellectual property rights related to technology to be used in the oil and gas industry. On February 19, 2002, we entered into a Purchase and Sale agreement with a subsidiary of Baker Hughes Oilfields Operations, Inc. (BHI) for the purchase of a 40% interest in Luna Energy. BHI paid us an up-front payment of $10 million for the 40% equity interest as well as licensing rights to use the intellectual property transferred to Luna Energy. In connection with this agreement, we were also required to enter into a Research and Development Agreement with Luna Energy for the development of certain new technology for the benefit of BHI. BHI committed to pay us an additional $8 million upon achievement of certain milestones which were tied to the development of the new technology. Additionally, BHI committed to provide Luna Energy with $12 million in financing over an estimated collaboration period of three years.

As there was no objective and reliable evidence of fair value for deliverables in this arrangement, consistent with the revenue recognition provisions of SAB No. 104 and the multi-element arrangement provisions of EITF 00-21, the proceeds from the $10 million payment were recognized ratably over the expected three year collaboration period as license revenues.

As previously discussed, BHI agreed to provide substantially all of the working capital required to fund Luna Energy's operations for three years. Additionally, in accordance with Luna Energy's Amended and Restated LLC agreement, BHI was provided certain approval rights which gave them substantive participation in the operations of Luna Energy. Accordingly, consistent with the provisions of EITF Issue No. 96-16, *Investor's Accounting for an Investee when the Investor Has a Majority of the Voting Interest but the Minority Shareholder or Shareholder Have Certain Approval or Veto Rights*, we did not consolidate Luna Energy but accounted for our interest under the equity method. We were not required to provide any capital financing to Luna Energy from inception through the three-year collaboration period, nor was there any carrying value for the intellectual property transferred to Luna Energy. Therefore, we had no basis to record losses from Luna Energy until 2004 when we advanced it $198,000. Luna Energy's operating results did not have a material effect on our financial position or our results of operations. As such, condensed financial information on Luna Energy has not been presented.

In December 2004, BHI acquired all of our remaining equity interest in Luna Energy for a non-refundable payment of $990,000.

In addition to our licensing and development arrangement, we also performed subcontract services on certain research contracts for Luna Energy. Total revenues earned from such contracts for the years ended December 31, 2002, 2003 and 2004 were $51,530, $628,050 and $176,802, respectively.

6. Accrued liabilities

Accrued liabilities consist of the following at:

	December 31,		September 30,
	2003	2004	2005
			(unaudited)
Accrued compensation and related liabilities	$390,789	$594,856	$259,712
Accrued professional fees	66,173	179,621	275,493
Accrued severance and bonuses	126,775	508,946	34,000
Accrued settlement costs	—	165,335	—
Other	152,099	293,336	363,122
	$735,836	$1,742,094	$932,327

7. Line of Credit Agreements

Working Capital Facility

We entered into a line of credit agreement with First National Bank (FNB) in December 2001. This agreement, as amended, enabled us to borrow up to $3,000,000, subject to an eligible borrowing base, with interest payable monthly based upon the Wall Street Journal prime rate (4.0% and 5.0% at December 31, 2003 and 2004, respectively). The line of credit is collateralized by a blanket interest in our assets. As of December 31, 2004, the line of credit is guaranteed by an officer and stockholder and is subject to certain financial covenants. Outstanding borrowings on the line of credit were $-0- and $1,500,000 as of December 31, 2003 and 2004, respectively.

We received a modified commitment for renewal of the line of credit in May 2005. Under the May 2005 commitment, we may draw up to $2,500,000 for working capital needs. Interest accrues on any outstanding balance at the Wall Street Journal prime rate (6.75% at September 30, 2005). Any outstanding principal balance is payable in full on demand or at maturity, May 30, 2006. Outstanding borrowings on the line of credit were $1,500,000 at September 30, 2005.

Milestone Credit Facility

In connection with the BHI transaction discussed in Note 5, we entered into a “Milestone” working capital line of credit with FNB on May 16, 2003 for $1,500,000. Interest was payable monthly at the Wall Street Journal prime rate plus 3.0%. Advances under the line of credit were governed by us providing FNB written evidence of BHI’s acceptance and approval of payment for milestone payments under the contract with BHI. In connection with acceptance and approval for Milestone 3, we were able to borrow $1,500,000 against the line of credit. The line of credit was collateralized by a blanket interest in our assets, as well as 40.0% of the payments for Milestones 3 and 4 under the Purchase and Sale Agreement. Additionally, the line of credit was guaranteed by an officer and stockholder and was subject to certain financial covenants. The line of credit expired on March 15, 2004 and was not renewed. Outstanding borrowings on the credit facility were $1,000,000 at December 31, 2003.

8. Income Taxes

Deferred tax assets and liabilities consist of the following components:

	December 31,	
	2003	2004
Research and development credits	$269,740	$623,181
Net operating loss carryforwards	867,285	19,064
Deferred revenues	1,301,486	370,498
Accrued liabilities	67,114	151,675
Stock-based compensation	61,880	76,943
Depreciation and amortization	(81,111)	(126,260)
Change in tax return accounting method - current (liability)	(60,212)	(30,106)
	2,426,182	1,084,995
Valuation allowance	(1,025,535)	(642,246)
Net deferred tax asset	$1,400,647	$442,749

The reconciliation of expected income tax expense (benefit) to actual income tax expense (benefit) was as follows:

	December 31,		
	2002	2003	2004
Statutory federal rate	(34.0%)	34.0%	34.0%
State tax net of federal benefit	(3.9%)	3.9%	3.9%
Research and development credit carryforward	—	—	—
Change in valuation allowance	—	—	—
Research and development credits	(17.6%)	(10.2%)	(0.6%)
Nondeductible subsidiary losses	22.5%	3.9%	(19.5%)
Capital loss deduction	—	—	(18.3%)
Permanent differences and other	3.6%	3.7%	3.5%
Income tax expense (benefit)	(29.4%)	35.3%	3.0%

The income tax provision (benefit) consists of the following for:

	December 31,		
	2002	2003	2004
Current:			
Federal	$1,552,209	$(397,722)	$(746,343)
State	254,210	91,485	(83,321)
Deferred Federal	(2,202,450)	1,068,139	852,276
Deferred State	(255,642)	123,980	105,622
Income tax expense (benefit)	$(651,673)	$885,882	$128,234

Realization of deferred income tax assets is dependent upon sufficient future taxable income during the period that deductible temporary differences are expected to be available to reduce taxable income. In assessing the realizability of deferred tax assets, we consider whether it is more likely than not, that some portion, or all of the deferred tax asset will be realized. We consider scheduled reversals of deferred tax liabilities, projected future taxable income, and tax planning strategies that can be implemented by us in making this assessment of the realizability of such assets. As of December 31, 2004 and September 30, 2005, we had research and development credits of $623,181 and $1,003,262 which expire at varying dates through 2025. We have established a full valuation allowance against the benefit of these credits as a result of the uncertainty surrounding their ultimate utilization.

9. Stockholders' Equity

Stock split

On September 22, 2003, we effected a 58:1 stock split in the form of a stock dividend on the Class A Common Stock. All prior period common stock and applicable share and per share amounts have been retroactively adjusted to reflect the stock split.

Redeemable Common Stock

In connection with our acquisition of Luna Technologies on September 30, 2005, we gave the shareholders of Luna Technologies a right to put 548,896 of their shares of Class B Common Stock back to us in the event we are unsuccessful in completing an initial public offering of our common stock by December 31, 2006. Such shares have been classified as Redeemable Common Stock on our September 30, 2005 consolidated balance sheet.

Warrants

In May 2003, we issued warrants to an unrelated party for the purchase of 18,775 shares of our Class B Common Stock in connection with the acquisition of certain equipment. The value of the warrants was nominal and was added to the cost of the equipment. In connection with our option exchange in September 2003, we issued a replacement warrant to the warrant holders giving them the option to purchase 183,120 shares of our Class B Common Stock at an exercise price of $0.001 per share. Non-cash share based expense associated with the replacement warrants was nominal in November 2005.

Common Stock

Upon the completion of our initial public offering all of the outstanding shares of Class A Common Stock, Class B Common Stock and Class C Common Stock will convert into one class of common stock.

Incentive Stock Option Plan

On August 20, 1999, we adopted the Luna Innovations Incorporated Stock Purchase Plan (the 1999 Plan) which permitted our Board of Directors to grant options to officers, directors and employees of our Company. There was no pre-established number of shares of common stock reserved for issuance under this plan. Options granted under the 1999 Plan generally had a life of 5 years and an exercise price equal to the estimated fair value of the Company as determined by the Board of Directors.

In connection with our reincorporation in April 2003, we adopted the Luna Innovations Incorporated 2003 Stock Plan (the 2003 Plan). Under the 2003 Plan, our Board of Directors is authorized to grant both incentive and nonstatutory stock options to employees, directors and consultants of our Company to purchase Class B shares of Common Stock. Options generally have a life of 10 years and exercise price equal to or greater than the fair market value of the Class B Common Stock as determined by the Board of Directors. A total of 5,000,000 shares of Class B Common Stock were reserved for issuance under the 2003 Plan. On March 16, 2004, our Board of Directors increased the number of shares reserved under the Plan to 8,000,000. The expiration date of the options cannot be more than 10 years from date of grant. A total of 4,032,446 and 2,036,435 were available for future grant as of December 31, 2004 and September 30, 2005, respectively.

In August 2003, our Board of Directors authorized an option exchange program whereby option holders of Class A Common Stock were given the opportunity to exchange their options for options to purchase Class B Common Stock on a one for one basis. The new option grants were immediately vested on the date of exchange, September 29, 2003, had an exercise price of $0.20 and a life of 10 years from the date of grant. Upon completion of the option exchange program, the 1999 plan was terminated.

All of the outstanding options from the 1999 Plan had exercise prices in excess of the fair value of our Class A Common Stock as of the date of the exchange. As such, the option exchange was accounted for as a repricing in accordance with FIN 44. We are required to apply variable plan accounting to the replacement grant and measure compensation based on the change in fair value of the Class B Common Stock at each reporting period. A total of 305,230 options were exchanged in connection with this transaction, of which 233,609 were outstanding at September 30, 2005.

There was no non-cash stock option expense related to employee and director awards for the years ended December 31, 2002 and 2003. Total non-cash stock option expense for the year ended December 31, 2004 and the nine months ended September 30, 2005 was $39,680 and $137,829, respectively.

	Number of Options	Range of Exercise Prices	Weighted Average Exercise Price
Outstanding at December 31, 2001	47,162,236	$0.03 – 0.09	$0.09
Granted	1,162,900	0.20	0.20
Exercised			
Cancelled	(252,938)	0.08	0.08
Outstanding at December 31, 2002	48,072,198	0.09	0.09
Granted	6,491,736	0.09 – 0.20	0.17
Exercised	(118,750)	0.20	0.20
Cancelled	(50,451,057)	0.03 – 0.20	0.09
Outstanding at December 31, 2003	3,994,127	0.20	0.20
Granted	255,000	0.20	0.20
Exercised	(16,499)	0.20	0.20
Cancelled	(265,074)	0.20	0.20
Outstanding at December 31, 2004	3,967,554	0.20	0.20
Granted (unaudited)	2,967,874	0.20 – 0.22	0.20
Exercised (unaudited)	(382,874)	0.20	0.20
Cancelled (unaudited)	(948,989)	0.20	0.20
Outstanding at September 30, 2005 (unaudited)	5,603,565	$0.20 – 0.22	$0.20

	Options Outstanding			Options Exercisable	
Range of Exercise Prices	**Options Outstanding**	**Weighted Average Remaining Life in Years**	**Weighted Average Exercise Price**	**Options Exercisable**	**Weighted Average Exercise Price of Options Exercisable**
December 31, 2002:	48,072,198	2.7	$0.09	37,074,317	$0.09
December 31, 2003:	3,994,127	9.7	0.20	2,086,511	0.20
December 31, 2004:					
$0.01 - $0.20	3,967,554	8.8	0.20	2,821,656	0.20
September 30, 2005 (unaudited):					
$0.01 - $1.00	5,603,565	6.9	0.20	2,821,656	0.20

Weighted average grant date fair value for December 31, 2002, 2003, and 2004 was $0.06, $0.13, and $0.13, respectively.

10. Commitments and Contingencies

Obligation Under Operating Leases

We lease our facilities in Blacksburg, Charlottesville, Danville and Hampton, Virginia under non-cancellable operating leases that expire between July 2005 and May 2009. Certain of the leases are subject to fixed escalations. We recognize rent expense on such leases on a straight-line basis over the lease term. Rent expense under these leases was approximately $404,000, $406,000 and $560,000 for the years ended December 31, 2002, 2003 and 2004, respectively, and $409,000 and $419,000 for the nine months ended September 30, 2004 and 2005.

Minimum future rentals, as of December 31, 2004, under the aforementioned operating leases for each of the next five periods ending are:

2005	$511,000
2006	350,000
2007	282,000
2008	200,000
2009	35,000
	$1,378,000

Facility Lease

We have entered into an agreement with Carilion Medical Center to lease 20,000 square feet of office space at the Riverside Centre in Roanoke, Virginia that will serve as our headquarters. The landlord of this property, Carilion Medical Center, is an affiliate of Carilion Health System, currently our second largest stockholder. Dr. Edward Murphy, Chairman and Chief Executive Officer of Carilion Health System became a member of our board of directors in connection with the investment of $7.0 million by Carilion Health System in August 2005. The lease has a five year term commencing on the later of September 1, 2006 or the date Carilion Medical Center provides us with a certificate of occupancy. Base rent will be $480,000 per year, subject to annual escalations of two percent.

Obligation Under Capital Lease

We are obligated under capital leases covering certain equipment and software that expire at various dates during the next five years. Minimum lease payments as of December 31, 2004 were as follows:

2005	$107,177
2006	103,832
2007	90,880
2008	22,459
2009	2,344
	326,692
Less—amount representing interest	(24,125)
Present value of net minimum obligation	302,567
Less—current obligation	(96,177)
Long-term obligation	$206,390

At December 31, 2004, the gross amount of property and equipment and related accumulated amortization recorded under capital leases were as follows:

Equipment	$292,580
Software	164,085
	456,665
Less—accumulated amortization	(92,528)
	$364,137

Governor's Opportunity Fund

In March 2004, we received a $900,000 grant (the "Grant") from the City of Danville, Virginia (the "City") to be used for the expansion of economic and commercial growth within the City. Specifically, $450,000 of the grant will be used to offset certain capital expenditures for leasehold improvements being made at our Danville facility, and the remaining $450,000 is to be used for our creation of new jobs.

The Grant stipulates that we must make estimated capital expenditures of at least $6,409,000 and create 54 new full time jobs at our Danville facility, at an average wage of at least $39,000 plus benefits within 30 months of the award, and then maintain such employment levels for an additional 30 months. We could be required to repay the grant funds on a pro-rata basis should we fail to satisfy the conditions stipulated in this agreement by September 25, 2006 at the earliest. As such, we have included the $900,000 in deferred revenue in the accompanying consolidated balance sheets as of December 31, 2004 and September 30, 2005.

11. Employee Profit Sharing Plan

We maintain a salary reduction/profit-sharing plan under provisions of Section 401(k) of the Internal Revenue Code. The plan is offered to employees who have completed three months of service with us. We contribute 50% of the salary deferral elected by each employee up to a maximum deferral of 10% of annual salary.

We may, at our option, contribute additional amounts to the plan. We contributed approximately $150,000, $165,000 and $156,000 to the plan for the years ended December 31, 2002, 2003 and 2004, respectively and approximately $156,000 and $145,000 for the nine months ended September 30, 2004 and 2005.

12. Transfers of Intellectual Property

Luna i-Monitoring

We formed Luna i-Monitoring, Inc., in February 2002, to focus on the commercialization of integrated wireless telesensing systems for managing remote assets. On October 1, 2003, we, along with our individual stockholders, agreed to the terms of a share purchase and asset transfer agreement with IHS Energy Group, Inc. and for the sale of all of the issued and outstanding capital stock of Luna i-Monitoring Inc., as well as the rights, title and interest in its intellectual property. Total consideration received at closing was approximately $700,000.

Luna i-Monitoring had no substantial operations from inception through the date of the IHS Energy Group, Inc., but did hold the rights to intellectual property. As there was no objective and reliable evidence of the fair value of the elements in this arrangement, we recorded the non-refundable payment of $700,000 as license revenues in accordance with SAB 104 and EITF 00-21.

The shareholders of Luna i-Monitoring are also entitled to receive additional consideration upon achievement of certain performance conditions as defined in the agreement. A nominal amount has been subsequently paid to certain shareholders. As of September 30, 2005, we have not received any additional payments in connection with this agreement.

Biotechnology Company

On December 1, 2003, our subsidiary, Luna Analytics, entered into a license agreement with a biotechnology company granting a worldwide exclusive license for the use of certain patents and technology subject to the terms of the agreement for work in the field of life sciences research applications. We also entered into a research and development agreement with the licensee to develop additional technology. In exchange for the license rights, we were paid a one-time technology access fee of $1,000,000. The agreement also called for additional payments aggregating to $1.5 million each upon achievement of certain milestones.

Since there was no objective and reliable evidence of fair value for deliverables in this arrangement, we deferred the up-front payment of $1,000,000 and were recognizing it ratably over the 10 year collaboration period. In October 2004, this biotechnology company notified us of its desire to terminate the research and development agreement. Since we had no further obligations to this biotechnology company under this arrangement, we recognized the remaining revenues upon the termination of the agreement.

13. Litigation and Other Contingencies

We are not party to any material legal proceedings, nor are we currently aware of any threatened material proceedings. From time to time, we may become involved in litigation in relation to claims arising out of our operations in the normal course of business. While management currently believes the amount of ultimate liability, if any, with respect to these actions will not materially affect our financial position, results of operations, or liquidity, the ultimate outcome of any litigation is uncertain. Were an unfavorable outcome to occur, or if protracted litigation were to ensue, the impact could be material to us.

In March 2003, the Office of Inspector General of the Department of Commerce advised us that the government was investigating anonymous allegations of contract improprieties. We have cooperated fully and extensively with that investigation through interviews and document production. In April 2003, the government advised our regulatory counsel that to date no wrongdoing had been identified, although the government indicated that we may not have fully complied with contractual reporting requirements in one or two instances, which the government did not specify. We believe that the investigation has been resolved favorably, based on statements by the government investigator to our employees in June 2003, and that this matter effectively is at an end absent any advice or communication from the government to the contrary. However, there can be no assurance as to how or whether our relationships, business, financial condition or results of operations will ultimately be affected, if at all, by the investigation.

On November 9, 2004, we received a subpoena from the Department of Defense's Office of the Inspector General covering certain government research contracts awarded to us between January 1, 1998 and November 9, 2004 to determine if we had duplicated work in our submission of project reports to the government. In connection with the investigation, the government alleged that duplication occurred in three research reports that we prepared under the contracts. We submitted a response to the Inspector General in September 2005 challenging the government's findings. On November 15, 2005, we entered into a settlement agreement with the government and received a general release with respect to this matter in return for a payment of $165,333. Such amount has been accrued for as of December 31, 2004.

In July 2005, we received a letter from legal counsel retained by a former employee that such law firm is investigating whether such former employee has any claims against us, including breaches of contract, fiduciary duty, implied covenants of good faith and fair dealing as well as potential violations of minority stockholder rights that such former employee may have as a stockholder in one of our subsidiaries. Although we believe none of these potential claims has merit, we cannot currently predict whether such former employee will file litigation against us or the ultimate outcome of any such potential litigation.

We have made, and will continue to make, efforts to comply with current and future environmental laws. We anticipate that we could incur additional capital and operating costs in the future to comply with existing environmental laws and new requirements arising from new or amended statutes and regulations. In addition, because the applicable regulatory agencies have not yet promulgated final standards for some existing environmental programs, we cannot at this time reasonably estimate the cost for compliance with these additional requirements. The amount of any such compliance costs could be material. We cannot predict the impact that future regulations will impose upon our business.

14. Carilion transaction

In August 2005, we entered into a Class C Common Stock Financing Agreement with Carilion Health System (Carilion) whereby Carilion committed to providing approximately $15 million in equity financing in three tranches subject to certain conditions outlined in the agreement. Carilion purchased 2,639,688 shares of our Class C Common Stock (the first tranche) for an aggregate purchase price of $7 million at closing.

In connection with the agreement, we also entered into an investor rights agreement with Carilion giving them certain registration rights in the event that we are successful in completing an initial public offering of our common stock.

On December 30, 2005, we reached an agreement with Carilion to terminate the August 2005 equity Financing Agreement and enter into a new Class C Common Stock Financing Agreement (the “New Agreement”). Under the New Agreement, Carilion agreed to provide $5 million in exchange for five $1 million convertible promissory notes, and $3 million in exchange for 1,131,294 shares of Class C Common Stock, subject to certain conditions.

The notes are convertible into Class C Common Stock and bear interest at 6% per annum and mature on December 30, 2009. We received $5 million in proceeds from the issuance of such notes at closing.

In connection with the New Agreement, we amended and restated the investor rights agreement granting Carilion and certain other shareholders the rights to require us to register their shares of Common Stock for resale. Although we could be required to register shares held by these shareholders, there is no liquidated damages provision in the event such shares are not registered. We were also required to increase our authorized common stock to 49,785,326 shares and reserve a sufficient number of shares of our Common Stock to cover the conversion of the Class C Common Stock and promissory notes, including accrued interest, held by Carilion.

Report of independent registered public accounting firm

INDEPENDENT AUDITOR'S REPORT

To the Board of Directors
Luna Technologies, Inc.
Blacksburg, Virginia

We have audited the accompanying balance sheet of Luna Technologies, Inc. as of December 31, 2004, and the related statements of operations, changes in stockholders' equity (deficit), and cash flows for the year then ended. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Luna Technologies, Inc. as of December 31, 2004, and the results of its operations and its cash flows for the year then ended in conformity with accounting principles generally accepted in the United States of America.

/s/ Brown, Edwards & Company, L. L. P.
CERTIFIED PUBLIC ACCOUNTANTS

September 22, 2005

Luna Technologies, Inc.

Balance sheets

	December 31, 2004	September 30, 2005
		(unaudited)
Assets		
Current assets:		
Cash and cash equivalents	$624,552	$114,541
Receivables, net of allowance for doubtful accounts of $552 and $2,052 at December 31, 2004 and September 30, 2005, respectively	680,591	784,688
Due from related party	9,268	7,533
Inventories, net	212,722	382,969
Other current assets	40,855	53,610
Total current assets	1,567,988	1,343,341
Property and equipment, net	300,947	286,134
Intangibles	—	166,726
Other assets	8,729	4,804
Total Assets	**$1,877,664**	**$1,801,005**
Liabilities and stockholders' equity (deficit)		
Current liabilities:		
Accounts payable	$74,978	$279,215
Accrued liabilities	331,343	273,961
Total current liabilities	406,321	553,176
Long term debt payable, net of current portion	214,953	214,953
Total liabilities	621,274	768,129
Redeemable Convertible Series B Preferred Stock, $0.001 par value per share; 64,600,000 shares authorized; 26,618,308 and 0 shares issued and outstanding at December 31, 2004 and September 30, 2005, respectively	3,200,565	—
Redeemable Convertible Series A and Series A-1 Preferred Stock, $0.001 par value per share; 26,000,000 shares authorized; 12,594,801 and 0 shares issued and outstanding at December 31, 2004 and September 30, 2005, respectively	11,960,763	—
Stockholders' equity:		
Common stock, $0.001 par value; 160,000,000 and 1,000 shares authorized at December 31, 2004 and September 30, 2005, respectively; 5,923,844 and 1,000 shares issued and outstanding at December 31, 2004 and September 30, 2005, respectively	5,924	1
Additional paid in capital	—	16,060,156
Retained earnings (deficit)	(13,910,862)	(15,027,281)
Total stockholders' equity	(13,904,938)	1,032,876
Total liabilities and stockholders' equity	**$1,877,664**	**$1,801,005**

The accompanying notes are an integral part of these financial statements.

Luna Technologies, Inc.

Statements of operations

	Year ended December 31, 2004	Nine Months Ended September 30,	
		2004	2005
		(unaudited)	(unaudited)
Revenues	$1,775,082	$1,049,299	$2,204,196
Cost of revenues	817,071	517,152	1,074,354
Gross profit	958,011	532,147	1,129,842
Operating expenses	1,884,606	1,416,386	1,507,864
Loss from operations	(926,595)	(884,239)	(378,022)
Other income (expense):			
Interest expense	(30,730)	(26,079)	(12,217)
Loss on disposal of fixed assets	(2,813)	(1,327)	—
Miscellaneous income (expense)	506	—	—
Total other income (expense)	(33,037)	(27,406)	(12,217)
Net loss	$(959,632)	$(911,645)	$(390,239)
Net loss per share—basic and diluted	$(0.16)	$(0.15)	$(0.07)
Weighted average number of common shares outstanding—basic and diluted	5,923,894	5,923,894	5,923,894

The accompanying notes are an integral part of these financial statements.

Luna Technologies, Inc.

Statements of changes in stockholders' equity (deficit)

	Shares	Common Stock	Additional Paid In Capital	Retained Earnings (Deficit)	Total
Balance—December 31, 2003	6,127,727	$6,128	$—	$(11,849,413)	$(11,843,285)
Net loss	—	—	—	(959,632)	(959,632)
Conversion of Common Stock to Series A	(203,883)	(204)	—	(147,040)	(147,244)
Accretion of Preferred Stock	—	—	—	(962,277)	(962,277)
Gain on redemption of Series B Preferred Stock	—	—	—	7,500	7,500
Balance—December 31, 2004	5,923,844	5,924	—	(13,910,862)	(13,904,938)
Net loss (unaudited)	—	—	—	(390,239)	(390,239)
Accretion of Preferred Stock (unaudited)	—	—	—	(726,180)	(726,180)
Purchase by Luna Innovations (unaudited)	(5,922,844)	(5,923)	16,060,156	—	16,054,233
Balance—September 30, 2005 (unaudited)	1,000	$1	$16,060,156	$(15,027,281)	$1,032,876

The accompanying notes are an integral part of these financial statements.

Luna Technologies, Inc.

Statements of cash flows

	Year Ended December 31, 2004	Nine Months Ended September 30, 2004	Nine Months Ended September 30, 2005
		(unaudited)	(unaudited)
Cash flows from (used in) operating activities:			
Net loss	$(959,632)	$(911,645)	$(390,239)
Adjustments to reconcile to net loss to net cash used in operating activities:			
Depreciation and amortization	252,933	171,826	112,182
Provision for doubtful accounts	(26,839)	(26,839)	1,500
Amortization of deferred financing costs	21,064	—	—
Loss on disposal of property and equipment	2,813	1,327	—
Change in current assets and liabilities:			
(Increase) decrease in:			
Accounts receivable	(386,081)	(109,744)	(133,784)
Due from related party	18,998	—	1,735
Inventories	106,270	52,626	(170,247)
Note receivable	51,484	25,743	28,187
Prepaid expenses and other current assets	24,804	15,388	(12,755)
Other assets	(15,827)	(19,752)	—
(Decrease) increase in:			
Accounts payable	(101,826)	75,023	208,097
Accrued compensation	108,514	—	—
Accrued liabilities	(7,509)	(164,578)	(61,242)
Deferred revenues	(79,671)	—	—
Net cash flows used in operating activities	(990,505)	(890,625)	(416,566)
Cash flows from (used in) investing activities:			
Purchase of property and equipment	(11,430)	(9,744)	(93,445)
Proceeds from sale of property and equipment	6,000	6,000	—
Net cash (used in) investing activities	(5,430)	(3,744)	(93,445)
Cash flows from financing activities:			
Proceeds (repayments) from issuance of notes payable	(195,549)	(195,549)	—
Proceeds from the issuance of preferred stock	1,441,481	1,441,481	—
Repurchase of preferred stock	(5,000)	(5,000)	—
Net cash provided by financing activities	1,240,932	1,240,932	—
Increase (decrease) in cash and cash equivalents	244,997	346,563	(510,011)
Cash and cash equivalents:			
Beginning	379,555	379,555	624,552
Ending	$624,552	$726,118	$114,541
Supplemental disclosure of cash flow information			
Interest paid	$30,730	$26,079	$12,217
Schedule of non-cash investing and financing activities			
Accretion of preferred stock and related dividends	$962,277	$717,531	$726,180
Conversion of common stock to Series A preferred stock	$147,040	$147,040	—

The accompanying notes are an integral part of these financial statements.

Notes to financial statements

(Information for the nine months ended September 30, 2004 and 2005 is unaudited)

1. Organization and Nature of Business

Luna Technologies, Inc. (the "Company") was originally incorporated on July 24, 1998 in the Commonwealth of Virginia as a wholly-owned subsidiary of Luna Innovations Incorporated ("Luna Innovations"). On December 11, 2000, we were reincorporated in the State of Delaware.

We develop and sell test instruments to measure the integrity of fiber optic network components and modules. Due to the nature of our products, the volume of sales transactions tends to be very low with relatively high average revenues per sale. Although we have repeat customers, we depend primarily on sales to new customers each year to maintain and increase revenues.

2. Summary of Significant Accounting Policies

Basis of Presentation

The unaudited financial statements have been prepared in accordance with accounting principles generally accepted in the United States for interim financial information and with the instructions to Form 10-Q and Article 10 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required to be presented for complete financial statements. The accompanying financial statements include all adjustments (consisting only of normal recurring accruals), which are, in the opinion of our management, necessary for a fair presentation of the results for the interim periods presented. The results of operations for the nine months ended September 30, 2005 are not necessarily indicative of the results that may be expected for the year ended December 31, 2005.

The unaudited financial statements and related disclosures have been prepared with the presumption that users of the interim financial information have read or have access to the audited financial statements for the preceding fiscal year. Accordingly, these financial statements should be read in conjunction with the audited financial statements and the related notes included for 2004.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from those estimates.

Cash and Cash Equivalents

Cash and cash equivalents consist of highly liquid investments with an original maturity of three months or less.

We maintain our cash in bank deposit accounts which, at times, may exceed federally insured limits. We have not experienced any losses in such account. We believe we are not exposed to any significant credit risk on cash and cash equivalents.

Financial Instruments

Our balance sheet includes various financial instruments (primarily cash and cash equivalents, accounts receivable, note receivable, accounts payable, accrued compensation and accrued liabilities). The fair values of these financial instruments approximate the carrying values due to their short maturities. The fair value of debt approximated its carrying amount as of December 31, 2004 and September 30, 2005 based on rates currently available to us for debt with similar terms and remaining maturities.

Concentration of Credit Risk

Financial instruments that potentially subject us to concentrations of credit risk consist primarily of cash and cash equivalents, accounts receivable, and notes receivable. We deposit our cash with financial institutions in the United States that we consider to be of high credit quality.

Accounts Receivable

With respect to accounts receivable and notes receivable, we perform ongoing credit evaluations of our customers, generally do not require collateral, and maintain an allowance for doubtful accounts based on historical experience and management's expectations.

Inventories

Inventory consists of component parts, work-in-progress, and finished goods. Inventory is stated at the lower of cost, determined on the first-in, first-out (FIFO) basis, or market.

Property and Equipment

Property and equipment are recorded at cost. Depreciation and amortization are calculated on the straight-line method over the following estimated useful lives of the assets:

Computer and sale demo equipment	3 – 7 years
Furniture and equipment	3 – 7 years
Software	3 – 7 years
Leasehold improvements	Lesser of lease term or life of improvements
Vehicles	5 years

Depreciation expense for the year ended December 31, 2004 and the nine months ended September 30, 2004 and 2005 was $252,933, $171,826 and $112,182, respectively.

Certain equipment held under capital leases is classified as property and equipment and is amortized using the straight-line method over the term of the lease. The related obligations are recorded as liabilities. Lease amortization expense is included in depreciation and amortization expense. Maintenance and repairs are charged to expense as incurred.

Impairment of Long-Lived Assets

We evaluate our long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of any asset to future net undiscounted cash flows expected to be generated by the asset. If such assets are considered to be impaired, the impairment to be recognized is measured by future discounted cash flows compared to the carrying amount of the assets. No such indicators existed as of December 31, 2004 and as of September 30, 2005.

Revenue Recognition

Revenues are derived from product sales. We recognize revenues when all the following criteria are met: (i) persuasive evidence of an arrangement exists, (ii) delivery has occurred, (iii) the fee is fixed or determinable, and (iv) collectibility is probable.

We accrue for warranty costs, sales returns and other allowances on our best estimate of costs that will be incurred on the delivered product.

Stock-Based Compensation

We have a stock-based employee compensation plan, which is more fully described in Note 11. We account for stock-based employee compensation arrangements in accordance with Accounting Principles Board Opinion No. 25, *Accounting for Stock Issued to Employees* (APB 25), and comply with the disclosure provisions of Statement of Financial Accounting Standards No. 123, *Accounting for Stock-Based Compensation* (SFAS No. 123). Awards under our current plan vest over a period of up to five years. We account for equity instruments issued to nonemployees in accordance with SFAS No. 123 and EITF 96-18, *Accounting for Equity Instruments that are Issued to Others than Employees for Acquiring, or in Conjunction with Selling, Goods or Services* . For the year ended December 31, 2004 and the nine months ended September 30, 2004 and 2005, applying the value-based method under SFAS 123 to all outstanding and unvested options would have no impact on the net loss as reported by us.

The fair value of each option grant is estimated on the date of grant using the Minimum Value option-pricing model with the following assumptions: dividend yield of 0.00%; riskfree interest rate of 5.00%; and an expected life of five years. In determining the value of the options, management also considers the fundamentals of Luna Technologies, including earnings performance, liquidation performances, and dilution of common stock by preferred stock conversion rights. The effect of applying SFAS No. 123 to the calculation of the pro forma net loss as stated above is not necessarily representative of the effects on reported net loss for future years due to, among other things, (1) the vesting period of the stock options and (2) the fair market value of additional stock options in future years.

In December 2004, the FASB issued SFAS No. 123 (revised 2004), *Share-Based Payment*, which is a revision of SFAS No. 123, *Accounting for Stock-Based Compensation* (SFAS No. 123R). SFAS No. 123R supersedes APB Opinion No. 25, *Accounting for Stock Issued to Employees*, and amends SFAS No. 95, *Statement of Cash Flows*. Generally, the approach in SFAS No. 123R is similar to the approach described in SFAS No. 123. However, SFAS No. 123R requires all share-based payments to employees, including grants of employee stock options, to be recognized in the income statement based on their fair values. Pro forma disclosure is no longer an alternative. Publicly traded companies are required to adopt SFAS No. 123R on January 1, 2006.

On September 30, 2005, all outstanding options were cancelled in conjunction with the acquisition by Luna Innovations.

Advertising Costs

We expense all advertising costs as incurred. We incurred approximately $44,000, $13,325 and $73,490 of advertising expense during the year ended December 31, 2004 and the nine months ended September 30, 2004 and 2005, respectively.

Research and Development Costs

Expenditures relating to the development of new products and processes, including significant improvements to existing products, are expensed as incurred. Software development costs are subject to capitalization beginning when a product's technological feasibility has been established and ending when a product is available for release to customers. Our products are released soon after technological feasibility has been established. As a result, the costs subsequent to achieving technological feasibility have been insignificant and all software development costs have been expensed.

Income Taxes

We provide for income taxes in accordance with the liability method required by Statement of Financial Accounting Standards No. 109, *Accounting for Income Taxes* (SFAS 109). Under this method, deferred tax assets and liabilities are determined based on differences between financial reporting and tax bases of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse.

Purchase Method of Accounting

The purchase method of accounting has been used to account for our acquisition by Luna Innovations on September 30, 2005. The price has been allocated based on the fair values of our identifiable assets. Push down accounting is used which resulted in revaluing the intangible assets of the company and assigning a value of $166,726 to licensed patents. Consideration of 1,031,234 shares valued by an independent appraiser at $0.92 per share, 44.6% of which is contingent.

3. Inventories

Inventories consist of the following at:

	December 31, 2004	September 30, 2005
Finished goods	$30,000	$—
Raw materials	76,494	384,473
Work-in-process	116,228	10,198
	222,722	394,671
Obsolescence reserve	(10,000)	(11,702)
	$212,722	$382,969

4. Note Receivable

As partial payment for a product sale, we accepted a promissory note payable for 36 equal installments of $4,290 beginning on August 1, 2002. The note bears interest at a rate of 6.5% per annum, with the product as collateral. The revenues on the remaining balance of the note receivable were $79,671 as of December 31, 2003. We recognized the remaining revenues related to the sale in 2004 because the maker of the note was purchased by a third party and our management believes there is minimal risk of default on the note and repossession of the equipment.

5. Property and Equipment

Property and equipment, at cost, including equipment under capital lease obligations, consist of the following at December 31, 2004:

Computer and sales demo equipment	$53,309
Furniture and equipment	801,146
Computer software	270,154
Leasehold improvements	43,020
	1,167,629
Less accumulated depreciation and amortization	866,682
	$300,947

6. Debt

On August 31, 2001, we entered into an equipment term note (the "Term Note") with a financial institution that provides for borrowings up to $800,000. At December 31, 2004, no balance was outstanding under the Term Note.

In conjunction with the execution of the Term Note, we issued warrants to purchase 88,642 shares of Series A Preferred Stock at $0.7222 per share. The warrants were fully vested upon issuance and expire on August 31, 2007. The fair value of the warrants was calculated using the Black-Scholes option-pricing model using the following assumptions: (a) 73% expected volatility; (b) 44 month expected life; (c) 0% expected dividend yield; and (d) 5.0% risk-free interest rate. We recorded deferred financing costs of $51,803, of which $46,094 related to the fair value of the warrants issued to the financial institution. The deferred financing costs are being amortized to interest expense using the effective interest method over the period the related debt is expected to be outstanding (three years). During the year ended December 31, 2004, we recognized additional interest expense of $15,828.

On August 31, 2003, we refinanced two previous loans totaling $214,953 with an affiliated organization in return for an interest only note payable beginning September 30, 2003 and bearing interest of 5% per annum. The note calls for 23 interest payments of $897, with a balloon payment of $214,953 due on August 1, 2005. At December 31, 2004, $214,953 was outstanding under this term note. In April 2005, the maker of the note extended the term until July 31, 2007. Consequently, the balance of the note is presented as a non-current liability.

On September 1, 2002, we agreed to borrow an aggregate of $105,060 from an affiliated organization in return for (i) a promissory note and (ii) warrants to purchase 36,364 shares of Series A Preferred Stock at $0.7222 per share. The warrants were fully vested upon issuance and expire on September 1, 2007. The fair value of the warrants was calculated using the Black-Scholes option-pricing model using the following assumptions: (a) 77% expected volatility; (b) five-year expected life; (c) 0% expected dividend yield; and (d) 5.0% risk-free interest rate. We recorded deferred financing costs of $26,182 related to the fair value of the warrants issued to the financial institution. The deferred financing costs are being amortized to interest expense using the effective interest method over the original four year term of the note. During the year ended December 31, 2004, we recognized additional interest expense of $5,236 per year. This note was refinanced as part of the interest only loan described above.

Annual maturities of all long-term debt are as follows:

Year ended December 31:

2005	$ —
2006	—
2007	214,953
	$214,953

7. Related Party Transactions

During the year ended December 31, 2004, we incurred approximately $1,966 of administrative fees paid to a stockholder.

During the year ended December 31, 2004, we sold products and services to the same stockholder valued at approximately $46,178.

8. Income Taxes

Significant components of the provision for (benefit from) income taxes attributable to operations consist of the following at December 31, 2004:

Current	$—
Deferred	(316,637)
Valuation allowance	316,637
	$—

The difference between the tax provision and the amount that would be computed by applying the statutory federal income tax rate to income before taxes is primarily attributable to the valuation allowance for deferred tax assets.

Temporary differences and carryforwards, which give rise to a significant portion of deferred tax assets and liabilities, are as follows at December 31, 2004:

Deferred tax assets:	
Net operating loss carryforwards	$3,937,451
Depreciation	(18,098)
Accrued other	34,706
Valuation allowance	(3,954,059)
Net deferred tax assets	$—

We have net operating loss carryforwards for federal income tax purposes of approximately $10,200,000, which expire, if unused, from the year 2019 through the year 2024. The timing and manner in which this net operating loss carryforward may be utilized in any year by us may be limited to our ability to generate future earnings and also be limited by certain provisions of the U.S. tax code. Realization of total deferred tax assets is contingent upon the generation of future taxable income. Due to the uncertainty of realization of these tax benefits, we have provided a valuation allowance for the full amount of its deferred tax assets.

9. Lease Commitments

We lease office facilities and office equipment under operating lease agreements. Rent expense for the year ended December 31, 2004 was approximately $96,400.

Future minimum rental payments associated with non-cancelable lease obligations are as follows at December 31, 2004:

2005	$104,431
2006	104,431
2007	8,703
	$217,565

10. Redeemable Preferred Stock

Series A

On December 22, 2000, we entered into the Series A Preferred Stock Purchase Agreement (Purchase Agreement). The sale of Series A Preferred Stock was effected in three closings occurring during 2001. The first closing occurred simultaneous with the execution of the Purchase Agreement whereby we issued 6,923,290 shares of Series A Preferred Stock at $0.7222 per share for gross proceeds of $5 million, less offering costs of $76,783. The second closing of the Purchase Agreement was executed on March 19, 2001, whereby we issued 1,841,591 shares of Series A Preferred Stock at $0.7222 per share for gross proceeds of $1,329,997, less offering costs of $14,630. The third closing of the Purchase Agreement was executed on October 10, 2001, whereby we issued 3,615,343 shares of Series A Preferred Stock at $0.7222 for gross proceeds of $2,611,001, less offering costs of $8,401.

The holders of Series A Preferred Stock are entitled to receive, when declared by our Board of Directors, cumulative dividends, accruing from the date of issuance at a rate of 8% per annum on each outstanding share of Series A Preferred Stock.

Each share of the Series A Preferred Stock is convertible into one share of common stock at the election of the holder, subject to certain anti-dilutive provisions. Conversions are automatic in the event of public offering of common stock in which the net proceeds to us are at least $25 million or upon the closing of an acquisition or asset transfer resulting in gross cash proceeds of at least $75.0 million. The holders of Series A Preferred Stock are entitled to one vote per share. Furthermore, the holders of Series A Preferred Stock are entitled to elect a certain number of members to the Board of Directors as well as vote on significant matters affecting us. In addition, the holders of Series A Preferred Stock have a liquidation preference in the event of our dissolution. The liquidation price is equal to the sum of the original issuance price per share of Series A Preferred Stock, plus any accrued and unpaid dividends. Holders of Series A Preferred Stock are entitled to redemption any time after the fifth anniversary of original issuance of the Series A Preferred Stock in two equal annual installments. The redemption price is equal to the sum of the original issuance price per share of Series A Preferred Stock, plus any accrued and unpaid dividends.

The difference between the redemption price of the Series A Preferred Stock and the carrying value of the Series A Preferred Stock is being accreted over the period from the issuance date to the redemption date using the effective-interest method.

In conjunction with the issuance of Series B shares described below, certain holders of common stock were entitled to convert shares of common stock to Series A Preferred Stock. The shares converted and the related carrying values of the common and preferred shares are as follows:

	Shares Converted	Par Value Common Stock	Series A Preferred Stock
2004	203,883	$ (204)	$ 147,244

Series A-1

Pursuant to the issue of Series B Preferred Stock described below, we authorized 13,000,000 shares of Series A-1 Preferred Stock to convert the Series A Preferred Stock for stockholders who opted not to participate in the Series B Preferred Stock issue. Series A-1 Preferred Stock has the same dividend, redemption, and conversion features as Series A Preferred Stock, but is subordinated in liquidation. 214,631 shares of Series A Preferred Stock were converted to Series A-1 Preferred Stock during 2003.

Series B

On March 31, 2003, we entered into the Series B Preferred Stock Purchase Agreement (Purchase Agreement). The sale of Series B Preferred Stock was effected in two closings. The first closing occurred simultaneous with the execution of the Purchase Agreement whereby we issued 26,618,308 shares of Series B Preferred Stock at $0.055 per share for net proceeds of $1,464,007. The second closing occurred during 2004 whereby we issued 26,209,218 additional shares of Series B Preferred Stock at $0.055 per share for net proceeds of $1,441,481.

The holders of Series B Preferred Stock are entitled to receive, when declared by our Board of Directors, cumulative dividends, accruing from the date of issuance at a rate of 8% per annum on each outstanding share of Series B Preferred Stock.

Each share of the Series B Preferred Stock is convertible into one share of common stock at the election of the holder, subject to certain anti-dilutive provisions. Conversions are automatic in the event of public offering of common stock in which the net proceeds to us are at least $25 million or upon the closing of an acquisition or asset transfer resulting in gross cash proceeds of at least $75 million. The holders of Series B Preferred Stock are entitled to one vote per share. Furthermore, the holders of Series B Preferred Stock are entitled to elect a certain number of members to the Board of Directors as well as vote on significant matters affecting us. In addition, the holders of Series B Preferred Stock have a liquidation preference in the event of our dissolution. The liquidation price is equal to the sum of the original issuance price per share of Series B Preferred Stock, plus any accrued and unpaid dividends. Holders of Series B Preferred Stock are entitled to redemption any time after the fifth anniversary of original issuance of the Series B Preferred Stock in two equal annual installments. The redemption price is equal to the sum of the original issuance price per share of Series B Preferred Stock, plus any accrued and unpaid dividends.

The difference between the redemption price of the Series B Preferred Stock and the carrying value of the Series B Preferred Stock is being accreted over the period from the issuance date to the redemption date using the effective-interest method.

11. Stockholders' Equity (Deficit)

Common Stock

We have authorized 160 million shares of common stock with a $0.001 par value. Dividends may be declared and paid on the common stock, subject in all cases to the rights and preferences of the holders of Series A and Series B Preferred Stock and to authorization by the Board of Directors. In the event of liquidation or winding up of Luna Technologies and after the payment of all preferential amounts required to be paid to the holders of Series A and Series B Preferred Stock, any remaining funds shall be distributed among the holders of the issued and outstanding common stock.

Stock Options

On September 7, 2000, we adopted the Luna Technologies, Inc. 2000 Incentive Stock Option Plan (the Plan) to provide for the granting of stock awards, such as stock options, to employees, directors and other individuals as determined by the Board of Directors. We have reserved 9,900,000 shares of common stock under the Plan. Stock options granted under the Plan may be either incentive stock options (ISOs) as defined by the Internal Revenue Code, or nonqualified stock options. The Board of Directors determines who will receive options under the Plan and determines the vesting period, which is generally five years. Options may have a maximum term of no more than 10 years. The exercise price of ISOs granted under the Plan shall not be less than 100% of the fair market value of the common stock on the date of grant. The Board of Directors determines the exercise price of nonqualified options.

Additional information with respect to stock option activity is summarized as follows for the year ended December 31, 2004:

	Shares	Weighted Average Exercise Price
Outstanding, beginning	6,594,955	$0.02
Options granted	12,774,470	0.01
Options canceled or expired	(35,000)	0.01
Outstanding, ending	19,334,425	0.01
Options exercisable, ending	7,966,935	$0.01

The following table summarizes information about stock options outstanding at December 31, 2004:

Options Outstanding			Options Exercisable		
Exercise Price	Number Outstanding	Weighted-Average Remaining Contractual Life (In Years)	Weighted-Average Exercise Price	Number Exercisable	Weighted-Average Exercise Price
$ 0.01	19,069,425	5.70	$ 0.01	7,757,379	$ 0.01
0.03	150,000	0.98	0.03	131,250	0.03
0.15	115,000	6.52	0.15	78,306	0.15
	19,334,425	5.67	0.02	7,966,935	0.01

12. Employee Benefit Plan

Employees of Luna Technologies participate in a 401(k) retirement plan administered by The Principal Inc. Eligible employees may elect to contribute, on a tax-deferred basis, up to 100% of their compensation, not to exceed annual maximums as defined in the Internal Revenue Code. We match one-half of a participant's contribution up to 10% of the participant's compensation. Our contributions to the plan were approximately $28,489, $25,196 and $33,385 for the year ended December 31, 2004 and nine months ended September 30, 2004 and 2005 (unaudited), respectively.

13. Royalty Agreement

We license certain technology from the National Aeronautics and Space Administration, which is used with, and incorporated in, the manufacture of certain products. We pay a 4.0% royalty on the gross sales of all products sold which incorporate the technology and record such amount as a cost of revenue. Royalty expenses under the agreement were $61,905 for the year ended December 31, 2004 and September 30, 2005.

14. Employment Agreement

During 2003, we entered into an employment agreement with our current president. The agreement provides for payment of a quarterly bonus of 50.0% of base salary if certain revenue milestones are met. The agreement also provides for stock option grants to purchase 3,584,955 shares of common stock. Additionally, the agreement provides for a severance payment of $45,752 in the event of a change of control of Luna Technologies.

15. Consulting Agreement

We entered into an agreement which requires us to pay up to 5.0% of the value of a sale of Luna Technologies. This requirement expires July 29, 2006 and applies to any purchaser except a current stockholder, Luna Innovations Incorporated or a company owned by Luna Innovations Incorporated.

16. Acquisition by Luna Innovations (unaudited)

On September 30, 2005, Luna Innovations Incorporated acquired us pursuant to an agreement and plan of merger. Our common and redeemable preferred stock outstanding at the time of the transaction was retired, and we replaced it with 1,000 shares of common stock, $0.001 par value, all of which is held by Luna Innovations Incorporated.

* * * * *

Introduction to unaudited pro forma consolidated financial statements

The unaudited pro forma consolidated statements of operations for the year ended December 31, 2004 and for the nine months ended September 30, 2005 gives effect to our acquisition of all outstanding shares of Luna Technologies, Inc. (“Luna Technologies”) as if it had occurred on January 1, 2004, combining the unaudited consolidated statement of operations of Luna Innovations Incorporated for the nine months ended September 30, 2005 and the unaudited statement of operations of Luna Technologies for the nine months ended September 30, 2005 as well as combining the audited consolidated statement of operations of Luna Innovations Incorporated for the year ended December 31, 2004 and the audited statement of operations of Luna Technologies for the year ended December 31, 2004.

The unaudited pro forma consolidated balance sheet as of September 30, 2005 has not been presented because the acquisition was consummated on September 30, 2005, and the balance sheet impact of the acquisition is therefore reflected in the unaudited consolidated financial statements for the nine months ended September 30, 2005.

As described in Note 5 to the Luna Innovations audited consolidated financial statements included elsewhere herein, we acquired all of the outstanding shares of Luna Technologies that we did not already own on September 30, 2005.

The pro forma consolidated statements of operations are unaudited and does not purport to represent the consolidated results that would have been obtained had the transaction occurred at the date indicated or the results which may be obtained in the future. The unaudited pro forma consolidated statements of operations do not represent the results which may be obtained in the future because, we believe that overhead and other operating costs will not continue at the same level as a result of integration efforts and synergies related to infrastructure and distribution channels, among other factors. Therefore, the results of operations reflected in the unaudited pro forma consolidated statement of operations for the period presented are not necessarily indicative of the results of operations which may be obtained in the future.

The unaudited pro forma consolidated statements of operations should be read in conjunction with: (i) our audit and unaudited consolidated financial statements included in this prospectus and (ii) the audited and unaudited financial statements of the Luna Technologies, Inc. included in this prospectus.

Unaudited pro forma consolidated statements of operations

	Year Ended December 31, 2004			
	Historical Luna Innovations	Historical Luna Technologies	Pro forma adjustments	Pro forma consolidated
	(audited)	(audited)	(unaudited)	(unaudited)
Revenues	$22,586,906	$1,775,082	($46,178)	$24,315,810
Cost of revenues	13,865,770	817,071	—	14,682,841
Gross profit	8,721,136	958,011	(46,178)	9,632,969
Operating expense	4,189,629	1,884,606	(46,178)	6,028,057
Operating income (loss)	4,531,507	(926,595)	—	3,604,912
Other income (expense):				
Interest income (expense), net	(90,304)	(30,730)	—	(121,034)
Loss on investments in and advances to affiliates	(256,904)	—	—	(256,904)
Miscellaneous income	117	506	—	623
Loss on disposal of fixed assets	—	(2,813)	—	(2,813)
Total other income (expense)	(347,091)	(33,037)	—	(380,128)
Income (loss) before income taxes	4,184,416	(959,632)	—	3,224,784
Income tax expense (benefit)	128,234	—	—	128,234
Net income (loss)	$4,056,182	$(959,632)	$—	$3,096,550
Net income (loss) per share:				
Basic	$0.79			$0.60
Diluted	$0.59			$0.45
Weighted average shares outstanding:				
Basic	5,136,001			5,136,001
Diluted	6,902,405			6,902,405

The accompanying notes are an integral part of these unaudited pro forma consolidated financial statements.

Unaudited pro forma consolidated statements of operations

	Nine Months Ended September 30, 2005			
	Historical Luna Innovations	Historical Luna Technologies	Pro forma adjustments	Pro forma consolidated
	(unaudited)	(unaudited)	(unaudited)	(unaudited)
Revenues	$11,111,721	$2,204,196	$(15,871)	$13,300,046
Cost of revenues	8,539,567	1,074,354	—	9,613,921
Gross profit	2,572,154	1,129,842	(15,871)	3,686,125
Operating expense	2,952,666	1,507,864	(15,871)	4,444,659
Operating income (loss)	(380,512)	(378,022)	—	(758,534)
Other income (expense)				
Interest income (expense), net	(75,206)	(12,217)	—	(87,423)
Miscellaneous (expense)	(92)	—	—	(92)
Total other (expense)	(75,298)	(12,217)	—	(87,515)
Income (loss) before income taxes	(455,810)	(390,239)	—	(846,049)
Income tax expense (benefit)	(187,273)	—	—	(187,273)
Net income (loss)	$(268,537)	$(390,239)	$—	$(658,776)
Net income (loss) per share:				
Basic	$(0.05)			$(0.12)
Diluted	$(0.05)			$(0.12)
Weighted average shares outstanding:				
Basic	5,713,926			5,713,926
Diluted	5,713,926			5,713,926

The accompanying notes are an integral part of these unaudited pro forma consolidated financial statements.

Notes to unaudited pro forma consolidated financial statements

1. Basis of Presentation

Our unaudited pro forma consolidated financial statements have been prepared using the purchase method of accounting. The unaudited pro forma combined statement of operations for the year ended December 31, 2004 and the nine month period ended September 30, 2005 illustrate the effect of the merger of Luna Technologies, Inc. as if it had occurred on January 1, 2004, and includes the historical statement of operations for Luna Technologies for the periods presented, combined with our audited and unaudited consolidated statement of operations for the periods presented.

Certain reclassifications have been made to the historical presentation of Luna Technologies, Inc. for conformity with the pro forma consolidated presentation.

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PART II

Information not required in prospectus

ITEM 13. Other Expenses of Issuance and Distribution

The following table sets forth the costs and expenses, other than the underwriting discount and commissions, payable by Luna Innovations Incorporated in connection with the sale of the common stock being registered hereby. All amounts are estimates except the SEC Registration Fee, the NASD filing fee and the Nasdaq National Market listing fee.

	Amount to be Paid
Securities and Exchange Commission registration fee	$6,152.50
NASD filing fee	*
Nasdaq National Market listing fee	*
Blue Sky fees and expenses	*
Printing and engraving expenses	*
Legal fees and expenses	*
Accounting fees and expenses	*
Transfer agent and registrar fees	*
Miscellaneous	*
Total	*

* To be filed by amendment

ITEM 14. Indemnification of Directors and Officers

Section 145(a) of the Delaware General Corporation Law provides that a Delaware corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation) by reason of the fact that such person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation or enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with such action, suit or proceeding if he or she acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no cause to believe his or her conduct was unlawful.

Section 145(b) of the Delaware General Corporation Law provides that a Delaware corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation to procure a judgment in its favor by reason of the fact that such person acted in any of the capacities set forth above, against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection with the defense or settlement of such action or suit if he or she acted under similar standards, except that no indemnification may be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the court in which such action or suit was brought shall determine that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to be indemnified for such expenses which the court shall deem proper.

Section 145 of the Delaware General Corporation Law further provides that: (i) to the extent that a former or present director or officer of a corporation has been successful in the defense of any action, suit or proceeding referred to in

subsections (a) and (b) or in the defense of any claim, issue or matter therein, such person shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by him or her in connection therewith; (ii) indemnification provided for by Section 145 shall not be deemed exclusive of any other rights to which the indemnified party may be entitled; and (iii) the corporation may purchase and maintain insurance on behalf of any present or former director, officer, employee or agent of the corporation or any person who at the request of the corporation was serving in such capacity for another entity against any liability asserted against such person and incurred by him or her in any such capacity or arising out of his or her status as such, whether or not the corporation would have the power to indemnify him or her against such liabilities under Section 145.

Article X of our amended and restated certificate of incorporation and Article VIII of our proposed amended and restated certificate of incorporation provides for the indemnification of directors to the fullest extent permissible under Delaware law.

Article VI of our proposed amended and restated bylaws provides for the indemnification of officers, directors and third parties acting on our behalf if such person acted in good faith and in a manner reasonably believed to be in and not opposed to our best interest and, with respect to any criminal action or proceeding, the indemnified party had no reason to believe his or her conduct was unlawful.

We have entered into indemnification agreements with our directors, executive officers and others, in addition to indemnification provided for in our bylaws, and intend to enter into indemnification agreements with any new directors and executive officers in the future.

We have purchased and intend to maintain insurance on behalf of any person who is or was a director or officer against any loss arising from any claim asserted against him or her and incurred by him or her in any such capacity, subject to certain exclusions.

See also the undertakings set out in response to Item 17 herein.

ITEM 15. Recent Sales of Unregistered Securities

In the past three years, we have issued and sold the following securities as adjusted for the -for- stock split:

1. From September 22, 2003 through the date hereof, we have granted options to purchase 10,831,660 shares of our Class B Common Stock at a weighted average exercise price of $0.43 per share, which included 7,506,910 shares of Class B Common Stock issuable upon exercise of options outstanding at an exercise price of $0.20 per share, 200,000 shares of Class B Common Stock issuable upon exercise of options outstanding at an exercise price of $0.22 per share, and 3,124,750 shares of Class B Common Stock issuable upon exercise of options outstanding at an exercise price of $1.00 per share. As of December 31, 2005, 556,623 of these options had been exercised at a price of $0.20 per share.
2. In May 2003, we issued warrants to purchase 183,120 shares of our Class B Common Stock at a price of $0.001 per share. Those warrants were exercised on November 22, 2005.
3. In August 2005, we issued and sold to an accredited investor 2,639,688 shares of our Class C Common Stock at a price of $2.65 per share.
4. In September 2005, we issued 1,227,637 shares of our Class B Common Stock (of which 196,403 shares were held in escrow as of the date of issuance) and warrants for 4,287 shares of our Class B Common Stock exercisable at $21.06 per share to accredited investors (of which 686 warrant shares were held in escrow as of the date of issuance) in consideration for the acquisition of Luna Technologies, Inc. In October 2005 we issued additional warrants for 2,636 shares of Class B Common Stock exercisable at $1.00 per share in connection with this transaction.
5. In December 2005, we issued and sold to an accredited investor 1,131,294 shares of our Class C Common Stock at a price of $2.65 per share. In connection with the transaction we issued to the same accredited investor a series of convertible promissory notes convertible into 1,885,490 shares of common stock upon the conversion of the principal amount outstanding under the convertible notes and, assuming we elect to convert all of the accrued interest on these notes into shares of common stock after these notes remain outstanding for eight years, up to an additional 905,035 shares of common stock.

6. In February 2006, we issued warrants to purchase 101,773 shares of our Class B Common Stock at an exercise price of $1.00 per share.

The sales of the above securities were deemed to be exempt from registration under the Securities Act with respect to items 1 through 6 above in reliance on Section 4(2) of the Securities Act, or Regulation D promulgated thereunder, and with respect to item 1 above also in reliance on, in full or in part, Rule 701 promulgated under Section 3(b) of the Securities Act as transactions by an issuer not involving a public offering or transactions pursuant to compensatory benefit plans and contracts relating to compensation as provided under such Rule 701. The recipients of securities in each such transaction represented their intention to acquire the securities for investment only and not with a view to or for sale in connection with any distribution thereof and appropriate legends were affixed to the share certificates and warrants issued in such transactions. All recipients had adequate access, through their relationships with us, to information about us.

ITEM 16. Exhibits and Financial Statement Schedules

(a) Exhibits.

A list of exhibits filed herewith is contained in the exhibit index that immediately precedes such exhibits and is incorporated herein by reference.

ITEM 17. Undertakings

The undersigned Registrant hereby undertakes to provide to the underwriters at the closing specified in the Underwriting Agreement certificates in such denominations and registered in such names as required by the underwriters to permit prompt delivery to each purchaser.

Insofar as indemnification by the Registrant for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Registrant pursuant to the provisions described in Item 14 or otherwise, the Registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

The undersigned Registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the Registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

Signatures

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in Roanoke, Commonwealth of Virginia, on the 10th day of February, 2006.

Luna Innovations Incorporated

By: /s/ KENT A. MURPHY
Kent A. Murphy, Ph.D.
President, Chief Executive Officer and Chairman

Power of Attorney

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Kent A. Murphy, Ph.D. and Scott A. Graeff, and each of them acting individually, as his true and lawful attorneys-in-fact and agents, with full power of each to act alone, with full powers of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to sign the Registration Statement filed herewith and any and all amendments to said Registration Statement (including post-effective amendments and any related registration statements thereto filed pursuant to Rule 462 and otherwise), and file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, with full power of each to act alone, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully for all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or his or their substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the dates indicated:

Signature	Title	Date
/S/ KENT A. MURPHY Kent A. Murphy, Ph.D.	President, Chief Executive Officer (Principal Executive Officer) and Chairman	February 10, 2006
/S/ SCOTT A. GRAEFF Scott A. Graeff	Chief Financial Officer (Principal Financial and Accounting Officer), Vice President, Corporate Development and Director	February 10, 2006
/S/ JOHN C. BACKUS, JR. John C. Backus, Jr.	Director	February 10, 2006
/S/ EDWARD G. MURPHY Edward G. Murphy, M.D.	Director	February 10, 2006
/S/ PAUL E. TORGERSEN Paul E. Torgersen, Ph.D.	Director	February 10, 2006
/S/ RICHARD W. ROEDEL Richard W. Roedel	Director	February 10, 2006

Exhibit Index

Exhibit Number	Description
1.1*	Form of Underwriting Agreement
2.1	Agreement and Plan of Merger, dated as of September 30, 2005, by and among Luna Innovations Incorporated, Luna Technologies Acquisition Corp., Luna Technologies, Inc. and certain stockholders
3.1	Amended and Restated Certificate of Incorporation of the Registrant as currently in effect
3.2	Form of Amended and Restated Certificate of Incorporation of the Registrant to be effective upon closing of the offering
3.3	Amended and Restated Bylaws of the Registrant as currently in effect
3.4	Form of Amended and Restated Bylaws of the Registrant to be effective upon closing of the offering
4.1*	Specimen Common Stock certificate of the Registrant
4.2	Form of Senior Convertible Promissory Note
4.3	Warrant to Purchase 1,047 Shares of Class B Common Stock of Luna Innovations Incorporated, issued on September 30, 2005
4.4	Warrant to Purchase 2,636 Shares of Class B Common Stock of Luna Innovations Incorporated, issued on November 11, 2005
4.5	Warrant to Purchase 2,554 Shares of Class B Common Stock of Luna Innovations Incorporated, issued on September 30, 2005
4.6	Form of Warrant to Purchase Shares of Common Stock of Luna Innovations Incorporated
4.7	Form of Stock Option Agreement
5.1*	Opinion of Wilson Sonsini Goodrich & Rosati, Professional Corporation
10.1	Form of Indemnification Agreement for directors and executive officers
10.2	Employment Letter between Scott A. Graeff and Luna Innovations Incorporated dated April 14, 2005
10.3	Employment Letter between Robert Lenk and Luna Innovations Incorporated dated August 13, 2005
10.4	Employment Letter between John Goehrke and Luna Innovations Incorporated dated September 20, 2005
10.5	Employment Letter between Kenneth Ferris and Luna Innovations Incorporated dated October 24, 2005
10.6	Loan Agreement, dated as of November 10, 2005, by and between Luna Innovations Incorporated and First National Bank
10.7	2003 Stock Plan
10.8	Amended and Restated Investor Rights Agreement, dated December 30, 2005, by and among Luna Innovations Incorporated, Carilion Health System and certain stockholders
10.9*	2006 Equity Incentive Plan and forms of award agreements used thereunder
10.10	Warehouse and Office Lease, dated June 2003, between Georgia Anne Snyder-Falkinham and Luna Innovations Incorporated (2851 Commerce Street, Blacksburg, Virginia)
10.11	Lease Agreement between William M. Sterrett, Jr. Family Limited Partnership and Luna Innovations Incorporated (2903-A Commerce Street, Blacksburg, Virginia)
10.12	Lease Agreement between William M. Sterrett, Jr. Family Limited Partnership and Luna Innovations Incorporated (2903-B Commerce Street, Blacksburg, Virginia)

Exhibit Number	Description
10.13	Lease Agreement, dated November 29, 1999, between William M. Sterrett, Jr. Family Limited Partnership and Luna Innovations Incorporated, as amended, November 27, 2001 (2903-C Commerce Street, Blacksburg, Virginia)
10.14	Commercial Lease, dated March 17, 2003, between Canvasback Real Estate & Investments LLC and Luna Innovations Incorporated (705 Dale Avenue, Charlottesville, Virginia)
10.15	Full Service Office Lease, dated August 2003, between Hampton R&D Properties, LLC and Luna Innovations Incorporated (130 Research Drive, Hampton, Virginia)
10.16	Office Service Agreement, dated August 19, 2005, between Tysons Business Center, LLC and Luna Innovations Incorporated (8300 Greensboro Drive, McLean, Virginia)
10.17	Lease, effective as of January 1, 2005, between the Industrial Development Authority of Danville and Luna Innovations Incorporated (521 Bridge Street, Danville, Virginia)
10.18	Sublease, dated as of February 1, 2006, between Gryphon Capital Partners, LLC and Luna Innovations Incorporated (10 South Jefferson Street, Roanoke, Virginia)
10.19	Lease, dated December 30, 2005, between Carilion Medical Center and Luna Innovations Incorporated (Riverside Center, Roanoke, Virginia)
10.20	Modification of Lease, dated August 26, 2003, between Virginia Tech Foundation, Inc. and Luna Technologies, Inc. (2020 Kraft Drive, Blacksburg, Virginia)
10.21	Grant Agreement, dated March 25, 2004, by and between the City of Danville, Virginia, and Luna Innovations Incorporated
10.22*	License Agreement No. DN-982, dated June 10, 2002, by and between the National Aeronautics and Space Administration (NASA) and Luna Innovations Incorporated; Modification No. 1 to License Agreement No. DN-982, dated January 23, 2006, by and between NASA and Luna Innovations Incorporated
10.23*	License Agreement No. DN-951, dated December 20, 2000, by and between NASA and Luna Technologies, Inc.
10.24*	License Agreement No. DE-384, dated October 28, 2004, by and between NASA and Luna Technologies, Inc.
10.25*	Fiber Optic Patent License, dated September 22, 2003, by and between United Technologies Corporation and Luna Innovations Incorporated
10.26*	Amended and Restated License Agreement, dated March 19, 2004, by and between Virginia Tech Intellectual Properties, Inc. and Luna Innovations Incorporated
10.27*	Forms of Stock Sale Restriction Agreement
21.1	List of Subsidiaries
23.1	Consent of Grant Thornton LLP, Independent Registered Public Accounting Firm
23.2	Consent of Brown, Edwards & Company, L.L.P.
23.3*	Consent of Wilson Sonsini Goodrich & Rosati, Professional Corporation (See Exhibit 5.1)
24.1	Power of Attorney (See page II-4)

* To be filed by amendment.

Exhibit 2.1

AGREEMENT AND PLAN OF MERGER

BY AND AMONG

LUNA INNOVATIONS INCORPORATED,

LUNA TECHNOLOGIES ACQUISITION CORP.,

LUNA TECHNOLOGIES, INC.

AND

THE OTHER PARTIES SIGNATORY HERETO

Dated as of September 30, 2005

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EXHIBITS

Exhibit A	Certificate of Merger
Exhibit B	Amended and Restated Certificate of Incorporation of the Surviving Corporation
Exhibit C	Lost Certificate Affidavit and Indemnity Agreement
Exhibit D	Market Stand-Off Agreement
Exhibit E	Amended and Restated Certificate of Incorporation of Parent

AGREEMENT AND PLAN OF MERGER

This AGREEMENT AND PLAN OF MERGER is made and entered into as of September 30, 2005, by and among Luna Innovations Incorporated, a Delaware corporation ("**Parent**"); Luna Technologies Acquisition Corp., a Delaware corporation and wholly-owned subsidiary of Parent (" **Sub**"); Luna Technologies, Inc., a Delaware corporation (the "**Company**"); and the Principal Stockholders identified on Annex A hereto. Capitalized terms used and not otherwise defined herein have the meanings given to them in Article 8.

RECITALS

A. The Boards of Directors of each of the Company, Parent and Sub have determined it to be advisable and in the best interests of each company and its respective stockholders that Parent acquire the Company through the statutory merger of the Company with and into Sub (the " **Merger**") and, in furtherance thereof, have approved this Agreement and declared its advisability.

B. The Company, the Principal Stockholders, Parent and Sub desire to make certain representations, warranties, covenants and other agreements in connection with the Merger.

NOW, THEREFORE, in consideration of the covenants, promises, representations and warranties set forth herein, and for other good and valuable consideration (the receipt and sufficiency of which are hereby acknowledged by the parties), intending to be legally bound hereby, the parties agree as follows:

ARTICLE 1
THE MERGER

1.1 The Merger. At the Effective Time, and upon the terms and subject to the conditions of this Agreement and the applicable provisions of Delaware Law, Sub shall be merged with and into the Company, the separate corporate existence of Sub shall cease, and the Company shall continue as the surviving corporation and as a wholly-owned subsidiary of Parent. The surviving corporation in the Merger is sometimes referred to herein as the " **Surviving Corporation**."

1.2 Effective Time. The parties hereto shall consummate the Merger and the transactions contemplated hereby at a closing (the " **Closing**") to be held immediately after the execution and delivery of this Agreement by the parties hereto at the offices of Wilson Sonsini Goodrich & Rosati, Professional Corporation, 11921 Freedom Drive, Suite 600, Reston, Virginia, unless another time and/or place is mutually agreed upon in writing by Parent and the Company. The date upon which the Closing actually occurs is herein referred to as the " **Closing Date**." On the Closing Date, the certificate of merger (the "**Certificate of Merger**"), substantially in the form of Exhibit A hereto, shall be duly prepared and executed by the Surviving Corporation and thereafter delivered to the Secretary of State of the State of Delaware for filing, as provided in Section 251 of Delaware Law, on the Closing Date. The parties shall make all other filings required under Delaware Law, and the Merger shall become effective at the time of the filing of the Certificate of Merger with the Secretary of State, or at such later time as may be agreed by Parent and the Company and stated in the Certificate of Merger (the date and time of such filing (or stated later time, if any) being referred to herein as the "**Effective Time**").

1.3 Effect of the Merger on Constituent Corporations. At the Effective Time, the effects of the Merger shall be as provided in the applicable provisions of Delaware Law.

1.4 Certificate of Incorporation and Bylaws of Surviving Corporation .

(a) At the Effective Time, the Certificate of Incorporation of the Surviving Corporation shall be amended and restated in its entirety to read as set forth on Exhibit B hereto, which Exhibit B shall be filed with the Certificate of Merger.

(b) The Bylaws of Sub as in effect immediately prior to the Effective Time shall be the Bylaws of the Surviving Corporation at the Effective Time, until thereafter amended in accordance with Delaware Law and as provided in the Certificate of Incorporation of the Surviving Corporation and such Bylaws.

1.5 Directors and Officers of Surviving Corporation . The directors of Sub immediately prior to the Effective Time shall be the directors of the Surviving Corporation, each to hold office in accordance with the certificate of incorporation and bylaws of the Surviving Corporation. The officers of Sub immediately prior to the Effective Time shall be the officers of the Surviving Corporation, each to hold office in accordance with the bylaws of the Surviving Corporation.

1.6 Effect on Capital Stock.

(a) At the Effective Time, by virtue of the Merger and without any action on the part of Sub, the Company or any holder of Company Capital Stock, each share of Company Capital Stock issued and outstanding immediately prior to the Effective Time (other than any Dissenting Shares and any shares owned by Parent, the Company or any direct or indirect wholly-owned subsidiary thereof) shall be canceled and extinguished and shall be converted automatically into the right to receive, upon the terms and subject to the conditions set forth below and throughout this Agreement:

(i) in the case of each share of Company Series B Preferred Stock, a number of shares of Parent Class B Common Stock equal to the applicable Series B Exchange Ratio;

(ii) in the case of each share of Company Series A-1 Preferred Stock, a number of shares of Parent Class B Common Stock equal to the applicable Series A-1 Exchange Ratio;

(iii) in the case of each share of Company Series A Preferred Stock, a number of shares of Parent Class B Common Stock equal to the applicable Series A Exchange Ratio; and

(iv) in the case of each share of Company Common Stock, zero dollars ($0.00), it being understood that each share of Company Common Stock issued and outstanding immediately prior to the Effective Time (other than any Dissenting Shares) shall be canceled and extinguished without payment of consideration and shall have no further value.

In connection with the conversion of the Company Series B Preferred Stock, Company Series A Preferred Stock, and Company Series A-1 Preferred Stock as provided above, and subject to the conditions set forth herein, including without limitation Section 1.9, Parent will issue 1,231,924 shares of Parent Class B Common Stock in the aggregate (as adjusted for stock splits, stock dividends and the like, the " **Merger Consideration**").

(b) Cancellation of Parent-Owned and Company-Owned Stock. Notwithstanding anything expressed or implied to the contrary, each share of Company Capital Stock owned by Parent or the Company or any direct or indirect wholly-owned subsidiary of Parent or the Company immediately prior to the Effective Time shall be automatically canceled and extinguished without any conversion thereof and without any further action on the part of Parent or the Company and shall not be entitled to any portion of the Merger Consideration.

(c) Capital Stock of Sub. At the Effective Time, by virtue of the Merger and without any action on the part of any of the parties hereto, each share of capital stock of Sub issued and outstanding immediately prior to the Effective Time shall be converted into and exchanged for one validly issued, fully paid and nonassessable share of common stock of the Surviving Corporation. Each stock certificate of Sub evidencing ownership of any such shares shall continue to evidence ownership of shares of capital stock of the Surviving Corporation.

(d) Company Options and Company Stock Plan. All unexpired and unexercised Company Options, Company Warrants and Company Stock Purchase Rights, then outstanding, whether vested or unvested, together with the Plans, shall be canceled and extinguished and shall have no further value.

(e) Company Warrants. All unexpired and unexercised Company Warrants then outstanding, whether vested or unvested, shall be assumed by Parent and then be deemed to be exercisable for the corresponding number of Parent Class B Common Stock that is equal to the number of shares of Series A Preferred Stock issuable upon exercise of such Company Warrant multiplied by the Warrant Exchange Ratio. Following the Merger, the Company Warrants shall have an aggregate exercise price equal to the aggregate exercise price immediately prior to the Effective Time. As soon as reasonably practicable following the Effective Time, Parent shall send a notice to the holders of Company Warrants informing them of the Merger, summarizing the effects thereof, and offering to exchange the Common Warrants for new Parent warrants of substantially like tenor (giving effect to the applicable changes) and describing the warrant exchange procedures therefor.

1.7 Fractional Shares. No fractional share of Parent Class B Common Stock shall be issued in the Merger. In lieu thereof, each holder of shares of Company Capital Stock that would otherwise be entitled to receive a fraction of a share of Parent Class B Common Stock (after aggregating all

fractional shares of Parent Class B Common Stock to be received by such holder) shall be entitled to receive the nearest whole number of shares of Parent Class B Common Stock (with .5 being rounded up).

1.8 Dissenting Shares.

(a) Notwithstanding any provision of this Agreement to the contrary, any shares of Company Capital Stock held by a holder that has demanded and perfected dissenters' rights for such shares in accordance with Delaware Law and who, as of the Effective Time, has not effectively withdrawn or lost such dissenters' rights ("**Dissenting Shares**") shall not be converted into or represent the right to receive Parent Capital Stock pursuant to Section 1.6, but the holder thereof shall only be entitled to such rights as are granted by Delaware Law.

(b) Notwithstanding the provisions of Section 1.8(a), if any holder of Dissenting Shares shall effectively withdraw or lose (through failure to perfect or otherwise) his, her or its appraisal or dissenter's rights, then, as of the later of the Effective Time and the occurrence of such event, such holder's Dissenting Shares shall then cease to be Dissenting Shares and shall automatically be converted into and represent only the right to receive Parent Capital Stock as provided in Section 1.6, without interest thereon, upon surrender of the certificate representing such shares.

1.9 Escrow of Certain Shares of Parent Class B Common Stock Issued in the Merger .

(a) Second Closing Escrow. Subject to the terms and conditions set forth herein, in the event that a Second Closing (as defined in the Parent Purchase Agreement) may no longer occur (either because such right has expired by its terms or has been irrevocably waived or terminated by the parties) (a "**Second Closing Termination Event**"), a total of 123,174 shares of Parent Class B Common Stock (the " **Second Closing Escrow Shares**") issued in the Merger shall be returned by the holders thereof to Parent. To secure such obligation, Certificates in the names of the applicable Principal Stockholders representing the Second Closing Escrow Shares that are issued pursuant to Section 1.6 above shall be held in escrow by Parent at the Effective Time subject to release as provided herein and will not be delivered to the former holders of Company Capital Stock entitled to receive shares of Parent Class B Common Stock under the terms of this Agreement. Such Second Closing Escrow Shares shall be contributed by the holders of Company Capital Stock receiving shares of Parent Class B Common Stock on a pro rata basis based on the number of shares of Parent Class B Common Stock issued pursuant to Section 1.6. For so long as these shares of Parent Class B Common Stock are held in escrow under this Section 1.9(a), the interests of the holders of Company Capital Stock in the Second Closing Escrow Shares may not be assigned or transferred by such holders. The holders of Company Capital Stock to which the Second Closing Escrow Shares have been allocated shall be entitled to any dividends or other distributions (other than dividends or distributions for which adjustment is made pursuant to the immediately following sentence) with respect to the Second Closing Escrow Shares. Additionally, the Second Closing Escrow Shares shall be appropriately adjusted for any stock splits, stock dividends or the like with respect to such shares. To the full extent that voting rights with respect to Parent Class B Common Stock may exist, the holders of Company Capital Stock to which the Second Closing Escrow Shares have been allocated

shall have the right to vote the Second Closing Escrow Shares. Upon the occurrence of a Second Closing, the Second Closing Escrow Shares shall be released from escrow and Parent shall deliver the certificates therefor. If a Second Closing Termination Event should occur, all Second Closing Escrow Shares shall be returned to the status of authorized but unissued shares of Parent Capital Stock and the holders of Company Capital Stock shall have no further right to such shares.

(b) Third Closing Escrow. Subject to the terms and conditions set forth herein, in the event that a Third Closing (as defined in the Parent Purchase Agreement) may no longer occur (either because such right has expired by its terms or has been irrevocably waived or terminated by the parties) (a "**Third Closing Termination Event**"), a total of 73,915 shares of Parent Class B Common Stock (the " **Third Closing Escrow Shares**") issued in the Merger shall be returned by the holders thereof to Parent. To secure such obligation, Certificates in the names of the applicable Principal Stockholders representing the Third Closing Escrow Shares that are issued pursuant to Section 1.6 above shall be held in escrow by Parent at the Effective Time subject to release as provided herein and will not be delivered to the former holders of Company Capital Stock entitled to receive shares of Parent Class B Common Stock under the terms of this Agreement. Such Third Closing Escrow Shares shall be contributed by the holders of Company Capital Stock receiving shares of Parent Class B Common Stock on a pro rata basis based on the number of shares of Parent Class B Common Stock issued pursuant to Section 1.6. For so long as these shares of Parent Class B Common Stock, are held in escrow under this Section 1.9(b), the interests of the holders of Company Capital Stock in the Third Closing Escrow Shares may not be assigned or transferred by such holders. The holders of Company Capital Stock to which the Third Closing Escrow Shares have been allocated shall be entitled to any dividends or other distributions (other than dividends or distributions for which adjustment is made pursuant to the immediately following sentence) with respect to the Third Closing Escrow Shares. Additionally, the Third Closing Escrow Shares shall be appropriately adjusted for any stock splits, stock dividends or the like with respect to such shares. To the full extent that voting rights with respect to Parent Class B Common Stock may exist from time to time, the holders of Company Capital Stock to which the Third Closing Escrow Shares have been allocated shall have the right to vote the Third Closing Escrow Shares. Upon the occurrence of a Third Closing, the Third Closing Escrow Shares shall be released from escrow and Parent shall and Parent shall deliver the certificates therefor. If a Third Closing Termination Event should occur, all Third Closing Escrow Shares shall be returned to the status of authorized but unissued shares of Parent Capital Stock and the holders of Company Capital Stock shall have no further right to such shares.

(c) Parent agrees that it will not seek to circumvent its obligations to issue any of the Second Closing Escrow Shares or Third Closing Escrow Shares or to release them (or any of them) from the escrow described above to the former holders of Company Capital Stock by entering into or completing a transaction or transactions on terms that are substantially similar or better to those presently provided for as part of the Second Closing or Third Closing with any person (or affiliate or related party of any person) who presently is a party to the Parent Purchase Agreement and is a potential participant in either such closing.

1.10 Exchange Procedures.

(a) Parent Capital Stock. As promptly as practicable after the Closing Date, Parent shall make available for exchange in accordance with this Article 1 the aggregate number of shares of each of Parent Class B Common Stock issuable in exchange for outstanding shares of Company Capital Stock.

(b) Exchange Procedures. As soon as reasonably practicable after the Effective Time, the Surviving Corporation shall cause to be mailed to each holder of record of a certificate or certificates which immediately prior to the Effective Time represented outstanding shares of Company Capital Stock (the "**Certificates**"), (i) a letter of transmittal (which shall specify that delivery shall be effected, and risk of loss and title to the Certificates shall pass, only upon delivery of the Certificates to Parent and shall be in such form and have such other provisions as Parent may reasonably specify, to include, without limitation, representations as to such holder's status as an accredited investor and other customary or commercially reasonable investor representations) and (ii) instructions for use in effecting the surrender of the Certificates in exchange for the consideration (if any) issuable in exchange therefor pursuant to this Agreement. Upon surrender of a Certificate for cancellation to Parent or to such other agent or agents as may be appointed by Parent together with such letter of transmittal, duly completed and validly executed in accordance with the instructions thereto, the holder of such Certificate shall be entitled to receive in exchange therefor a certificate representing the number and type of whole shares of Parent Capital Stock to which such holder is entitled pursuant to Section 1.6 (subject to Section 1.9), and the Certificate so surrendered shall be canceled. Until surrendered, each outstanding Certificate that, prior to the Effective Time, represented shares of Company Capital Stock will be deemed from and after the Effective Time, for all corporate purposes other than the payment of dividends, to evidence the ownership of the number and type of whole shares of Parent Capital Stock into which such shares of Company Capital Stock shall have been so converted (including, without limitation, any other shares of capital stock into which such shares may subsequently be or have been converted or exchanged). In the event that the Second Closing or Third Closing occurs, as soon as reasonably practicable following such Second Closing or Third Closing, as applicable, Parent shall issue certificates representing the Second Closing Escrow Shares or Third Closing Escrow Shares, as applicable, to the holders entitled to such shares pursuant to Section 1.9.

(c) Distributions With Respect to Unexchanged Shares of Company Capital Stock. Dividends or other distributions (including, without limitation, stock splits by way of a dividend) with respect to Parent Class B Common Stock that have a record date after the Effective Time shall accrue but shall not be paid to the holder of any unsurrendered Certificate with respect to the shares of Parent Class B Common Stock represented thereby until the holder of record of such Certificate shall surrender such Certificate. Subject to applicable Law, following surrender of any such Certificate, there shall be paid to the record holder of the certificates representing whole shares of Parent Class B Common Stock issued in exchange therefor, without interest, at the time of such surrender, the amount of dividends or other distributions with a record date after the Effective Time theretofore payable (but for the provisions of this Section 1.10(c)) with respect to such whole shares of Parent Class B Common Stock.

(d) Transfers of Ownership. If any certificate for shares of Parent Class B Common Stock is to be issued pursuant to the Merger in a name other than that in which the Certificate surrendered in exchange therefor is registered, it will be a condition of the issuance thereof that the Certificate so surrendered be properly endorsed and otherwise in proper form for transfer and that the person requesting such exchange will have paid to Parent or any agent designated by it any transfer or other taxes required by reason of the issuance of a certificate for shares of Parent Class B Common Stock in any name other than that of the registered holder of the Certificate surrendered, or that it be established to the satisfaction of Parent or any such agent that such tax has been paid or is not payable.

1.11 No Further Ownership Rights in Company Capital Stock. All shares of Parent Class B Common Stock (or in the case of any Dissenting Shares, any other consideration) issued in exchange of shares of Company Capital Stock in accordance with the terms hereof shall be deemed to have been issued in full satisfaction of all rights pertaining to such shares of Company Capital Stock, and there shall be no further registration of transfers on the records of the Company of shares of Company Capital Stock that were outstanding immediately prior to the Effective Time. If, after the Effective Time, Certificates are presented to the Surviving Corporation for any reason, they shall be canceled and exchanged as provided in this Article 1

1.12 Lost, Stolen or Destroyed Certificates. Notwithstanding anything herein or otherwise to the contrary, in the event any Certificates evidencing shares of Company Capital Stock shall have been lost, stolen or destroyed, Parent shall issue in exchange for such lost, stolen or destroyed Certificates, upon execution and delivery of a Lost Certificate Affidavit and Indemnity Agreement in substantially the form of Exhibit C, a certificate or certificates representing the shares of Parent Class B Common Stock to which the holder of such shares of Company Capital Stock would be entitled under this Article 1. The execution and delivery of a Lost Certificate Affidavit and Indemnity Agreement as provided for in the immediately preceding sentence will be deemed to be the delivery of a Certificate for all purposes of this Article 1.

1.13 Taking of Necessary Action; Further Action. If, at any time after the Effective Time, any further action is necessary or desirable to carry out the purposes of this Agreement or to vest the Surviving Corporation with full right and title to and possession of all assets, property, rights, privileges, powers and franchises of the Company, then except to the extent provided elsewhere herein, officers and directors of the Surviving Corporation are fully authorized to take, and shall take, all such lawful and necessary or desirable action.

ARTICLE 2
REPRESENTATIONS AND WARRANTIES OF THE COMPANY

The Company hereby represents and warrants to Parent, subject to such exceptions as are set forth and disclosed in the disclosure schedule (the "**Company Disclosure Schedule**") delivered herewith and dated as of the date hereof, that the statements contained in this Article 2 are true and correct on the date hereof (unless such statements speak as of different date, in which case they are true and correct as of such date):

2.1 Organization, Good Standing and Qualification. The Company is a corporation duly organized, validly existing and in good standing under the laws of the State of Delaware. The Company has all requisite corporate power and authority to own and operate its properties and assets, to execute and deliver this Agreement and the other agreements of which forms are attached as exhibits hereto (the " **Ancillary Agreements**") to which the Company is a party, and to carry out the provisions of this Agreement and the Ancillary Agreements and to carry on its business. The Company is duly qualified and is authorized to do business and is in good standing as a foreign corporation in all jurisdictions in which the nature of its activities and of its properties (both owned and leased) makes such qualification necessary, except for those jurisdictions in which failure to do so would not have a material adverse effect on the Company's assets, liabilities, financial condition or operations.

2.2 Subsidiaries. The Company does not own or control any equity security or other interest of any other corporation, limited partnership or other business entity. The Company is not a participant in any joint venture, partnership or similar arrangement.

2.3 Capitalization; Voting Rights.

(a) The authorized capital stock of the Company, immediately prior to the Closing, consists of (i) 160,000,000 shares of Company Common Stock, 5,923,844 of which are issued and outstanding, and (ii) 90,600,000 shares of Company Preferred Stock, par value $0.001 per share, (x) 13,000,000 of which are designated as Company Series A Preferred Stock, 12,584,064 of which are issued and outstanding and 125,006 of which are available for issuance upon the exercise of outstanding Company Warrants, (y) 13,000,000 of which are designated as Company Series A-1 Preferred Stock, 214,621 of which are issued and outstanding and (z) 64,600,000 of which are designated as Company Series B Preferred Stock, 52,600,255 of which are issued and outstanding.

(b) Under the Company's 2000 Incentive Stock Option Plan (the " **Founder Option Plan**"), immediately prior to the Closing, (i) no shares of Company Common Stock have been issued pursuant to the exercise of options and no shares have been issued pursuant to restricted stock purchase agreements, (ii) options to purchase 2,550,000 shares of Company Common Stock have been granted and are currently outstanding (as included in the vested and unvested options in Section 2.3 of the Company Disclosure Schedule) and (iii) no shares of Company Common Stock remain available for future issuance of options to officers, directors, employees and consultants for the purchase Company Common Stock. Under the Company's 2000 Stock Plan (the "**New Plan**" and, together with the Founder Option Plan, the " **Plans**"), immediately prior to the Closing, (x) 14,583 shares of Company Common Stock have been issued pursuant to the exercise of options and no shares have been issued pursuant to restricted stock purchase agreements, (y) options to purchase 19,844,425 shares of Company Common Stock have been granted and are currently outstanding (as included in the vested and unvested options in Section 2.3 of the Company Disclosure Schedule), and (z) options to purchase 4,356,734 shares of Company Common Stock remain available for future issuance to officers, directors, employees and consultants of the Company.

(c) Other than the SVB Warrant, the VT Warrant, pursuant to the Company's Amended and Restated Investor Rights Agreement, and as set forth in Section 2.3 of the Company Disclosure Schedule , and except as may be granted pursuant to this Agreement, there are no outstanding options, warrants, rights (including conversion or preemptive rights and rights of first refusal), proxy or stockholder agreements, or agreements of any kind for the purchase or acquisition from the Company of any of its securities.

(d) All issued and outstanding shares of Company Capital Stock (i) have been duly authorized and validly issued to the persons listed in Section 2.3 of the Company Disclosure Schedule hereto and are fully paid and nonassessable, and (ii) were issued in compliance with all applicable state and federal laws concerning the issuance of securities.

(e) Section 2.3 of the Company Disclosure Schedule sets forth a true, complete and correct table showing the Company's fully-diluted capitalization immediately prior to the Effective Time.

2.4 Authorization; Binding Obligations. All corporate action on the part of the Company, its officers, directors and stockholders necessary for the authorization of this Agreement and the performance of all obligations of the Company hereunder has been taken. This Agreement, when executed and delivered, will be a valid and binding obligation of the Company enforceable in accordance with its terms, except (a) as limited by applicable bankruptcy, insolvency, reorganization, moratorium or other laws of general application affecting enforcement of creditors' rights and (b) general principles of equity that restrict the availability of equitable remedies.

2.5 Financial Statements. The Company has made available to Parent a draft of its audited balance sheet as at December 31, 2004, along with its compiled balance sheet as of December 31, 2004 and compiled statement of operations and accumulated deficit, statement of changes in stockholders' equity, statement of cash flows and schedule of operating expenses, for the twelve months ending December 31, 2004 and unaudited statements for the eight months ended August 31, 2005 (the "**Statement Date**") (collectively, the "**Financial Statements**"). The Financial Statements, together with the notes thereto, have been prepared in accordance with generally accepted accounting principles (" **GAAP**") applied on a consistent basis throughout the periods indicated, except as disclosed therein and except that the unaudited Financial Statements may not include all footnotes required by GAAP, and present fairly the financial condition and position of the Company as of the Statement Date, subject, in the case of unaudited Financial Statements, to normal, year-end adjustments that the Company currently believes will not, individually or in the aggregate, be material.

2.6 Liabilities. The Company has no material liabilities and, to the best of its knowledge, knows of no material contingent liabilities not disclosed in the Financial Statements, except (i) current liabilities incurred in the ordinary course of business subsequent to the Statement Date and (ii) obligations under contracts and commitments incurred in the ordinary course of business and not required under GAAP to be reflected in the Financial Statements, which, in both cases, either in any individual case or in the aggregate, would not have a material adverse effect on the Company's assets, financial condition, prospects or operations.

2.7 Agreements; Action.

(a) Except for agreements explicitly contemplated hereby and agreements between the Company and its employees with respect to the sale of the Company's Common Stock, there are no agreements, understandings or proposed transactions between the Company and any of its officers, directors, affiliates or any affiliate thereof.

(b) There are no agreements, understandings, instruments, contracts, proposed transactions, judgments, orders, writs or decrees to which the Company is a party or to its knowledge by which it is bound which may involve (i) obligations (contingent or otherwise) of, or payments to, the Company in excess of $10,000 (other than obligations of, or payments to, the Company arising from purchase or sale agreements entered into in the ordinary course of business), (ii) the transfer or license of any patent, copyright, trade secret or other proprietary right to or from the Company (other than licenses arising from the purchase of "off the shelf" or other standard products), (iii) provisions restricting the development, manufacture or distribution of the Company's products or services or (iv) indemnification by the Company with respect to infringements of proprietary rights (other than indemnification obligations arising from purchase, sale or license agreements entered into in the ordinary course of business).

(c) The Company has not (i) declared or paid any dividends, or authorized or made any distribution upon or with respect to any class or series of its capital stock, (ii) incurred or guaranteed any indebtedness for money borrowed or any other liabilities (other than with respect to dividend obligations, distributions, indebtedness and other obligations incurred in the ordinary course of business) individually in excess of $10,000 or, in the case of indebtedness and/or liabilities individually less than $10,000, in excess of $25,000 in the aggregate, (iii) made any loans or advances to any person, other than ordinary advances for travel expenses or (iv) sold, exchanged or otherwise disposed of any of its assets or rights, other than the sale of its inventory in the ordinary course of business.

(d) For the purposes of subsections (b) and (c) above, all indebtedness, liabilities, agreements, understandings, instruments, contracts and proposed transactions involving the same person or entity (including persons or entities the Company has reason to believe are affiliated therewith) shall be aggregated for the purpose of meeting the individual minimum dollar amounts of such subsections.

(e) Except as contemplated by this Agreement, the Company has not engaged in the past three (3) months in any discussion (i) with any representative of any corporation or corporations regarding the consolidation or merger of the Company with or into any such corporation or corporations, (ii) with any corporation, partnership, association or other business entity or any individual regarding the sale, conveyance or disposition of all or substantially all of the assets of the Company, or a transaction or series of related transactions in which more than fifty percent (50%) of the voting power of the Company is disposed of, or (iii) regarding any other form of acquisition, liquidation, dissolution or winding up, of the Company.

2.8 Obligations to Related Parties. There are no obligations of the Company to officers, directors, stockholders, or employees of the Company other than (a) for payment of salary for services rendered, (b) reimbursement for reasonable expenses incurred on behalf of the Company and (c) for other standard employee benefits made generally available to all employees (including stock option agreements outstanding under any stock option plan approved by the Board of Directors of the Company). None of the officers, directors, or key employees of the Company, or, to the best of the Company's knowledge, any members of their immediate families or any stockholder of the Company, are indebted to the Company or have any direct or indirect ownership interest in any firm or corporation with which the Company is affiliated or with which the Company has a business relationship, or any firm or corporation which competes with the Company, other than passive investments in publicly traded companies (representing less than 1% of such company) which may compete with the Company. No officer, director, or key employee of the Company, or, to the best of the Company's knowledge, any member of their immediate families or any stockholder of the Company, is, directly or indirectly, interested in any material contract with the Company (other than such contracts as relate to any such person's ownership of capital stock or other securities of the Company). The Company is not a guarantor or indemnitor of any indebtedness of any other person, firm or corporation.

2.9 Changes. Since the Statement Date, there has not been, to the best of the Company's knowledge:

(a) Any change in the assets, liabilities, financial condition, or operations of the Company from that reflected in the Financial Statements, other than changes in the ordinary course of business, none of which individually or in the aggregate has had or is reasonably expected to have a material adverse effect on such assets, liabilities, financial condition, or operations of the Company;

(b) Any resignation or termination of any officer or key employee of the Company; and the Company, to the best of its knowledge, does not know of the impending resignation or termination of employment of any such officer or key employee;

(c) Any material change, except in the ordinary course of business, in the contingent obligations of the Company by way of guaranty, endorsement, indemnity, warranty or otherwise;

(d) Any damage, destruction or loss, whether or not covered by insurance, materially and adversely affecting the properties, business or financial condition of the Company;

(e) Any waiver by the Company of a valuable right or of a material debt owed to it;

(f) Any direct or indirect loans made by the Company to any stockholder, employee, officer or director of the Company, other than advances made in the ordinary course of business;

(g) Any material change in any compensation arrangement or agreement with any employee, officer, director or stockholder;

(h) Any declaration or payment of any dividend or other distribution of the assets of the Company in respect of any of the Company's capital stock;

(i) Any labor organization activity related to the Company;

(j) Any debt, obligation or liability incurred, assumed or guaranteed by the Company, except those for amounts individually less than $5,000 and less than $10,000 in the aggregate and for current liabilities incurred in the ordinary course of business;

(k) Any sale, assignment or transfer of any patents, trademarks, copyrights, trade secrets or other intangible assets;

(l) Any change in any material agreement to which the Company is a party or by which it is bound which materially and adversely affects the business, assets, liabilities, financial condition, operations of the Company;

(m) Any other event or condition of any character that, either individually or cumulatively, has materially and adversely affected the business, assets, liabilities, financial condition or operations of the Company; or

(n) Any agreement or commitment by the Company to do any of the acts described in subsection (a) through (m) above.

2.10 Title to Properties and Assets; Liens, Etc.. The Company has good and marketable title to its properties and assets, including the properties and assets reflected in the most recent balance sheet included in the Financial Statements, and good title to its leasehold estates, in each case subject to no mortgage, pledge, lien, lease, encumbrance or charge, other than (a) those reflected in the Financial Statements, (b) those resulting from taxes which have not yet become delinquent, (c) liens in respect of pledges or deposits under workers' compensation laws or similar legislation, (d) minor liens and encumbrances which do not materially interfere with the use of the property subject thereto and (e) those that have otherwise arisen in the ordinary course of business. All facilities, machinery, equipment, fixtures, vehicles and other properties owned, leased or used by the Company are in good operating condition and repair and are reasonably fit and usable for the purposes for which they are being used. The Company is in compliance with all material terms of each lease to which it is a party or is otherwise bound.

2.11 Intellectual Property.

(a) The Company owns or possesses sufficient legal rights to all patents, trademarks, service marks, trade names, copyrights, trade secrets, licenses, information and other proprietary rights and processes necessary for its business as now conducted and as presently proposed to be conducted, without any known infringement of the rights of others. There are no outstanding options, licenses or agreements of any kind relating to the foregoing proprietary rights, nor is the Company bound by or a party to any options, licenses or agreements of any kind with respect to the patents, trademarks, service marks, trade names, copyrights, trade secrets, licenses, information and other proprietary rights and processes of any other person or entity other than such licenses or agreements arising from the purchase of "off the shelf" or standard products.

(b) The Company has not received any communications alleging that the Company has violated or, by conducting its business, would violate any of the patents, trademarks, service marks, trade names, copyrights or trade secrets or other proprietary rights of any other person or entity, nor is the Company aware of any basis for any such allegation.

(c) The Company is not aware that any of its employees is obligated under any contract (including licenses, covenants or commitments of any nature) or other agreement, or subject to any judgment, decree or order of any court or administrative agency, that would interfere with their duties to the Company or that would conflict with the Company's business as presently proposed to be conducted. Each former and current employee, officer and consultant of the Company has executed a Proprietary Information and Inventions Agreement in substantially the form approved by the Board of Directors of the Company. No former or current employee, officer or consultant of the Company has excluded works or inventions made prior to his or her employment with the Company from his or her assignment of inventions pursuant to such employee, officer or consultant's proprietary information and inventions agreement. The Company does not believe it is or will be necessary to utilize any inventions, trade secrets or proprietary information of any of its employees made prior to their employment by the Company, except for inventions, trade secrets or proprietary information that have been assigned to the Company.

2.12 Compliance with Other Instruments. The Company is not in violation or default of any term of its Restated Certificate or Bylaws, or of any provision of any mortgage, indenture, agreement, instrument or contract to which it is party or by which it is bound or of any judgment, decree, order, writ or injunction to which it is a party or, to the best of its knowledge, by which it is bound, the violation of which would have a material adverse effect on the business, assets, liabilities, financial condition or operations of the Company. The execution, delivery, and performance of and compliance with this Agreement, and the Ancillary Agreements, and the performance of its obligations hereunder and thereunder, will not, with or without the passage of time or giving of notice, result in any such violation, or be in conflict with or constitute a default under any such term, or result in the creation of any mortgage, pledge, lien, encumbrance or charge upon any of the properties or assets of the Company or the suspension, revocation, impairment, forfeiture or nonrenewal of any permit, license, authorization or approval applicable to the Company, its business or operations or any of its assets or properties. To its knowledge, the Company has avoided every condition, and has not performed any act, the occurrence of which would result in the Company's loss of any right granted under any license, distribution agreement or other agreement required to be disclosed on the Company Disclosure Schedule.

2.13 Litigation. There is no action, suit, proceeding or investigation pending or, to the Company's knowledge, currently threatened against the Company that questions the validity of this Agreement, or the Ancillary Agreements or the right of the Company to enter into any of such agreements, or to consummate the transactions contemplated hereby or thereby, or which would reasonably be expected to result, either individually or in the aggregate, in any material adverse

change in the assets, liabilities, financial condition, prospects or operations of the Company, or any change in the current equity ownership of the Company, nor is the Company aware that there is any basis for any of the foregoing. The foregoing includes, without limitation, actions pending or, to the Company's knowledge, threatened or any basis therefor known by the Company involving the prior employment of any of the Company's employees, their use in connection with the Company's business of any information or techniques allegedly proprietary to any of their former employers, or their obligations under any agreements with prior employers. The Company is not a party or, to the best of its knowledge, subject to the provisions of any order, writ, injunction, judgment or decree of any court or government agency or instrumentality. There is no action, suit, proceeding or investigation by the Company currently pending or which the Company intends to initiate.

2.14 Tax Returns and Payments. The Company has timely filed all tax returns (federal, state and local) required by Law to be filed by it. All taxes shown to be due and payable on such returns, any assessments imposed, and to the Company's knowledge all other taxes due and payable by the Company on or before the Effective Time, have been paid, are accrued for the in the Financial Statements or will be paid prior to the time they become delinquent, except those contested by the Company in good faith and which are identified on the Company Disclosure Schedule. The Company has not been advised (a) that any of its returns, federal, state or other, have been or are being audited as of the date hereof or (b) of any deficiency in assessment or proposed judgment to its federal, state or other taxes. To the best of the Company's knowledge, it has no liability for any tax to be imposed upon its properties or assets as of the date of this Agreement that is not adequately accrued or provided for. The Company has withheld with respect to its employees and other third parties for which it is obligated to make tax withholdings (and timely paid over (if due prior to the Effective Time) any withheld amounts to the appropriate taxing authority) all federal and state income taxes, Federal Insurance Contribution Act, Federal Unemployment Tax Act and other Taxes required to be withheld. The Company is not, nor has it been at any time, a "United States Real Property Holding Corporation" within the meaning of Section 897(c)(2) of the Code.

2.15 Employees. The Company has no collective bargaining agreements with any of its employees. There is no labor union organizing activity pending or, to the Company's knowledge, threatened with respect to the Company. The Company is not a party to or bound by any currently effective employment contract, deferred compensation arrangement, bonus plan, incentive plan, profit sharing plan, retirement agreement or other employee compensation plan or agreement. To the Company's knowledge, no employee of the Company, nor any consultant with whom the Company has contracted, is in violation of any term of any employment contract, proprietary information agreement or any other agreement relating to the right of any such individual to be employed by, or to contract with, the Company because of the nature of the business conducted or presently proposed to be conducted by the Company; and to the Company's knowledge the continued employment by the Company of its present employees, and the performance of the Company's contracts with its independent contractors, will not result in any such violation. The Company has not received any notice alleging that any such violation has occurred. No employee of the Company has been granted the right to continued employment by the Company or to any material compensation following termination of employment with the Company.

2.16 Obligations of Management. Each officer and key employee of the Company is currently devoting substantially all of his or her business time to the conduct of the business of the Company. No officer or key employee is currently working for a competitive enterprise, whether or not such officer or key employee is compensated by such enterprise.

2.17 Voting Rights. To the Company's knowledge, except as contemplated in the Voting Agreement dated as of March 31, 2003, as amended to date, no stockholder of the Company has entered into any agreement with respect to the voting of equity securities of the Company.

2.18 Compliance with Laws; Permits. The Company is not in violation of any applicable Law in respect of the conduct of its business as presently conducted or the ownership of its properties which violation would materially and adversely affect the business, assets, liabilities, financial condition, operations or prospects of the Company. No governmental orders, permissions, consents, approvals or authorizations are required to be obtained and no registrations or declarations are required to be filed with any local, state, federal or other governmental authority in connection with the execution and delivery of this Agreement, except such as has been duly and validly obtained or filed, or that may be made after the Effective Time, as will be filed in a timely manner. The Company has all franchises, permits, licenses and any similar authority necessary for the conduct of its business as now being conducted by it, the lack of which could materially and adversely affect the business, properties or financial condition of the Company.

2.19 Environmental and Safety Laws. The Company is not in violation of any applicable Law relating to the environment or occupational health and safety, and to the best of its knowledge, no material expenditures are or will be required in order to comply with any such existing Law. No Hazardous Materials are used or have been used, stored, or disposed of by the Company or, to the Company's knowledge, by any other person or entity on any property owned, leased or used by the Company.

2.20 Minute Books. The copies of the minute books of the Company made available to Parent contain a summary of all meetings of directors and stockholders since the time of incorporation that is complete in all material respects.

2.21 Insurance. The Company has general commercial, product liability, fire and casualty insurance policies with coverage that the Company reasonably believes are sufficient for the business as conducted and proposed to be conducted by the Company.

2.22 Tax Elections. The Company has not elected pursuant to the Code to be treated as an "S" corporation pursuant to Section 1362(a) of the Code.

2.23 Full Disclosure. The Company has provided Parent with all information requested in writing by Parent in connection with the transactions contemplated hereby. None of this Agreement, the exhibits hereto, the Ancillary Agreements nor any other document delivered by the Company to Parent or its attorneys or agents in connection herewith or therewith or with the transactions contemplated hereby or thereby, contain any untrue statement of a material fact nor omit to state a material fact necessary in order to make the statements contained herein or therein not misleading.

2.24 Brokers. Neither the Company nor any of its officers, directors, employees or agents, has entered into any agreement, or had any discussions with any Person regarding any transaction involving the Company which could result in Parent, the Company, the Surviving Corporation or any general partner, limited partner, manager, officer, director, employee, agent or Affiliate of any of them being subject to any claim for liability to said Person as a result of or in connection with entering into this Agreement or consummating the transactions contemplated hereby. No broker, investment banker, financial advisor or other Person is entitled to any broker's, finder's, financial advisor's or similar fee or commission in connection with this Agreement and the transactions contemplated hereby based on arrangements made by or on behalf of the Company.

ARTICLE 3
REPRESENTATIONS AND WARRANTIES OF PARENT AND SUB

Parent and Sub, jointly and severally, hereby represent and warrant to the Company s follows:

3.1 Organization and Qualification. Each of Parent and Sub is a corporation duly organized, validly existing and in good standing under the laws of the State of Delaware. Each of Parent and Sub has all requisite corporate power and authority to own and operate its properties and assets, to execute and deliver this Agreement and the Ancillary Agreements to which they are parties, and to carry out the provisions of this Agreement and the Ancillary Agreements and to carry on its business.

3.2 Authority Relative to this Agreement. All corporate action on the part of Parent and Sub, their respective officers, directors and stockholders necessary for the authorization of this Agreement and the Ancillary Agreements, the performance of all obligations of Parent and Sub hereunder and thereunder has been taken. This Agreement and the Ancillary Agreements, when executed and delivered, will be valid and binding obligations of Parent and Sub enforceable in accordance with their terms, except (a) as limited by applicable bankruptcy, insolvency, reorganization, moratorium or other laws of general application affecting enforcement of creditors' rights and (b) general principles of equity that restrict the availability of equitable remedies.

3.3 Parent Capitalization. The authorized capital stock of Parent will, upon the filing of the Restated Certificate, consist of: 7,164,740 shares of Class A Common Stock, par value $0.001 per share, 5,015,318 shares of which are issued and outstanding, 12,922,095 shares of Class B Common Stock, par value $0.001 per share ("**Parent Class B Common Stock**"), 136,249 shares of which are issued and outstanding, 5,656,473 shares of Class C Common Stock, par value $0.001 per share, 2,639,688 shares of which are issued and outstanding and 20,086,835 shares of Common Stock, par value $0.001 per share, none of which are issued and outstanding. Parent has reserved 1,231,924 shares of Parent Class B Common Stock for issuance hereunder and 1,231,924 shares of Common Stock for issuance upon conversion of such shares. Options to purchase 5,879,829 shares of Parent Class B Common Stock are currently outstanding and warrants to purchase 183,120 shares of Parent Class B Common Stock are currently outstanding.

3.4 Sub Capitalization. The authorized capital stock of Sub consists of 1,000 shares of Common Stock, par value $0.001 per share, all of which are outstanding and owned by Parent. There are no options, warrants, calls, rights, commitments or agreements of any character, written or oral, to which Sub is a party or by which Sub is bound obligating Sub to issue, deliver, sell, repurchase or redeem, or cause to be issued, delivered, sold, repurchased or redeemed, any shares of the capital stock of Sub or obligating Sub to grant, extend, or enter into any such option, warrant, call, right, commitment or agreement. All outstanding shares of the Common Stock of Sub have been duly authorized and are validly issued, fully paid and non-assessable, and have been issued in compliance with applicable securities laws.

3.5 Issuance of Parent Class B Common Stock. The shares of Parent Class B Common Stock to be issued pursuant to the Merger, when issued in accordance with the terms of this Agreement, will be duly authorized, validly issued, fully paid and non-assessable.

3.6 Brokers. Neither Parent nor any of its officers, directors, employees or agents, has entered into any agreement, or had any discussions with any Person regarding any transaction involving Parent which could result in Parent, the Company, the Surviving Corporation or any general partner, limited partner, manager, officer, director, employee, agent or Affiliate of any of them being subject to any claim for liability to said Person as a result of or in connection with entering into this Agreement or consummating the transactions contemplated hereby. No broker, investment banker, financial advisor or other Person is entitled to any broker's, finder's, financial advisor's or similar fee or commission in connection with this Agreement and the transactions contemplated hereby based on arrangements made by or on behalf of the Company.

3.7 Compliance with Other Instruments. Parent is not in violation or default of any term of its certificate of incorporation or bylaws, or of any provision of any mortgage, indenture, agreement, instrument or contract to which it is party or by which it is bound or of any judgment, decree, order, writ or injunction to which it is a party or, to the best of its knowledge, by which it is bound, the violation of which would have a material adverse effect on the business, assets, liabilities, financial condition or operations of Parent. The execution, delivery, and performance of and compliance with this Agreement, and the Ancillary Agreements, and the performance of its obligations hereunder and thereunder, will not, with or without the passage of time or giving of notice, result in any such violation, or be in conflict with or constitute a default under any such term, or result in the creation of any mortgage, pledge, lien, encumbrance or charge upon any of the properties or assets of Parent or the suspension, revocation, impairment, forfeiture or nonrenewal of any permit, license, authorization or approval applicable to Parent, its business or operations or any of its assets or properties.

ARTICLE 4
REPRESENTATIONS AND WARRANTIES OF THE PRINCIPAL STOCKHOLDERS

Each Principal Stockholder, severally but not jointly, hereby represents and warrants to Parent as follows:

4.1 Requisite Power and Authority. Such Principal Stockholder has all necessary power and authority to execute and deliver this Agreement and to carry out its provisions. All action on such Principal Stockholder's part required for the lawful execution and delivery of this Agreement has been or will be effectively taken prior to the Closing. Upon its execution and delivery, this Agreement will be valid and binding obligations of such Principal Stockholder, enforceable in accordance with its terms, except (a) as limited by applicable bankruptcy, insolvency, reorganization, moratorium or other laws of general application affecting enforcement of creditors' rights and (b) as limited by general principles of equity that restrict the availability of equitable remedies.

4.2 Investment Representations. Such Principal Stockholder understands that the shares of Parent Class B Common Stock constituting the Merger Consideration (the "**Merger Shares**") and the Parent Common Stock issuable upon conversion thereof (the " **Conversion Shares**") have not been registered under the Securities Act. Such Principal Stockholder also understands that the Merger Shares are being offered and sold pursuant to an exemption from registration contained in the Securities Act based in part upon such Principal Stockholder's representations contained in this Agreement. Such Principal Stockholder hereby represents and warrants as follows:

(a) Such Principal Stockholder Has Investment Experience and Bears Economic Risk . Such Principal Stockholder has substantial experience in evaluating and investing in private placement transactions of securities in companies similar to Parent so that he, she or it is capable of evaluating the merits and risks of his, her or its investment in Parent and has the capacity to protect his, her or its own interests. Such Principal Stockholder must bear the economic risk of this investment indefinitely unless the Merger Shares (or the Conversion Shares) are registered pursuant to the Securities Act, or an exemption from registration is available. Such Principal Stockholder understands that Parent has no present intention of registering the Merger Shares or the Conversion Shares. Such Principal Stockholder also understands that there is no assurance that any exemption from registration under the Securities Act will be available and that, even if available, such exemption may not allow such Principal Stockholder to transfer all or any portion of the Merger Shares or the Conversion Shares under the circumstances, in the amounts or at the times such Principal Stockholder might propose.

(b) Acquisition for Own Account. Such Principal Stockholder is acquiring the Merger Shares and the Conversion Shares for such Principal Stockholder's own account for investment only, and not with a view towards their distribution.

(c) Principal Stockholder Can Protect Its Interest. Such Principal Stockholder represents that by reason of his, her or its management's, business or financial experience, such Principal Stockholder has the capacity to protect his, her or its own interests in connection with the transactions contemplated in this Agreement. Further, such Principal Stockholder is aware of no publication of any advertisement in connection with the transactions contemplated in this Agreement.

(d) Accredited Investor. Such Principal Stockholder represents that he, she or it is an "accredited investor" within the meaning of Regulation D under the Securities Act.

(e) Parent Information. Such Principal Stockholder has had an opportunity to discuss Parent's business, management and financial affairs with directors, officers and management of Parent and has had the opportunity to review Parent's operations and facilities. Such Principal Stockholder has also had the opportunity to ask questions of and receive answers from, Parent and its management regarding the terms and conditions of this transaction.

(f) Rule 144. Such Principal Stockholder acknowledges and agrees that the Merger Shares, and, if issued, the Conversion Shares must be held indefinitely unless they are subsequently registered under the Securities Act or an exemption from such registration is available. Such Principal Stockholder has been advised or is aware of the provisions of Rule 144 promulgated under the Securities Act as in effect from time to time, which permits limited resale of shares purchased in a private placement subject to the satisfaction of certain conditions, including, among other things: the availability of certain current public information about Parent, the resale occurring following the required holding period under Rule 144 and the number of shares being sold during any three-month period not exceeding specified limitations.

(g) Residence. If such Principal Stockholder is an individual, then Such Principal Stockholder resides in the state or province identified in the address of such Principal Stockholder set forth on the signature pages hereto; if such Principal Stockholder is a partnership, corporation, limited liability company or other entity, then the office or offices of such Principal Stockholder in which its investment decision was made is located at the address or addresses of such Principal Stockholder set forth on the signature pages hereto.

(h) Foreign Investors. If such Principal Stockholder is not a United States person (as defined by Section 7701(a)(30) of the Code), such Principal Stockholder hereby represents that he, she or it has satisfied himself, herself or itself as to the full observance of the Laws of his, her or its jurisdiction in connection with any invitation to subscribe for the Merger Shares, or any use of this Agreement, including (i) the legal requirements within its jurisdiction for the purchase of the Merger Shares, (ii) any foreign exchange restrictions applicable to such purchase, (iii) any government or other consents that may need to be obtained, and (iv) the income tax and other tax consequences, if any, that may be relevant to the purchase, holding, redemption, sale or transfer of the Merger Shares. The issuance of, and continued beneficial ownership of the Merger Shares and Conversion Shares will not violate any applicable securities or other Laws of such Principal Stockholder's jurisdiction.

ARTICLE 5
ADDITIONAL AGREEMENTS

5.1 Put Right.

(a) In the event that a registration statement with respect to Parent's initial public offering of Parent Common Stock (an " **IPO**") involving (i) an offering in which the aggregate gross proceeds to Parent (before the deduction of underwriters' commissions and expenses are at least $20 million, (ii) a firm value of Parent of not less than $100 million and (iii) listing of the securities offered in such IPO on Nasdaq (a " **Qualified IPO**") has not been declared effective by December 31, 2006 (the "**Put Date**"), then each holder of Company Series B Preferred Stock

immediately prior to the Effective Time (each a "**Company Series B Investor**") shall have the right to sell certain shares of Parent Class B Common Stock received pursuant to this Agreement back to Parent on the terms and subject to the conditions set forth below (the " **Put Right**"). Any Company Series B Investor may exercise the Put Right by delivering an irrevocable notice thereof to Parent not later than thirty (30) days following the Put Date (the " **Put Notice**").

(b) Pursuant to the Put Right, each Company Series B Investor shall be entitled to sell that number of shares of Parent Class B Common Stock that is equal to the product of (i) the result of (A) the total number of shares of Parent Class B Common Stock that constitute the Merger Consideration less (B) the number of Returned Shares (if any) multiplied by (ii) 44.556% (the " **Put Percentage**") (such number of shares to be adjusted appropriately to reflect the impact of any stock split, combination, recapitalization, or the like applicable to the Parent Class B Common Stock that is effected on or after the Closing Date, so as to put each Company Series B Investor in substantially the same economic position as if no such stock split, combination, recapitalization, or the like had occurred) (as so adjusted, the "**Aggregate Put Shares Number**") in exchange for cash consideration from Parent equal to such Company Series B Investor's Put Pro Rata Share (as defined below) of $2,893,014 (the " **Put Consideration**"). Each Company Series B Investor's "**Put Pro Rata Share**" shall be equal to the quotient of (A) the number of shares of Company Series B Preferred Stock held by such Company Series B Investor immediately prior to the Effective Time divided by (B) the number of shares of Company Series B Preferred Stock held by all Company Series B Investors (other than Parent and any holder of Company Series B Preferred Stock whose shares are appraised and acquired for cash in connection with such appraisal) immediately prior to the Effective Time, including in each case any Second Closing Escrow Shares or Third Closing Escrow Shares, as applicable.

(c) Parent shall pay the share of the Put Consideration payable to each Company Series B Investor that elects to exercise its Put Right not later than six (6) months following the Put Date, *provided, however*, that notwithstanding the foregoing, if Parent makes such payment later than thirty (30) days following the Put Date (it being understood and agreed that Parent is not entitled to make such payment any later than six (6) months after Put Date), the Put Percentage shall be increased to 53.467% (with a corresponding increase to the Aggregate Put Shares Number) and the Put Consideration shall be increased to $3,471,617.

(d) The ability to exercise the Put Right shall terminate upon the earlier of (i) thirty (30) days after the Put Date or (ii) the effective date of a registration statement filed in connection with a Qualified IPO.

5.2 Registration Rights.

(a) At any time after Parent has qualified for the use of Form S-3, subject to the conditions set forth in this Section 5.2, if Parent shall receive from a Company Series B Investor, or any Company Series B Investors, a written request that Parent effect any registration on Form S-3 or any similar short form registration statement with respect to all or part of the Parent Capital Stock then held by such Company Series B Investor (such request shall state the number of shares of Parent Capital Stock to be disposed of and the intended methods of disposition of such shares by

such Company Series B Investor), Parent will within twenty (20) calendar days after receipt of such notice, give written notice of the proposed registration, and any related qualification or compliance, to all other Company Series B Investors and as soon as reasonably practicable, effect such registration and all such qualifications and compliances as may be so requested and as would permit or facilitate the sale and distribution of all or such portion of such Company Series B Investors' Parent Capital Stock as are specified in such request, together with all or such portion of the Parent Capital Stock of any other Company Series B Investors joining in such request as are specified in a written request given within fifteen (15) calendar days after receipt of such written notice from Parent; *provided*, *however*, that Parent shall not be obligated to effect any such registration, qualification or compliance pursuant to this Section 5.2, (i) if Form S-3 is not available to Parent for such offering, (ii) if the aggregate proceeds from the sale of Parent Capital Stock proposed to be sold pursuant to a Form S-3 will not exceed $500,000 or (iii) if Parent has already effected one (1) registration pursuant to this Section 5.2 in the immediately preceding six (6) month period.

(b) All Registration Expenses incurred in connection with any registration effected pursuant to this Section 5.2 shall be borne by Parent. All Selling Expenses incurred in connection with any registrations under this Section 5.2 shall be borne by the holders of the securities so registered *pro rata* on the basis of the number of shares so registered.

(c) To the extent permitted by Law, Parent will indemnify and hold harmless each Company Series B Investor, each of its officers, directors and partners, legal counsel, and accountants and each person controlling such Company Series B Investor within the meaning of Section 15 of the Securities Act, with respect to which registration, qualification, or compliance has been effected pursuant to this Section 5.2, and each underwriter, if any, and each person who controls within the meaning of Section 15 of the Securities Act any underwriter, against all expenses, claims, losses, damages, and liabilities (or actions, proceedings, or settlements in respect thereof) arising out of or based on: (i) any untrue statement (or alleged untrue statement) of a material fact contained or incorporated by reference in any prospectus, offering circular, or other document (including any related registration statement, notification, or the like) incident to any such registration, qualification, or compliance, (ii) any omission (or alleged omission) to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, or (iii) any violation (or alleged violation) by Parent of the Securities Act, any state securities laws or any rule or regulation thereunder applicable to Parent and relating to action or inaction required of Parent in connection with any offering covered by such registration, qualification, or compliance, and Parent will reimburse each such Company Series B Investor, each of its officers, directors, partners, legal counsel, and accountants and each person controlling such Company Series B Investor, each such underwriter, and each person who controls any such underwriter, for any legal and any other expenses reasonably incurred in connection with investigating and defending or settling any such claim, loss, damage, liability, or action; *provided* that Parent will not be liable in any such case to the extent that any such claim, loss, damage, liability, or action arises out of or is based on any untrue statement or omission based upon written information furnished to Parent by such Company Series B Investor, any of such Company Series B Investor's officers, directors, partners, legal counsel or accountants, any person controlling such Company Series B Investor, such underwriter or any person who controls any such underwriter and stated to be specifically for use

therein; and *provided, further* that, the indemnity agreement contained in this Section 5.2(c) shall not apply to amounts paid in settlement of any such loss, claim, damage, liability, or action if such settlement is effected without the consent of Parent (which consent shall not be unreasonably withheld, conditioned or delayed).

(d) To the extent permitted by Law, each Company Series B Investor will, if Parent Capital Stock held by such Company Series B Investor is included in the securities as to which such registration, qualification, or compliance is being effected, indemnify and hold harmless Parent, each of its directors, officers, partners, legal counsel, and accountants and each underwriter, if any, of Parent's securities covered by such a registration statement, each person who controls Parent or such underwriter within the meaning of Section 15 of the Securities Act, each other such Company Series B Investor, and each of their officers, directors, and partners, and each person controlling such Company Series B Investor, against all claims, losses, damages and liabilities (or actions in respect thereof) arising out of or based on: (i) any untrue statement (or alleged untrue statement) of a material fact contained or incorporated by reference in any such registration statement, prospectus, offering circular, or other document, or (ii) any omission (or alleged omission) to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, and will reimburse Parent and such Company Series B Investors, directors, officers, partners, legal counsel, and accountants, persons, underwriters, or control persons for any legal or any other expenses reasonably incurred in connection with investigating or defending any such claim, loss, damage, liability, or action, in each case to the extent, but only to the extent, that such untrue statement (or alleged untrue statement) or omission (or alleged omission) is made in such registration statement, prospectus, offering circular, or other document in reliance upon and in conformity with written information furnished to Parent by such Company Series B Investor and stated to be specifically for use therein; *provided, however*, that the obligations of such Holder hereunder shall not apply to amounts paid in settlement of any such claims, losses, damages, or liabilities (or actions in respect thereof) if such settlement is effected without the consent of such Company Series B Investor (which consent shall not be unreasonably withheld, conditioned or delayed); and *provided* that in no event shall any indemnity under this Section 5.2(d) exceed the net proceeds from the offering received by such Company Series B Investor.

(e) Each party entitled to indemnification under this Section 5.2 (the "**Registration Indemnified Party**") shall give notice to the party required to provide indemnification (the "**Registration Indemnifying Party**") promptly after such Registration Indemnified Party has actual knowledge of any claim as to which indemnity may be sought, and shall permit the Registration Indemnifying Party to assume the defense of such claim or any litigation resulting therefrom; *provided* that counsel for the Registration Indemnifying Party, who shall conduct the defense of such claim or any litigation resulting therefrom, shall be approved by the Indemnified Party (whose approval shall not be unreasonably withheld), and the Registration Indemnified Party may participate in such defense at such party's expense; and *provided further* that the failure of any Registration Indemnified Party to give notice as provided herein shall not relieve the Registration Indemnifying Party of its obligations under this Section 5.2, to the extent such failure is not prejudicial. No Registration Indemnifying Party, in the defense of any such claim or litigation, shall, except with the consent of each Registration Indemnified Party, consent to entry of any judgment or

enter into any settlement that does not include as an unconditional term thereof the giving by the claimant or plaintiff to such Indemnified Party of a release from all liability in respect to such claim or litigation. Each Registration Indemnified Party shall furnish such information regarding itself or the claim in question as a Registration Indemnifying Party may reasonably request in writing and as shall be reasonably required in connection with defense of such claim and litigation resulting therefrom.

(f) Parent shall keep any registration on Form S-3 effective until the earliest of (i) sixty (60) days following the effective date of the registration statement, (ii) such time as all shares registered thereunder have been sold or (iii) such time as the holders whose shares are registered on such Form S-3 agree to terminate such registration. Parent agrees that it will use commercially reasonable efforts to (x) obtain eligibility to use Form S-3 in accordance with SEC rules and regulations and (y) maintain and continue such eligibility such that the Company Series B Investors may enjoy the benefits of the registration rights provided under this Section 5.2.

(g) If (i) in the good faith judgment of the board of directors of Parent (the " **Parent Board**"), the filing of a registration statement pursuant to this Section 5.2 would be detrimental to Parent and the Parent Board concludes, as a result, that it is in the best interests of Parent to defer the filing of such registration statement at such time, and (ii) Parent shall furnish to such Company Series B Investors a certificate signed by the President of Parent stating that in the good faith judgment of the Parent Board, it would be detrimental to Parent for such registration statement to be filed in the near future and that it is, therefore, in the best interests of Parent to defer the filing of such registration statement, then (in addition to the limitations set forth in Section 5.2(a) above) Parent shall have the right to defer such filing for a period of not more than ninety (90) days after receipt of the request of the Company Series B Investors, and, *provided further*, that Parent shall not defer its obligation in this manner more than once in any twelve (12)-month period.

5.3 Market Standoff Agreements. Each Principal Stockholder receiving Parent Class B Common Stock pursuant to this Agreement agrees to execute a lock-up agreement with Parent in substantially the form attached hereto as Exhibit D (the "**LUA**") pursuant to which such holders shall agree, if so requested by Parent or any underwriter's representative in connection with an IPO, not to sell or otherwise transfer any securities of Parent during a period of up to one hundred eighty (180) days following the effective date of the registration statement, or such other period as specified in any lock-up agreement approved by Parent and its underwriters in connection with an IPO. Notwithstanding the foregoing, if any other stockholders of Parent are offered the opportunity to enter into a different lock-up agreement that contains terms or provisions that are materially more favorable to such stockholders (a " **Preferential LUA**") than those contained in the LUA entered into or to be entered into by any Principal Stockholder hereunder, then each such Principal Stockholder shall be entitled at its option to enter into such Preferential LUA as well prior to the IPO.

5.4 Cooperation in Qualified IPO. Each Principal Stockholder receiving Parent Class B Common Stock pursuant to this Agreement agrees to take such other commercially reasonable actions as may be reasonably necessary to effectuate a Qualified IPO, including without limitation executing and delivering any stockholder consents, questionnaires, lock-up agreements (but in this

case subject to Section 5.3, above) and certificates reasonably requested by Parent or its underwriters, but only if and to the extent that such actions, consents, and the like do not contain terms that provide disparate treatment to the holders of Parent Class B Common Stock from those actions and consents required of Parent's other stockholders.

5.5 Expenses. Except as otherwise provided herein, whether or not the Merger is consummated, all fees and expenses incurred in connection with the Merger including all legal, accounting, financial advisory, consulting and all other fees and expenses of third parties incurred by a party in connection with the negotiation and effectuation of the terms and conditions of this Agreement and the transactions contemplated hereby, shall be the obligation of the respective party incurring such fees and expenses, *provided, however*, that the Company shall pay the reasonable legal fees and expenses incurred by DLA Piper Rudnick Gray Cary US LLP in its capacity as counsel for the Company, which fees shall not exceed $40,000.

5.6 Additional Documents and Further Assurances. Each party hereto, at the request of another party hereto, shall execute and deliver such other instruments and do and perform such other acts and things as may be necessary or desirable for effecting completely the consummation of this Agreement and the transactions contemplated hereby.

5.7 Indemnification. From and after the Effective Time, Parent shall (or shall cause the Surviving Corporation to) fulfill and honor in all respects the obligations of the Company to indemnity each Person who is or was a director or officer of the Company pursuant to any indemnification provisions of the Company's charter or bylaws as in effect immediately prior to the Effective Time.

5.8 Certain Employee and Benefits Matters. Those employees of the Company who are hired by Parent or any of its affiliates will be full given credit for their service and tenure with the Company with respect to vacation accruals, non-applicability of waiting periods for Company benefits (insurance, participation in 401(k) plan and the like. Those employees of the Company who are not hired by Parent or its affiliates will be any and all accrued or otherwise applicable severance, accrued vacation and the like, in accordance with the Company's historical practices and procedures.

5.9 Information Rights.

(a) Access to Records; Inspection. Each Principal Stockholder who receives at least 30,000 shares of Parent Class B Common Stock pursuant to this Agreement (each, a "**Significant Holder**") shall have the right to visit and inspect any of the properties of Parent and to discuss the affairs, finances and accounts of Parent with its officers, and to review such information as is reasonably requested all during normal business hours. Parent shall make its officers available to the Significant Holders during all such visits and inspections. The Significant Holders agree to keep, and to use the same degree of care as such Significant Holders use to protect their own confidential information, confidential and not misuse any Parent information that Parent identifies as being confidential or proprietary (so long as such information is not in the public domain) that is obtained by a Significant Holder, except that a Significant Holder may disclose such proprietary or confidential information (i) to any partner, subsidiary, parent or such other agent of such Significant

Holder for the purpose of evaluating its ownership position in Parent as long as such partner, subsidiary, parent or agent is advised of and bound to the confidentiality provisions of this Agreement; (ii) at such time as it enters the public domain through not fault of such Significant Holder; (iii) that is communicated to it free of any obligation of confidentiality; or (iv) that is developed by such Significant Holder or its agents independently of and without reference to any confidential information communicated by Parent.

(b) Financials. As soon as reasonably practicable after the end of each quarterly accounting periods in each fiscal year of Parent, Parent will furnish to each Significant Holder, upon request from such Significant Holder, an unaudited consolidated balance sheet of Parent as of the end of each such quarterly period, and an unaudited consolidated statement of income and an unaudited statement of cash flows of Parent for such period and for the current fiscal year to date, prepared in accordance with GAAP (with the exception that no notes need be attached to such statements and period-end audit adjustments may not have been made).

ARTICLE 6
SURVIVAL OF REPRESENTATIONS AND WARRANTIES

6.1 Survival of Representations, Warranties and Covenants. All of the representations, warranties and covenants in this Agreement of the Company and the Principal Stockholders on the one hand, and Parent and Sub on the other hand, shall survive the Merger and continue until 5:00 p.m., Virginia time, on the date which is one year following the Closing Date (the "**Expiration Date**"); *provided*, *however*, that (a) the representations and warranties of the Company set forth in Sections 2.1 and 2.4 of this Agreement shall survive indefinitely and (b) the representations and warranties of the Company set forth in Sections 2.14 and 2.19 of this Agreement shall survive until the expiration of the applicable statutes of limitation.

6.2 Indemnification by the Principal Stockholders and the Company . Subject to the restrictions and limitations set forth elsewhere herein, the Principal Stockholders, severally but not jointly, in proportion to their respective Indemnification Pro Rata Shares, shall indemnify and hold harmless Parent and its officers, directors, employees, agents, Representatives and affiliates, including the Surviving Corporation after the Closing (Parent and such other persons, collectively, the "**Parent Indemnified Parties**"), against all Losses incurred directly or indirectly by one or more Parent Indemnified Parties as a result of (a) any inaccuracy or breach of any representation or warranty of the Company contained herein or (b) any failure by the Company prior to Closing or any failure by the Principal Stockholders to perform or comply with any covenant contained herein, *provided, however*, that no Principal Stockholder will be liable or responsible for, or have any indemnification obligations in respect of, any other Principal Stockholder's breach of any covenant contained herein. No Principal Stockholder shall have any right of contribution from Parent or the Surviving Corporation with respect to any Loss claimed by Parent Indemnified Parties.

6.3 Claims for Indemnification.

(a) Upon receipt by a Principal Stockholder of a certificate signed by any officer of Parent (an " **Officer's Certificate**"): (i) stating that Parent Indemnified Parties have paid or properly

accrued or reasonably anticipate that they will have to pay or accrue Losses, and (ii) specifying in reasonable detail the individual items of Losses included in the amount so stated, the date each such item was paid or properly accrued or the basis for such anticipated liability, and the nature of the misrepresentation or breach of warranty (which shall be based upon a representation or warranty of the Company that shall not have terminated as of the date such Officer's Certificate is delivered to such Principal Stockholder) to which such item is related, such Principal Stockholder shall, subject to the provisions of Sections 6.3(b) and 6.4 hereof, deliver to Parent, as promptly as practicable, cash or Parent Capital Stock in an amount equal to such Losses, and Parent shall deliver such cash or Parent Capital Stock to such Parent Indemnified Parties as appropriate. Parent shall deliver an Officer's Certificate concurrently to each Principal Stockholder from whom Parent intends to seek indemnification for the Losses specified in such Officers Certificates. If Parent shall not have delivered an Officer's Certificate regarding such Losses to a Principal Stockholder within thirty (30) days of the delivery of the first Officer's Certificate for such Losses, Parent shall not be entitled to seek indemnification hereunder for such Losses from such Principal Stockholder.

(b) A Principal Stockholder, at its option, may elect to satisfy Losses claimed under Section 6.3 by delivering cash, Parent Capital Stock or any combination thereof to Parent. For the purpose of determining the number of shares of Parent Capital Stock to be delivered to Parent pursuant to this Section 6.3, each share of Parent Capital Stock shall be valued at either (i) if publicly traded and listed or admitted for trading on any exchange or market (including, without limitation, Nasdaq or the NYSE) or traded over-the-counter, then the value shall be deemed to be the average of the closing bid or sale prices (whichever are applicable) over the ten (10)-day period ending three (3) trading days prior to the date of such delivery or (ii) otherwise, the Implied Share Price.

6.4 Objections to Claims; Resolution of Conflicts; Arbitration .

(a) Objections to Claims. Each Principal Stockholder shall be entitled, during the thirty-day period following the time of delivery of any Officer's Certificate to such Principal Stockholder, to object to the claim made in such Officer's Certificate by delivering a written statement of such objection to Parent. After the expiration of such thirty (30)-day period, provided that no such written statement of objection shall have been delivered to Parent, such Principal Stockholder shall make delivery of cash and/or shares of Parent Capital Stock to Parent in accordance with Section 6.3 hereof.

(b) Disputed Claims. In case a Principal Stockholder objects in writing to any claim or claims made in any Officer's Certificate, Parent and each Principal Stockholder to whom an Officer's Certificate shall have been delivered (and who shall not previously have satisfied such claim or claims) shall attempt in good faith to agree upon the rights of the respective parties with respect to each of such claims. If Parent and each such Principal Stockholder should so agree, a memorandum setting forth such agreement shall be prepared and signed by the parties. Such Principal Stockholder shall be entitled to rely on any such memorandum and deliver cash and/or shares of Parent Capital Stock to Parent in accordance with the terms thereof.

(c) Arbitration.

(i) If no agreement can be reached after the good faith negotiation contemplated by Section 6.4(b), any party to such negotiation may demand arbitration of the matter unless the amount of the damage or loss is at issue in pending litigation with a third party, in which event arbitration shall not be commenced until such amount is ascertained or both parties agree to arbitration; and in either such event the matter shall be settled by arbitration conducted by three arbitrators. Each party to such negotiation (with all Principal Stockholders treated for this purpose as one party) shall select one arbitrator, and the two arbitrators so selected shall select a third arbitrator. The arbitrators shall set a limited time period and establish procedures designed to reduce and minimize to the fullest extent practicable the cost and time for discovery while allowing the parties an opportunity, adequate in the sole judgment of the arbitrators, to discover relevant information from the opposing parties about the subject matter of the dispute. The arbitrators shall rule upon motions to compel or limit discovery and shall have the authority to impose sanctions, including attorneys' fees and costs, to the same extent as a court of law or equity of competent jurisdiction, should the arbitrators determine that discovery was sought without substantial justification or that discovery was refused or objected to without substantial justification. The decision of a majority of the three arbitrators as to the validity and amount of any claim in such Officer's Certificate shall be binding and conclusive upon the parties to this Agreement. Such decision shall be written and shall be supported by written findings of fact and conclusions that shall set forth the award, judgment, decree or order awarded by the arbitrators. Notwithstanding anything herein or otherwise to the contrary, the arbitrators shall (x) have no right or authority to award damages or costs against any person that exceed the limitations applicable to such person in accordance with the provisions of Section 6.6, or to award damages or costs that otherwise are not allocable to such person in pursuant to Section 6.2, and (y) describe the basis for any decision or award in reasonable detail.

(ii) Judgment upon any award rendered by the arbitrators may be entered in any court having jurisdiction. Any such arbitration shall be held under the rules then in effect of the American Arbitration Association.

6.5 Third-Party Claims. In the event Parent becomes aware of a third-party claim which Parent believes may result in a claim for indemnification under Section 6.3, Parent shall notify the Principal Stockholders of such claim, and one representative of the Principal Stockholders (which representative would be designated from time to time by, and serve in such role at the pleasure of, a majority in interest of the Principal Stockholders, measured by shares of Parent Class B Common Stock issuable to the Principal Stockholders at the Effective Time) shall be entitled, at the expense of the Principal Stockholders, to participate in, but not to determine or conduct, any defense of such claim. Parent shall have the right in its sole discretion to settle any such claim; *provided, however*, that except with the consent of the representative of the Principal Stockholders (which consent shall not be unreasonably withheld or delayed), no settlement of any such claim with third-party claimants shall alone be determinative of the amount payable by any Principal Stockholder as a result of any claim for indemnification under Section 6.3. In the event that the representative of the Principal Stockholders shall have consented to any such settlement, no Principal Stockholder shall have any power or authority to object under any provision of this Article 6 to the amount of any claim by Parent against such Principal Stockholder with respect to such settlement.

6.6 Limitations; Maximum Payments; Remedies.

(a) Notwithstanding anything herein or otherwise to the contrary, neither Parent nor any of the other Parent Indemnified Parties may seek indemnification with respect to any claim for Losses until the aggregate amount of all Losses for which indemnification under this Article 6 is sought exceeds $150,000 (the "**Minimum Claims Amount**"), whereupon Parent and such other Parent Indemnified Parties shall be entitled to seek indemnification with respect to all such Losses without regard to the Minimum Claims Amount from the first dollar of such Losses, subject to the limitations set forth in Section 6.6(b), *provided, however*, that no Parent Indemnified Party (other than Parent) shall be entitled or permitted to seek indemnification under this Article 6 unless Parent shall have consented in writing, in Parent's sole discretion, to the assertion of such claim by such other Parent Indemnified Party.

(b) Except in the case of fraud, the maximum liability of each Principal Stockholder for his, her or its indemnification obligations pursuant to this Article 6 shall be limited to sixty percent (60%) of such Principal Stockholders' Indemnification Pro Rata Share of the Merger Consideration, *provided, however*, that notwithstanding the foregoing, the liability of the Principal Stockholders for their indemnification obligations pursuant to this Article 6 shall be limited to one hundred percent (100%) of their Indemnification Pro Rata Share of the Merger Consideration with respect to breaches of the Company of the representations and warranties made in Section 2.11 hereof, provided, however, that for purposes of clarity, except in the case of fraud, in no event will the foregoing provisions be read to provide for indemnification in excess of one hundred percent (100%) of the respective Principal Stockholders' Indemnification Pro Rata Share of the Merger Consideration. The indemnification rights of Parent and the other Parent Indemnified Parties provided for in this Article 6 shall be, except in the case of fraud, the sole and exclusive remedy available to them (or any person claiming through them) for any Losses that such persons (or any person claiming through them) have now or may have in the future, of any kind or nature whatsoever, whether in law, at equity or otherwise, and whether know or unknown, including, without limitation, any Losses attributable to any inaccuracy in or breach of any representation or warranty, any failure to perform any of the covenants, agreements or undertakings in this Agreement, the Company Disclosure Schedule, or as part of or in connection with any agreement or any other document provided for in or contemplated by this Agreement. For purposes of this Section 6, the number of shares constituting the "Merger Consideration" shall be adjusted and reduced as appropriate in the event of a Second Closing Termination Event or a Third Closing Termination Event by the number of shares of Parent Class B Common Stock cancelled by Parent upon such events.

ARTICLE 7
MISCELLANEOUS PROVISIONS

7.1 Notices. All notices, requests and other communications hereunder must be in writing and will be deemed to have been duly given only if delivered personally against written receipt or by facsimile transmission against facsimile confirmation or mailed by internationally recognized overnight courier prepaid, to the parties at the following addresses or facsimile numbers:

If to Parent to:

Luna Innovations Incorporated
2851 Commerce Street Southeast
Blacksburg, Virginia 24011
Facsimile No.: (540) 951-6760
Attn: Kent Murphy, Ph.D.

with a copy (which shall not constitute notice) to:

Wilson Sonsini Goodrich & Rosati, P.C.
11921 Freedom Drive, Suite 600
Reston, Virginia 20190
Facsimile No.: (703) 734-3199
Attn: Trevor J. Chaplick, Esq.

If to the Company to:

Luna Technologies, Inc.
2020 Kraft Drive, Suite 2000
Blacksburg, Virginia 24060
Facsimile No.: (540) 961-5191
Attn: John Goerhke

with a copy (which shall not constitute notice) to:

DLA Piper Rudnick Gray Cary US LLP
1775 Wiehle Avenue, Suite 400
Reston, Virginia 20190
Facsimile No.: (703) 773-5096
Attn: Geoff Willard, Esq.

If to any Principal Stockholder, to such Principal Stockholder's address as set forth on the signature pages hereto.

All such notices, requests and other communications will (a) if delivered personally to the address as provided in this Section 7.1, be deemed given upon delivery, (b) if delivered by facsimile transmission to the facsimile number as provided for in this Section 7.1, be deemed given upon facsimile confirmation, and (c) if delivered by overnight courier to the address as provided in this Section 7.1, be deemed given on the earlier of the first Business Day following the date sent by such overnight courier or upon receipt (in each case regardless of whether such notice, request or other communication is received by any other Person to whom a copy of such notice is to be delivered pursuant to this Section 7.1). Any party from time to time may change its address, facsimile number or other information for the purpose of notices to that party by giving notice specifying such change to the other party hereto.

7.2 Entire Agreement. This Agreement and the Schedules hereto, including the Company Disclosure Schedule, the Parent Disclosure Schedule and the agreements of which forms of which are attached as Exhibits hereto, constitute the entire Agreement among the parties with respect to the subject matter hereof and supersede all prior agreements and understandings, both written and oral, among the parties with respect to the subject matter hereof, except for the Confidentiality Agreement, which shall continue in full force and effect and shall survive any termination of this Agreement or the Closing in accordance with its terms.

7.3 Post-Closing Cooperation. At any time or from time to time after the Closing, the parties shall execute and deliver to the other party such other documents and instruments, provide such materials and information and take such other actions as the other party may reasonably request to consummate the transactions contemplated by this Agreement and otherwise to cause the other party to fulfill its obligations under this Agreement and the transactions contemplated hereby.

7.4 Amendment and Waiver. Any term or condition of this Agreement may be amended or waived at any time by upon the written consent of Parent and the Company, provided, however, that if any waiver affects the rights or obligations of the Principal Stockholders hereunder, such amendment or waiver shall also require the consent of the Principal Stockholders receiving a majority of the Parent Class B Common Stock issued pursuant to this Agreement. No waiver by any party of any term or condition of this Agreement, in any one or more instances, shall be deemed to be or construed as a waiver of the same or any other term or condition of this Agreement on any future occasion. All remedies, either under this Agreement or by Law or otherwise afforded, will be cumulative and not alternative.

7.5 Third Party Beneficiaries. The terms and provisions of this Agreement are intended solely for the benefit of each party hereto and their respective successors or permitted assigns, and it is not the intention of the parties to confer third-party beneficiary rights, and this Agreement does not confer any such rights, upon any other Person other than the Persons entitled to indemnity under Article 6 and the persons intended to be benefited thereunder.

7.6 No Assignment; Binding Effect. Neither this Agreement nor any right, interest or obligation hereunder may be assigned (by operation of law or otherwise) by any party without the prior written consent of the other party and any attempt to do so will be void. Subject to the preceding sentence, this Agreement is binding upon, inures to the benefit of and is enforceable by the parties hereto and their respective successors and assigns.

7.7 Headings. The headings and table of contents used in this Agreement have been inserted for convenience of reference only and do not define or limit the provisions hereof.

7.8 Invalid Provisions. If any provision of this Agreement is held to be illegal, invalid or unenforceable under any present or future Law, and if the rights or obligations of any party hereto under this Agreement will not be materially and adversely affected thereby, (a) such provision will be fully severable, (b) this Agreement will be construed and enforced as if such illegal, invalid or unenforceable provision had never comprised a part hereof, (c) the remaining provisions of this Agreement will remain in full force and effect and will not be affected by the illegal, invalid or

unenforceable provision or by its severance herefrom and (d) in lieu of such illegal, invalid or unenforceable provision, there will be added automatically as a part of this Agreement a legal, valid and enforceable provision as similar in terms to such illegal, invalid or unenforceable provision as may be possible.

7.9 Governing Law. This Agreement, any other merger agreements, the Ancillary Agreements and any other closing documents shall be governed by and construed in accordance with the domestic laws of the State of Delaware, without giving effect to any choice of law or conflict of law provision or rule (whether of the State of Delaware or any other jurisdiction) that would cause the application of the laws of any jurisdiction other than the State of Delaware.

7.10 WAIVER OF TRIAL BY JURY. IN ANY ACTION OR PROCEEDING ARISING HEREFROM, THE PARTIES HERETO CONSENT TO TRIAL WITHOUT A JURY IN ANY ACTION, PROCEEDING OR COUNTERCLAIM BROUGHT BY ANY PARTY HERETO AGAINST THE OTHER OR THEIR SUCCESSORS IN RESPECT OF ANY MATTER ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT, REGARDLESS OF THE FORM OF ACTION OR PROCEEDING.

7.11 Construction. The parties hereto agree that this Agreement is the product of negotiation between sophisticated parties and individuals, all of whom were represented by counsel, and each of whom had an opportunity to participate in and did participate in, the drafting of each provision hereof. Accordingly, ambiguities in this Agreement, if any, shall not be construed strictly or in favor of or against any party hereto but rather shall be given a fair and reasonable construction without regard to the rule of *contra proferentem*.

7.12 Counterparts. This Agreement may be executed in any number of counterparts, each of which will be deemed an original, but all of which together will constitute one and the same instrument.

7.13 Specific Performance. The parties hereto agree that irreparable damage would occur in the event that any of the provisions of this Agreement were not performed in accordance with their specific terms or were otherwise breached. Except where this Agreement specifically provides for arbitration, it is agreed that the parties shall be entitled to an injunction or injunctions to prevent breaches of this Agreement and to enforce specifically the terms and provisions hereof in any court of the United States or any state having jurisdiction, this being in addition to any other remedy to which they are entitled at law or in equity.

7.14 Representation; Waiver of Conflicts.

(a) Each party to this Agreement acknowledges that DLA Piper Rudnick Gray Cary US LLP has served as special counsel to the Company in connection with and to facilitate the negotiation and preparation of this Agreement and all related agreements, documents and transactions and has not represented any other party or parties hereto. Each party to this Agreement further acknowledges that DLA Piper Rudnick Gray Cary US LLP and certain of its attorneys (collectively, "**DLA Piper**"), outside counsel to the Company, has in the past performed and may

now or in the future represent one or more Principal Stockholders or their affiliates in matters other than those provided for in this Agreement. The applicable rules of professional conduct require that DLA Piper inform the parties hereunder of this representation and obtain their consent. DLA Piper has served as outside counsel to the Company and has negotiated the terms of this Agreement and the Merger solely on behalf of the Company. The Company and each other party hereto hereby (i) acknowledge that they have had an opportunity to ask for and have obtained information relevant to such representation, including disclosure of the reasonably foreseeable adverse consequences of such representation; (ii) acknowledge that with respect to this Agreement and the Merger, DLA Piper has represented solely the Company, and not any person or party hereto; and (iii) gives its informed consent to DLA Piper's representation of the Company in connection with this Agreement and the Merger and waives any conflicts with respect thereto.

(b) Each party to this Agreement acknowledges that Wilson Sonsini Goodrich & Rosati, P.C. has served as special counsel to Parent in connection with and to facilitate the negotiation and preparation of this Agreement and all related agreements, documents and transactions and has not represented any other party or parties hereto. Each party to this Agreement further acknowledges that Wilson Sonsini Goodrich & Rosati, P.C. and certain of its attorneys (collectively, "**WSGR**"), outside counsel to Parent, has in the past performed and may now or in the future represent the Company and one or more Principal Stockholders or their affiliates in matters other than those provided for in this Agreement. The applicable rules of professional conduct require that WSGR inform the parties hereunder of this representation and obtain their consent. WSGR has served as outside counsel to Parent and has negotiated the terms of this Agreement and the Merger solely on behalf of Parent. Parent, the Company and each other party hereto hereby (i) acknowledge that they have had an opportunity to ask for and have obtained information relevant to such representation, including disclosure of the reasonably foreseeable adverse consequences of such representation; (ii) acknowledge that with respect to this Agreement and the Merger, WSGR has represented solely Parent, and not any person or party hereto; and (iii) gives its informed consent to WSGR's representation of Parent in connection with this Agreement and the Merger and waives any conflicts with respect thereto.

ARTICLE 8
DEFINITIONS

8.1 Definitions. As used in this Agreement, the following defined terms shall have the meanings indicated below:

"**Affiliate**" means, as applied to any Person, (a) any other Person directly or indirectly controlling, controlled by or under common control with, that Person, or (b) as to a corporation, each director and officer thereof, and as to a partnership, each general partner thereof, and as to a limited liability company, each managing member or similarly authorized person thereof (including officers), and as to any other entity, each Person exercising similar authority to those of a director or officer of a corporation.

"**Aggregate Put Shares Number**" has the meaning given to it in Section 5.1.

"**Agreement**" means this Agreement and Plan of Merger, including (unless the context otherwise requires) the Exhibits and the Disclosure Schedules and the certificates and instruments delivered in connection herewith, or incorporated by reference, as the same may be amended or supplemented from time to time in accordance with the terms hereof.

"**Ancillary Agreements**" has the meaning given to it in Section 2.1.

"**Business Day**" means a day other than Saturday, Sunday or any day on which banks located in the Commonwealth of Virginia are authorized or obligated to close.

"**Certificates**" has the meaning given to it in Section 1.10(b).

"**Closing**" has the meaning given to it in Section 1.2.

"**Closing Date**" has the meaning given to it in Section 1.2.

"**Code**" means the Internal Revenue Code of 1986, as amended, and the rules and regulations promulgated thereunder.

"**Company**" has the meaning given to it in the forepart of this Agreement.

"**Company Capital Stock**" means collectively the Company Common Stock and the Company Preferred Stock.

"**Company Common Stock**" means the Common Stock, par value $0.001 per share of the Company.

"**Company Disclosure Schedule**" has the meaning given to it in the preamble of Article 2.

"**Company Option(s)**" means any Option to purchase Company Capital Stock, excluding the Company Preferred Stock and the Company Warrants.

"**Company Preferred Stock**" means collectively the Company Series A Preferred Stock, Company Series A-1 Preferred Stock and Series B Preferred Stock.

"**Company Restricted Stock**" means shares of Company Capital Stock that are subject to a repurchase option in favor of the Company.

"**Company Series A Preferred Stock**" means the Series A Convertible Preferred Stock, par value $0.001 per share of the Company.

"**Company Series A-1 Preferred Stock**" means the Series A-1 Convertible Preferred Stock, par value $0.001 per share of the Company.

"**Company Series B Investor**" has the meaning given to it in Section 5.1.

"**Company Series B Preferred Stock**" means the Series B Convertible Preferred Stock, par value $0.001 per share of the Company.

"**Company Stock Purchase Right**" means a right to purchase Company Restricted Stock granted pursuant to the Plans or otherwise.

"**Company Warrants**" means any and all warrants to purchase Company Capital Stock.

"**Conversion Shares**" has the meaning given to it in Section 4.2.

"**Delaware Law**" means the General Corporation Law of the State of Delaware and all amendments and additions thereto.

"**Dissenting Shares**" has the meaning given to it in Section 1.8(a).

"**Effective Time**" has the meaning given to it in Section 1.2.

"**Expiration Date**" has the meaning given to it in Section 6.1.

"**Financial Statements**" has the meaning given to it in Section 2.5.

"**Form S-3**" means such form under the Securities Act as in effect on the date hereof or any successor or similar registration form under the Securities Act subsequently adopted by the SEC that permits inclusion or incorporation of substantial information by reference to other documents filed by Parent with the SEC.

"**Founder Option Plan**" has the meaning given to it in Section 2.3(b).

"**GAAP**" has the meaning given to it in Section 2.5.

"**Governmental or Regulatory Authority**" means any court, tribunal, arbitrator, authority, agency, bureau, board, commission, department, official or other instrumentality of the United States, any foreign country or any domestic or foreign state, county, city or other political subdivision, including any stock exchange, quotation service and the National Association of Securities Dealers.

"**Hazardous Materials**" means (a) materials which are listed or otherwise defined as "hazardous" or "toxic" under any applicable local, state, federal and/or foreign laws and regulations that govern the existence and/or remedy of contamination on property, the protection of the environment from contamination, the control of hazardous wastes, or other activities involving hazardous substances, including building materials or (b) any petroleum products or nuclear materials.

"**Indemnification Pro Rata Share**" shall mean the quotient of (a) the number of shares of Parent Class B Common Stock issued to a Principal Stockholder pursuant to this

Agreement divided by (b) the total number of shares of Parent Class B Common Stock issued to all Principal Stockholders pursuant to this Agreement.

"**IPO**" has the meaning given to it in Section 5.1.

"**Implied Share Price**" means a price per share of Parent Class B Common Stock equal to: (i) if neither the Second Closing nor Third Closing has occurred, $5.9266, (ii) if the Second Closing has occurred, but the Third Closing has not occurred, $5.2962, if the Third Closing has occurred, but the Second Closing has not occurred, $5.5315 and (iv) if both the Second Closing and Third Closing have occurred, $4.9784, in each case, as appropriately adjusted for stock splits, stock dividends and the like.

"**Law**" or "**Laws**" means any law, statute, order, decree, consent decree, judgment, rule, regulation, ordinance or other pronouncement having the effect of law whether in the United States, any foreign country, or any domestic or foreign state, county, city or other political subdivision or of any Governmental or Regulatory Authority.

"**Loss(es)**" means any and all damages, fines, fees, taxes, penalties, deficiencies, losses (including lost profits or diminution in value) and expenses, including interest, reasonable expenses of investigation, court costs, reasonable fees and expenses of attorneys, accountants and other experts or other expenses of litigation or other proceedings or of any claim, default or assessment (such fees and expenses to include all fees and expenses, including reasonable fees and expenses of attorneys, incurred in connection with (a) the investigation or defense of any third party claims or (b) asserting or disputing any rights under this Agreement against any party hereto or otherwise), net of any insurance proceeds actually received or proceeds received by virtue of third party indemnification.

"**LUA**" has the meaning given to it in Section 5.3.

"**Merger**" has the meaning given to it in Recital A to this Agreement.

"**Merger Consideration**" has the meaning given to it in Section 1.6.

"**Minimum Claims Amount**" has the meaning given to it in Section 6.6.

"**New Plan**" has the meaning given to it in Section 2.3(b).

"**Officer's Certificate**" has the meaning given to it in Section 6.3(a).

"**Option**" with respect to any Person means any security, right, subscription, warrant, option, "phantom" stock right or other contract (other than the Company Preferred Stock) that gives the right to (a) purchase or otherwise receive or be issued any shares of capital stock or other equity interests of such Person or any security of any kind convertible into or exchangeable or exercisable for any shares of capital stock or other equity interests of such Person or (b) receive any benefits or rights similar to any rights enjoyed by or accruing to the holder of shares of capital stock or other equity interests of such Person, including any rights to participate in the equity, income or election of directors or officers of such Person.

"**Parent**" has the meaning ascribed to it in the forepart of this Agreement.

"**Parent Board**" has the meaning given to it in Section 5.2.

"**Parent Capital Stock**" means the capital stock of Parent.

"**Parent Class A Common Stock**" means the Class A Common Stock, par value $0.001 per share of Parent.

"**Parent Class B Common Stock**" means the Class B Common Stock, par value $0.001 per share of Parent.

"**Parent Class C Common Stock**" means the Class C Common Stock, par value $0.001 per share of Parent.

"**Parent Common Stock**" means the Common Stock, par value $0.001 per share of Parent.

"**Parent Indemnified Parties**" has the meaning ascribed to it in Section 6.2.

"**Parent Purchase Agreement**" means that certain Class C Common Stock Purchase Agreement dated as of August 2, 2005, by and among Parent and Carilion Health System.

"**Person**" means any natural person, corporation, general partnership, limited partnership, limited liability company or partnership, proprietorship, other business organization, trust, union, association or Governmental or Regulatory Authority.

"**Plans**" has the meaning given to it in Section 2.3(b).

"**Preferential LUA**" has the meaning given to it in Section 5.3.

"**Principal Stockholder**" means any holder of Company Preferred Stock immediately prior to the Effective Time who is receiving shares of Parent Class B Common Stock pursuant to this Agreement.

"**Put Consideration**" has the meaning given to it in Section 5.1.

"**Put Date**" has the meaning given to it in Section 5.1.

"**Put Notice**" has the meaning given to it in Section 5.1.

"**Put Percentage**" has the meaning given to it in Section 5.1.

"**Put Pro Rata Share**" has the meaning given to it in Section 5.1.

"**Put Right**" has the meaning given to it in Section 5.1.

"**Qualified IPO**" has the meaning given to it in Section 5.1.

"**Registration Expenses**" shall mean all expenses incurred by Parent in complying with Section 5.2 hereof, including, without limitation, all registration and filing fees, printing expenses, fees and disbursements of counsel for Parent, Blue Sky fees and expenses and the expense of any special audits incidental to or required by any such registration (but excluding the compensation of regular employees of Parent, which shall be paid in any event by Parent, all underwriting discounts and all underwriting commissions).

"**Registration Indemnified Party** has the meaning ascribed to it in Section 5.2.

"**Registration Indemnifying Party**" has the meaning ascribed to it in Section 5.2.

"**Representative**" means each any every officer, director, employee, agent, attorney, accountant, advisor and representative of any person or party.

"**Restated Certificate**" means the Amended and Restated Certificate of Incorporation of Parent, substantially in the form attached as Exhibit E hereto, to be in effect immediately following the Effective Time.

"**Returned Shares**" means any Second Closing Escrow Shares or Third Closing Escrow Shares that are returned to the status of authorized but unissued shares of Parent Capital Stock pursuant to Section 1.9, as applicable.

"**SEC**" means the Securities and Exchange Commission or any successor entity.

"**Second Closing Escrow Shares**" has the meaning ascribed to it in Section 1.9.

"**Second Closing Termination Event**" has the meaning ascribed to it in Section 1.9.

"**Securities Act**" means the Securities Act of 1933, as amended, and the rules and regulations promulgated by the SEC thereunder.

"**Selling Expenses**" means all underwriting discounts, selling commissions and stock transfer rates applicable to the sale of Parent Capital Stock and, except as set forth in the definition of "Registration Expenses" above, all fees and reimbursement of counsel for the Company Series B Investors initiating such registration.

"**Series A Exchange Ratio**" means either: (i) with respect to Company Series A Preferred Stock issued on December 22, 2000, 0.04951047, (ii) with respect to Company Series A Preferred Stock issued on March 20, 2001, 0.04860027, (iii) with respect to Company Series A Preferred Stock issued on October 10, 2001, 0.04655411, (iv) with respect to Company Series A Preferred Stock issued on June 27, 2003, 0.04080614, or (v) with respect to Company Series A Preferred Stock issued on March 16, 2004, 0.03860487, as applicable.

"**Series A-1 Exchange Ratio**" means either: (i) with respect to Company Series A-1 Preferred Stock issued on March 20, 2001, 0.04860027 or (ii) with respect to Company Series A-1 Preferred Stock issued on October 10, 2001, 0.04655411, as applicable.

"**Series B Exchange Ratio**" means either: (i) with respect to Company Series B Preferred Stock issued on March 31, 2003, 0.01360621, (ii) with respect to Company Series B Preferred Stock issued on June 27, 2003, 0.01333761, or (iii) with respect to Company Series B Preferred Stock issued on March 16, 2004, 0.01356828, as applicable.

"**Significant Holder**" has the meaning ascribed to it in Section 5.9.

"**Statement Date**" has the meaning given to it in Section 2.5

"**Sub**" has the meaning ascribed to it in the forepart of this Agreement.

"**Surviving Corporation**" has the meaning given to it in Section 1.1.

"**SVB Warrant**" means that certain warrant to purchase shares of the Series A Preferred Stock of the Company, dated as of August 31, 2001, and issued by the Company to Silicon Valley Bank.

"**Third Closing Escrow Shares**" has the meaning ascribed to it in Section 1.9.

"**Third Closing Termination Event**" has the meaning ascribed to it in Section 1.9.

"**VT Warrant**" means that certain warrant to purchase shares of the Series A Preferred Stock of the Company, dated as of September 23, 2002, and issued by the Company to the Virginia Tech Foundation, Inc.

"**Warrant Exchange Ratio**" means 0.03429089.

8.2 Construction. Unless the context of this Agreement otherwise requires, (i) words of any gender include each other gender and the neuter, (ii) words using the singular or plural number also include the plural or singular number, respectively, (iii) the terms "hereof," "herein," "hereby" and derivative or similar words refer to this entire Agreement as a whole and not to any particular Article, Section or other subdivision, (iv) the terms "Article" or "Section" or other subdivision refer to the specified Article, Section or other subdivision of the body of this Agreement, (v) the phrases "ordinary course of business" and "ordinary course of business consistent with past practice" refer to the business and practice of the Company, the words "include," "includes" and "including" shall be deemed to be followed by the phrase "without limitation," and (vi) when a reference is made in this Agreement to Exhibits, such reference shall be to an Exhibit to this Agreement unless otherwise

indicated. All accounting terms used herein and not expressly defined herein shall have the meanings given to them under GAAP. When used herein, the terms "party" or "parties" refer to Parent, the Company and the Principal Stockholders, and the terms "third party" or "third parties" refers to Persons other than Parent or the Company.

[SIGNATURE PAGES FOLLOW]

IN WITNESS WHEREOF, the parties hereto, have caused this Agreement to be signed by their duly authorized representatives, all as of the date first written above.

PARENT:

LUNA INNOVATIONS INCORPORATED

By: /s/ Scott A. Graeff

Name: Scott A. Graeff

Title: Chief Financial Officer

SUB:

LUNA TECHNOLOGIES ACQUISITION CORP.

By: /s/ Scott A. Graeff

Name: Scott A. Graeff

Title: President and Secretary

COMPANY:

LUNA TECHNOLOGIES, INC.

By: /s/ John Goehrke

Name: John Goehrke

Title: CEO

PRINCIPAL STOCKHOLDERS:

_____

(Name of Stockholder)

By: /s/ _____

Name: _____

Title: _____

Address: _____

_____

_____

Facsimile: (_____) _____ - _____

ANNEX A

List of Principal Stockholders

Bittle W. Porterfield, III
Bryce Bolton
Columbia Capital Equity Partners III (Q.P.), L.P.
Columbia Luna Partners, LLC
Court Square Luna Holdings, LLC
Court Square Ventures I, LLC
Ed Valigursky
Envest Ventures I, LLC
GC&H Investments
Jon Tietbohl
Leon P. Harris
Luna Innovations Incorporated
Mark A. Frantz
Novak Biddle Venture Partners III, LP
Paul Torgersen
Raymond D. and Jean N. Smoot, JTWROS
Robert L. Martinet
Soundview Technology Photonics Limited Fund, LLC
Southwest One, LLC
Stephen H. Sewell, Jr.
Trevor J. Chaplick
Virginia Tech Foundation, Inc.
WS Investment Company, LLC (2001A)

Exhibit 3.1

AMENDED AND RESTATED CERTIFICATE OF INCORPORATION

OF

LUNA INNOVATIONS INCORPORATED

Kent A. Murphy hereby certifies that:

ONE: The original name of the corporation is Luna Innovations Incorporated and the Certificate of Incorporation of this corporation was first filed with the Secretary of State of the State of Delaware on April 4, 2003 and was amended and restated on August 1, 2003, August 2, 2005, September 30, 2005 and December 30, 2005.

TWO: He is the duly elected and acting President and Chief Executive Officer of Luna Innovations Incorporated, a Delaware corporation.

THREE: The Certificate of Incorporation of this corporation is hereby amended and restated to read as follows:

ARTICLE I

The name of the corporation is Luna Innovations Incorporated (the " **Corporation**").

ARTICLE II

The address of the Corporation's registered office in the State of Delaware is: Corporation Trust Center, 1209 Orange Street, Wilmington, New Castle County, Delaware 19801. The name of its registered agent at such address is: The Corporation Trust Company.

ARTICLE III

The purpose of the Corporation is to engage in any lawful act or activity for which corporations may be organized under the General Corporation Law of Delaware (the "**DGCL**").

ARTICLE IV

The Corporation is authorized to issue four classes of stock to be designated, respectively, "Class A Common Stock", "Class B Common Stock", "Class C Common Stock", and "Common Stock." The total number of shares of capital stock that the Corporation shall have authority to issue is 54,245,588, of which (i) 7,269,165 shares shall be Class A Common Stock, $0.001 par value per share (" **Class A Common Stock**"), (ii) 15,694,940 shares shall be Class B Common Stock, $0.001 par value per share (" **Class B Common Stock**"), (iii) 5,932,044 shares shall be Class C Common Stock, $0.001 par value per share ("**Class C Common Stock**" and together with the Class A

Common Stock and Class B Common Stock, the "**Class Common Stock**"), and (iv) 25,349,439 shares shall be Common Stock, $0.001 par value per share ("**Common Stock**").

The holders of Common Stock, Class A Common Stock and Class C Common Stock shall have the right to vote for the election of members of the board of directors of the Corporation (the "**Board of Directors**") and on all other matters requiring stockholder action. The Corporation's Class B Common Stock shall be non-voting except to the extent otherwise required under the DGCL. Each share of Class A Common Stock and Class C Common Stock shall be entitled to the number of votes set forth in Article V below, and each share of Common Stock shall be entitled to one vote. Subject to the rights of the holders of the Class C Common Stock pursuant to Article V, Section 6 herein, the number of authorized shares of any class or classes of capital stock may be increased or decreased (but not below the number of shares thereof then outstanding) by the affirmative vote of the holders of a majority of the capital stock of the Corporation entitled to vote, voting together as a single class, irrespective of the provisions of Section 242(b)(2) of the DGCL; *provided, however*, that the affirmative vote of a majority of the voting interests of all outstanding Class C Common Stock shall also be required to increase or decrease the number of authorized shares of Class C Common Stock.

Other than with respect to the voting rights of the Class A Common Stock, Class C Common Stock and Common Stock set forth above in this Article IV and other than as set forth in Article V with respect to the rights, preferences and privileges of the Class Common Stock, the holders of Class A Common Stock, the Class B Common Stock, the Class C Common Stock and the Common Stock shall be entitled to the same rights and privileges, and shall share equally on a per share basis in the distribution of any funds which the Board of Directors may declare or set aside or pay out as dividends, and shall share equally on a per share basis in the distribution of any and all dividends and in the distribution of assets in connection with a Liquidation Event (as defined in Article V below), whether voluntary or involuntary, and after the payment of all debts of the Corporation, and shall be alike in all other respects. Except as may otherwise be agreed by the holders of a majority of the voting interests of the Class C Common Stock then outstanding, the consideration per share paid for Class C Common Stock in connection with a Liquidation Event shall not be less than the consideration per share paid for Class A Common Stock in connection with such Liquidation Event; *provided further*, that no discount or reduction in the valuation of the Class C Common Stock shall be deemed to apply because of any difference between the voting rights of the Class C Common Stock and the voting rights of the Class A Common Stock, or because the Class C Common Stock is convertible in part into shares of Class B Common Stock.

ARTICLE V

The rights, privileges and restrictions and other matters relating to the Class Common Stock are as follows:

1. Definitions. For purposes of this ARTICLE V, the following definitions shall apply:

(a) "**Change of Control**" shall mean (a) the merger or consolidation of the Corporation with or into another entity in which the stockholders of the Corporation immediately

prior to such merger or consolidation own less than 50% of the voting securities of the surviving entity, (b) any other transaction or series of related transactions to which the Corporation is a party as a result of which the stockholders of the Corporation immediately prior to such transaction or series of related transactions own less than 50% of the voting securities of the Corporation or other surviving entity following such transaction or related transactions (other than the sale of equity securities by the Corporation in a capital raising transaction), or (c) a sale, lease or other conveyance of all or substantially all of the assets of the Corporation.

(b) "**Convertible Securities**" shall mean any evidences of indebtedness, shares or other securities convertible into or exchangeable for Common Stock.

(c) "**Corporation**" shall mean Luna Innovations Incorporated.

(d) "**Dividend Rate**" shall mean an annual rate of six percent (6%) of the Original Purchase Price.

(e) "**Initial Issue Date**" shall mean the first date of issuance of a share of Class C Common Stock.

(f) "**Liquidation Event**" shall mean (a) any Change of Control or (b) any liquidation, dissolution or winding up of the Corporation, whether voluntary or involuntary.

(g) "**Notes**" shall mean those certain Senior Convertible Promissory Notes issued by the Company in favor of the Investors named therein under that certain Class C Common Stock and Note Purchase Agreement by and between the Company and the Investors named therein on December 30, 2005.

(h) "**Original Purchase Price**" shall mean the $2.65183 per share for the Class C Common Stock (subject to adjustment from time to time for Recapitalizations as set forth in Sections 4(e), (f), (g) and (h) herein).

(i) "**Qualified Change of Control**" shall mean a Change of Control that (A) involves a bona fide, arm's length transaction with a third-party unaffiliated with the Corporation, the terms of which have been negotiated in good faith by the Corporation and such third-party, and (B) in respect of a stock purchase or merger, results in such third party acquiring one hundred percent (100%) of the voting securities (excluding options, warrants or other rights to purchase capital stock of the Corporation then outstanding) of the Corporation.

(j) "**Recapitalization**" shall mean any stock dividend, stock split, combination of shares, reorganization, recapitalization, reclassification or other similar event.

2. Dividends.

(a) Class C Common Stock. Beginning on the date of issuance of each share of Class C Common Stock, the holders of outstanding shares of such Class C Common Stock shall be entitled to receive cumulative dividends whether or not declared by the Board of Directors, out of

any assets at the time legally available therefor, at the Dividend Rate specified for such shares of Class C Common Stock payable in preference and priority to any declaration or payment of any dividend on any other class of Common Stock or any other class or series of capital stock of the Corporation. For the avoidance of doubt, no dividends shall be paid with respect to the Class A Common Stock, the Class B Common Stock, the Common Stock or any capital stock of the Corporation (i) at a rate greater than the Dividend Rate and (ii) until all accrued dividends on the Class C Common Stock have been paid in full. Payment of any dividends to the holders of the Class C Common Stock shall be on a pro rata, pari passu basis in proportion to the Dividend Rate for the Class C Common Stock. The right to receive dividends on each share of Class C Common Stock shall be cumulative beginning on the date of original issue of such share of Class C Common Stock and such dividends shall accrue and be payable in shares of Class B Common Stock (or, at the election of the Corporation, in cash) upon the earlier of the date on which (i) a Liquidation Event (as defined in Section 1(f)) occurs, (ii) such share is converted pursuant to any of the provisions of Section 4 of this Article V into Class A Common Stock, Class B Common Stock or Common Stock or (iii) such share is redeemed, provided, in each case, such dividends shall be due and payable at the time of such event out of assets legally available therefor.

(b) Additional Dividends. After the payment of the dividends described in Section 2(a) above, any additional dividends declared or paid in any fiscal year may be declared or paid to the holders of the Class A Common Stock, the Class B Common Stock, the Common Stock and/or other capital stock of the Corporation in proportion to the number of shares of Common Stock then outstanding; *provided, however*, that in no event shall any dividend be paid on the Class A Common Stock, Class B Common Stock or Common Stock and/or other capital stock of the Corporation (i) at a rate greater than the Dividend Rate and (ii) until all accrued but unpaid dividends on Class C Common Stock have been paid in full. Unless otherwise declared by the Board, the Class B Common Stock shall not be entitled to the declaration and payment of dividends.

(c) Non-Cash Dividends. Whenever a dividend provided for in this Section 2 shall be payable in property other than cash, the value of such dividend shall be deemed to be the fair market value of such property as determined in good faith by the Board of Directors.

(d) Waiver. The holders of the Class C Common Stock may waive any dividend preference that such holders shall be entitled to receive under this Section 2 upon the affirmative vote or action by written consent of the holders of a majority of the voting interests of the then-outstanding Class C Common Stock (voting or acting together as a single class) (such required holders being sometimes collectively referred to herein as the " **Required Holders**").

3. Voting.

(a) Voting Generally. Except as otherwise expressly provided in this Amended and Restated Certificate of Incorporation or as required by law, the holders of Class A Common Stock, Class C Common Stock and Common Stock shall vote together and not as separate classes. The Class B Common Stock shall be non-voting except to the extent otherwise required under the DGCL. Except as otherwise expressly provided herein or as required by law, there shall be no series voting.

(b) Class A Common Stock Voting. Each holder of Class A Common Stock shall be entitled to the number of votes equal to the number of shares of Common Stock issuable upon conversion of the Class A Common as of the record date pursuant to Section 4 of this Article V. Except as otherwise contemplated herein or required by the DGCL, the holders of shares of the Class A Common Stock shall be entitled to vote on all matters requiring stockholder action. Holders of Class A Common Stock shall be entitled to notice of any stockholders' meeting in accordance with the Bylaws of the Corporation. Fractional votes shall not, however, be permitted and any fractional voting rights resulting from the above formula (after aggregating all shares into which shares of Class A Common Stock held by each holder could be converted), shall be rounded to the nearest whole number.

(c) Class C Common Stock Voting. Each holder of Class C Common Stock shall be entitled to the number of votes equal to the number of shares of Class A Common Stock issuable upon conversion of the Class C Common Stock as of the record date pursuant to Section 4 of this Article V. Except as otherwise contemplated herein or required by the DGCL, the holders of shares of the Class C Common Stock shall be entitled to vote on all matters requiring stockholder action. Holders of Class C Common Stock shall be entitled to notice of any stockholders' meeting in accordance with the Bylaws of the Corporation. Fractional votes shall not, however, be permitted and any fractional voting rights resulting from the above formula (after aggregating all shares into which shares of Class C Common Stock held by each holder could be converted), shall be rounded to the nearest whole number.

(d) Election of Directors.

(i) The size of the Board of Directors shall be established by the Bylaws of the Corporation. At each meeting or pursuant to each consent of the Corporation's stockholders for the election of directors:

(1) For so long as any shares of Class C Common Stock remain outstanding, the Required Holders of the Class C Common Stock, voting as a separate class distinct from any other series or class of securities issued by the Corporation, shall be entitled (A) if the size of the Board of Directors is seven (7) or less, to elect one (1) member of the Board of Directors, (B) if the size of the Board of Directors is greater than seven (7), to elect two (2) members of the Board of Directors (each such director, a " **Class C Director**"), (C) to remove any such Class C Director from office, and (D) to fill any vacancy caused by the resignation, death or removal of any such Class C Director; *provided*, *however*, that in the event that there are no shares of Class C Common Stock outstanding, such members of the Board of Directors shall be elected and removed by the holders of a majority of the outstanding shares of Class A Common Stock, voting as a separate class distinct from any other series or class of securities issued by the Corporation; and

(2) The holders of a majority of the outstanding shares of Class A Common Stock, voting as a separate class distinct from any other series or class of securities issued by the Corporation, shall be entitled to elect the remaining members of the Board of Directors, to remove such directors from office, and to fill any vacancy caused by the resignation, death or removal of such directors.

4. General Conversion Rights. Each share of Class Common Stock shall be convertible (the "**Conversion Rights**") into that number of fully-paid, nonassessable shares of Common Stock or a particular Class Common Stock, as may be applicable, pursuant to the applicable Conversion Rate as provided herein; *provided, however*, no conversion of the Class C Common Stock into Common Stock shall be permitted under any circumstances except in connection with a Qualified IPO (as defined herein) pursuant to subsection 4(c) of this Article V. Notwithstanding anything to the contrary of the foregoing, for purposes of determining the number of votes per share of the Class A Common Stock and Class C Common Stock, such number of votes shall be equal to (i) with respect to the Class A Common Stock, the number of shares of Common Stock issuable upon conversion of such Class A Common Stock as of the record date pursuant to the then effective Class A Conversion Rate (as defined herein), and (ii) with respect to the Class C Common Stock, the number of shares of Class A Common Stock issuable upon conversion of such Class C Common Stock as of the record date pursuant to the then effective Primary Class C Conversion Rate (as defined herein), in either such case of (i) and (ii), notwithstanding the fact that such conversion was not otherwise permitted except in connection with a Qualified IPO. The number of shares of Common Stock into which each share of Class A Common Stock may be converted is hereinafter referred to as the "**Class A Conversion Rate**." The number of shares of Common Stock into which each share of Class B Common Stock may be converted is hereinafter referred to as the "**Class B Conversion Rate**." The number of shares of Class Common Stock (and thereafter into Common Stock) into which each share of Class C Common Stock may be converted is hereinafter referred to as the " **Class C Conversion Rate**" (and together with the Class A Conversion Rate and the Class B Conversion Rate, collectively the "**Conversion Rate**").

(a) Conversion Rights of Class A Common Stock and Class B Common Stock. The Class A Conversion Rate shall entitle the holder of Class A Common Stock to convert such shares into that number of shares of Common Stock equal to the product of (x) the number of shares of Class A Common Stock held by such holder, multiplied by (y) the Class A Conversion Rate. For purposes of the Conversion Rights, the Class A Conversion Rate shall initially be equal to one (1), subject to further adjustment as may be required pursuant to subsections 4(e), (f), (g) and (h) of this Article V. The Class B Conversion Rate shall entitle the holder of Class B Common Stock to convert such shares into that number of shares of Common Stock equal to the product of (x) the number of shares of Class B Common Stock held by such holder, multiplied by (y) the Class B Conversion Rate. For purposes of the Conversion Rights, the Class B Conversion Rate shall initially be equal to one (1), subject to further adjustment as may be required pursuant to subsections 4(e), (f), (g) and (h) of this Article V. Notwithstanding anything to the contrary in this Article V, no conversion of the Class A Common Stock or the Class B Common Stock into Common Stock shall be permitted under any circumstances except in connection with a Qualified IPO (as defined herein) pursuant to Section 4(c) herein.

(b) Conversion Rights of Class C Common Stock. Each share of Class C Common Stock shall be convertible, at the option of the holder thereof, at any time after the date of issuance of such share at the office of the Corporation or any transfer agent for the Class C Common Stock, into that number of fully-paid, nonassessable shares of Class A Common Stock and Class B Common Stock (and thereafter into Common Stock) as provided herein. The Class C Conversion

Rate shall initially entitle the holder of Class C Common Stock to convert such shares into (A) that number of shares of Class A Common Stock equal to the product of (x) the number of shares of Class C Common Stock held by such holder, multiplied by (y) the Primary Class C Conversion Rate (as defined herein), plus (B) that number of shares of Class B Common Stock equal to the product of (x) the number of shares of Class C Common Stock held by such holder, multiplied by (y) the Secondary Class C Conversion Rate (as defined herein). Notwithstanding anything to the contrary in this Article V, no conversion of the Class C Common Stock into Common Stock (through an initial conversion into Class A Common Stock and Class B Common Stock) shall be permitted under any circumstances except in connection with a Qualified IPO (as defined herein) pursuant to Section 4(c) herein. The " **Primary Class C Conversion Rate**" shall be equal to the number that, when multiplied by the total number of outstanding shares of Class C Common Stock, will result in the percentage of voting power determined under Sections 4(b)(i) or 4(b)(ii) below, as may be applicable; and the " **Secondary Class C Conversion Rate**" shall be equal to the number that, when multiplied by the total number of outstanding shares of Class C Common Stock and added to the number of shares of Class A Common Stock into which such shares of Class C Common Stock are convertible, will result in the percentage of equity ownership of the Corporation on a fully-diluted basis determined under Sections 4(b)(i) or 4(b)(ii) below, as may be applicable).

(i) Except as provided below in Section 4(b)(ii) and subject to adjustments that may be required pursuant to Sections 4(e), (f), (g) and (h) of this Article V, the Primary Class C Conversion Rate and the corresponding Secondary Class C Conversion Rate shall equal those numbers (calculated pursuant to the formulas above to the sixth decimal place) which would result in (A) the aggregate voting interest of all outstanding shares of Class C Common Stock (together with all outstanding shares of Class Common Stock into which shares of Class C Common Stock have been converted) representing twenty-two and twenty-two hundredths of a percent (22.22%) of the aggregate voting interests of all outstanding capital stock of the Corporation (the "**Percentage of Voting Power**" under this Section 4(b)(i)) and (B) the aggregate equity ownership interest of all outstanding shares of Class C Common Stock (together with all outstanding shares of Class Common Stock into which shares of Class C Common Stock have been converted) representing twenty and six hundredths of a percent (20.06%) of the total equity ownership of the Corporation (on a fully diluted basis assuming the exercise or conversion of all outstanding warrants, options, Class Common Stock or other securities convertible into Common Stock, but excluding any securities issued or issuable as dividends on the Class C Common Stock pursuant to Section 2(a) and any shares of Class B Common Stock issued or issuable upon conversion of the principal amount and accrued interest under the Notes) (the " **Percentage of Equity Ownership**" under this Section 4(b)(i)).

(ii) Subject to adjustments that may be required pursuant to Sections 4(e), (f), (g) and (h) of this Article V, in the event that the entire outstanding principal amount of all of the Notes shall have been converted into shares of Class C Common Stock, the Primary Class C Conversion Rate and the corresponding Secondary Class C Conversion Rate shall equal those numbers (calculated pursuant to the formulas above to the sixth decimal place) which would result in (A) the aggregate voting interest of all outstanding shares of Class C Common Stock (together with all outstanding shares of Class Common Stock into which shares of Class C Common Stock have

been converted) representing thirty percent (30.0%) of the aggregate voting interests of all outstanding capital stock of the Corporation (the " **Percentage of Voting Power**" under this Section 4(b)(ii)) and (B) the aggregate equity ownership interest of all outstanding shares of Class C Common Stock (together with all outstanding shares of Class Common Stock into which shares of Class C Common Stock have been converted) representing twenty-seven and twenty-nine hundredths percent (27.29%) of the total equity ownership of the Corporation (on a fully diluted basis assuming the exercise or conversion of all outstanding warrants, options, Class Common Stock or other securities convertible into Common Stock, but excluding any securities issued or issuable as dividends on the Class C Common Stock pursuant to Section 2(a) and any shares of Class B Common Stock issued or issuable upon conversion of the principal amount and accrued interest under the Notes) (the " **Percentage of Equity Ownership**" under this Section 4(b)(ii)). In the event that a portion of the outstanding principal amount, but less than the entire outstanding principal amount, of all of the Notes shall have been converted into shares of Class C Common Stock, such shares of Class C Common Stock issued upon conversion of the Notes shall be deemed to be shares of Class B Common Stock for all purposes under this amended and restated certificate of incorporation until such time as the entire outstanding principal amount of all of the Notes shall have been converted into shares of Class C Common Stock, at which time all of such shares of Class C Common Stock issued upon conversion of the Note shall be treated as set forth in the first sentence of this **Section 4(b)(ii)**.

(c) Automatic Conversion of Class Common Stock. Each share of Class Common Stock shall automatically be converted into fully-paid, non-assessable shares of Common Stock at the then effective applicable Conversion Rate as provided herein.

(i) Automatic Conversion of Class A Common Stock and Class B Common Stock. Each such share of Class A Common Stock and Class B Common Stock shall automatically be converted into fully-paid, non-assessable shares of Common Stock at the then effective applicable Class A Conversion Rate and Class B Conversion Rate, respectively, immediately prior to the closing of a firm commitment underwritten initial public offering pursuant to an effective registration statement filed under the Securities Act of 1933, as amended (the " **Securities Act**"), covering the offer and sale of any class or series of the Corporation's Common Stock, provided that the offering price per share is not less than two (2) times the Original Purchase Price per share of the Class C Common Stock (as appropriately adjusted for Recapitalizations) and the aggregate gross proceeds to the Corporation (before the deduction of underwriters' commissions and expenses) are not less than $20 million (a " **Qualified IPO**") (such event a "**Class A/B Automatic Conversion Event**").

(ii) Automatic Conversion of Class C Common Stock. In connection with either (x) a Qualified IPO, or (y) upon the receipt by the Corporation of a written request for conversion of the Class C Common Stock from the holders of a majority of the voting interests of the Class C Common Stock then outstanding, (with such class voting as a separate class) (each of the events referred to in (x) and (y) are referred to herein as a " **Class C Automatic Conversion Event**"), each such share of Class C Common Stock shall automatically be converted into fully-paid, non-assessable shares of (A) Class A Common Stock at the then effective applicable Primary Class C Conversion Rate and Class B Common Stock at the then effective applicable Secondary

Class C Conversion Rate, respectively, and (B) with respect to a Qualified IPO only, immediately following such automatic conversion into Class A Common Stock and Class B Common Stock pursuant to the foregoing clause (A), each such share of Class A Common Stock and Class B Common Stock shall then automatically be converted into fully-paid, non-assessable shares of Common Stock at the then effective applicable Class A Conversion Rate and Class B Conversion Rate, respectively. For the avoidance of doubt, in the event of a Class C Automatic Conversion Event pursuant to a written request for conversion of the Class C Common Stock from the holders of a majority of the voting interests of the Class C Common Stock then outstanding (in accordance with clause (y) above), the Class A Common Stock and Class B Common Stock issued upon such Class C Automatic Conversion Event shall not thereafter be converted to Common Stock except in connection with a Qualified IPO.

(d) Mechanics of Conversion. No fractional shares of Common Stock shall be issued upon conversion of Class Common Stock. In lieu of any fractional shares to which the holder would otherwise be entitled, the Corporation shall pay cash equal to such fraction multiplied by the then fair market value of a share of Common Stock as determined by the Board of Directors. For such purpose, all shares of Class Common Stock held by each holder of Class Common Stock shall be aggregated, and any resulting fractional share of Common Stock shall be paid in cash. Before any holder of Class Common Stock shall be entitled to convert the same into full shares of Class Common Stock or Common Stock, as may be applicable, and to receive certificates therefor: (i) such holder shall either (A) surrender the certificate or certificates therefor, duly endorsed, at the office of the Corporation or of any transfer agent for the Class Common Stock or Common Stock or (B) notify the Corporation or its transfer agent that such certificates have been lost, stolen or destroyed and execute an agreement reasonably satisfactory to the Corporation to indemnify the Corporation from any loss incurred by it in connection with such certificates; and (ii) such holder shall give written notice to the Corporation at such office that he elects to convert the same; provided, however, that on the date of a Class A/B Automatic Conversion Event or a Class C Automatic Conversion Event, as may be applicable, the outstanding shares of Class Common Stock shall be converted automatically pursuant to the terms of Section 4(c) without any further action by the holders of such shares and whether or not the certificates representing such shares are surrendered to the Corporation or its transfer agent; provided further, however, that the Corporation shall not be obligated to issue certificates evidencing the applicable shares of Class Common Stock and/or Common Stock issuable upon such Class A/B Automatic Conversion Event or Class C Automatic Conversion Event unless either the certificates evidencing such shares of Class Common Stock are delivered to the Corporation or its transfer agent as provided above, or the holder notifies the Corporation or its transfer agent that such certificates have been lost, stolen or destroyed and executes an agreement reasonably satisfactory to the Corporation to indemnify the Corporation from any loss incurred by it in connection with such certificates. On the date of the occurrence of a Class A/B Automatic Conversion Event or Class C Automatic Conversion Event in connection with a Qualified IPO, each holder of record of shares of Class Common Stock shall be deemed to be the holder of record of the Common Stock issuable upon such conversion, notwithstanding that the certificates representing such shares of Class Common Stock shall not have been surrendered at the office of the Corporation, that notice from the Corporation shall not have been received by any

holder of record of shares of Class Common Stock, or that the certificates evidencing such shares of Class Common Stock shall not then be actually delivered to such holder.

The Corporation shall, as soon as practicable after such delivery, or after such agreement and indemnification, issue and deliver at such office to such holder of Class Common Stock, (i) a certificate or certificates for the number of shares of Class Common Stock and/or Common Stock to which he shall be entitled as aforesaid and (ii) a check payable to the holder in the amount of any cash amounts payable as the result of a conversion into fractional shares of Class Common Stock and/or Common Stock, plus any accrued but unpaid dividends, whether or not declared, on the converted Class Common Stock or, in lieu of such dividends upon the written election of such holder, a number of shares of Class Common Stock equal to the aggregate dollar amount of such accrued but unpaid dividends divided by the applicable Conversion Rates for such Class Common Stock. Such conversion shall be deemed to have been made immediately prior to the close of business on the date of such surrender of the shares of Class Common Stock to be converted, and the person or persons entitled to receive the shares of Class Common Stock and/or Common Stock issuable upon such conversion shall be treated for all purposes as the record holder or holders of such shares of Class Common Stock and/or Common Stock, as may be applicable, on such date; provided, however, that if the conversion is in connection with an underwritten offer of securities registered pursuant to the Securities Act or a merger, sale, financing, or liquidation of the Corporation or other event, the conversion may, at the option of any holder tendering Class Common Stock for conversion, be conditioned upon the closing of such transaction or upon the occurrence of such event, in which case the person(s) entitled to receive the Class Common Stock and/or Common Stock issuable upon such conversion of the Class Common Stock shall not be deemed to have converted such Class Common Stock until immediately prior to the closing of such transaction or the occurrence of such event.

(e) Adjustments for Subdivisions or Combinations of Common Stock . In the event the outstanding shares of Common Stock shall be subdivided (by stock split, by payment of a stock dividend or otherwise), into a greater number of shares of Common Stock, the applicable Conversion Rate of the applicable Class Common Stock in effect immediately prior to such subdivision shall, concurrently with the effectiveness of such subdivision, be proportionately increased. In the event the outstanding shares of Common Stock shall be combined (by reclassification or otherwise) into a lesser number of shares of Common Stock, the applicable Conversion Rate of the applicable Class Common Stock in effect immediately prior to such combination prior to such combination shall, concurrently with the effectiveness of such combination, be proportionately decreased. The above notwithstanding, in no event shall any adjustment pursuant to this Section 4(e) have the effect of increasing or decreasing the aggregate voting interest of all shares of Class C Common Stock (expressed as a percentage of the aggregate voting interests of all outstanding capital stock of the Corporation) or the aggregate equity ownership interest of all shares of Class C Common Stock (expressed as a percentage of the total equity ownership of the Corporation, on a fully diluted basis assuming the exercise or conversion of all outstanding warrants, options, Class Common Stock or other securities convertible into Common Stock, but excluding any securities issued or issuable as dividends on the Class C Common Stock pursuant to Section 2(a) and any shares of Class B Common Stock issued or issuable upon

conversion of the principal amount and accrued interest under the Notes), as such percentages are set forth in Sections 4(b)(i) and 4(b)(ii).

(f) Adjustments for Subdivisions or Combinations of Class A Common Stock or Class B Common Stock . In the event the outstanding shares of Class A Common Stock or Class B Common Stock shall be subdivided (by stock split, by payment of a stock dividend or otherwise), into a greater number of shares of Class A Common Stock or Class B Common Stock, then (i) the Conversion Rate of the affected Class A Common Stock or Class B Common Stock, as applicable, in effect immediately prior to such subdivision shall, concurrently with the effectiveness of such subdivision, be proportionately decreased and (ii) the Conversion Rate of the affected Class C Common Stock in effect immediately prior to such subdivision shall, concurrently with the effectiveness of such subdivision, be proportionately increased. In the event the outstanding shares of Class A Common Stock or Class B Common Stock shall be combined (by reclassification or otherwise) into a lesser number of shares of Class A Common Stock or Class B Common Stock, then (i) the Conversion Rate of the affected Class A Common Stock or Class B Common Stock, as applicable, in effect immediately prior to such subdivision shall, concurrently with the effectiveness of such subdivision, be proportionately increased and (ii) the Conversion Rate of the affected Class C Common Stock in effect immediately prior to such combination shall, concurrently with the effectiveness of such combination, be proportionately decreased. The above notwithstanding, in no event shall any adjustment pursuant to this Section 4(f) have the effect of increasing or decreasing the aggregate voting interest of all shares of Class C Common Stock (expressed as a percentage of the aggregate voting interests of all outstanding capital stock of the Corporation) or the aggregate equity ownership interest of all shares of Class C Common Stock (expressed as a percentage of the total equity ownership of the Corporation, on a fully diluted basis assuming the exercise or conversion of all outstanding warrants, options, Class Common Stock or other securities convertible into Common Stock, but excluding any securities issued or issuable as dividends on the Class C Common Stock pursuant to Section 2(a) and any shares of Class B Common Stock issued or issuable upon conversion of the principal amount and accrued interest under the Notes), as such percentages are set forth in Sections 4(b)(i) and 4(b)(ii).

(g) Adjustments for Subdivisions or Combinations of Class C Common Stock . In the event the outstanding shares of Class C Common Stock shall be subdivided (by stock split, by payment of a stock dividend or otherwise), into a greater number of shares of Class C Common Stock, the Conversion Rate and Original Purchase Price of the affected Class C Common Stock in effect immediately prior to such subdivision shall, concurrently with the effectiveness of such subdivision, be proportionately decreased. In the event the outstanding shares of Class C Common Stock shall be combined (by reclassification or otherwise) into a lesser number of shares of Class C Common Stock, the Conversion Rate and Original Purchase Price of the affected Class C Common Stock in effect immediately prior to such combination shall, concurrently with the effectiveness of such combination, be proportionately increased. The above notwithstanding, in no event shall any adjustment pursuant to this Section 4(g) have the effect of increasing or decreasing the aggregate voting interest of all shares of Class C Common Stock (expressed as a percentage of the aggregate voting interests of all outstanding capital stock of the Corporation) or the aggregate equity ownership interest of all shares of Class C Common Stock (expressed as a percentage of the total equity

ownership of the Corporation, on a fully diluted basis assuming the exercise or conversion of all outstanding warrants, options, Class Common Stock or other securities convertible into Common Stock, but excluding any securities issued or issuable as dividends on the Class C Common Stock pursuant to Section 2(a) and any shares of Class B Common Stock issued or issuable upon conversion of the principal amount and accrued interest under the Notes), as such percentages are set forth in Sections 4(b)(i) and 4(b)(ii).

(h) Adjustments for Reclassification, Exchange and Substitution . If the Class Common Stock or Common Stock issuable upon conversion of the Class Common Stock shall be changed into the same or a different number of shares of any other class or classes of stock, whether by capital reorganization, reclassification or otherwise (other than a subdivision or combination of shares provided for above), then, in any such event, in lieu of the number of shares of Class Common Stock and Common Stock which the holders would otherwise have been entitled to receive, each holder of such Class Common Stock shall have the right thereafter to convert such shares of Class Common Stock into a number of shares of such other class or classes of stock which a holder of the number of shares of Common Stock deliverable upon conversion of such Class Common Stock immediately before that change would have been entitled to receive in such reorganization or reclassification, all subject to further adjustment as provided herein with respect to such other shares; *provided, however*, in no event shall any adjustment pursuant to this Section 4(h) have the effect of increasing or decreasing the aggregate voting interest of all shares of Class C Common Stock (expressed as a percentage of the aggregate voting interests of all outstanding capital stock of the Corporation) or the aggregate equity ownership interest of all shares of Class C Common Stock (expressed as a percentage of the total equity ownership of the Corporation, on a fully diluted basis assuming the exercise or conversion of all outstanding warrants, options, Class Common Stock or other securities convertible into Common Stock, but excluding any securities issued or issuable as dividends on the Class C Common Stock pursuant to Section 2(a) and any shares of Class B Common Stock issued or issuable upon conversion of the principal amount and accrued interest under the Notes), as such percentages are set forth in Sections 4(b)(i) and 4(b)(ii).

(i) Certificate as to Adjustments . Upon the occurrence of each adjustment or readjustment of the applicable Conversion Rate pursuant to this Section 4, the Corporation at its expense shall promptly compute such adjustment or readjustment in accordance with the terms hereof and furnish to each holder of Class Common Stock a certificate setting forth such adjustment or readjustment and showing in detail the facts upon which such adjustment or readjustment is based. The Corporation shall, upon the written request at any time of any holder of Class Common Stock, furnish or cause to be furnished to such holder a like certificate setting forth (i) such adjustments and readjustments, (ii) the Conversion Rate at the time in effect and (iii) the number of shares of Class Common Stock and Common Stock, as may be applicable, and the amount, if any, of other property which at the time would be received upon the conversion of Class Common Stock.

(j) Waiver of Adjustment of Primary Class C Conversion Rate . Notwithstanding anything herein to the contrary, any adjustment of the Class C Conversion Rate of the Class C Common Stock may be waived by the consent or vote of the holders of the majority of the outstanding shares of Class C Common Stock either before or after the event causing the adjustment.

(k) Reservation of Stock Issuable Upon Conversion. The Corporation shall at all times reserve and keep available out of its authorized but unissued shares of Class A Common Stock, Class B Common Stock and Common Stock, for the purpose of effecting the conversion of the shares of the Class Common Stock, such number of its shares of Class A Common Stock, Class B Common Stock and Common Stock as shall from time to time be sufficient to effect the conversion of all then outstanding shares of the Class Common Stock.

5. Redemption.

(a) At any time after the six (6) year anniversary of the Initial Issue Date, at the election of the Required Holders of the Class C Common Stock upon prior written notice to the Corporation of at least one hundred twenty (120) days prior to the proposed date for redemption (the " **Redemption Date**"), this Corporation shall redeem, out of funds legally available therefor, all (but not less than all) of the outstanding shares of Class C Common Stock which have not been converted into Common Stock pursuant to Section 4 hereof. The Corporation shall redeem the shares of the Class C Common Stock by paying in cash an amount per share equal to the applicable Original Purchase Price for each share of Class C Common Stock, plus an amount equal to all accrued but unpaid dividends thereon, whether or not declared or earned, accrued up to and including the date such share is actually redeemed (collectively, the "**Redemption Price**"). Notwithstanding the foregoing, to the extent that the Corporation may not legally redeem such shares of Class C Common Stock, such redemption shall take place as soon as legally permitted; *provided, further*, that if the funds legally available for redemption of the Class C Common Stock shall be insufficient to permit the payment to such holders of the full respective Redemption Prices, the Corporation shall effect such redemption pro rata among the holders of such Class C Common Stock so that each holder of such Class C Common Stock shall receive a redemption payment equal to a fraction of the aggregate amount available for redemption, the numerator of which is the number of shares of Class C Common Stock held by such holder, and the denominator of which is the total number of shares of Class C Common Stock outstanding. To the extent that the Corporation's available cash flow does not permit such redemption, and to the extent permitted by law, the remainder (if any) shall be paid as soon as practicable and no other dividends or distributions to other holders of any of the Corporation's capital stock shall be made until all of the Class C Common Stock has been fully redeemed.

(b) Any redemption effected pursuant to Section 5(a) shall be made on a pro rata basis among the holders of the Class C Common Stock in proportion to the number of shares of Class C Common Stock then outstanding.

(c) At least thirty (30) days prior to each Redemption Date, written notice shall be mailed, first class postage prepaid, to each holder of record (at the close of business on the business day next preceding the day on which notice is given) of the Class C Common Stock to be redeemed, at the address last shown on the records of the Corporation for such holder, notifying such holder of the redemption to be effected, specifying the number of shares to be redeemed from such holder, the Redemption Date, the Redemption Price, the place at which payment may be obtained and calling upon such holder to surrender to the Corporation, in the manner and at the place designated, the holder's certificate or certificates representing the shares to be redeemed (the " **Redemption**

Notice"). Except as provided herein, on or after the Redemption Date each holder of Class C Common Stock to be redeemed shall surrender to this Corporation the certificate or certificates representing such shares, in the manner and at the place designated in the Redemption Notice, and thereupon the Redemption Price of such shares shall be payable to the order of the person whose name appears on such certificate or certificates as the owner thereof and each surrendered certificate shall be cancelled. In the event less than all the shares represented by any such certificate are redeemed, a new certificate shall be issued representing the unredeemed shares.

(d) If the funds of the Corporation legally available for redemption of shares of Class C Common Stock on any Redemption Date are insufficient to redeem the total number of shares of Class C Common Stock to be redeemed on such date, those funds which are legally available will be used to redeem the maximum possible number of such shares ratably among the holders of such shares to be redeemed based upon their holdings of Class C Common Stock pursuant to Section 5(a). The shares of Class C Common Stock not redeemed shall remain outstanding and entitled to all the rights and preferences provided herein. Subject to Section 5(a) and Section 5(e), at any time thereafter when additional funds of the Corporation are legally available for the redemption of shares of Class C Common Stock such funds will immediately be used to redeem the balance of the shares which the Corporation has become obliged to redeem on any Redemption Date, but which it has not redeemed.

(e) In the event the Board of Directors determines by less than a unanimous vote that the funds legally available for redemption of the Class C Common Stock are insufficient to redeem the total number of shares of Class C Common Stock, then the Board of Directors shall appoint an *ad-hoc* committee of its disinterested (for such purpose, any person beneficially owning shares of the Corporation's capital stock shall be deemed interested) members to make a further study of the issue and to retain separate legal counsel to advise and opine on the issue and then to report back to the full Board of Directors on its findings and the advice and opinion of the separate legal counsel.

6. Protective Provisions. As long as any issued shares of Class C Common Stock remain outstanding, the Corporation shall not, without first obtaining the approval (by vote or by written consent as provided by law) of the Required Holders of the Class C Common Stock:

(a) amend, alter, change or repeal any provision of the Certificate of Incorporation if such action would alter or change or affect the rights, preferences, privileges or powers of, or restrictions provided for the benefit of the Class A Common Stock, the Class B Common Stock or the Class C Common Stock;

(b) increase or decrease (other than for decreases resulting from conversion of the Class C Common Stock) the authorized number of, or otherwise issue, shares of Class A Common Stock, Class B Common Stock or Class C Common Stock (other than shares of Common Stock issued after approval by the compensation committee of the Board of Directors pursuant to an employee incentive plan authorized by the Board of Directors or unanimously by such compensation committee, and other than shares of Class Common Stock issued upon conversion of the principal amount and accrued interest under the Notes);

(c) authorize or declare any dividends on the Class A Common Stock, the Class B Common Stock or any other shares of capital stock of the Corporation other than the Class C Common Stock;

(d) take any action that results in the redemption of any shares of capital stock of the Corporation (other than (i) the Class C Common Stock as provided herein, (ii) pursuant to agreements between the Corporation and its employees that have been approved by the compensation committee of the Board of Directors, or (iii) in connection with any party's exercise of the Put Right as defined in and pursuant to that certain Agreement and Plan of Merger dated on or around September 30, 2005, by and among the Corporation, Luna Technologies Acquisition Corp., Luna Technologies, Inc. and the Principal Stockholders identified on Annex A thereto); and

(e) create, by reclassification or otherwise, any class or series of shares.

7. Reissuance of Class Common Stock. In the event that any shares of Class Common Stock shall be converted pursuant to Section 4, redeemed pursuant to Section 5 or otherwise repurchased by the Corporation, the shares so converted, redeemed or repurchased shall be cancelled and shall not be issuable by this Corporation.

8. Notices. Any notice required by the provisions of this ARTICLE V to be given to the holders of Class Common Stock shall be deemed given five (5) business days after deposit, postage pre-paid, with first class mail (which must be sent by certified mail, return receipt requested), in the United States mail, and addressed to each holder of record at such holder's address appearing on the books of the Corporation.

ARTICLE VI

The Corporation is to have perpetual existence.

ARTICLE VII

In furtherance and not in limitation of the powers conferred by statute, the Board of Directors of the Corporation is expressly authorized to adopt, amend or repeal the Bylaws of the Corporation, provided that such action does not conflict with the provisions of this Amended and Restated Certificate of Incorporation or the provisions of any written agreement between the Corporation and any of its stockholders.

ARTICLE VIII

The number of directors that will constitute the whole Board of Directors of the Corporation shall be as designated in the Bylaws of the Corporation.

ARTICLE IX

The election of directors need not be by written ballot unless the Bylaws of the Corporation shall so provide.

ARTICLE X

1. *Limitation of Director's Liability*. To the fullest extent permitted by the DGCL as the same exists or may hereafter be amended, a director of the Corporation shall not be personally liable to the Corporation or its stockholders for monetary damages for breach of fiduciary duty as a director of the Corporation.

2. *Indemnification of Directors and Officers.* To the fullest extent permitted by applicable law, the Corporation is authorized to provide indemnification of, and advancement of expenses to, directors, officers, employees, other agents of the Corporation and any other persons to which the DGCL permits the Corporation to provide indemnification.

3. *Repeal or Modification*. Neither the repeal, modification nor amendment of this Article X, whether by amendment of this Article X, by the adoption of any provision of the Corporation's Certificate of Incorporation inconsistent with this Article X or by operation of law, shall adversely affect any right or protection of a director, officer, employee or other agent of the Corporation existing at the time of, or increase the liability of any such person with respect to any acts or omissions in their capacity as a director, officer, employee, or other agent of the Corporation occurring prior to such repeal, amendment or modification.

FOUR: This Amended and Restated Certificate of Incorporation has been duly approved by the Board of Directors of the Corporation.

FIVE: This Amended and Restated Certificate of Incorporation was approved by the holders of the requisite number of shares of capital stock of the Corporation in accordance with Section 228 of the DGCL. This Amended and Restated Certificate of Incorporation has been duly adopted in accordance with the provisions of Sections 242 and 245 of the DGCL by the stockholders of the Corporation.

* * *

IN WITNESS WHEREOF, LUNA INNOVATIONS INCORPORATED has caused this Amended and Restated Certificate of Incorporation to be signed by its President and Chief Executive Officer this 8th day of February, 2006.

LUNA INNOVATIONS INCORPORATED

By: /S/ KENT A. MURPHY

Kent A. Murphy
President and Chief Executive Officer

Exhibit 3.2

FORM OF AMENDED AND RESTATED CERTIFICATE OF INCORPORATION

OF

LUNA INNOVATIONS INCORPORATED

Kent A. Murphy hereby certifies that:

ONE: The original name of the corporation is Luna Innovations Incorporated and the Certificate of Incorporation of this corporation was first filed with the Secretary of State of the State of Delaware on April 4, 2003 and was amended and restated on August 1, 2003, August 2, 2005, September 30, 2005, December 30, 2005 and February 8, 2006.

TWO: He is the duly elected and acting President and Chief Executive Officer of Luna Innovations Incorporated, a Delaware corporation.

THREE: Pursuant to Sections 242 and 245 of the General Corporation Law of the State of Delaware (the " **DGCL**"), this Amended and Restated Certificate of Incorporation restates and amends the provisions of the Amended and Restated Certificate of Incorporation of the corporation.

FOUR: This Amended and Restated Certificate of Incorporation has been duly approved by the Board of Directors of the corporation in accordance with Sections 242 and 245 of the DGCL.

FIVE: This Amended and Restated Certificate of Incorporation has been duly approved by the written consent of the stockholders of the corporation in accordance with Sections 228, 242 and 245 of the DGCL.

SIX: The Certificate of Incorporation of this corporation is hereby amended and restated to read as follows:

ARTICLE I

The name of the corporation is Luna Innovations Incorporated (the " **Corporation**").

ARTICLE II

The address of the Corporation's registered office in the State of Delaware is: Corporation Trust Center, 1209 Orange Street, Wilmington, New Castle County, Delaware 19801. The name of its registered agent at such address is: The Corporation Trust Company.

ARTICLE III

The purpose of the corporation is to engage in any lawful act or activity for which corporations may be organized under the DGCL.

ARTICLE IV

The corporation shall have authority to issue shares as follows:

100,000,000 shares of Common Stock, par value $0.001 per share. Each share of Common Stock shall entitle the holder thereof to one (1) vote on each matter submitted to a vote at a meeting of stockholders.

5,000,000 shares of Preferred Stock, par value $0.001 per share, which may be issued from time to time in one or more series pursuant to a resolution or resolutions providing for such issue duly adopted by the Board of Directors (authority to do so being hereby expressly vested in the Board of Directors). The Board of Directors is further authorized, subject to limitations prescribed by law, to fix by resolution or resolutions the designations, powers, preferences and rights, and the qualifications, limitations or restrictions thereof, of any wholly unissued series of Preferred Stock, including without limitation authority to fix by resolution or resolutions the dividend rights, dividend rate, conversion rights, voting rights, rights and terms of redemption (including sinking fund provisions), redemption price or prices, and liquidation preferences of any such series, and the number of shares constituting any such series and the designation thereof, or any of the foregoing.

The Board of Directors is further authorized to increase (but not above the total number of authorized shares of the class) or decrease (but not below the number of shares of any such series then outstanding) the number of shares of any series, the number of which was fixed by it, subsequent to the issuance of shares of such series then outstanding, subject to the powers, preferences and rights, and the qualifications, limitations and restrictions thereof stated in the Certificate of Incorporation or the resolution of the Board of Directors originally fixing the number of shares of such series. If the number of shares of any series is so decreased, then the shares constituting such decrease shall resume the status which they had prior to the adoption of the resolution originally fixing the number of shares of such series.

ARTICLE V

The number of directors that constitutes the entire Board of Directors of the corporation shall be determined in the manner set forth in the Bylaws of the corporation. At each annual meeting of stockholders, directors of the corporation shall be elected to hold office until the expiration of the term for which they are elected and until their successors have been duly elected and qualified; except that if any such election shall not be so held, such election shall take place at a stockholders' meeting called and held in accordance with the DGCL.

The directors of the corporation shall be divided into three classes as nearly equal in size as is practicable, hereby designated Class I, Class II and Class III. The term of office of the initial Class I

directors shall expire at the first regularly-scheduled annual meeting of the stockholders following the effective date of this corporation's initial public offering (the "**Effective Date**"), the term of office of the initial Class II directors shall expire at the second annual meeting of the stockholders following the Effective Date and the term of office of the initial Class III directors shall expire at the third annual meeting of the stockholders following the Effective Date. At each annual meeting of stockholders, commencing with the first regularly-scheduled annual meeting of stockholders following the Effective Date, each of the successors elected to replace the directors of a Class whose term shall have expired at such annual meeting shall be elected to hold office until the third annual meeting next succeeding his or her election and until his or her respective successor shall have been duly elected and qualified.

Notwithstanding the foregoing provisions of this Article, each director shall serve until his or her successor is duly elected and qualified or until his or her death, resignation, or removal. If the number of directors is hereafter changed, any newly created directorships or decrease in directorships shall be so apportioned among the classes as to make all classes as nearly equal in number as is practicable, provided that no decrease in the number of directors constituting the Board of Directors shall shorten the term of any incumbent director.

Any director may be removed from office by the stockholders of the corporation only for cause. Vacancies occurring on the Board of Directors for any reason and newly created directorships resulting from an increase in the authorized number of directors may be filled only by vote of a majority of the remaining members of the Board of Directors, although less than a quorum, at any meeting of the Board of Directors. A person so elected by the Board of Directors to fill a vacancy or newly created directorship shall hold office until the next election of the Class for which such director shall have been chosen and until his or her successor shall have been duly elected and qualified.

ARTICLE VI

In furtherance and not in limitation of the powers conferred by statute, the Board of Directors of the corporation is expressly authorized to adopt, amend or repeal the Bylaws of the corporation.

ARTICLE VII

The election of directors need not be by written ballot unless the Bylaws of the corporation shall so provide.

ARTICLE VIII

To the fullest extent permitted by the DGCL, as it presently exists or may hereafter be amended from time to time, a director of the corporation shall not be personally liable to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director. If the DGCL is amended to authorize corporate action further eliminating or limiting the personal liability of directors, then the liability of a director of the corporation shall be eliminated or limited to the fullest extent permitted by the DGCL, as so amended.

The corporation shall indemnify and hold harmless, to the fullest extent permitted by the DGCL, as it presently exists or may hereafter be amended from time to time, any director or officer of the corporation who was or is made or is threatened to be made a party or is otherwise involved in any action, suit or proceeding, whether civil, criminal, administrative or investigative (a " **Proceeding**") by reason of the fact that he or she, or a person for whom he or she is the legal representative, is or was a director, officer, employee or agent of the corporation or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation or of a partnership, joint venture, trust, enterprise or non-profit entity, including service with respect to employee benefit plans, against all liability and loss suffered and expenses reasonably incurred by such person in connection with any such Proceeding. The corporation shall be required to indemnify a person in connection with a Proceeding initiated by such person only if the Proceeding was authorized by the Board.

The corporation shall have the power to indemnify and hold harmless, to the extent permitted by applicable law, as it presently exists or may hereafter be amended from time to time, any employee or agent of the corporation who was or is made or is threatened to be made a party or is otherwise involved in any Proceeding by reason of the fact that he or she, or a person for whom he or she is the legal representative, is or was an employee or agent of the corporation or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation or of a partnership, joint venture, trust, enterprise or non-profit entity, including service with respect to employee benefit plans, against all liability and loss suffered and expenses reasonably incurred by such person in connection with any such Proceeding.

Neither any amendment nor repeal of this Article IX, nor the adoption of any provision of this corporation's Certificate of Incorporation inconsistent with this Article IX, shall eliminate or reduce the effect of this Article IX in respect of any matter occurring, or any cause of action, suit or claim accruing or arising or that, but for this Article IX, would accrue or arise, prior to such amendment, repeal or adoption of an inconsistent provision.

ARTICLE IX

Except as provided in Article IX above, the corporation reserves the right to amend, alter, change or repeal any provision contained in this Certificate of Incorporation, in the manner now or hereafter prescribed by statute, and all rights conferred upon stockholders herein are granted subject to this reservation.

* * *

IN WITNESS WHEREOF, LUNA INNOVATIONS INCORPORATED has caused this Amended and Restated Certificate of Incorporation to be signed by its President and Chief Executive Officer this [_____th] day of [ ], 2006.

LUNA INNOVATIONS INCORPORATED

By: _____

Kent A. Murphy
President and Chief Executive Officer

Exhibit 3.3

AMENDED AND RESTATED BYLAWS OF

LUNA INNOVATIONS INCORPORATED

Initially adopted on April 4, 2003

Amended and Restated on July 15, 2005

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(continued)

AMENDED AND RESTATED BYLAWS OF LUNA INNOVATIONS INCORPORATED

ARTICLE I — CORPORATE OFFICES

1.1 REGISTERED OFFICE.

The registered office of Luna Innovations Incorporated shall be fixed in the corporation's certificate of incorporation, as the same may be amended from time to time.

1.2 OTHER OFFICES.

The corporation's Board of Directors (the "**Board**") may at any time establish other offices at any place or places where the corporation is qualified to do business.

ARTICLE II — MEETINGS OF STOCKHOLDERS

2.1 PLACE OF MEETINGS.

Meetings of stockholders shall be held at any place, within or outside the State of Delaware, designated by the Board. The Board may, in its sole discretion, determine that a meeting of stockholders shall not be held at any place, but may instead be held solely by means of remote communication as authorized by Section 211(a)(2) of the Delaware General Corporation Law (the " **DGCL**"). In the absence of any such designation or determination, stockholders' meetings shall be held at the corporation's principal executive office.

2.2 ANNUAL MEETING.

The annual meeting of stockholders shall be held each year. The Board shall designate the date and time of the annual meeting. In the absence of such designation the annual meeting of stockholders shall be held on the first (1 st) day in March in each year, at 9:00 a.m Eastern Time. However, if such day falls on a weekend or legal holiday, then the meeting shall be held at the same time and place on the next succeeding business day. At the annual meeting, directors shall be elected and any other proper business may be transacted.

2.3 SPECIAL MEETING.

A special meeting of the stockholders may be called at any time by the Board, chairperson of the Board, chief executive officer or president (in the absence of a chief executive officer) or by one or more stockholders holding shares in the aggregate entitled to cast not less than twenty percent (20%) of the votes at that meeting.

If any person(s) other than the Board calls a special meeting, the request shall:

(i) be in writing;

(ii) specify the time of such meeting and the general nature of the business proposed to be transacted; and

(iii) be delivered personally or sent by registered mail or by facsimile transmission to the chairperson of the Board, the chief executive officer, the president (in the absence of a chief executive officer) or the secretary of the corporation.

The officer(s) receiving the request shall cause notice to be promptly given to the stockholders entitled to vote at such meeting, in accordance with the provisions of Sections 2.4 and 2.5 of these bylaws, that a meeting will be held at the time requested by the person or persons calling the meeting. No business may be transacted at such special meeting other than the business specified in such notice to stockholders. Nothing contained in this paragraph of this Section 2.3 shall be construed as limiting, fixing, or affecting the time when a meeting of stockholders called by action of the Board may be held.

2.4 NOTICE OF STOCKHOLDERS' MEETINGS.

All notices of meetings of stockholders shall be sent or otherwise given in accordance with Section 2.5 of these bylaws not less than 10 nor more than 60 days before the date of the meeting to each stockholder entitled to vote at such meeting. The notice shall specify the place, if any, date and hour of the meeting, the means of remote communication, if any, by which stockholders and proxy holders may be deemed to be present in person and vote at such meeting, and, in the case of a special meeting, the purpose or purposes for which the meeting is called.

2.5 MANNER OF GIVING NOTICE; AFFIDAVIT OF NOTICE.

(i) Notice of any meeting of stockholders shall be given when deposited in the United States mail, postage prepaid, directed to the stockholder at his or her address as it appears on the corporation's records.

An affidavit of the secretary or an assistant secretary of the corporation or of the transfer agent or any other agent of the corporation that the notice has been given by mail shall, in the absence of fraud, be prima facie evidence of the facts stated therein.

2.6 QUORUM.

The holders of a majority of each class of stock issued and outstanding and entitled to vote, present in person or represented by proxy, shall constitute a quorum for the transaction of business at all meetings of the stockholders. If, however, such quorum is not present or represented at any meeting of the stockholders, then either (i) the chairperson of the meeting, or (ii) the stockholders entitled to vote at the meeting, present in person or represented by proxy, shall have power to adjourn the meeting from time to time, without notice other than announcement at the meeting, until a quorum is present or represented. At such adjourned meeting at which a quorum is present or represented, any business may be transacted that might have been transacted at the meeting as originally noticed.

2.7 ADJOURNED MEETING; NOTICE.

When a meeting is adjourned to another time or place, unless these bylaws otherwise require, notice need not be given of the adjourned meeting if the time, place if any thereof, and the means of remote communications if any by which stockholders and proxy holders may be deemed to be present in person and vote at such adjourned meeting are announced at the meeting at which the adjournment is taken. At the continuation of the adjourned meeting, the corporation may transact any business which might have been transacted at the original meeting. If the adjournment is for more than 30 days, or if after the adjournment a new record date is fixed for the adjourned meeting, a notice of the adjourned meeting shall be given to each stockholder of record entitled to vote at the meeting.

2.8 CONDUCT OF BUSINESS.

The chairperson of any meeting of stockholders shall determine the order of business and the procedure at the meeting, including such regulation of the manner of voting and the conduct of business. The chief executive officer of the Corporation shall preside over all meetings of stockholders as chairperson. If he or she is not present or there is no person holding that office, the president shall preside, or if the president is not present, the chairperson of the Board shall preside. If neither the chief executive officer, the president nor the chairperson of the Board is present, a chairperson shall be elected by the stockholders present at the meeting.

2.9 VOTING.

The stockholders entitled to vote at any meeting of stockholders shall be determined in accordance with the provisions of Section 2.11 of these bylaws, subject to Section 217 (relating to voting rights of fiduciaries, pledgors and joint owners of stock) and Section 218 (relating to voting trusts and other voting agreements) of the DGCL.

Except as may be otherwise provided in the certificate of incorporation or these bylaws, each stockholder shall be entitled to one vote for each share of voting capital stock held by such stockholder.

2.10 STOCKHOLDER ACTION BY WRITTEN CONSENT WITHOUT A MEETING.

Unless otherwise provided in the certificate of incorporation, any action required by the DGCL to be taken at any annual or special meeting of stockholders of a corporation, or any action which may be taken at any annual or special meeting of such stockholders, may be taken without a meeting, without prior notice, and without a vote, if a consent or consents in writing, setting forth the action so taken, shall be signed by (i) the holders of outstanding stock having not less than the minimum number of votes that would be necessary to authorize or take such action at a meeting at which all shares entitled to vote thereon were present and voted, and (ii) the holders of a majority of the then-outstanding Class C Common Stock.

Prompt notice of the taking of the corporate action without a meeting by less than unanimous written consent shall be given to those stockholders who have not consented in writing and who, if the action had been taken at a meeting, would have been entitled to notice of the meeting if the record date for such meeting had been the date that written consents signed by a sufficient number of holders to take the action were delivered to the corporation as provided in Section 228 of the DGCL. In the event that the action which is consented to is such as would have required the filing of a certificate under any provision of the DGCL, if such action had been voted on by stockholders at a meeting thereof, the certificate filed under such provision shall state, in lieu of any statement required by such provision concerning any vote of stockholders, that written consent has been given in accordance with Section 228 of the DGCL.

2.11 RECORD DATE FOR STOCKHOLDER NOTICE; VOTING; GIVING CONSENTS.

In order that the corporation may determine the stockholders entitled to notice of or to vote at any meeting of stockholders or any adjournment thereof, or entitled to receive payment of any dividend or other distribution or allotment of any rights, or entitled to exercise any rights in respect of any change, conversion or exchange of stock

or for the purpose of any other lawful action, the Board may fix, in advance, a record date, which record date shall not precede the date on which the resolution fixing the record date is adopted and which shall not be more than 60 nor less than 10 days before the date of such meeting, nor more than 60 days prior to any other such action.

If the Board does not so fix a record date:

(i) The record date for determining stockholders entitled to notice of or to vote at a meeting of stockholders shall be at the close of business on the day next preceding the day on which notice is given, or, if notice is waived, at the close of business on the day next preceding the day on which the meeting is held.

(ii) The record date for determining stockholders entitled to express consent to corporate action in writing without a meeting, when no prior action by the Board is necessary, shall be the day on which the first written consent is expressed.

(iii) The record date for determining stockholders for any other purpose shall be at the close of business on the day on which the Board adopts the resolution relating thereto.

A determination of stockholders of record entitled to notice of or to vote at a meeting of stockholders shall apply to any adjournment of the meeting; provided, however, that the Board may fix a new record date for the adjourned meeting.

2.12 PROXIES.

Each stockholder entitled to vote at a meeting of stockholders or to express consent or dissent to corporate action in writing without a meeting may authorize another person or persons to act for such stockholder by proxy authorized by an instrument in writing or by a transmission permitted by law filed in accordance with the procedure established for the meeting, but no such proxy shall be voted or acted upon after three years from its date, unless the proxy provides for a longer period. The revocability of a proxy that states on its face that it is irrevocable shall be governed by the provisions of Section 212 of the DGCL.

2.13 LIST OF STOCKHOLDERS ENTITLED TO VOTE.

The officer who has charge of the stock ledger of the corporation shall prepare and make, at least 10 days before every meeting of stockholders, a complete list of the stockholders entitled to vote at the meeting, arranged in alphabetical order, and showing the address of each stockholder and the number of shares registered in the name of each stockholder. The corporation shall not be required to include electronic mail addresses or other electronic contact information on such list. Such list shall be open to the examination of any stockholder, for any purpose germane to the meeting for a period of at least 10 days prior to the meeting: (i) at the corporation's discretion, on a reasonably accessible electronic network, provided that the information required to gain access to such list is provided with the notice of the meeting, or (ii) during ordinary business hours, at the corporation's principal executive office. In the event that the corporation determines to make the list available on an electronic network, the corporation may take reasonable steps to ensure that such information is available only to stockholders of the corporation. If the meeting is to be held at a place, then the list shall be produced and kept at the time and place of the meeting during the whole time thereof, and may be inspected by any stockholder who is present. If the meeting is to be held solely by means of remote communication, then the list shall also be available for examination of any stockholder during the whole time of the meeting on a reasonably accessible electronic network or other reasonable means; provided that if such information is made available over an electronic

network, information required to access such list shall be provided with the notice of the meeting. Such list shall presumptively determine the identity of the stockholders entitled to vote at the meeting and the number of shares held by each of them.

ARTICLE III — DIRECTORS

3.1 POWERS.

Subject to the provisions of the DGCL and any limitations in the certificate of incorporation or these bylaws relating to action required to be approved by the stockholders or by the outstanding shares, the business and affairs of the corporation shall be managed and all corporate powers shall be exercised by or under the direction of the Board.

3.2 NUMBER OF DIRECTORS.

The authorized number of directors shall be determined from time to time by resolution of the Board, provided the Board shall consist of at least one member. No reduction of the authorized number of directors shall have the effect of removing any director before that director's term of office expires.

3.3 ELECTION, QUALIFICATION AND TERM OF OFFICE OF DIRECTORS.

Except as provided in Section 3.4 of these bylaws, directors shall be elected at each annual meeting of stockholders to hold office until the next annual meeting. Directors need not be stockholders unless so required by the certificate of incorporation or these bylaws. The certificate of incorporation or these bylaws may prescribe other qualifications for directors. Each director, including a director elected to fill a vacancy, shall hold office until such director's successor is elected and qualified or until such director's earlier death, resignation or removal.

All elections of directors shall be by written ballot, unless otherwise provided in the certificate of incorporation; if authorized by the Board, such requirement of a written ballot shall be satisfied by a ballot submitted by electronic transmission, provided that any such electronic transmission must be either set forth or be submitted with information from which it can be determined that the electronic transmission authorized by the stockholder or proxy holder.

3.4 RESIGNATION AND VACANCIES.

Any director may resign at any time upon notice given in writing or by electronic transmission to the corporation. When one or more directors so resigns and the resignation is effective at a future date, a majority of the directors then in office, including those who have so resigned, shall have power to fill such vacancy or vacancies, the vote thereon to take effect when such resignation or resignations shall become effective, and each director so chosen shall hold office as provided in this section in the filling of other vacancies.

Unless otherwise provided in the certificate of incorporation or these bylaws:

(i) Vacancies for directors elected by the holders of the corporation's Class A Common Stock and newly created directorships resulting from any increase in the authorized number of directors elected by the holders of the corporation's Class A Common Stock may be filled by a majority of the directors then in office

who were elected by the holders of the corporation's Class A Common Stock, although less than a quorum, or by a sole remaining director.

(ii) Vacancies for directors elected by the holders of the corporation's Class C Common Stock and newly created directorships resulting from any increase in the authorized number of directors elected by the holders of the corporation's Class C Common Stock voting as a single class may be filled by a majority of the directors then in office who were elected by the holders of the Class C Common Stock, although less than a quorum, or by a sole remaining director.

(iii) Whenever the holders of any class or classes of stock or series thereof are entitled to elect one or more directors by the provisions of the certificate of incorporation, vacancies and newly created directorships of such class or classes or series may be filled by a majority of the directors elected by such class or classes or series thereof then in office, or by a sole remaining director so elected.

If at any time, by reason of death or resignation or other cause, the corporation should have no directors in office, then any officer or any stockholder or an executor, administrator, trustee or guardian of a stockholder, or other fiduciary entrusted with like responsibility for the person or estate of a stockholder, may call a special meeting of stockholders in accordance with the provisions of the certificate of incorporation or these bylaws, or may apply to the Court of Chancery for a decree summarily ordering an election as provided in Section 211 of the DGCL.

If, at the time of filling any vacancy or any newly created directorship, the directors then in office constitute less than a majority of the whole Board (as constituted immediately prior to any such increase), then the Court of Chancery may, upon application of any stockholder or stockholders holding at least 10% of the total number of the shares at the time outstanding having the right to vote for such directors, summarily order an election to be held to fill any such vacancies or newly created directorships, or to replace the directors chosen by the directors then in office as aforesaid, which election shall be governed by the provisions of Section 211 of the DGCL as far as applicable.

3.5 PLACE OF MEETINGS; MEETINGS BY TELEPHONE.

The Board may hold meetings, both regular and special, either within or outside the State of Delaware.

Members of the Board, or any committee designated by the Board, may participate in a meeting of the Board, or any committee, by means of conference telephone or other communications equipment by means of which all persons participating in the meeting can hear each other, and such participation in a meeting shall constitute presence in person at the meeting.

3.6 REGULAR MEETINGS.

Regular meetings of the Board shall be held on three days advance notice at such time and at such place as shall from time to time be determined by the Board. A regular meeting of the Board shall be held immediately after, and at the same place as, the annual meeting of stockholders.

3.7 SPECIAL MEETINGS; NOTICE.

Special meetings of the Board for any purpose or purposes may be called at any time by the chairperson of the Board, the chief executive officer, the president, the secretary or any two directors.

Notice of the time and place of special meetings shall be:

(i) delivered personally by hand, by courier or by telephone;

(ii) sent by United States first-class mail, postage prepaid;

(iii) sent by facsimile; or

(iv) sent by electronic mail,

directed to each director at that director's address, telephone number, facsimile number or electronic mail address, as the case may be, as shown on the corporation's records.

If the notice is (i) delivered personally by hand, by courier or by telephone, (ii) sent by facsimile or (iii) sent by electronic mail, it shall be delivered or sent at least three (3) business days before the time of the holding of the meeting. If the notice is sent by United States mail, it shall be deposited in the United States mail at least seven (7) business days before the time of the holding of the meeting. Any oral notice may be communicated to the director. The notice need not specify the place of the meeting (if the meeting is to be held at the corporation's principal executive office) nor the purpose of the meeting.

3.8 QUORUM.

At all meetings of the Board, a majority of the authorized number of directors shall constitute a quorum for the transaction of business. The vote of a majority of the directors present at any meeting at which a quorum is present shall be the act of the Board, except as may be otherwise specifically provided by statute, the certificate of incorporation or these bylaws. If a quorum is not present at any meeting of the Board, then the directors present thereat may adjourn the meeting from time to time, without notice other than announcement at the meeting, until a quorum is present.

A meeting at which a quorum is initially present may continue to transact business notwithstanding the withdrawal of directors, if any action taken is approved by at least a majority of the required quorum for that meeting.

3.9 BOARD ACTION BY WRITTEN CONSENT WITHOUT A MEETING.

Unless otherwise restricted by the certificate of incorporation or these bylaws, any action required or permitted to be taken at any meeting of the Board, or of any committee thereof, may be taken without a meeting if all members of the Board or committee, as the case may be, consent thereto in writing or by electronic transmission and the writing or writings or electronic transmission or transmissions are filed with the minutes of proceedings of the Board or committee. Such filing shall be in paper form if the minutes are maintained in paper form and shall be in electronic form if the minutes are maintained in electronic form.

3.10 FEES AND COMPENSATION OF DIRECTORS.

Unless otherwise restricted by the certificate of incorporation or these bylaws, the Board shall have the authority to fix the compensation of directors.

3.11 REMOVAL OF DIRECTORS.

Subject to the terms and conditions of the Right of First Refusal, Co-Sale and Voting Agreement by and among the corporation and its stockholders, as amended from time to time, and unless otherwise restricted by statute, the certificate of incorporation or these bylaws, any director or the entire Board may be removed, with or without cause, by the holders of a majority of the shares then entitled to vote at an election of directors. No reduction of the authorized number of directors shall have the effect of removing any director prior to the expiration of such director's term of office.

ARTICLE IV — COMMITTEES

4.1 COMMITTEES OF DIRECTORS.

The Board may designate one or more committees, each committee to consist of one or more of the directors of the corporation. The Board may designate one or more directors as alternate members of any committee, who may replace any absent or disqualified member at any meeting of the committee. In the absence or disqualification of a member of a committee, the member or members thereof present at any meeting and not disqualified from voting, whether or not such member or members constitute a quorum, may unanimously appoint another member of the Board to act at the meeting in the place of any such absent or disqualified member. Any such committee, to the extent provided in the resolution of the Board or in these bylaws, shall have and may exercise all the powers and authority of the Board in the management of the business and affairs of the corporation, and may authorize the seal of the corporation to be affixed to all papers that may require it; but no such committee shall have the power or authority to (i) approve or adopt, or recommend to the stockholders, any action or matter expressly required by the DGCL to be submitted to stockholders for approval, or (ii) adopt, amend or repeal any bylaw of the corporation. So long as shares of the corporation's Class C Common Stock remain outstanding, a Class C Director (as such term is defined in the corporation's amended and restated certificate of incorporation) shall be entitled to be a member of any committee responsible for evaluation of internal project investments by the corporation or any committee having similar responsibilities.

4.2 COMPENSATION COMMITTEE.

Notwithstanding anything in Section 4.1 to the contrary, so long as shares of the corporation's Class C Common Stock remain outstanding, the Board shall maintain a compensation committee (the "**Compensation Committee**"), which shall consist of not more than three directors elected by the Board, one of which shall be a Class C Director. The unanimous approval of all standing members of the Compensation Committee shall be required to effect the following:

(i) any increase in the annual salary of the senior executive officers of the corporation, including the Chief Executive Officer, the President, the Chief Financial Officer and any Vice-President;

(ii) the implementation of any employee stock option plan, employee stock purchase plan, employee restricted stock plan or other employee incentive or bonus plan (each a "**Company Plan**") covering employees of the corporation; including any individual payments of grants of equity securities thereunder;

(iii) any payment of one-time bonuses for specific employees;

(iv) any increase in the number of shares of capital stock reserved and issuable under any Company Plan; or

(v) any grants of equity incentives (including stock options) to employees, directors, consultants or any other person or entity pursuant to a Company Plan or otherwise.

4.3 COMMITTEE MINUTES.

Each committee shall keep regular minutes of its meetings and report the same to the Board when required.

4.4 MEETINGS AND ACTION OF COMMITTEES.

Meetings and actions of committees shall be governed by, and held and taken in accordance with, the provisions of:

(i) Section 3.5 (place of meetings and meetings by telephone);

(ii) Section 3.6 (regular meetings);

(iii) Section 3.7 (special meetings and notice);

(iv) Section 3.8 (quorum);

(v) Section 7.13 (waiver of notice); and

(vi) Section 3.9 (action without a meeting)

with such changes in the context of those bylaws as are necessary to substitute the committee and its members for the Board and its members. However:

(i) the time of regular meetings of committees may be determined either by resolution of the Board or by resolution of the committee;

(ii) special meetings of committees may also be called by resolution of the Board; and

(iii) notice of special meetings of committees shall also be given to all alternate members, who shall have the right to attend all meetings of the committee. The Board may adopt rules for the government of any committee not inconsistent with the provisions of these bylaws.

ARTICLE V — OFFICERS

5.1 OFFICERS.

The officers of the corporation shall be a president and a secretary. The corporation may also have, at the discretion of the Board, a chairperson of the Board, a vice chairperson of the Board, a chief executive officer, a chief financial officer or treasurer, one or more vice presidents, one or more assistant vice presidents, one or more

assistant treasurers, one or more assistant secretaries, and any such other officers as may be appointed in accordance with the provisions of these bylaws. Any number of offices may be held by the same person.

5.2 APPOINTMENT OF OFFICERS.

The Board shall appoint the officers of the corporation, except such officers as may be appointed in accordance with the provisions of Sections 5.3 and 5.5 of these bylaws, subject to the rights, if any, of an officer under any contract of employment.

5.3 SUBORDINATE OFFICERS.

The Board may appoint, or empower the chief executive officer or, in the absence of a chief executive officer, the president, to appoint, such other officers and agents as the business of the corporation may require. Each of such officers and agents shall hold office for such period, have such authority, and perform such duties as are provided in these bylaws or as the Board may from time to time determine.

5.4 REMOVAL AND RESIGNATION OF OFFICERS.

Subject to the rights, if any, of an officer under any contract of employment, any officer may be removed, either with or without cause, by an affirmative vote of the majority of the Board at any regular or special meeting of the Board or, except in the case of an officer chosen by the Board, by any officer upon whom such power of removal may be conferred by the Board.

Any officer may resign at any time by giving written notice to the corporation. Any resignation shall take effect at the date of the receipt of that notice or at any later time specified in that notice. Unless otherwise specified in the notice of resignation, the acceptance of the resignation shall not be necessary to make it effective. Any resignation is without prejudice to the rights, if any, of the corporation under any contract to which the officer is a party.

5.5 VACANCIES IN OFFICES.

Any vacancy occurring in any office of the corporation shall be filled by the Board or as provided in Section 5.2.

5.6 CHAIRPERSON OF THE BOARD.

The chairperson of the Board, if such an officer be elected, shall, if present, preside at meetings of the Board and exercise and perform such other powers and duties as may from time to time be assigned to him by the Board or as may be prescribed by these bylaws. If there is no chief executive officer or president, then the chairperson of the Board shall also be the chief executive officer of the corporation and shall have the powers and duties prescribed in Section 5.7 of these bylaws.

5.7 CHIEF EXECUTIVE OFFICER.

Subject to such supervisory powers, if any, as the Board may give to the chairperson of the Board, the chief executive officer, if any, shall, subject to the control of the Board, have general supervision, direction, and control of the business and affairs of the corporation and shall report directly to the Board. All other officers, officials, employees and agents shall report directly or indirectly to the chief executive officer. The chief

executive officer shall see that all orders and resolutions of the Board are carried into effect. The chief executive officer shall serve as chairperson of and preside at all meetings of the stockholders. In the absence of a chairperson of the Board, the chief executive officer shall preside at all meetings of the Board.

5.8 PRESIDENT.

In the absence or disability of the chief executive officer, the president shall perform all the duties of the chief executive officer. When acting as the chief executive officer, the president shall have all the powers of, and be subject to all the restrictions upon, the chief executive officer. The president shall have such other powers and perform such other duties as from time to time may be prescribed for him by the Board, these bylaws, the chief executive officer or the chairperson of the Board.

5.9 VICE PRESIDENTS.

In the absence or disability of the president, the vice presidents, if any, in order of their rank as fixed by the Board or, if not ranked, a vice president designated by the Board, shall perform all the duties of the president. When acting as the president, the appropriate vice president shall have all the powers of, and be subject to all the restrictions upon, the president. The vice presidents shall have such other powers and perform such other duties as from time to time may be prescribed for them respectively by the Board, these bylaws, the chairperson of the Board, the chief executive officer or, in the absence of a chief executive officer, the president.

5.10 SECRETARY.

The secretary shall keep or cause to be kept, at the principal executive office of the corporation or such other place as the Board may direct, a book of minutes of all meetings and actions of directors, committees of directors, and stockholders. The minutes shall show

(i) the time and place of each meeting;

(ii) whether regular or special (and, if special, how authorized and the notice given);

(iii) the names of those present at directors' meetings or committee meetings;

(iv) the number of shares present or represented at stockholders' meetings;

(v) and the proceedings thereof.

The secretary shall keep, or cause to be kept, at the principal executive office of the corporation or at the office of the corporation's transfer agent or registrar, as determined by resolution of the Board, a share register, or a duplicate share register showing;

(vi) the names of all stockholders and their addresses;

(vii) the number and classes of shares held by each;

(viii) the number and date of certificates evidencing such shares; and

(ix) the number and date of cancellation of every certificate surrendered for cancellation.

The secretary shall give, or cause to be given, notice of all meetings of the stockholders and of the Board required to be given by law or by these bylaws. The secretary shall keep the seal of the corporation, if one be adopted, in safe custody and shall have such other powers and perform such other duties as may be prescribed by the Board or by these bylaws.

5.11 CHIEF FINANCIAL OFFICER.

The chief financial officer shall keep and maintain, or cause to be kept and maintained, adequate and correct books and records of accounts of the properties and business transactions of the corporation, including accounts of its assets, liabilities, receipts, disbursements, gains, losses, capital retained earnings, and shares. The books of account shall at all reasonable times be open to inspection by any director.

The chief financial officer shall deposit all moneys and other valuables in the name and to the credit of the corporation with such depositories as the Board may designate. The chief financial officer shall disburse the funds of the corporation as may be ordered by the Board, shall render to the chief executive officer or, in the absence of a chief executive officer, the president and directors, whenever they request it, an account of all his or her transactions as chief financial officer and of the financial condition of the corporation, and shall have other powers and perform such other duties as may be prescribed by the Board or these bylaws.

The chief financial officer shall be the treasurer of the corporation.

5.12 ASSISTANT SECRETARY.

The assistant secretary, or, if there is more than one, the assistant secretaries in the order determined by the stockholders or Board (or if there be no such determination, then in the order of their election) shall, in the absence of the secretary or in the event of the secretary's inability or refusal to act, perform the duties and exercise the powers of the secretary and shall perform such other duties and have such other powers as may be prescribed by the Board or these bylaws.

5.13 ASSISTANT TREASURER.

The assistant treasurer, or, if there is more than one, the assistant treasurers, in the order determined by the stockholders or Board (or if there be no such determination, then in the order of their election), shall, in the absence of the chief financial officer or in the event of the chief financial officer's inability or refusal to act, perform the duties and exercise the powers of the chief financial officer and shall perform such other duties and have such other powers as may be prescribed by the Board or these bylaws.

5.14 REPRESENTATION OF SHARES OF OTHER CORPORATIONS.

The chairperson of the Board, the president, any vice president, the treasurer, the secretary or assistant secretary of this corporation, or any other person authorized by the Board or the president or a vice president, is authorized to vote, represent, and exercise on behalf of this corporation all rights incident to any and all shares of any other corporation or corporations standing in the name of this corporation. The authority granted herein may be exercised either by such person directly or by any other person authorized to do so by proxy or power of attorney duly executed by such person having the authority.

5.15 AUTHORITY AND DUTIES OF OFFICERS.

In addition to the foregoing authority and duties, all officers of the corporation shall respectively have such authority and perform such duties in the management of the business of the corporation as may be designated from time to time by the Board or the stockholders.

ARTICLE VI — RECORDS AND REPORTS

6.1 MAINTENANCE AND INSPECTION OF RECORDS.

The corporation shall, either at its principal executive office or at such place or places as designated by the Board, keep a record of its stockholders listing their names and addresses and the number and class of shares held by each stockholder, a copy of these bylaws as amended to date, accounting books, and other records.

Except as otherwise contemplated by the certificate of incorporation or any agreement between the corporation and any stockholder, any stockholder of record, in person or by attorney or other agent, shall, upon written demand under oath stating the purpose thereof, have the right during the usual hours for business to inspect for any proper purpose the corporation's stock ledger, a list of its stockholders, and its other books and records and to make copies or extracts therefrom. A proper purpose shall mean a purpose reasonably related to such person's interest as a stockholder. In every instance where an attorney or other agent is the person who seeks the right to inspection, the demand under oath shall be accompanied by a power of attorney or such other writing that authorizes the attorney or other agent so to act on behalf of the stockholder. The demand under oath shall be directed to the corporation at its registered office in Delaware or at its principal executive office.

6.2 INSPECTION BY DIRECTORS.

Any director shall have the right to examine the corporation's stock ledger, a list of its stockholders, and its other books and records for a purpose reasonably related to his or her position as a director. The Court of Chancery is hereby vested with the exclusive jurisdiction to determine whether a director is entitled to the inspection sought. The Court may summarily order the corporation to permit the director to inspect any and all books and records, the stock ledger, and the stock list and to make copies or extracts therefrom. The Court may, in its discretion, prescribe any limitations or conditions with reference to the inspection, or award such other and further relief as the Court may deem just and proper.

ARTICLE VII — GENERAL MATTERS

7.1 CHECKS.

From time to time, the Board shall determine by resolution which person or persons may sign or endorse all checks, drafts, other orders for payment of money, notes or other evidences of indebtedness that are issued in the name of or payable to the corporation, and only the persons so authorized shall sign or endorse those instruments.

7.2 EXECUTION OF CORPORATE CONTRACTS AND INSTRUMENTS.

The Board, except as otherwise provided in these bylaws, may authorize any officer or officers, or agent or agents, to enter into any contract or execute any instrument in the name of and on behalf of the corporation; such authority may be general or confined to specific instances. Unless so authorized or ratified by the Board or within the agency power of an officer, no officer, agent or employee shall have any power or authority to bind the corporation by any contract or engagement or to pledge its credit or to render it liable for any purpose or for any amount.

7.3 STOCK CERTIFICATES; PARTLY PAID SHARES.

The shares of the corporation shall be represented by certificates, provided that the Board may provide by resolution or resolutions that some or all of any or all classes or series of its stock shall be uncertificated shares. Any such resolution shall not apply to shares represented by a certificate until such certificate is surrendered to the corporation. Notwithstanding the adoption of such a resolution by the Board, every holder of stock represented by certificates and upon request every holder of uncertificated shares shall be entitled to have a certificate signed by, or in the name of the corporation by the chairperson or vice-chairperson of the Board, or the president or vice-president, and by the treasurer or an assistant treasurer, or the secretary or an assistant secretary of such corporation representing the number of shares registered in certificate form. Any or all of the signatures on the certificate may be a facsimile. In case any officer, transfer agent or registrar who has signed or whose facsimile signature has been placed upon a certificate has ceased to be such officer, transfer agent or registrar before such certificate is issued, it may be issued by the corporation with the same effect as if he were such officer, transfer agent or registrar at the date of issue.

The corporation may issue the whole or any part of its shares as partly paid and subject to call for the remainder of the consideration to be paid therefor. Upon the face or back of each stock certificate issued to represent any such partly paid shares, upon the books and records of the corporation in the case of uncertificated partly paid shares, the total amount of the consideration to be paid therefor and the amount paid thereon shall be stated. Upon the declaration of any dividend on fully paid shares, the corporation shall declare a dividend upon partly paid shares of the same class, but only upon the basis of the percentage of the consideration actually paid thereon.

7.4 SPECIAL DESIGNATION ON CERTIFICATES.

If the corporation is authorized to issue more than one class of stock or more than one series of any class, then the powers, the designations, the preferences, and the relative, participating, optional or other special rights of each class of stock or series thereof and the qualifications, limitations or restrictions of such preferences and/or rights shall be set forth in full or summarized on the face or back of the certificate that the corporation shall issue to represent such class or series of stock; provided, however, that, except as otherwise provided in Section 202 of the DGCL, in lieu of the foregoing requirements there may be set forth on the face or back of the certificate that the corporation shall issue to represent such class or series of stock a statement that the corporation will furnish without charge to each stockholder who so requests the powers, the designations, the preferences, and the relative, participating, optional or other special rights of each class of stock or series thereof and the qualifications, limitations or restrictions of such preferences and/or rights.

7.5 LOST CERTIFICATES.

Except as provided in this Section 7.5, no new certificates for shares shall be issued to replace a previously issued certificate unless the latter is surrendered to the corporation and cancelled at the same time. The corporation may issue a new certificate of stock or uncertificated shares in the place of any certificate theretofore issued by it, alleged to have been lost, stolen or destroyed, and the corporation may require the owner of the lost, stolen or destroyed certificate, or such owner's legal representative, to give the corporation a bond sufficient to indemnify it against any claim that may be made against it on account of the alleged loss, theft or destruction of any such certificate or the issuance of such new certificate or uncertificated shares.

7.6 CONSTRUCTION; DEFINITIONS.

Unless the context requires otherwise, the general provisions, rules of construction, and definitions in the DGCL shall govern the construction of these bylaws. Without limiting the generality of this provision, the singular number includes the plural, the plural number includes the singular, and the term "person" includes both a corporation and a natural person.

7.7 DIVIDENDS.

The Board, subject to any restrictions contained in either (i) the DGCL, or (ii) the certificate of incorporation, may declare and pay dividends upon the shares of its capital stock. Dividends may be paid in cash, in property, or in shares of the corporation's capital stock.

The Board may set apart out of any of the funds of the corporation available for dividends a reserve or reserves for any proper purpose and may abolish any such reserve. Such purposes shall include but not be limited to equalizing dividends, repairing or maintaining any property of the corporation, and meeting contingencies.

7.8 FISCAL YEAR.

The fiscal year of the corporation shall be fixed by resolution of the Board and may be changed by the Board.

7.9 SEAL.

The corporation may adopt a corporate seal, which shall be adopted and which may be altered by the Board. The corporation may use the corporate seal by causing it or a facsimile thereof to be impressed or affixed or in any other manner reproduced.

7.10 TRANSFER OF STOCK.

Except as otherwise contemplated by the certificate of incorporation or any agreement between the corporation and any stockholder, upon surrender to the corporation or the transfer agent of the corporation of a certificate for shares duly endorsed or accompanied by proper evidence of succession, assignation or authority to transfer, it shall be the duty of the corporation to issue a new certificate to the person entitled thereto, cancel the old certificate, and record the transaction in its books.

7.11 STOCK TRANSFER AGREEMENTS.

The corporation shall have power to enter into and perform any agreement with any number of stockholders of any one or more classes of stock of the corporation to restrict the transfer of shares of stock of the corporation of any one or more classes owned by such stockholders in any manner not prohibited by the DGCL.

7.12 REGISTERED STOCKHOLDERS.

The corporation:

(i) shall be entitled to recognize the exclusive right of a person registered on its books as the owner of shares to receive dividends and to vote as such owner;

(ii) shall be entitled to hold liable for calls and assessments the person registered on its books as the owner of shares; and

(iii) shall not be bound to recognize any equitable or other claim to or interest in such share or shares on the part of another person, whether or not it shall have express or other notice thereof, except as otherwise provided by the laws of Delaware.

7.13 WAIVER OF NOTICE.

Whenever notice is required to be given under any provision of the DGCL, the certificate of incorporation or these bylaws, a written waiver, signed by the person entitled to notice, or a waiver by electronic transmission by the person entitled to notice, whether before or after the time of the event for which notice is to be given, shall be deemed equivalent to notice. Attendance of a person at a meeting shall constitute a waiver of notice of such meeting, except when the person attends a meeting for the express purpose of objecting at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened. Neither the business to be transacted at, nor the purpose of, any regular or special meeting of the stockholders need be specified in any written waiver of notice or any waiver by electronic transmission unless so required by the certificate of incorporation or these bylaws.

7.14 ADVISORY BOARDS.

By resolution, the Board may establish one or more advisory boards for the purpose of rendering non-binding advice to the Corporation on a given subject matter (each, an "**Advisory Board**"). For each such Advisory Board, the Board shall appoint members to each Advisory Board, set the compensation for such Advisory Board members, dismiss Advisory Board members with or without cause, disband any Advisory Board, describe the functions, tasks or mission to be accomplished by such Advisory Board and set the rules by which meetings of the Advisory Board are to be conducted. All such Advisory Board(s) and their members shall serve at the pleasure of the Board and shall answer directly to the Board.

ARTICLE VIII — NOTICE BY ELECTRONIC TRANSMISSION

8.1 NOTICE BY ELECTRONIC TRANSMISSION.

Without limiting the manner by which notice otherwise may be given effectively to stockholders pursuant to the DGCL, the certificate of incorporation or these bylaws, and subject to the notification requirements with respect to meetings of stockholders pursuant to Section 2.5 of these bylaws, any notice to stockholders given by the corporation under any provision of the DGCL, the certificate of incorporation or these bylaws shall be effective if given by a form of electronic transmission consented to by the stockholder to whom the notice is given. Any such consent shall be revocable by the stockholder by written notice to the corporation. Any such consent shall be deemed revoked if:

(i) the corporation is unable to deliver by electronic transmission two consecutive notices given by the corporation in accordance with such consent; and

(ii) such inability becomes known to the secretary or an assistant secretary of the corporation or to the transfer agent, or other person responsible for the giving of notice.

However, the inadvertent failure to treat such inability as a revocation shall not invalidate any meeting or other action.

Any notice given pursuant to the preceding paragraph shall be deemed given:

(iii) if by facsimile telecommunication, when directed to a number at which the stockholder has consented to receive notice;

(iv) if by electronic mail, when directed to an electronic mail address at which the stockholder has consented to receive notice;

(v) if by a posting on an electronic network together with separate notice to the stockholder of such specific posting, upon the later of (A) such posting and (B) the giving of such separate notice; and

(vi) if by any other form of electronic transmission, when directed to the stockholder.

An affidavit of the secretary or an assistant secretary or of the transfer agent or other agent of the corporation that the notice has been given by a form of electronic transmission shall, in the absence of fraud, be prima facie evidence of the facts stated therein.

8.2 DEFINITION OF ELECTRONIC TRANSMISSION.

An “electronic transmission” means any form of communication, not directly involving the physical transmission of paper, that creates a record that may be retained, retrieved, and reviewed by a recipient thereof, and that may be directly reproduced in paper form by such a recipient through an automated process.

8.3 INAPPLICABILITY.

Notwithstanding anything herein to the contrary, any notice required to be given to a holder of Class C Common Stock must be given in writing in accordance with Section 2.5 of these Bylaws. Notice by a form of electronic transmission shall not apply to Sections 164, 296, 311, 312 or 324 of the DGCL.

ARTICLE IX — AMENDMENTS

These bylaws may be adopted, amended or repealed by the stockholders entitled to vote; provided that any amendment to these bylaws shall require the approval of a majority of the then-outstanding shares of Class C Common Stock. However, the corporation may, in its certificate of incorporation, confer the power to adopt, amend or repeal bylaws upon the Board; provided that any amendment to Section 2.10, 3.4, 3.6, 3.7, 3.11 or 4.1 of these bylaws shall require the approval of a majority of the then-outstanding shares of Class C Common Stock. The fact that such power has been so conferred upon the directors shall not divest the stockholders of the power, nor limit their power to adopt, amend or repeal bylaws. Notwithstanding anything to the contrary stated in these bylaws or in the corporation's certificate of incorporation, any amendment, change, restatement or repeal that would adversely affect the rights of the holders the corporation's Class C Common Stock or the rights of the Class C Director (which shall include without limitation the right of a Class C Director to sit on a committee of the Board as set forth in Section 4.1 or the authority of the compensation committee as set forth in Section 4.2) shall also require the approval of a majority of the then-outstanding shares of Class C Common Stock.

LUNA INNOVATIONS INCORPORATED

CERTIFICATE OF ADOPTION OF AMENDED AND RESTATED BYLAWS

The undersigned hereby certifies that he or she is the duly elected, qualified, and acting Secretary or Assistant Secretary of Luna Innovations Incorporated, a Delaware corporation and that the foregoing amended and restated bylaws, comprising 18 pages, were adopted as the corporation's bylaws on July 15, 2005 by the corporation's board of directors.

IN WITNESS WHEREOF, the undersigned has hereunto set his or her hand this 29 day of July, 2005.

/s/ KENT A. MURPHY, PH.D.

Kent A. Murphy, Ph.D., Secretary

Exhibit 3.4

FORM OF AMENDED AND RESTATED BYLAWS

OF

LUNA INNOVATIONS INCORPORATED

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FORM OF AMENDED AND RESTATED BYLAWS

OF

LUNA INNOVATIONS INCORPORATED

ARTICLE I

CORPORATE OFFICES

1.1 REGISTERED OFFICE

The address of the Corporation's registered office in the State of Delaware is Corporation Trust Center, 1209 Orange Street, Wilmington, New Castle County, Delaware 19801. The name of the registered agent at such address is The Corporation Trust Company.

1.2 OTHER OFFICES

The Board of Directors of the corporation (the "**Board**") may at any time establish other offices at any place or places where the corporation is qualified to do business.

ARTICLE II

MEETINGS OF STOCKHOLDERS

2.1 PLACE OF MEETINGS

Meetings of stockholders shall be held at any place, within or outside the State of Delaware, designated by the Board. In the absence of any such designation, stockholders' meetings shall be held at the corporation's principal executive office.

2.2 ANNUAL MEETING

The annual meeting of stockholders shall be held each year on a date and at a time designated by the Board. At the annual meeting, directors shall be elected and any other proper business may be transacted.

2.3 SPECIAL MEETING

A special meeting of the stockholders may be called at any time by the Board, or by the Chairman of the Board, the Chief Executive Officer or the President, or by one or more stockholders holding shares in the aggregate entitled to cast votes not less than 10% of the votes at that meeting.

Effective upon the closing of a firm commitment underwritten public offering of Common Stock of the Corporation and subject to the rights of the holders of any series of Preferred Stock then outstanding, special meetings of the stockholders may be called at any time only by the Board acting pursuant to a resolution duly adopted by a majority of the Board, the Chairman of the Board, the Chief Executive Officer or the President, but such special meetings may not be called by any other person or persons.

Only such business shall be considered at a special meeting of stockholders as shall have been stated in the notice for such meeting. Nothing contained in this paragraph of this Section 2.3 shall be construed as limiting, fixing, or affecting the time when a meeting of stockholders called by action of the Board may be held.

2.4 NOTICE OF STOCKHOLDERS' MEETINGS; EXCEPTION TO REQUIREMENTS OF NOTICE

All notices of meetings with stockholders shall be in writing and shall be sent or otherwise given in accordance with Section 2.5 of these Bylaws not less than ten (10) nor more than sixty (60) calendar days before the date of the meeting to each stockholder entitled to vote at such meeting. The notice shall specify the place, date and hour of the meeting, the means of remote communications, if any, by which stockholders and proxy holders may be deemed to be present in person and vote at such meeting (as authorized by the Board in its sole discretion pursuant to Section 211(a)(2) of the General Corporation Law of Delaware), and, in the case of a special meeting, the purpose or purposes for which the meeting is called. Any previously scheduled meeting of stockholders may be postponed, and, unless the Certificate of Incorporation of the corporation, as the same may be amended and/or restated from time to time (as so amended and restated, the "**Certificate**") provides otherwise, any special meeting of the stockholders may be cancelled by resolution duly adopted by a majority of the Board members then in office upon public notice given prior to the date previously scheduled for such meeting of stockholders.

Whenever notice is required to be given, under the General Corporation Law of Delaware, the Certificate or these Bylaws, to any person with whom communication is unlawful, the giving of such notice to such person shall not be required and there shall be no duty to apply to any governmental authority or agency for a license or permit to give such notice to such person. Any action or meeting which shall be taken or held without notice to any such person with whom communication is unlawful shall have the same force and effect as if such notice had been duly given. In the event that the action taken by the corporation is such as to require the filing of a certificate with the Secretary of State of Delaware, the certificate shall state, if such is the fact and if

notice is required, that notice was given to all persons entitled to receive notice except such persons with whom communication is unlawful.

Whenever notice is required to be given, under any provision of the General Corporation Law of Delaware, the Certificate or these Bylaws, to any stockholder, and such stockholder has received (a) notice of two (2) consecutive annual meetings, or (b) at least two (2) payments (if sent by first-class mail) of dividends or interest on securities during a twelve (12) month period, having been mailed such notice addressed to such person at such person's address as shown on the records of the corporation and have been returned undeliverable, the giving of such notice to such person shall not be required. Any actions or meeting which shall be taken or held without notice to such person shall have the same force and effect as if such notice had been duly given. If any such person shall deliver to the corporation a written notice setting forth such person's then current address, the requirement that notice be given to such person shall be reinstated. In the event that the action taken by the corporation is such as to require the filing of a certificate with the Secretary of State of Delaware, the certificate need not state that notice was not given to persons to whom notice was not required to be given pursuant to Section 230(b) of the General Corporation Law of Delaware.

The exception in subsection (a) of the above paragraph to the requirement that notice be given shall not be applicable to any notice returned as undeliverable if the notice was given by electronic transmission.

2.5 MANNER OF GIVING NOTICE; AFFIDAVIT OF NOTICE

Written notice of any meeting of stockholders, if mailed, is given when deposited in the United States mail, postage prepaid, directed to the stockholder at his, her or its address as it appears on the records of the corporation and otherwise is given when delivered. An affidavit of the Secretary or an Assistant Secretary, the transfer agent or other agent of the corporation that the notice has been given shall, in the absence of fraud, be prima facie evidence of the facts stated therein.

2.6 QUORUM

The holders of a majority of the stock issued and outstanding and entitled to vote thereat, present in person or represented by proxy, shall constitute a quorum at all meetings of the stockholders for the transaction of business, except as otherwise provided by statute or the Certificate. If, however, such quorum is not present or represented at any meeting of the stockholders, then a majority of the stockholders entitled to vote thereat, present in person or represented by proxy, shall have power to adjourn the meeting from time to time, without notice other than announcement at the meeting, until a quorum is present or represented. At such adjourned meeting at which a quorum is present or represented, any business may be transacted that might have been transacted at the meeting as originally noticed. The stockholders present at a duly called meeting at which quorum is present may continue to transact business until adjournment, notwithstanding the withdrawal of enough stockholders to leave less than a quorum.

2.7 ADJOURNED MEETING; NOTICE

When a meeting is adjourned to another time or place, unless these Bylaws otherwise require, notice need not be given of the adjourned meeting if the time and place thereof, and the means of remote communications, if any, by which stockholders and proxy holders may be deemed to be present in person and vote at such adjourned meeting (as authorized by the Board in its sole discretion pursuant to Section 211(a)(2) of the General Corporation Law of Delaware), are announced at the meeting at which the adjournment is taken. At the adjourned meeting, the corporation may transact any business that might have been transacted at the original meeting. If the adjournment is for more than thirty (30) days, or if after the adjournment a new record date is fixed for the adjourned meeting, a notice of the adjourned meeting shall be given to each stockholder of record entitled to vote at the meeting. The Chairman of the meeting shall have the power to adjourn any meeting of stockholders for any reason, and the stockholders shall have the power to adjourn any meeting of stockholders in accordance with Section 2.6 of these Bylaws.

2.8 VOTING

The stockholders entitled to vote at any meeting of stockholders shall be determined in accordance with the provisions of Section 2.11 of these Bylaws, subject to the provisions of Sections 217 and 218 of the General Corporation Law of Delaware (relating to voting rights of fiduciaries, pledgors and joint owners of stock and to voting trusts and other voting agreements).

Except as otherwise provided in the provisions of Section 213 of the General Corporation Law of Delaware (relating to the fixing of a date for determination of stockholders of record), or as may be otherwise provided in the Certificate, each stockholder shall be entitled to one (1) vote for each share of capital stock held by such stockholder.

In all matters, other than the election of directors and except as otherwise required by law, the affirmative vote of the majority of shares present or represented by proxy at the meeting and entitled to vote on the subject matter shall be the act of the stockholders. Directors shall be elected by a plurality of the votes of the shares present in person or represented by proxy at the meeting and entitled to vote on the election of directors.

2.9 WAIVER OF NOTICE

Whenever notice is required to be given under any provision of the General Corporation Law of Delaware, the Certificate or these Bylaws, a written waiver thereof, signed by the person entitled to notice, or a waiver by electronic transmission by the person entitled to notice, whether before or after the time stated therein, shall be deemed equivalent to notice. Attendance of a person at a meeting shall constitute a waiver of notice of such meeting, except when the person attends a meeting for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened. Neither the business to be transacted at, nor the purpose of, any regular or special meeting of the stockholders need be specified

in any written waiver of notice, or any waiver by electronic transmission, unless so required by the Certificate or these Bylaws.

2.10 STOCKHOLDER ACTION BY WRITTEN CONSENT

Unless otherwise provided in the Certificate, any action required by the DGCL to be taken at any annual or special meeting of stockholders of a corporation, or any action which may be taken at any annual or special meeting of such stockholders, may be taken without a meeting, without prior notice, and without a vote, if a consent or consents in writing, setting forth the action so taken, shall be signed by the holders of outstanding stock having not less than the minimum number of votes that would be necessary to authorize or take such action at a meeting at which all shares entitled to vote thereon were present and voted.

Prompt notice of the taking of the corporate action without a meeting by less than unanimous written consent shall be given to those stockholders who have not consented in writing and who, if the action had been taken at a meeting, would have been entitled to notice of the meeting if the record date for such meeting had been the date that written consents signed by a sufficient number of holders to take the action were delivered to the Company as provided in Section 228 of the DGCL. In the event that the action which is consented to is such as would have required the filing of a certificate under any provision of the DGCL, if such action had been voted on by stockholders at a meeting thereof, the certificate filed under such provision shall state, in lieu of any statement required by such provision concerning any vote of stockholders, that written consent has been given in accordance with Section 228 of the DGCL.

2.11 RECORD DATE FOR STOCKHOLDER NOTICE

In order that the corporation may determine the stockholders entitled to notice of or to vote at any meeting of stockholders or any adjournment thereof, or entitled to receive payment of any dividend or other distribution or allotment of any rights, or entitled to exercise any rights in respect of any change, conversion or exchange of stock or for the purpose of any other lawful action, the Board may fix, in advance, a record date, which such date shall not precede the date upon which the resolution fixing the record date is adopted by the Board and which such date shall not be more than sixty (60) nor less than ten (10) calendar days before the date of such meeting, nor more than sixty (60) days prior to any other action.

If the Board does not so fix a record date:

(a) The record date for determining stockholders entitled to notice of or to vote at a meeting of stockholders shall be at the close of business on the day next preceding the day on which notice is given, or, if notice is waived, at the close of business on the day next preceding the day on which the meeting is held.

(b) The record date for determining stockholders for any other purpose shall be at the close of business on the day on which the Board adopts the resolution relating thereto.

A determination of stockholders of record entitled to notice of or to vote at a meeting of stockholders shall apply to any adjournment of the meeting; *provided, however*, that the Board may fix a new record date for the adjourned meeting.

2.12 PROXIES

Each stockholder entitled to vote at a meeting of stockholders may authorize another person or persons to act for him, her or it by a written proxy, signed by the stockholder and filed with the Secretary of the corporation, but no such proxy shall be voted or acted upon after three (3) years from its date, unless the proxy provides for a longer period. A stockholder may authorize another person or persons to act for him, her or it as proxy in the manner(s) provided under Section 212(c) of the General Corporate Law of Delaware or as otherwise provided under Delaware law. The revocability of a proxy that states on its face that it is irrevocable shall be governed by the provisions of Section 212(e) of the General Corporation Law of Delaware.

2.13 LIST OF STOCKHOLDERS ENTITLED TO VOTE; STOCK LEDGER

The officer who has charge of the stock ledger of a corporation shall prepare and make, at least ten (10) calendar days before every meeting of stockholders, a complete list of the stockholders entitled to vote at the meeting, arranged in alphabetical order, and showing the address of each stockholder and the number of shares registered in the name of each stockholder. Nothing contained in this Section 2.13 shall require the corporation to include electronic mail addresses or other electronic contact information on such list. Such list shall be open to the examination of any stockholder, for any purpose germane to the meeting: (a) on a reasonably accessible electronic network, provided that the information required to gain access to such list is provided with the notice of the meeting, or (b) for a period of at least ten (10) calendar days prior to the meeting during ordinary business hours at the principal place of business of the corporation.

In the event that the corporation determines to make the list available on an electronic network, the corporation may take reasonable steps to ensure that such information is available only to the stockholders of the corporation. The list shall be produced and kept at the time and place of the meeting during the whole time thereof, and may be inspected by any stockholder who is present.

2.14 NOMINATIONS AND PROPOSALS BY STOCKHOLDERS AT ANNUAL MEETING

(a) Only such business shall be conducted as shall have been properly brought before the meeting. To be properly brought before an annual meeting, business must be: (A) specified in the notice of meeting (or any supplement thereto) given by or at the direction of the Board, (B) otherwise properly brought before the meeting by or at the direction of the Board, or (C) otherwise properly brought before the meeting by a stockholder (i) who is a stockholder of record on the date of the giving of notice provided for in this Section 2.14(a) and on the record date for the determination of stockholders entitled to vote at such annual meeting and (ii) who complies with the notice procedures set forth in this Section 2.14(a). For business to be properly brought before an

annual meeting by a stockholder, the stockholder must have given timely notice thereof in writing to the Secretary of the corporation. To be timely, a stockholder's notice must be delivered to or mailed and received at the principal executive offices of the corporation not less than ninety (90) calendar days in advance of the date that is the one year anniversary of the date on which the corporation first mailed its proxy statement to stockholders in connection with the previous year's annual meeting of stockholders; *provided, however*, that in the event that no annual meeting was held in the previous year or the date of the annual meeting has been changed by more than thirty (30) days from the date of the prior year's meeting, notice by the stockholder to be timely must be so received not later than the close of business on the tenth (10 th) day following the day notice of the date of the meeting was mailed or such public disclosure was made, whichever occurs first. A stockholder's notice to the Secretary shall set forth as to each matter the stockholder proposes to bring before the annual meeting: (i) a brief description of the business desired to be brought before the annual meeting and the reasons for conducting such business at the annual meeting, (ii) the name and address, as they appear on the corporation's books, of the stockholder proposing such business, (iii) the class and number of shares of the corporation which are beneficially owned by the stockholder, (iv) any material interest of the stockholder in such business and (v) any other information that is required to be provided by the stockholder pursuant to Regulation 14A under the Securities Exchange Act of 1934, as amended (the "**Exchange Act**"), in such stockholder's capacity as a proponent to a stockholder proposal. Notwithstanding the foregoing, in order to include information with respect to a stockholder proposal in the proxy statement and form of proxy for a stockholder's meeting, stockholders must provide notice as required by the regulations promulgated under the Exchange Act. Notwithstanding anything in these Bylaws to the contrary, no business shall be conducted at any annual meeting except in accordance with the procedures set forth in this paragraph (a). The chairman of the annual meeting shall, if the facts warrant, determine and declare at the meeting that business was not properly brought before the meeting and in accordance with the provisions of this paragraph (a), and, if he should so determine, he shall so declare at the meeting that any such business not properly brought before the meeting shall not be transacted.

(b) Only persons who are nominated in accordance with the procedures set forth in this paragraph (b) shall be eligible for election as directors, except as otherwise provided in the Certificate of Incorporation with respect to the right of holders of preferred stock of the corporation. Nominations of persons for election to the Board of the corporation may be made at a meeting of stockholders by or at the direction of the Board or by any stockholder of the corporation entitled to vote in the election of directors at the meeting who complies with the notice procedures set forth in this paragraph (b). Such nominations, other than those made by or at the direction of the Board, shall be made pursuant to timely notice in writing to the Secretary of the corporation in accordance with the provisions of paragraph (a) of this Section 2.14. Such stockholder's notice shall set forth (i) as to each person, if any, whom the stockholder proposes to nominate for election or re-election as a director: (A) the name, age, business address and residence address of such person, (B) the principal occupation or employment of such person, (C) the class and number of shares of the corporation which are beneficially owned by such

person, (D) a description of all arrangements or understandings between the stockholder and each nominee and any other person or persons (naming such person or persons) pursuant to which the nominations are to be made by the stockholder, and (E) any other information relating to such person that is required to be disclosed in solicitations of proxies for elections of directors, or is otherwise required, in each case pursuant to Regulation 14A under the Exchange Act (including without limitation such person's written consent to being named in the proxy statement, if any, as a nominee and to serving as a director if elected); and (ii) as to such stockholder giving notice, the information required to be provided pursuant to paragraph (a) of this Section 2.14. At the request of the Board, any person nominated by a stockholder for election as a director shall furnish to the Secretary of the corporation that information required to be set forth in the stockholder's notice of nomination, which pertains to the nominee. No person shall be eligible for election as a director of the corporation unless nominated in accordance with the procedures set forth in this paragraph (b). The chairman of the meeting shall, if the facts warrants, determine and declare at the meeting that a nomination was not made in accordance with the procedures prescribed by these Bylaws, and if he should so determine, he shall so declare at the meeting, and the defective nomination shall be disregarded.

(c) Notwithstanding the foregoing provisions of this Section 2.14, a stockholder shall also comply with all applicable requirements of the Exchange Act and the rules and regulations thereunder with respect to matters set forth in this Section 2.14. Nothing in this Section 2.14 shall be deemed to affect any rights of stockholders to request inclusion of proposals in the corporation's proxy statement pursuant to Rule 14a-8 under the Exchange Act.

2.15 ORGANIZATION

Meetings of stockholders shall be presided over by (a) the Chairman of the Board or, in the absence thereof, (b) such person as the Chairman of the Board shall appoint or, in the absence thereof or in the event that the Chairman of the Board shall fail to make such appointment, (c) such person as the Chairman of the executive committee of the corporation shall appoint or, in the absence thereof or in the event that the Chairman of the executive committee of the corporation shall fail to make such appointment, any officer of the corporation elected by the Board. In the absence of the Secretary of the corporation, the secretary of the meeting shall be such person as the Chairman of the meeting appoints.

The Board shall, in advance of any meeting of stockholders, appoint one (1) or more inspector(s), who may include individual(s) who serve the corporation in other capacities, including without limitation as officers, employees or agents, to act at the meeting of stockholders and make a written report thereof. The Board may designate one (1) or more persons as alternate inspector(s) to replace any inspector, who fails to act. If no inspector or alternate has been appointed or is able to act at a meeting of stockholders, the Chairman of the meeting shall appoint one (1) or more inspector(s) to act at the meeting. Each inspector, before discharging his or her duties, shall take and sign an oath to faithfully execute the duties of inspector with strict impartiality and according to the best of his or her ability. The inspector(s) or alternate(s) shall have the duties prescribed pursuant to Section 231 of the General Corporate Laws of Delaware or other applicable law.

The Board shall be entitled to make such rules or regulations for the conduct of meetings of stockholders as it shall deem necessary, appropriate or convenient. Subject to such rules and

regulations, if any, the Chairman of the meeting shall have the right and authority to prescribe such rules, regulations and procedures and to do all acts as, in the judgment of such Chairman, are necessary, appropriate or convenient for the proper conduct of the meeting, including without limitation establishing an agenda of business of the meeting, rules or regulations to maintain order, restrictions on entry to the meeting after the time fixed for commencement thereof and the fixing of the date and time of the opening and closing of the polls for each matter upon which the stockholders will vote at a meeting (and shall announce such at the meeting).

2.16 NOTICE BY ELECTRONIC TRANSMISSION

Without limiting the manner by which notice otherwise may be given effectively to stockholders, any notice to stockholders given by the corporation under any provision of the General Corporation Law of Delaware, the Certificate or these Bylaws shall be effective if given by a form of electronic transmission consented to by the stockholder to whom the notice is given. Any such consent shall be revocable by the stockholder by written notice to the corporation. Any such consent shall be deemed revoked if (a) the corporation is unable to deliver by electronic transmission two (2) consecutive notices given by the corporation in accordance with such consent, and (b) such inability becomes known to the Secretary or an Assistant Secretary of the corporation, the transfer agent or other person responsible for the giving of notice; *provided, however*, the inadvertent failure to treat such inability as a revocation shall not invalidate any meeting or other action.

Notice given pursuant to the above paragraph shall be deemed given (a) if by facsimile telecommunication, when directed to a number at which the stockholder has consented to receive notice, (b) if by electronic mail, when directed to an electronic mail address at which the stockholder has consented to receive notice, (c) if by a posting on an electronic network together with a separate notice to the stockholder of such specific posting, upon the later of (i) such posting, and (ii) the giving of such separate notice, and (d) if by any other form of electronic transmission, when directed to the stockholder. An affidavit of the Secretary or Assistant Secretary, the transfer agent or other agent of the corporation that the notice has been given by a form of electronic transmission shall in the absence of fraud, be prima facie evidence of the facts stated therein.

For purposes of these Bylaws, "**electronic transmission**" means any form of communication, not directly involving the physical transmission of paper, which creates a record that may be retained, retrieved and reviewed by a recipient thereof, and that may be directly reproduced in paper form by such a recipient through an automated process. This Section 2.16 shall not apply to Section 164 (failure to pay for stock; remedies), Section 296 (adjudication of claims; appeal), Section 311 (revocation of voluntary dissolution), Section 312 (renewal, revival, extension and restoration of certificate of incorporation) or Section 324 (attachment of shares of stock) of the General Corporation Law of Delaware.

ARTICLE III

DIRECTORS

3.1 POWERS

The business and affairs of the corporation shall be managed by or under the direction of the Board. In addition to the power and authorities these Bylaws expressly confer upon them, the Board may exercise all such powers of the corporation and do all such lawful acts and things as are not required by statute, the Certificate or these Bylaws to be exercised or done by the stockholders.

3.2 NUMBER OF DIRECTORS

Subject to the rights of the holders of any Preferred Stock of the corporation to elect additional directors under specified circumstances, the authorized number of directors of the corporation shall be fixed from time to time exclusively by the Board pursuant to a resolution duly adopted by a majority of the Board members then in office.

No reduction of the authorized number of directors shall have the effect of removing any director before such director's term of office expires.

3.3 ELECTION, QUALIFICATION AND TERM OF OFFICE OF DIRECTORS

Except as provided in the Certificate or Section 3.4 of these Bylaws, directors shall be classified, with respect to the time for which they severally hold office, into three (3) classes, as nearly equal in number as possible, one (1) class to be originally elected for a term expiring at the annual meeting of stockholders to be held in 2006, another class to be originally elected for a term expiring at the annual meeting of stockholders to be held in 2007, and another class to be originally elected for a term expiring at the annual meeting of stockholders to be held in 2008, with each class to hold office until its successor is duly elected and qualified. At each succeeding annual meeting of stockholders, commencing with the first annual meeting (a) directors elected to succeed those directors whose terms then expire shall be elected for a term of office to expire at the third succeeding annual meeting of stockholders after their election, with each director to hold office until his or her successor shall have been duly elected and qualified, and (b) if authorized by a resolution of the Board, directors may be elected to fill any vacancy on the Board, regardless of how such vacancy shall have been created (as set forth in Section 3.4 below).

Directors need not be stockholders unless so required by the Certificate or these Bylaws, wherein other qualifications for directors may be prescribed.

Elections of directors at all meetings of the stockholders at which directors are to be elected shall be by ballot and, subject to the rights of the holders of any Preferred Stock of the corporation to elect additional directors under specified circumstances, a plurality of the votes cast thereat shall elect directors. The ballot shall state the name of the stockholder or proxy voting or such other information as may be required under the procedure established by the Chairman of the meeting. If authorized by the Board, such requirement of a ballot shall be satisfied by a ballot submitted by electronic transmission provided that any such electronic transmission must either set forth or be

submitted with information from which it can be determined that the electronic submission was authorized.

3.4 RESIGNATION AND VACANCIES

Any director may resign at any time upon written notice or by electronic transmission to the corporation.

Subject to the rights of the holders of any series of Preferred Stock of the corporation then outstanding and unless the Board otherwise determines, newly created directorships resulting from any increase in the authorized number of directors, or any vacancies on the Board resulting from the death, resignation, retirement, disqualification, removal from office or other cause shall, unless otherwise provided by law or resolution of the Board, be filled only by a majority vote of the directors then in office, whether or not less than a quorum, and directors so chosen shall hold office for a term expiring at the annual meeting of stockholders at which the term of office of the class to which they have been elected expires.

3.5 PLACE OF MEETINGS; MEETINGS BY TELEPHONE

The Board may hold meetings, both regular and special, either within or outside the State of Delaware.

Unless otherwise restricted by the Certificate or these Bylaws, members of the Board, or any committee designated by the Board, may participate in a meeting of the Board, or any committee, by means of conference telephone or other communications equipment by means of which all persons participating in the meeting can hear each other, and such participation in a meeting shall constitute presence in person at the meeting.

3.6 FIRST MEETINGS

The first meeting of each newly elected Board shall be held immediately after, and at the same location as, the annual meeting of stockholders, unless the Board shall fix another time and place and give notice thereof (or obtain waivers of notice thereof) in the manner required herein for special meetings of directors, and no notice of such meeting shall be necessary to the newly elected directors in order legally to constitute the meeting, except as provided in this Section 3.6 and provided that a quorum shall be present.

3.7 REGULAR MEETINGS

Regular meetings of the Board may be held without notice at such time and at such place as shall from time to time be determined by the Board.

3.8 SPECIAL MEETINGS; NOTICE

Special meetings of the Board for any purpose(s) may be called at any time by the Chairman of the Board, the Chief Executive Officer, the President or a majority of the members of the Board then in office. The person(s) authorized to call special meetings of the Board may fix the place and time of the meetings.

The Secretary shall give notice of any special meeting to each director personally or by telephone, or sent by first-class mail, overnight mail, courier service or telegram, postage or charges prepaid, addressed to each director at that director's address as it is shown on the records of the corporation. If the notice is mailed, it shall be deposited in the United States mail at least four (4) calendar days before the time of the holding of the meeting. If the notice is delivered by telegram, overnight mail or courier, it shall be deemed adequately delivered when the telegram is delivered to the telegraph company or the notice is delivered to the overnight mail or courier service company at least forty-eight (48) hours before such meeting. If by facsimile transmission, such notice shall be deemed adequately delivered when the notice is transmitted at least twelve (12) hours before such meeting. If by telephone or hand delivery the notice shall be given at least twelve (12) hours prior to the time set for the meeting. Any oral notice given personally or by telephone may be communicated either to the director or to a person at the office of the director who the person giving the notice has reason to believe will promptly communicate it to the director. The notice need not specify the purpose or the place of the meeting, if the meeting is to be held at the principal executive office of the corporation.

3.9 QUORUM

At all meetings of the Board, a majority of the Whole Board (as defined below) shall constitute a quorum for all purposes, and the act of a majority of the directors present at any meeting at which there is a quorum shall be the act of the Board, except as may be otherwise specifically provided by statute or by the Certificate. The directors present at a duly organized meeting may continue to transact business until adjournment notwithstanding the withdrawal of enough directors to leave less than quorum. The term "**Whole Board**" shall mean the total number of authorized directors of the corporation whether or not there exist any vacancies in previously authorized directorships.

3.10 WAIVER OF NOTICE

Whenever notice is required to be given under any provisions of the General Corporation Law of Delaware of the Certificate or these Bylaws, a written waiver thereof, signed by the person entitled to notice, or a waiver by electronic transmission by the person entitled to notice, whether before or after the time stated therein, shall be deemed equivalent to notice. Attendance of a person at a meeting shall constitute a waiver of notice of such meeting, except when the person attends a meeting for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened. Neither the business to be transacted at, nor the purpose of, any regular or special meeting of the directors, or members of a

committee of directors, need be specified in any written waiver of notice or any waiver by electronic transmission unless so required by the Certificate or these Bylaws.

3.11 ADJOURNED MEETING; NOTICE

If a quorum is not present at any meeting of the Board, then a majority of the directors present thereat may adjourn the meeting from time to time, without notice other than announcement at the meeting, until a quorum is present.

3.12 BOARD ACTION BY WRITTEN CONSENT WITHOUT A MEETING

Unless otherwise restricted by the Certificate or these Bylaws, any action required or permitted to be taken at any meeting of the Board, or of any committee thereof, may be taken without a meeting if all members of the Board or committee, as the case may be, consent thereto in writing or by electronic transmission and the writing(s) or electronic transmission(s) are filed with the minutes of proceedings of the Board or committee. Such filing shall be in paper form if the minutes are maintained in paper form and shall be in electronic form if the minutes are maintained in electronic form.

3.13 FEES AND COMPENSATION OF DIRECTORS

Unless otherwise restricted by the Certificate or these Bylaws, the Board shall have the authority to fix the compensation of directors.

3.14 REMOVAL OF DIRECTORS

Unless otherwise restricted by statute, the Certificate or these Bylaws, any director or the entire Board may be removed, with or without cause, by the holders of a majority of the shares then entitled to vote at an election of directors.

Effective upon the closing of a firm commitment underwritten public offering of Common Stock of the Corporation and subject to the rights of the holders of any series of Preferred Stock of the corporation then outstanding, unless otherwise restricted by statute, the Certificate or these Bylaws, any director, or all of the directors, may be removed from the Board, but only for cause, but only by the affirmative vote of the holders of at least a majority of the voting power of all the then outstanding shares of capital stock of the corporation then entitled to vote at the election of directors, voting together as a single class.

For purposes of the foregoing paragraph, "**cause**" shall mean (i) continued willful failure to perform the obligations of a director, (ii) gross negligence by the director, (iii) engaging in transactions that defraud the corporation, (iv) fraud or intentional misrepresentation, including falsifying use of funds and intentional misstatements made in financial statements, books, records or reports to stockholders or governmental agencies, (v) material violation of any agreement between the director and the corporation, (vi) knowingly causing the corporation to commit violations of

applicable law (including by failure to act), (vii) acts of moral turpitude or (viii) conviction of a felony.

No reduction of the authorized number of directors shall have the effect of removing any director prior to the expiration of such director's term of office.

ARTICLE IV

COMMITTEES

4.1 COMMITTEES OF DIRECTORS

The Board may from time to time, by resolution passed by a majority of the Whole Board, designate one (1) or more committees of the Board, with such lawfully delegable powers and duties as it thereby confers, with each committee to consist of one (1) or more of the directors of the corporation. The Board may designate one (1) or more directors as alternate members of any committee, who may replace any absent or disqualified member at any meeting of the committee. In the absence or disqualification of a member of a committee, the member(s) thereof present at any meeting and not disqualified from voting, whether or not such member(s) constitute a quorum, may unanimously appoint another member of the Board to act at the meeting in the place of any such absent or disqualified member.

4.2 COMMITTEE MINUTES

Each committee shall keep regular minutes of its meetings and report the same to the Board when required.

4.3 MEETINGS AND ACTION OF COMMITTEES

Meetings and actions of committees shall be governed by, and held and taken in accordance with, the provisions of Article III of these Bylaws, Section 3.5 (place of meetings and meetings by telephone), Section 3.7 (regular meetings), Section 3.8 (special meetings and notice), Section 3.9 (quorum), Section 3.10 (waiver of notice), Section 3.11 (adjournment and notice of adjournment), and Section 3.12 (action without a meeting), with such changes in the context of those Bylaws as are necessary to substitute the committee and its members for the Board and its members; *provided, however*, that the time of regular and special meetings of committees may also be called by resolution of the Board. The Board may adopt rules for the government of any committee not inconsistent with the provisions of these Bylaws.

ARTICLE V

OFFICERS

5.1 OFFICERS

The officers of the corporation shall be a President and a Secretary. The corporation may also have, at the discretion of the Board, a Chairman of the Board, a Vice Chairman of the Board, a Chief Executive Officer, a Chief Financial Officer, a Treasurer, one or more Vice Presidents, Assistant Vice Presidents, Assistant Secretaries, and Assistant Treasurers, and any such other officers as may be appointed in accordance with the provisions of Section 5.3 of these Bylaws. Any number of offices may be held by the same person.

5.2 ELECTION OF OFFICERS

The officers of the corporation, except such officers as may be appointed in accordance with the provisions of Section 5.3 of these Bylaws, shall be chosen by the Board, which shall consider such subject at its first meeting after every annual meeting of stockholders, subject to the rights, if any, of an officer under any contract of employment. Each officer shall hold office until his or her successor is elected and qualified or until his or her earlier resignation or removal. A failure to elect officers shall not dissolve or otherwise affect the corporation.

5.3 SUBORDINATE OFFICERS

The Board may appoint, or empower the Chief Executive Officer or, in the absence of a Chief Executive Officer, the President, to appoint, such other officers as the business of the corporation may require, each of whom shall hold office for such period, have such authority, and perform such duties as are provided in these Bylaws or as the Board may from time to time determine.

5.4 REMOVAL AND RESIGNATION OF OFFICERS

Subject to the rights, if any, of an officer under contract of employment, any officer may be removed, either with or without cause, by an affirmative vote of the majority of the Board at any regular or special meeting of the Board.

Any officer may resign at any time by giving written notice to the corporation. Any resignation shall take effect at the date of the receipt of that notice or at any later time specified in that notice. Unless otherwise specified in such notice, the acceptance of the resignation shall not be necessary to make it effective. Any resignation is without prejudice to the rights, if any, of the corporation under any contract to which the officer is a party.

5.5 VACANCIES IN OFFICES

Any vacancy occurring in any office of the corporation shall be filled by the Board.

5.6 CHAIRMAN OF THE BOARD

The Chairman of the Board, if such an officer be elected, shall, if present, preside at meetings of the Board and exercise and perform such other powers and duties as may from time to time be

assigned to him or her by the Board or as may be prescribed by these Bylaws. If there is no Chief Executive Officer or President, then the Chairman of the Board shall also be the Chief Executive Officer of the corporation and as such shall also have the powers and duties prescribed in Section 5.7 of these Bylaws.

5.7 CHIEF EXECUTIVE OFFICER

Subject to such supervisory powers, if any, as the Board may give to the Chairman of the Board, the Chief Executive Officer, if any, shall, subject to the control of the Board, have general supervision, direction, and control of the business and affairs of the corporation and shall report directly to the Board. All other officers, officials, employees and agents shall report directly or indirectly to the Chief Executive Officer. The Chief Executive Officer shall see that all orders and resolutions of the Board are carried into effect. The Chief Executive Officer shall serve as chairperson of and preside at all meetings of the stockholders. In the absence of a Chairman of the Board, the Chief Executive Officer shall preside at all meetings of the Board.

5.8 PRESIDENT

In the absence or disability of the Chief Executive Officer, the President shall perform all the duties of the Chief Executive Officer. When acting as the Chief Executive Officer, the President shall have all the powers of, and be subject to all the restrictions upon, the Chief Executive Officer. The President shall have such other powers and perform such other duties as from time to time may be prescribed for him or her by the Board, these Bylaws, the Chief Executive Officer or the Chairman of the Board.

5.9 VICE PRESIDENT

In the absence or disability of the President, the Vice President(s), if any, in order of their rank as fixed by the Board or, if not ranked, a Vice President designated by the Board, shall perform all the duties of the President and, when so acting, shall have all the powers of, and be subject to all the restrictions upon, the President. The Vice President(s) shall have such other powers and perform such other duties as from time to time may be prescribed for them respectively by the Board, these Bylaws, the Chairman of the Board, the Chief Executive Officer or, in the absence of a Chief Executive Officer, the President.

5.10 SECRETARY

The Secretary shall keep or cause to be kept, at the principal executive office of the corporation or such other place as the Board may direct, a book of minutes of all meetings and actions of directors, committees of directors, and stockholders. The minutes shall show the time and place of each meeting, whether regular or special (and, if special, how authorized and the notice given), the names of those present at directors' meetings or committee meetings, the number of shares present or represented at stockholders' meetings, and the proceedings thereof.

The Secretary shall keep, or cause to be kept, at the principal executive office of the corporation or at the office of the corporation's transfer agent or registrar, as determined by resolution of the Board, a share register, or a duplicate share register, showing the names of all stockholders and their addresses, the number and classes of shares held by each, the number and date of certificates evidencing such shares, and the number and date of cancellation of every certificate surrendered for cancellation. Such share register shall be the " **stock ledger**" for purposes of Section 2.13 of these Bylaws.

The Secretary shall give, or cause to be given, notice of all meetings of the stockholders and of the Board, or committee of the Board, required to be given by law or by these Bylaws. He or she shall keep the seal of the corporation, if one be adopted, in safe custody and shall have such other powers and perform such other duties as may be prescribed by the Board or by these Bylaws.

5.11 CHIEF FINANCIAL OFFICER

The Chief Financial Officer shall keep and maintain, or cause to be kept and maintained, adequate and correct books and records of accounts of the properties and business transactions of the corporation, including accounts of its assets, liabilities, receipts, disbursements, gains, losses, capital and retained earnings.

The Chief Financial Officer shall deposit all money and other valuables in the name and to the credit of the corporation with such depositaries as may be designated by the Board or Chief Executive Officer. The Chief Financial Officer shall disburse the funds of the corporation as may be ordered by the Board, shall render to the Board and Chief Executive Officer, or in the absence of a Chief Executive Officer the President, whenever they request, an account of all of his or her transactions as Chief Financial Officer and of the financial condition of the corporation, and shall have such other powers and perform such other duties as may be prescribed by the Board or these Bylaws. In lieu of any contrary resolution duly adopted by the Board, the Chief Financial Officer shall be the Treasurer of the corporation.

5.12 ASSISTANT SECRETARY

The Assistant Secretary(ies), if any, in the order determined by the Board (or if there be no such determination, then in the order of their election) shall, in the absence of the Secretary or in the event of his or her inability or refusal to act, perform the duties and exercise the powers of the Secretary and shall perform such other duties and have such other powers as the Board may from time to time prescribe.

5.13 ASSISTANT TREASURER

The Assistant Treasurer(s), if any, in the order determined by the Board (or if there be no such determination, then in the order of their election), shall, in the absence of the Chief Financial Officer or in the event of his or her inability or refusal to act, perform the duties and exercise the

powers of the Chief Financial Officer and shall perform such other duties and have such other powers as the Board may from time to time prescribe.

5.14 AUTHORITY AND DUTIES OF OFFICERS

In addition to the foregoing authority and duties, all officers of the corporation shall respectively have such authority and perform such duties in the management of the business of the corporation as may be designated from time to time by the Board.

ARTICLE VI

INDEMNITY

6.1 RIGHT TO INDEMNIFICATION IN ACTIONS, SUITS OR PROCEEDINGS OTHER THAN THOSE BY OR IN THE RIGHTS OF THE CORPORATION

Subject to Section 6.3 of this Article VI, the corporation shall indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation) by reason of the fact that such person is or was a director or officer of the corporation, or is or was a director or officer of the corporation serving at the request of the corporation as a director or officer, employee or agent of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with such action, suit or proceeding if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe such person's conduct was unlawful. The termination of any action, suit or proceeding by judgment, order, settlement, conviction, or upon a plea of nolo contendere or its equivalent, shall not, of itself, create a presumption that the person did not act in good faith and in a manner which such person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had reasonable cause to believe that such person's conduct was unlawful.

6.2 RIGHT TO INDEMNIFICATION IN ACTIONS, SUITS OR PROCEEDINGS BY OR IN THE RIGHT OF THE CORPORATION

Subject to Section 6.3 of this Article VI, the corporation shall indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation to procure a judgment in its favor by reason of the fact that such person is or was a director or officer of the corporation, or is or was a director or officer of the corporation serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise against expenses (including attorneys' fees) actually and reasonably incurred by such person in

connection with the defense or settlement of such action or suit if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the corporation; except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

6.3 AUTHORIZATION OF INDEMNIFICATION

Any indemnification under this Article VI (unless ordered by a court) shall be made by the corporation only as authorized in the specific case upon a determination that indemnification of the director or officer is proper in the circumstances because such person has met the applicable standard of conduct set forth in Section 6.1 or Section 6.2 of this Article VI, as the case may be. Such determination shall be made, with respect to a person who is a director or officer at the time of such determination, (a) by a majority vote of the directors who are not parties to such action, suit or proceeding, even though less than a quorum, or (b) by a committee of such directors designated by a majority vote of such directors, even though less than a quorum, or (c) if there are no such directors, or if such directors so direct, by independent legal counsel in a written opinion or (d) by the stockholders (but only if a majority of the directors who are not parties to such action, suit or proceeding, if they constitute a quorum of the board of directors, presents the issue of entitlement to indemnification to the stockholders for their determination). Any person or persons having the authority to act on the matter on behalf of the corporation shall make such determination, with respect to former directors and officers. To the extent, however, that a present or former director or officer of the corporation has been successful on the merits or otherwise in defense of any action, suit or proceeding described above, or in defense of any claim, issue or matter therein, such person shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection therewith, without the necessity of authorization in the specific case.

6.4 GOOD FAITH DEFINED

For purposes of any determination under Section 6.3 of this Article VI, a person shall be deemed to have acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the corporation, or, with respect to any criminal action or proceeding, to have had no reasonable cause to believe such person's conduct was unlawful, if such person's action is based on the records or books of account of the corporation or another enterprise, or on information supplied to such person by the officers of the corporation or another enterprise in the course of their duties, or on the advice of legal counsel for the corporation or another enterprise or on information or records given or reports made to the corporation or another enterprise by an independent certified public accountant or by an appraiser or other expert selected with reasonable care by the corporation or another enterprise. The term "**another enterprise**" as used in this Section 6.4 shall mean any other corporation or any partnership, joint venture, trust, employee

benefit plan or other enterprise of which such person is or was serving at the request of the corporation as a director, officer, employee or agent. The provisions of this Section 6.4 shall not be deemed to be exclusive or to limit in any way the circumstances in which a person may be deemed to have met the applicable standard of conduct set forth in Section 6.1 or Section 6.2 of this Article VI, as the case may be.

6.5 INDEMNIFICATION BY A COURT

Notwithstanding any contrary determination in the specific case under Section 6.3 of this Article VI, and not withstanding the absence of any determination thereunder, any director or officer may apply to the Court of Chancery in the State of Delaware (but in no event later than forty-five (45) days after written receipt of the written request by said director or officer) for indemnification to the extent otherwise permissible under Section 6.1 and Section 6.2 of this Article VI. The basis of such indemnification by a court shall be a determination by such court that indemnification of the director or officer is proper in the circumstances because such person has met the applicable standards of conduct set forth in Section 6.1 or Section 6.2 of this Article VI, as the case may be. Neither a contrary determination in the specific case under Section 6.3 of this Article VI nor the absence of any determination thereunder shall be a defense to such application or create a presumption that the director or officer seeking indemnification has not met any applicable standard of conduct. Notice of any application for indemnification pursuant to this Section 6.5 shall be given to the corporation promptly upon the filing of such application. If successful, in whole or in part, the director or officer seeking indemnification shall also be entitled to be paid the expense of prosecuting such application.

6.6 EXPENSES PAYABLE IN ADVANCE

Expenses incurred by a director or officer in defending any civil, criminal, administrative or investigative action, suit or proceeding shall be paid by the corporation in advance of the final disposition of such action, suit or proceeding upon receipt of an undertaking by or on behalf of such director or officer to repay such amount if it shall ultimately be determined that such person is not entitled to be indemnified by the corporation as authorized in this Article VI.

6.7 NONEXCLUSIVITY OF INDEMNIFICATION AND ADVANCEMENT OF EXPENSES

The indemnification and advancement of expenses provided by or granted pursuant to this Article VI shall not be deemed exclusive of any other rights to which those seeking indemnification or advancement of expenses may be entitled under the Certificate, any Bylaw, agreement, vote of stockholders or disinterested directors or otherwise, both as to action in such person's official capacity and as to action in another capacity while holding such office, it being the policy of the corporation that indemnification of the persons specified in Section 6.1 and Section 6.2 of this Article VI shall be made to the fullest extent permitted by law. The provisions of this Article VI shall not be deemed to preclude the indemnification of any person who is not specified in Section 6.1

or Section 6.2 of this Article VI but whom the corporation has the power or obligation to indemnify under the provisions of the General Corporation Law of the State of Delaware, or otherwise.

6.8 INSURANCE

The corporation may purchase and maintain insurance on behalf of any person who is or was a director or officer of the corporation, or is or was a director or officer of the corporation serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise against any liability asserted against such person and incurred by such person in any such capacity, or arising out of such person's status as such, whether or not the corporation would have the power or the obligation to indemnify such person against such liability under the provisions of this Article VI.

6.9 CERTAIN DEFINITIONS

For purposes of this Article VI, references to the "**corporation**" shall include, in addition to the resulting corporation, any constituent corporation (including any constituent of a constituent) absorbed in a consolidation or merger which, if its separate existence had continued, would have had power and authority to indemnify its directors or officers, so that any person who is or was a director or officer of such constituent corporation, or is or was a director or officer of such constituent corporation serving at the request of such constituent corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise, shall stand in the same position under the provisions of this Article VI with respect to the resulting or surviving corporation as such person would have with respect to such constituent corporation if its separate existence had continued. For purposes of this Article VI, references to "**fines**" shall include any excise taxes assessed on a person with respect to an employee benefit plan; and references to "**serving at the request of the corporation**" shall include any service as a director, officer, employee or agent of the corporation which imposes duties on, or involves services by, such director or officer with respect to an employee benefit plan, its participants or beneficiaries; and a person who acted in good faith and in a manner such person reasonably believed to be in the interest of the participants and beneficiaries of an employee benefit plan shall be deemed to have acted in a manner "**not opposed to the best interests of the corporation**" as referred to in this Article VI.

6.10 SURVIVAL OF INDEMNIFICATION AND ADVANCEMENT OF EXPENSES

The indemnification and advancement of expenses provided by, or granted pursuant to, this Article VI shall, unless otherwise provided when authorized or ratified, continue as to a person who has ceased to be a director or officer and shall inure to the benefit of the heirs, executors and administrators of such a person.

6.11 LIMITATION ON INDEMNIFICATION

Notwithstanding anything contained in this Article VI to the contrary, except for proceedings to enforce rights to indemnification (which shall be governed by Section 6.5 hereof), the corporation shall not be obligated to indemnify any director or officer in connection with a proceeding (or part thereof) initiated by such person unless such proceeding (or part thereof) was authorized or consented to by the board of directors of the corporation.

6.12 INDEMNIFICATION OF EMPLOYEES AND AGENTS

The corporation may, to the extent authorized from time to time by the board of directors, provide rights to indemnification and to the advancement of expenses to employees and agents of the corporation similar to those conferred in this Article VI to directors and officers of the corporation.

ARTICLE VII

RECORDS AND REPORTS

7.1 MAINTENANCE AND INSPECTION OF RECORDS

The corporation shall, either at its principal executive office or at such place or places as designated by the Board, keep a record of its stockholders listing their names and addresses and the number and class of shares held by each stockholder, a copy of these Bylaws, as may be amended to date, minute books, accounting books and other records.

Any such records maintained by the corporation may be kept on, or by means of, or be in the form of, any information storage device or method, provided that the records so kept can be converted into clearly legible paper form within a reasonable time. The corporation shall so convert any records so kept upon the request of any person entitled to inspect such records pursuant to the provisions of the General Corporation Law of Delaware. When records are kept in such manner, a clearly legible paper form produced from or by means of the information storage device or method shall be admissible in evidence, and accepted for all other purposes, to the same extent as an original paper form accurately portrays the record.

Any stockholder of record, in person or by attorney or other agent, shall, upon written demand under oath stating the purpose thereof, have the right during the usual hours for business to inspect for any proper purpose the corporation’s stock ledger, a list of its stockholders, and its other books and records and to make copies or extracts therefrom. A proper purpose shall mean a purpose reasonably related to such person’s interest as a stockholder. In every instance where an attorney or other agent is the person who seeks the right to inspection, the demand under oath shall be accompanied by a power of attorney or such other writing that authorizes the attorney or other agent to so act on behalf of the stockholder. The demand under oath shall be directed to the corporation at its registered office in Delaware or at its principal place of business.

7.2 INSPECTION BY DIRECTORS

Any director shall have the right to examine the corporation's stock ledger, a list of its stockholders, and its other books and records for a purpose reasonably related to his or her position as a director. The Court of Chancery is hereby vested with the exclusive jurisdiction to determine whether a director is entitled to the inspection sought. The Court may summarily order the corporation to permit the director to inspect any and all books and records, the stock ledger, and the stock list and to make copies or extracts therefrom. The Court may, in its discretion, prescribe any limitations or conditions with reference to the inspection, or award such other and further relief as the Court may deem just and proper.

7.3 REPRESENTATION OF SHARES OF OTHER CORPORATIONS

Unless otherwise directed by the Board, the Chief Executive Officer, the President, or any other person authorized by the President, is authorized to vote, represent, and exercise on behalf of the corporation all rights incident to any and all shares of any other corporation(s) standing in the name of the corporation. The authority granted herein may be exercised either by such person directly or by any other person authorized to do so by proxy or power of attorney duly executed by such person having the authority.

ARTICLE VIII

GENERAL MATTERS

8.1 CHECKS

From time to time, the Board shall determine by resolution which person or persons may sign or endorse all checks, drafts, other orders for payment of money, notes or other evidences of indebtedness that are issued in the name of or payable to the corporation, and only the persons so authorized shall sign or endorse those instruments.

8.2 EXECUTION OF CORPORATE CONTRACTS AND INSTRUMENTS

The Board, except as otherwise provided in these Bylaws, may authorize any officer or officers, or agent or agents, to enter into any contract or execute any instrument in the name of and on behalf of the corporation. Such authority may be general or confined to specific instances. Unless so authorized or ratified by the Board or within the agency power of an officer, no officer, agent or employee shall have any power or authority to bind the corporation by any contract or engagement or to pledge its credit or to render it liable for any purpose or for any amount.

8.3 STOCK CERTIFICATES; PARTLY PAID SHARES

The shares of a corporation shall be represented by certificates, provided that the Board may provide by resolution that some or all of any or all classes or series of its stock shall be uncertificated

shares. Any such resolution shall not apply to shares represented by a certificate until such certificate is surrendered to the corporation. Notwithstanding the adoption of such a resolution by the Board, every holder of stock represented by certificates and upon request every holder of uncertificated shares shall be entitled to have a certificate signed by, or in the name of the corporation by the Chairman of the Board or Chief Executive Officer, or the President or Vice-President, and by the Chief Financial Officer or an Assistant Treasurer, or the Secretary or an Assistant Secretary of the corporation representing the number of shares registered in certificate form. Any or all of the signatures on the certificate may be a facsimile. In case any officer, transfer agent or registrar who has signed or whose facsimile signature has been placed upon a certificate has ceased to be such officer, transfer agent or registrar before such certificate is issued, it may be issued by the corporation with the same effect as if he were such officer, transfer agent or registrar at the date of issue.

The corporation may issue the whole or any part of its shares as partly paid and subject to call for the remainder of the consideration to be paid therefor. Upon the face or back of each stock certificate issued to represent any such partly paid shares, upon the books and records of the corporation in the case of uncertificated partly paid shares, the total amount of the consideration to be paid therefor and the amount paid thereon shall be stated. Upon the declaration of any dividend on fully paid shares, the corporation shall declare a dividend upon partly paid shares of the same class, but only upon the basis of the percentage of the consideration actually paid thereon.

8.4 SPECIAL DESIGNATION ON CERTIFICATES

If the corporation is authorized to issue more than one (1) class of stock or more than one (1) series of any class, then the powers, the designations, the preferences, and the relative, participating, optional or other special rights of each class of stock or series thereof and the qualifications, limitations or restrictions of such preferences and/or rights shall be set forth in full or summarized on the face or back of the certificate that the corporation shall issue to represent such class or series of stock; *provided, however*, that, except as otherwise provided in Section 202 of the General Corporation Law of Delaware, in lieu of the foregoing requirements, there may be set forth on the face or back of the certificate that the corporation shall issue to represent such class or series of stock a statement that the corporation will furnish without charge to each stockholder who so requests the powers, the designations, the preferences, and the relative, participating, optional or other special rights of each class of stock or series thereof and the qualifications, limitations or restrictions of such preferences and/or rights.

8.5 LOST CERTIFICATES

Except as provided in this Section 8.5, no new certificates for shares shall be issued to replace a previously issued certificate unless the latter is surrendered to the corporation and cancelled at the same time. The corporation may issue a new certificate of stock or uncertificated shares in the place of any certificate theretofore issued by it, alleged to have been lost, stolen or destroyed, and the corporation may require, or may require any transfer agent, if any, for the shares to require, the owner of the lost, stolen or destroyed certificate, or his, her or its legal representative,

to give the corporation a bond sufficient to indemnify it against any claim that may be made against it on account of the alleged loss, theft or destruction of any such certificate or the issuance of such new certificate or uncertificated shares.

8.6 CONSTRUCTION; DEFINITIONS

Unless the context requires otherwise, the general provisions, rules of construction and definitions in the Delaware General Corporation Law shall govern the construction of these Bylaws. Without limiting the generality of this provision, the singular number includes the plural, the plural number includes the singular, and the term "**person**" includes both a corporation and a natural person.

8.7 DIVIDENDS

The directors of the corporation, subject to any restrictions contained in the Certificate, may declare and pay dividends upon the shares of its capital stock pursuant to the General Corporation Law of Delaware. Dividends may be paid in cash, in property or in shares of the corporation's capital stock.

The directors of the corporation may set apart out of any of the funds of the corporation available for dividends a reserve or reserves for any proper purpose and may abolish any such reserve. Such purposes shall include but not be limited to equalizing dividends, repairing or maintaining any property of the corporation, and meeting contingencies.

8.8 FISCAL YEAR

The fiscal year of the corporation shall be fixed by resolution of the Board and may be changed by resolution of the Board.

8.9 SEAL

This corporation may have a corporate seal, which may be adopted or altered at the pleasure of the Board, and may use the same by causing it or a facsimile thereof, to be impressed or affixed or in any other manner reproduced.

8.10 TRANSFER OF STOCK

Upon surrender to the corporation or the transfer agent of the corporation, if any, of a certificate for shares duly endorsed or accompanied by proper evidence of succession, assignation or authority to transfer (as determined by legal counsel to the corporation), it shall be the duty of the corporation, as the corporation may so instruct its transfer agent, if any, to issue a new certificate to the person entitled thereto, cancel the old certificate, and record the transaction in its books.

8.11 REGISTERED STOCKHOLDERS

The corporation shall be entitled to recognize the exclusive right of a person registered on its books as the owner of shares to receive dividends and to vote as such owner, shall be entitled to hold liable for calls and assessments the person registered on its books as the owner of shares, and shall not be bound to recognize any equitable or other claim to or interest in such share or shares on the part of another person, whether or not it shall have express or other notice thereof, except as otherwise provided by the laws of Delaware.

ARTICLE IX

AMENDMENTS

The Bylaws of the corporation may be adopted, amended or repealed by the stockholders entitled to vote; *provided, however*, that the corporation may, in its Certificate, confer the power to adopt, amend or repeal bylaws upon the Board. The fact that such power has been so conferred upon the Board shall not divest the stockholders of the power, nor limit their power to adopt, amend or repeal bylaws.

Effective upon the closing of a firm commitment underwritten public offering of Common Stock of the Corporation and notwithstanding the foregoing, in addition to any vote of the holders of any class or series of stock of the corporation required by law or by the Certificate, the amendment or repeal of all or any portion of Article II, Section 3.2 (number of directors), Section 3.3 (election, qualification and term of office of directors), Section 3.4 (resignation and vacancies), Section 3.14 (removal of directors), Article VI or this Article IX by the stockholders of the corporation shall require the affirmative vote of the holders of at least sixty-six and two-thirds percent (66 2/3%) of the voting power of the then outstanding shares of voting stock entitled to vote generally in the election of directors, voting together as a single class.

CERTIFICATE BY SECRETARY OF ADOPTION OF AMENDED AND RESTATED BYLAWS

OF

LUNA INNOVATIONS INCORPORATED

The undersigned hereby certifies that he is the duly elected, qualified and acting Secretary of Luna Innovations Incorporated and that the foregoing Amended and Restated Bylaws, comprising 26 pages, were adopted as the Bylaws of the corporation (i) on _____ __, 2006 by the Board of Directors of the corporation, and (ii) on _____ __, 2006 by the stockholders of the corporation.

IN WITNESS WHEREOF, the undersigned has hereunto set his hand and affixed the corporate seal on _____ __, 2006.

Kent A. Murphy
Secretary

Exhibit 4.2

EXECUTION COPY

THIS NOTE AND THE SECURITIES ISSUABLE UPON THE CONVERSION HEREOF HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"). NEITHER THE NOTE NOR THE SECURITIES ISSUABLE HEREUNDER MAY BE SOLD, OFFERED FOR SALE, PLEDGED OR HYPOTHECATED IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT WITH RESPECT TO SUCH NOTE OR SECURITIES OR AN OPINION OF COUNSEL SATISFACTORY TO LUNA INNOVATIONS INCORPORATED THAT SUCH REGISTRATION IS NOT REQUIRED.

LUNA INNOVATIONS INCORPORATED

SENIOR CONVERTIBLE PROMISSORY NOTE

$1,000,000.00 December 30, 2005

Instrument Number: _____ Blacksburg, Virginia

FOR VALUE RECEIVED, Luna Innovations Incorporated, a Delaware corporation (the "**Company**") promises to pay to Carilion Health System, a Virginia non-profit, non-stock corporation ("**Investor**"), or its registered assigns, in lawful money of the United States of America the principal sum of One Million Dollars ($1,000,000.00), or such lesser amount as shall equal the outstanding principal amount hereof, together with simple interest from the date of this Note on the unpaid principal balance at a rate equal to 6.00% per annum, computed on the basis of the actual number of days elapsed and a year of 365 days. All unpaid principal, together with any then unpaid and accrued interest and other amounts payable hereunder, shall be due and payable on the earlier of (i) December 30, 2009, or such later date as may be determined pursuant to Section 9 hereof (the " **Maturity Date**"), or (ii) when, upon or after the occurrence of an Event of Default (as defined below), such amounts are declared due and payable by Investor or made automatically due and payable in accordance with the terms hereof. This Note is one of the "Notes" issued pursuant to that certain Class C Common Stock and Note Purchase Agreement of even date herewith (as may from time to time be amended, modified or supplemented, the " **Stock and Note Purchase Agreement**") between the Company and the Investor.

The following is a statement of the rights of Investor and the conditions to which this Note is subject, and to which Investor, by the acceptance of this Note, agrees:

1. ***Definitions***. As used in this Note, the following capitalized terms have the following meanings:

(a) "**Change of Control**" shall mean (a) the merger or consolidation of the Company with or into another entity in which the stockholders of the Company immediately prior to such merger

or consolidation own less than 50% of the voting securities of the surviving entity, (b) any other transaction or series of related transactions to which the Company is a party as a result of which the stockholders of the Company immediately prior to such transaction or series of related transactions own less than 50% of the voting securities of the Company or other surviving entity following such transaction or related transactions (other than the sale of equity securities by the Company in a capital raising transaction), or (c) a sale, lease or other conveyance of all or substantially all of the assets of the Company.

(b) "**Class B Common Stock**" shall mean the Class B Common Stock, $0.001 par value per share, of the Company.

(c) "**Class C Common Stock**" shall mean the Class C Common Stock, $0.001 par value per share, of the Company.

(d) "**Common Stock**" shall mean the Common Stock, $0.001 par value per share, of the Company.

(e) the "**Company**" includes the corporation initially executing this Note and any Person which shall succeed to or assume the obligations of the Company under this Note.

(f) "**Event of Default**" has the meaning given in **Section 4** hereof.

(g) "**GAAP**" shall mean generally accepted accounting principles as in effect in the United States of America from time to time.

(h) "**Investor**" shall mean the Person specified in the introductory paragraph of this Note or any Person who shall at the time be the registered holder of this Note.

(i) "**IPO**" shall mean the closing of the Company's first firm commitment underwritten public offering of the Company's Common Stock registered under the Securities Act.

(j) "**Majority in Interest**" shall mean more than fifty percent (50%) of the aggregate outstanding principal amount of the Notes issued pursuant to the Stock and Note Purchase Agreement.

(k) "**Material Adverse Effect**" shall mean a material adverse effect on (a) the business, assets, operations or financial condition of the Company; (b) the ability of the Company to pay or perform the Obligations in accordance with the terms of this Note and the other Transaction Documents and to avoid an Event of Default, or an event which, with the giving of notice or the passage of time or both, would constitute an Event of Default, under any Transaction Document; or (c) the rights and remedies of Investor under this Note or the other Transaction Documents.

(l) "**Note**" or "**Notes**" shall mean the senior convertible promissory notes of the Company issued pursuant to the Stock and Note Purchase Agreement.

(m) "**Obligations**" shall mean and include all loans, advances, debts, liabilities and obligations, howsoever arising, owed by the Company to Investor of every kind and description (whether or not evidenced by any note or instrument and whether or not for the payment of money) now existing or hereafter arising under or pursuant to the terms of this Note and the Stock and Note

Purchase Agreement, including all interest, fees, charges, expenses, attorneys' fees and costs and accountants' fees and costs chargeable to and payable by the Company hereunder and thereunder, in each case, whether direct or indirect, absolute or contingent, due or to become due, and whether or not arising after the commencement of a proceeding under Title 11 of the United States Code (11 U. S. C. Section 101 *et seq*.), as amended from time to time (including post-petition interest) and whether or not allowed or allowable as a claim in any such proceeding.

(n) "**Person**" shall mean and include an individual, a partnership, a corporation (including a non-profit corporation, a non-stock corporation, or a business trust), a joint stock company, a limited liability company, an unincorporated association, a joint venture or other entity or a governmental authority.

(o) "**Qualified Change of Control**" shall mean a Change of Control that (A) involves a bona fide, arm's length transaction with a third party unaffiliated with the Company, the terms of which have been negotiated in good faith by the Company and such third party, and (B) in respect of a stock purchase or merger, results in such third party acquiring one hundred percent (100%) of the voting securities (excluding options, warrants or other rights to purchase capital stock of the Company then outstanding) of the Company.

(p) "**Securities Act**" shall mean the Securities Act of 1933, as amended.

(q) "**Stock and Note Purchase Agreement**" has the meaning given in the introductory paragraph hereof.

(r) "**Subsidiary**" shall mean (a) any corporation of which more than 50% of the issued and outstanding equity securities having ordinary voting power to elect a majority of the board of directors of such corporation is at the time directly or indirectly owned or controlled by the Company, (b) any partnership, joint venture, or other association of which more than 50% of the equity interest having the power to vote, direct or control the management of such partnership, joint venture or other association is at the time directly or indirectly owned and controlled by the Company, (c) any other entity included in the financial statements of the Company on a consolidated basis.

(s) "**Transaction Documents**" shall mean (i) this Note, (ii) each of the other Notes issued under the Stock and Note Purchase Agreement and (iii) the Stock and Note Purchase Agreement.

2. ***Interest***. Accrued interest on this Note shall be payable on the Maturity Date or upon conversion as provided herein.

3. ***Prepayment***. This Note may not be prepaid without the consent of the Investor.

4. ***Events of Default***. The occurrence of any of the following shall constitute an "**Event of Default**" under this Note and the other Transaction Documents:

(a) *Failure to Pay*. The Company shall fail to pay (i) when due any principal or interest payment on the due date hereunder or (ii) any other payment required under the terms of this Note on the date due and such payment shall not have been made within five days of the Company's receipt of Investor's written notice to the Company of such failure to pay; or

(b) *Voluntary Bankruptcy or Insolvency Proceedings*. The Company shall (i) apply for or consent to the appointment of a receiver, trustee, liquidator or custodian of itself or of all or a substantial part of its property, (ii) be unable, or admit in writing its inability, to pay its debts generally as they mature, (iii) make a general assignment for the benefit of its or any of its creditors, (iv) be dissolved or liquidated, (v) become insolvent (as such term may be defined or interpreted under any applicable statute), (vi) commence a voluntary case or other proceeding seeking liquidation, reorganization or other relief with respect to itself or its debts under any bankruptcy, insolvency or other similar law now or hereafter in effect or consent to any such relief or to the appointment of or taking possession of its property by any official in an involuntary case or other proceeding commenced against it, or (vii) take any action for the purpose of effecting any of the foregoing;

(c) *Involuntary Bankruptcy or Insolvency Proceedings.* Proceedings for the appointment of a receiver, trustee, liquidator or custodian of the Company or of all or a substantial part of the property thereof, or an involuntary case or other proceedings seeking liquidation, reorganization or other relief with respect to the Company or the debts thereof under any bankruptcy, insolvency or other similar law now or hereafter in effect shall be commenced and an order for relief entered or such proceeding shall not be dismissed or discharged within 30 days of commencement; or

(d) *Other Breach.* The Company shall (i) breach any representation or warranty made in this Note or in the other Transaction Documents where such breach has a Material Adverse Effect, (ii) materially breach any covenant, obligation, condition or agreement contained in this Note or the other Notes (other than the provisions of **Section 7** hereof and thereof) or in the Stock and Note Purchase Agreement, or (iii) fail to observe or perform any covenant, obligation or agreement contained in **Section 7** of this Note or the other Notes; *provided* that, in the event of a breach that is reasonably capable of a cure, Investor shall first give written notice to the Company of such breach and an Event of Default shall not be deemed to occur (including without limitation for purposes of **Section 5** below) until and unless such breach has not been cured within thirty (30) days of the Company's receipt of Investor's written notice of such breach.

5. ***Rights of Investor upon Default***. Upon the occurrence or existence of any Event of Default (other than an Event of Default described in **Sections 4(b)** or **4(c)**) and at any time thereafter during the continuance of such Event of Default, Investor may, with the consent of a Majority in Interest of the holders of the Notes, by written notice to the Company, declare all outstanding Obligations payable by the Company hereunder to be immediately due and payable without presentment, demand, protest or any other notice of any kind, all of which are hereby expressly waived. Upon the occurrence or existence of any Event of Default described in **Sections 4(b)** and **4(c)**, immediately and without notice, all outstanding Obligations payable by the Company hereunder shall automatically become immediately due and payable, without presentment, demand, protest or any other notice of any kind, all of which are hereby expressly waived. During any period in which an Event of Default has occurred and is continuing, the Company shall pay interest on the unpaid principal balance hereof at a rate per annum equal to the rate otherwise applicable hereunder plus five percent (5%). In addition to the foregoing remedies, upon the occurrence or existence of any Event of Default, Investor may exercise any other right power or remedy granted to it by the Transaction Documents or otherwise permitted to it by law, either by suit in equity or by action at law, or both.

6. ***Conversion.***

(a) *Optional Conversion at Maturity.* This Note shall only be convertible on the Maturity Date unless otherwise provided in **Sections 6(b)** or **(c)** below. If no Qualified Equity Financing (defined below) or Qualified Change of Control takes place prior to the Maturity Date, then (i) if the Maturity Date is on or after the date of the Company's IPO, the outstanding principal amount of and all accrued interest under this Note shall be convertible at the option of the Investor into that number of shares of the Company's Common Stock as is determined by dividing such principal amount and accrued interest by $2.65183 per share (adjusted to reflect subsequent stock dividends, stock splits, combinations or recapitalizations), and (ii) if the Maturity Date is prior to the date of the Company's IPO, then at the option of the Investor (A) the outstanding principal amount of this Note shall be convertible into that number of shares of the Company's Class C Common Stock (or, in the event that no Class C Common Stock is outstanding, into that number of shares of any other class or series of stock into which shares of the Company's Class C Common Stock were previously converted) as is determined by dividing such principal amount by $2.65183 per share (adjusted to reflect subsequent stock dividends, stock splits, combinations or recapitalizations) and (B) all accrued interest under this Note shall be convertible into that number of shares of the Company's Class B Common Stock (or, in the event that no Class B Common Stock is outstanding, into that number of shares of any other class or series of stock into which shares of the Company's Class B Common Stock were previously converted) as is determined by dividing such accrued interest by $2.65183 per share (adjusted to reflect subsequent stock dividends, stock splits, combinations or recapitalizations). This **Section 6(a)** shall terminate immediately prior to the close of business on the Maturity Date.

(b) *Optional Conversion upon Certain Events Prior to an IPO.* In the event the Company consummates, after the date hereof but prior to both (1) the Company's IPO and (2) the Maturity Date, either of the following transactions (each, a " **Triggering Event**"):

(i) an equity financing pursuant to which the Company sells shares of Class C Common Stock or shares of a class or series of capital stock having rights, privileges and preferences equal or senior to the rights, privileges and preferences of the Class C Common Stock (the " **Senior Stock**") with an aggregate sales price of not less than $15,000,000, including any and all debt which is converted into Class C Common Stock or Senior Stock (but excluding this Note upon the conversion hereof pursuant to this **Section 6(b)** and excluding the other Notes upon conversion thereof pursuant to Section 6(b) therein), and with the principal purpose of raising capital (a " **Qualified Equity Financing**"), or

(ii) a Qualified Change of Control;

then in connection with such Triggering Event at the option of the Investor (A) the outstanding principal amount of this Note shall be convertible into that number of shares of the Company's Class C Common Stock (or, in the event that no Class C Common Stock is outstanding, into that number of shares of any other class or series of stock into which shares of the Company's Class C Common Stock were previously converted) as is determined by dividing such principal amount by $2.65183 per share (adjusted to reflect subsequent stock dividends, stock splits, combinations or recapitalizations) and (B) all accrued interest under this Note shall be convertible into that number of shares of the Company's Class B Common Stock (or, in the event that no Class B Common Stock is outstanding, into that number of shares of any other class or series of stock into which shares of the Company's Class B

Common Stock were previously converted) as is determined by dividing such accrued interest by $2.65183 per share (adjusted to reflect subsequent stock dividends, stock splits, combinations or recapitalizations). This **Section 6(b)** shall terminate immediately prior to the Company's IPO.

(c) *Early Conversion.* Notwithstanding the foregoing, in the event that the Company is either (i) no longer eligible for Small Business Innovation Research (SBIR) grants, as evidenced by an opinion of counsel mutually acceptable to the Company and Investor, or (ii) has not applied for an SBIR grant within the preceding twelve (12) months, then the Investor may convert this Note into equity securities of the Company as otherwise provided under **Section 6(a)**. Prior to an event specified in clause (i) or (ii) of the immediately preceding sentence, beginning on the one-year anniversary of the Company's IPO, the holders of a Majority in Interest of the Notes may make a written request to the Company that the Company review a legal opinion of counsel selected and retained by the holders of a Majority in Interest of the Notes (the costs of which legal opinion shall be borne by the holders making such request) as to whether any one or more Notes may be converted into equity securities of the Company without adversely affecting the Company's efforts to maintain SBIR eligibility and fully cooperate with such counsel. Such request may be made no more frequently than once every 12 months, and if the Company in its sole good faith discretion is satisfied, based on such legal opinion, that the conversion of this Note by the Investor shall not adversely affect the Company's efforts to maintain SBIR eligibility, then upon written notice from the Company the Investor may convert this Note into equity securities of the Company as otherwise provided under **Section 6(a)**. Notwithstanding anything to the contrary contained herein, no conversion shall be allowed during any period in which the Company is, in good faith, making commercially reasonable efforts to maintain or regain SBIR eligibility unless such conversion, together with all other conversions of Notes, would not be reasonably expected to adversely affect such efforts to maintain or regain SBIR eligibility.

(d) *Procedures for Conversion.* The Company shall provide the Investor at least twenty (20) days prior notice of the closing of a Triggering Event (the "**Triggering Event Notice**") or the Maturity Date, as applicable. If the Company does not provide the Investor prior notice of the Maturity Date as required by this **Section 6(d)**, the Maturity Date shall automatically be extended to the date that is twenty (20) days after Investor has received notice of the Maturity Date from the Company. In the event that Investor elects to convert this Note into shares of Common Stock, Class C Common Stock and/or Class B Stock, as applicable, under **Section 6(a)** or **Section 6(b)**, the Investor shall, at least ten (10) days prior to the Maturity Date (if **Section 6(a)** is applicable) or within ten (10) days following the date of the Triggering Event Notice (if **Section 6(b)** is applicable) surrender the original of this Note, duly endorsed (or a notice to the effect that the original Note has been lost, stolen or destroyed and an agreement acceptable to the Company whereby the holder agrees to indemnify the Company from any loss incurred by it in connection with this Note), at the principal corporate office of the Company and shall give written notice to the Company at its principal corporate office of the election to convert the same pursuant to **Section 6(a)** or **Section 6(b)**, as applicable, and shall state therein the name or names in which the certificate or certificates for shares of Common Stock or shares of Class C Common Stock and/or Class B Common Stock, as applicable, are to be issued. Before shares of Common Stock, Class C Common Stock or Class B Common Stock, as applicable, under **Section 6(a)** or **Section 6(b)** are issued by the Company to the Investor in connection with the conversion of this Note hereunder, the Investor shall execute and deliver to the Company a common stock purchase agreement reasonably acceptable to the Company containing customary representations and warranties and transfer restrictions (including a lock-up agreement in connection with a public offering). The Company shall, upon conversion or as soon as practicable thereafter, issue and deliver

at such office to Investor a certificate or certificates for the number of shares of Common Stock or shares of Class C Common Stock and/or Class B Common Stock, as applicable, to which Investor shall be entitled upon conversion (bearing such legends as are required by the common stock purchase agreement and applicable state and federal securities laws in the opinion of counsel to the Company), together with any other securities and property to which Investor is entitled upon such conversion under the terms of this Note, including a check payable to Investor for any cash amounts payable as described in **Section 6(e)**. The conversion shall be deemed to have been made immediately prior to the closing of the Triggering Event (in the event the Investor elects to convert this Note pursuant to **Section 6(b)**) or immediately prior to the close of business on the date of the surrender of this Note (in the event the Investor elects to convert this Note pursuant to **Section 6(a)**), and the Person or Persons entitled to receive the shares of Common Stock, Class C Common Stock and/or Class B Common Stock, as applicable, upon such conversion shall be treated for all purposes as the record Investor or Investors of such shares of Common Stock, Class C Common Stock and/or Class B Common Stock, as applicable, as of such date.

(e) *Fractional Shares; Interest; Effect of Conversion.* No fractional shares shall be issued upon conversion of this Note. In lieu of the Company issuing any fractional shares to Investor upon the conversion of this Note, the Company shall pay to Investor an amount equal to the product obtained by multiplying the conversion price by the fraction of a share not issued pursuant to the previous sentence. Upon conversion of this Note in full and the payment of any amounts specified in this **Section 6(e)**, the Company shall be forever released from all its obligations and liabilities under this Note.

(f) *Treatment upon Qualified Change of Control.* If at any time while this Note, or any portion hereof, is outstanding and unexpired there shall be a Qualified Change of Control, this Note shall cease to represent the right to receive equity securities of the Company upon conversion and shall automatically represent the right to receive upon conversion of this Note, during the period and upon the terms and conditions specified herein, the number of shares of stock or other securities or property offered to the Company's holders of Common Stock in connection with such Qualified Change of Control that a holder of the shares deliverable upon conversion of this Note would have been entitled to receive in such Qualified Change of Control if this Note had been converted immediately before such Qualified Change of Control. The foregoing provisions of this **Section 6(f)** shall similarly apply to Qualified Changes of Control and to the stock or securities of any other corporation that are at the time receivable upon the conversion of this Note. If the per share consideration payable to the holder hereof in connection with any such transaction is in a form other than cash or marketable securities, then the value of such consideration shall be determined in good faith by the Company's board of directors.

7. ***Covenants of the Company.*** The Company agrees that it will not, without the prior written consent of the Investors holding a Majority in Interest, drawdown any amount under the Company's existing line of credit with First National Bank or incur additional indebtedness other than (i) unsecured indebtedness incurred in the ordinary course of the Company's business (including accounts payable), (ii) up to $250,000 in aggregate principal amount of secured indebtedness outstanding at any time that is incurred solely for the purpose of financing all or any part of the cost of acquiring or holding property in the ordinary course of business, and (iii) indebtedness which is expressly made subordinate to the Notes.

8. ***Successors and Assigns.*** Subject to the restrictions on transfer described in **Sections 10, 11** and **12** below, the rights and of the Company and Investor shall be binding upon and benefit the successors, assigns, heirs, administrators and transferees of the parties.

9. ***Waiver and Amendment.*** Any provision of this Note may be amended, waived or modified upon the written consent of the Company and the Investors holding a Majority in Interest. Notwithstanding the foregoing, the Investors holding a Majority in Interest may, without the consent of the Company, elect to amend all of the Notes solely to extend the Maturity Dates thereof for one (1) year by providing the Company written notice of such election no later than ninety (90) days prior to the original Maturity Dates; *provided further*, that unless the Company is either not eligible for or has elected not to pursue SBIR funding as determined pursuant to **Section 6(c)(i)** or **6(c)(ii)**, respectively, the Investors holding a Majority in Interest may extend the Maturity Dates (subject to the notice requirement provided in this **Section 9**) of all of the Notes for up to three (3) consecutive one (1) year periods. Such election by the Investors holding a Majority in Interest to extend the Maturity Dates of all of the Notes shall be irrevocable unless otherwise agreed by the Company, and following such election the Company shall have the option, in its sole discretion, to pay accrued interest under the Notes either in cash or in shares of the Company's Common Stock (if such payment is made on or after the date of the Company's IPO) or Class B Common Stock (if such payment is made prior to the date of the Company's IPO). In the event of an amendment, waiver or modification of this Note pursuant to this **Section 9**, the Company shall provide written notice of such event to all holders of the Notes, and if requested by the Company in such notice, the holder of this Note shall promptly tender to the Company all Notes held by such holder for replacement by the Company with amended and restated Notes.

10. ***Transfer of this Note.*** This Note shall be freely transferable by Investor; *provided, however*, that any such transfer may not involve a principal amount of less than the entire remaining principal amount under this Note, and *provided, further*, that any such transfer must comply with all applicable federal and state securities laws as evidenced, in the case of a transfer to an entity not an affiliate of the Investors, by opinion of counsel to the transferor reasonably acceptable to the Company. With respect to any offer, sale or other disposition of this Note, Investor shall give written notice to the Company prior thereto, describing briefly the manner thereof, together with a written opinion of Investor's counsel, if required under this **Section 10**, or other evidence if reasonably satisfactory to the Company, to the effect that such offer, sale or other distribution may be effected without registration or qualification under any federal or state law then in effect.

11. ***Transfer of the Securities Issuable on Conversion of this Note.*** With respect to any offer, sale or other disposition of securities into which this Note may be converted, Investor will give written notice to the Company prior thereto, describing briefly the manner thereof, together with a written opinion of Investor's counsel, or other evidence if reasonably satisfactory to the Company, to the effect that such offer, sale or other distribution may be effected without registration or qualification (under any federal or state law then in effect). Upon receiving such written notice and reasonably satisfactory opinion, if so requested, or other evidence, the Company, as promptly as practicable, shall notify Investor that Investor may sell or otherwise dispose of such securities, all in accordance with the terms of the notice delivered to the Company. If a determination has been made pursuant to this **Section 11** that the opinion of counsel for Investor, or other evidence, is not reasonably satisfactory to the Company, the Company shall so notify Investor promptly after such determination has been made. Each certificate representing the securities thus transferred shall bear a legend as to the applicable

restrictions on transferability in order to ensure compliance with the Securities Act, unless in the opinion of counsel for the Company such legend is not required in order to ensure compliance with the Securities Act. The Company may issue stop transfer instructions to its transfer agent in connection with such restrictions. Subject to the foregoing, transfers of any securities hereunder shall be registered upon registration books maintained for such purpose by or on behalf of the Company.

12. ***Assignment by the Company.*** Neither this Note nor any of the rights, interests or obligations hereunder may be assigned, by operation of law or otherwise, in whole or in part, by the Company without the prior written consent of the Investor.

13. ***Notices.*** All notices, requests, demands, consents, instructions or other communications required or permitted hereunder shall in writing and faxed, mailed or delivered to each party at the respective addresses of the parties as set forth in the Stock and Note Purchase Agreement, or at such other address or facsimile number as the Company shall have furnished to Investor in writing. All such notices and communications will be deemed effectively given the earlier of (i) when received, (ii) when delivered personally, (iii) one business day after being delivered by facsimile (with receipt of appropriate confirmation), (iv) one business day after being deposited with an overnight courier service of recognized standing or (v) four days after being deposited in the U.S. mail, first class with postage prepaid.

14. ***Pari Passu Notes.*** Investor acknowledges and agrees that the payment of all or any portion of the outstanding principal amount of this Note and all interest hereon shall be *pari passu* in right of payment and in all other respects to the other Notes issued pursuant to the Stock and Note Purchase Agreement or pursuant to the terms of such Notes. In the event Investor receives payments in excess of its pro rata share of the Company's payments to the Investors of all of the Notes, then Investor shall hold in trust all such excess payments for the benefit of the holders of the other Notes and shall pay such amounts held in trust to such other holders upon demand by such holders.

15. ***Usury.*** In the event any interest is paid on this Note which is deemed to be in excess of the then legal maximum rate, then that portion of the interest payment representing an amount in excess of the then legal maximum rate shall be deemed a payment of principal and applied against the principal of this Note.

16. ***Waivers.*** The Company hereby waives notice of default, presentment or demand for payment, protest or notice of nonpayment or dishonor and all other notices or demands relative to this instrument.

17. ***Governing Law.*** This Note and all actions arising out of or in connection with this Note shall be governed by and construed in accordance with the laws of the Commonwealth of Virginia, without regard to the conflicts of law provisions of the Commonwealth of Virginia, or of any other state.

(Signature Page Follows)

The Company has caused this Senior Convertible Promissory Note to be issued as of the date first written above.

LUNA INNOVATIONS INCORPORATED
a Delaware corporation

By: _____

Name: _____

Title: _____

[Signature page to Senior Convertible Promissory Note]

Exhibit 4.3

WARRANT TO PURCHASE 1,047 SHARES
OF CLASS B COMMON STOCK (SUBJECT TO ADJUSTMENT)

THIS WARRANT AND ALL SHARES OF CAPITAL STOCK ISSUABLE HEREUNDER, HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "ACT") AND MAY NOT BE SOLD, OFFERED FOR SALE, TRANSFERRED, PLEDGED OR HYPOTHECATED IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT UNDER THE ACT UNLESS THE COMPANY HAS RECEIVED AN OPINION OF COUNSEL, IN FORM AND SUBSTANCE REASONABLY SATISFACTORY TO THE COMPANY, TO THE EFFECT THAT REGISTRATION IS NOT REQUIRED IN CONNECTION WITH SUCH DISPOSITION.

WARRANT TO PURCHASE SHARES OF CLASS B COMMON STOCK

OF LUNA INNOVATIONS INCORPORATED

Date of Issuance: September 30, 2005
Void after September 27, 2007

WHEREAS, pursuant to that certain warrant, dated September 27, 2002 (the "Prior Warrant"), issued by Luna Technologies, Inc., a Delaware corporation ("LTI"), Virginia Tech Foundation, Inc. ("VTF") was entitled to purchase 36,364 shares of LTI's Series A Preferred Stock at an exercise price of $0.7222 per share.

WHEREAS, pursuant to that certain Agreement and Plan of Merger dated September 30, 2005, by and among Luna Innovations Incorporated, a Delaware corporation (the "Company"), Luna Technologies Acquisition Corp., a Delaware corporation and wholly-owned subsidiary of the Company ("Sub"), LTI, and the principal stockholders listed on Annex A thereto (the "Merger Agreement"), LTI merged with and into Sub with LTI being the surviving corporation.

WHEREAS, pursuant to the Merger Agreement, all unexpired and unexercised warrants of LTI were assumed by the Company and were deemed to be exercisable for the corresponding number of the Company's presently authorized Class B Common Stock ("Class B Common Stock").

WHEREAS, pursuant to Section 1.6(e) of the Merger Agreement, the Company is offering to exchange this Warrant, which is of substantially like tenor, for the Prior Warrant.

NOW, THEREFORE, THIS WARRANT CERTIFIES THAT, for value received, VTF or its registered assigns (the "Holder"), is entitled to subscribe for and purchase such shares of fully paid and nonassessable capital stock of the Company in such number of shares and at such exercise price as is provided herein (the "Warrant"). As used herein, the term "Common Stock" shall mean the Company's presently authorized Common Stock, and any stock into or for which such Common Stock may hereafter be converted or exchanged. The shares purchasable upon exercise of this Warrant, and the purchase price per share, each as adjusted from time to time pursuant to the provisions of this Warrant, are hereinafter referred to as the "Warrant Shares" and the "Purchase Price," respectively.

1. Purchase Right. This Warrant represents the right of the Holder to subscribe for and purchase up to an aggregate of 1,047 shares of fully paid and nonassessable Class B Common Stock of the Company (the "Warrant Amount") (subject to adjustment pursuant to Section 4 hereof). The Purchase Price for each share of Class B Common Stock is equal to $21.06 (subject to adjustment pursuant to Section 4 hereof).

2. Method of Exercise: Payment.

(a) Cash Exercise; Timing. The purchase rights represented by this Warrant may be exercised by the Holder, in whole or in part, by the surrender of this Warrant (with the notice of exercise form (the "Notice of Exercise") attached hereto as Exhibit A duly executed) at the principal office of the Company, and by the payment to the Company of an amount equal to the aggregate Purchase Price for the number of Warrant Shares being purchased (the "Exercise Amount"), which amount may be paid, at the election of the Holder, (i) by wire transfer or certified check payable to the order of the Company, (ii) by cancellation by the Holder of indebtedness or other obligations of the Company to the Holder or (iii) by a combination of (i) and (ii). The person or persons in whose name(s) any certificate(s) representing Warrant Shares that shall be issuable upon exercise of this Warrant shall be deemed to have become the holder(s) of record of, and shall be treated for all purposes as the record holder(s) of, the Warrant Shares represented thereby (and such Warrant Shares shall be deemed to have been issued) immediately prior to the close of business on the date or dates upon which this Warrant is exercised.

(b) Net Issue Exercise. In lieu of the payment methods set forth in Section 2(a) above, if the Fair Market Value of one Warrant Share is greater than the Purchase Price (at the date of calculation as set forth below), the Holder may elect to exchange all or some of the Warrant for Warrant Shares equal to the value of the Warrant (as determined below) being exercised on the date of exchange. If the Holder elects to exchange this Warrant as provided in this Section 2(b), the Holder shall tender to the Company at the principal office of the Company the Warrant for the amount being exchanged, along with a properly endorsed Notice of Exercise, and the Company shall issue to the Holder the number of Warrant Shares computed using the following formula:

$$X = \frac{Y\,(A-B)}{A}$$

Where:

X = the number of Warrant Shares to be issued to the Holder.

Y = the number of Warrant Shares purchasable under this Warrant or, if only a portion of the Warrant is being exercised, the portion of the Warrant being cancelled (at the date of such calculation).

A = the Fair Market Value of one Warrant Share (at the date of such calculation).

B = the Purchase Price (as adjusted to the date of such calculation).

All references herein to an "exercise" of the Warrant shall include an exchange pursuant to this Section 2(b). Upon receipt of a written notice of the Company's intention to raise capital by selling shares of Common Stock in the initial public offering of the Company's Common Stock (the "IPO"), which notice (the "IPO Notice") shall be delivered to Holder at least thirty (30) but not more than ninety (90) days before the anticipated date of the filing with the SEC of the registration statement associated with the IPO, the Holder shall notify the Company within ten (10) days whether or not the Holder will exercise this Warrant pursuant to this Section 2(b) prior to consummation of the IPO. Notwithstanding whether an IPO Notice has been delivered to Holder or any other provision of this Warrant to the contrary, if Holder decides to exercise this Warrant while a registration statement is on file with the Securities and Exchange Commission (the "SEC"), but prior to effectiveness of such Registration Statement, in connection with the IPO, this Warrant shall be deemed exercised on the consummation of the IPO and the Fair Market Value will be the price at which one share of Common Stock was sold to the public in the IPO. If Holder elects to exercise this Warrant pursuant to this Section 2(b) while a registration statement is on file with the SEC in connection with an IPO and the IPO is not consummated, then Holder's exercise of this Warrant shall not be effective unless Holder confirms in writing Holder's intention to go forward with the exercise of this Warrant.

(c) "Easy Sale" Exercise. In lieu of the payment methods set forth in Section 2(a) above, when permitted by law and applicable regulations (including Nasdaq and National Association of Securities Dealers ("NASD Rules"), the Holder may pay the Exercise Amount through a "same day sale" commitment from the Holder (and if applicable a broker-dealer that is a member of the NASD (an "NASD Dealer")), whereby the Holder will irrevocably elect to exercise this Warrant and to sell at least that number of Warrant Shares so purchased to pay the Exercise Amount (and up to all of the Warrant Shares so purchased) and the Holder (or, if applicable, the NASD Dealer) commits upon sale (or, in the case of the NASD Dealer, upon receipt) of such Warrant Shares to forward the Exercise Amount directly to the Company, with any sale proceeds in excess of the Exercise Amount being for the benefit of the Holder.

(d) Fair Market Value. For purposes of this Warrant, the "Fair Market Value" of a Warrant Share shall mean:

(i) if the conversion right is being exercised in connection with the IPO, the IPO price per share (before deducting commissions, discounts or expenses) at which the Common Stock is sold to the public in the IPO, multiplied by the number of shares of Common Stock into which a share of Class B Common Stock is convertible at the time of the exercise of the conversion right (the "Conversion Rate");

(ii) if the conversion right is being exercised in connection with a *bona fide* acquisition of the Company (an "Acquisition") (*i.e.*, not a mere recapitalization, reincorporation for the sole purpose of changing corporate domicile, or similar transaction pursuant to which control of the Company is not transferred), regardless of the form of the transaction (*e.g.*, merger, consolidation, sale or lease of assets or sale of stock), the price per share to be paid to the holders of the Company's Class B Common Stock by the acquiring entity, or, if no such price per share has been established, the price per share to be paid to the holders of the Company's Common Stock multiplied by the Conversion Rate;

(iii) if the Company's Common Stock is traded on a securities exchange or national over the counter trading system, the fair value shall be deemed to be the product of the average of the security's prices at 4:30 Eastern Time on such exchange or trading system over the 30-day period ending three (3) days prior to the closing of the Acquisition, multiplied by the Conversion Rate; and

(iv) in all other cases, the value shall be the fair market value thereof, as determined in good faith by the Board.

(e) Exercisability. This Warrant is fully exercisable by the Holder as of the date hereof, and shall remain exercisable prior to its expiration pursuant to Section 12 below.

(f) Stock Certificates; Fractional Shares. As soon as practicable on or after the date of exercise of this Warrant under Section 2(a), 2(b) or 2(c) above, as applicable, such date, the Company shall issue and deliver to the person or persons entitled to receive the same a certificate or certificates for the number of Warrant Shares issuable upon such exercise, together with cash in lieu of any fraction of a share equal to such fraction of the current Fair Market Value of one whole Warrant Share as of the date of exercise of this Warrant. No fractional shares or scrip representing fractional shares shall be issued upon an exercise of this Warrant.

(g) Partial Exercise; Effective Date of Exercise. In case of any partial exercise of this Warrant, the Company shall cancel this Warrant upon surrender hereof and shall execute and deliver a new Warrant of like tenor and date for the balance of the Warrant Shares purchasable hereunder. This Warrant shall be deemed to have been exercised immediately prior to the close of business on the date of its surrender for exercise as provided above. The person entitled to receive the Warrant Shares shall be treated for all purposes as the holder of record of such Warrant Shares as of the close of business on the date the Holder is deemed to have exercised this Warrant.

3. Stock Fully Paid; Reservation of Shares. All of the Warrant Shares issuable upon the exercise of the rights represented by this Warrant will, upon issuance and receipt of the Purchase Price therefor, be validly issued, fully paid and nonassessable, and free from all taxes, liens and charges except for restrictions on transfer provided for herein or under applicable federal and state securities laws. During the period within which the rights represented by this Warrant may be exercised, the Company shall at all times have authorized and reserved for issuance a sufficient number of shares of its Class B Common Stock to provide for the exercise of the rights represented by this Warrant and sufficient shares of Common Stock to provide for the conversion of such Class B Common Stock. The Company agrees that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of executing stock certificates to execute and issue the necessary certificates for the Shares upon the exercise of this Warrant.

4. Adjustment of Price and Number of Shares. The number and kind of securities purchasable upon the exercise of this Warrant and the Purchase Price therefor shall be subject to adjustment from time to time upon the occurrence of certain events, as follows:

(a) Merger, Sale of Assets, etc. If at any time while this Warrant, or any portion hereof, is outstanding and unexpired there shall be (i) a reorganization (other than a combination,

reclassification, exchange or subdivision of shares otherwise provided for herein), (ii) a merger or consolidation of the Company with or into another corporation in which the Company is not the surviving entity, or a reverse triangular merger, or similar transaction, in which the Company is the surviving entity but the shares of the Company's capital stock outstanding immediately prior to the merger are converted by virtue of the merger into other property, whether in the form of securities, cash, or otherwise, and as a result of which the ownership of the Company shall change 50% or more, or (iii) a sale or transfer of the Company's properties and assets as, or substantially as, an entirety to any other person, then, as a part of such reorganization, merger, consolidation, sale or transfer (collectively, a "Change of Control"), this Warrant shall cease to represent the right to receive Warrant Shares and shall automatically represent the right to receive upon exercise of this Warrant, during the period specified herein and upon payment of the Purchase Price then in effect, the number of shares of stock or other securities or property offered to the Company's holders of Class B Common Stock in connection with such Change of Control that a holder of the shares deliverable upon exercise of this Warrant would have been entitled to receive in such Change of Control if this Warrant had been exercised immediately before such Change of Control, subject to further adjustment as provided in this Section 4. The foregoing provisions of this Section 4(a) shall similarly apply to successive reorganizations, consolidations, mergers, sales and transfers and to the stock or securities of any other corporation that are at the time receivable upon the exercise of this Warrant. If the per share consideration payable to the holder hereof for Shares in connection with any such transaction is in a form other than cash or marketable securities, then the value of such consideration shall be determined in good faith by the Company's Board of Directors. In all events, appropriate adjustment (as determined in good faith by the Company's Board of Directors) shall be made in the application of the provisions of this Warrant with respect to the rights and interests of the Holder after the transaction, to the end that the provisions of this Warrant shall be applicable after that event, as near as reasonably may be, in relation to any shares or other property deliverable after that event upon exercise of this Warrant.

(b) Reclassification, etc. If the Company, at any time while this Warrant, or any portion hereof, remains outstanding and unexpired shall change the Warrant Shares (other than a change in par value, or solely as a result of a stock dividend, subdivision or combination) whether by reclassification, a merger or consolidation not subject to Section 4(a), or otherwise (a "Reclassification"), or shall change, by a Reclassification, any of the securities as to which purchase rights under this Warrant exist, into the same or a different number of securities of any other class or classes, this Warrant shall thereafter represent the right to acquire such number and kind of securities as would have been issuable as the result of such change with respect to the securities that were subject to the purchase rights under this Warrant immediately prior to such reclassification or other change and the Purchase Price therefore shall be appropriately adjusted, all subject to further adjustment as provided in this Section 4. The provisions of this Section 4(b) shall also apply to successive Reclassifications.

(c) Split, Subdivision or Combination of Shares. If the Company at any time while this Warrant, or any portion hereof, remains outstanding and unexpired shall split, subdivide or combine the shares of Class B Common Stock, as to which purchase rights under this Warrant exist, into a different number of securities of the same class, the number of shares of Class B Common Stock issuable upon exercise of this Warrant shall be proportionately increased and the Purchase Price for such securities shall be proportionately decreased in the case of a split or

subdivision and the number of shares of Class B Common Stock issuable upon exercise of this Warrant shall be proportionately decreased and the Purchase Price shall be proportionately increased in the case of a combination.

(d) Adjustments for Dividends in Stock or Other Securities or Property . If while this Warrant, or any portion hereof, remains outstanding and unexpired, the holders of the securities as to which purchase rights under this Warrant exist at the time shall have received, or, on or after the record date fixed for the determination of eligible stockholders, shall have become entitled to receive, without payment therefore, other or additional stock or other securities or property (other than cash) of the Company by way of dividend, then and in each case, this Warrant shall represent the right to acquire, in addition to the number of shares of the security receivable upon exercise of this Warrant, and without payment of any additional consideration therefore, the amount of such other or additional stock or other securities or property (other than cash) of the Company that such holder would hold on the date of such exercise had it been the holder of record of the security receivable upon exercise of this Warrant on the date hereof and had thereafter, during the period from the date hereof to and including the date of such exercise, retained such shares and/or all other additional stock available by it as aforesaid during such period, giving effect to all adjustments called for during such period by the provisions of this Section 4.

5. Notice of Adjustments.

(a) Upon any adjustment of the Purchase Price and any increase or decrease in the number of Shares purchasable upon the exercise of this Warrant in accordance with Section 4 hereof, then, and in each such case, the Company, within thirty (30) days thereafter, shall give written notice thereof to the Holder at the address of such Holder as shown on the books of the Company, which notice shall state (i) the event requiring the adjustment, (ii) the Purchase Price as adjusted and, if applicable, (iii) the increased or decreased number of shares of Class B Common Stock purchasable upon the exercise of this Warrant, setting forth in reasonable detail the method of calculation of each.

(b) Any such notices by the Company required or permitted hereunder may be given by hand delivery or first class mail, postage prepaid, addressed to the Holder at the address shown on the books of the Company for the Holder and shall be deemed to have been received (i) in the case of personal delivery, on the date of such delivery and (ii) in the case of mailing, on the third business day following the date of such mailing.

6. Lockup. If and to the extent required by any managing underwriter in the IPO, the Holder of this Warrant agrees not to effect any sale, transfer, disposition or distribution of any Shares (except as part of such offering) during (i) the 180-day period commencing with the effective date of the registration statement for such IPO filed under the Securities Act of 1933, as amended (the "Securities Act") (or such other period as may be requested in writing by the managing underwriter and agreed to in writing by the Company), and (ii) as to any Holder which beneficially owns 5% or more of the Company's outstanding capital stock, the 90-day period commencing with the effective date of a registration statement of the Company filed under the Securities Act for any public offering following the Company's IPO, provided that all officers, directors and holders of 1%

or more of the Company's outstanding capital stock enter into similar agreements providing for similar restrictions on sales.

7. Conditions of Exercise of Warrant or Transfer of Shares. Except in accordance with the conditions contained herein, this Warrant, the Warrant Shares and all rights hereunder are not transferable or assignable by the Holder.

(a) It shall be a condition to any exercise or transfer of this Warrant that the Company shall have received, at the time of such exercise or transfer, a representation in writing from the recipient or transferee in the form attached hereto as Exhibit A-1 or Exhibit B-l. respectively, that the shares of Class B Common Stock being issued upon exercise, or the Warrant (or portion hereof) being transferred, as the case may be, are being acquired for investment and not with a view to any sale or distribution thereof.

(b) It shall be a further condition to any transfer of this Warrant or of any or all of the shares of Class B Common Stock, other than a transfer registered under the Act, that the Holder shall have given written notice to the Company which shall describe the manner and circumstances of the proposed transfer and be accompanied by, at the Holder's option, a written opinion of Holder's legal counsel or a "no-action" letter reasonably satisfactory to the Company stating that such transfer is exempt from the registration and prospectus delivery requirements of the Act and applicable state securities laws. In order to effect any transfer or assignment of this Warrant, the transferor shall deliver a completed and duly executed Notice of Transfer in the form attached hereto as Exhibit B.

(c) Each certificate evidencing the Warrant Shares issued upon exercise of this Warrant, or transfer of such Warrant Shares (other than a transfer registered under the Act or any subsequent transfer of shares so registered) shall be stamped or imprinted with a legend substantially in the following form (in addition to any legend required by applicable state securities laws):

THE SHARES REPRESENTED BY THIS CERTIFICATE HAVE BEEN ACQUIRED FOR INVESTMENT AND NOT WITH A VIEW TO, OR FOR RESALE IN CONNECTION WITH, ANY DISTRIBUTION THEREOF, AND HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "ACT") OR ANY APPLICABLE STATE SECURITIES LAWS. SUCH SECURITIES MAY NOT BE SOLD, OFFERED FOR SALE, PLEDGED OR HYPOTHECATED IN THE ABSENCE OF SUCH REGISTRATION OR AN OPINION OF COUNSEL SATISFACTORY TO THE COMPANY AND ITS COUNSEL THAT SUCH REGISTRATION IS NOT REQUIRED UNDER THE ACT.

The Company may instruct its transfer agent not to register the transfer of this Warrant, or any of the Warrant Shares, unless the conditions specified in Section 8 hereof are satisfied.

8. Removal of Legend. Upon request of a holder of a certificate with the legend referred to in Section 7 hereof, the Company shall issue to such holder a new certificate therefor free of any transfer legend, if, with such request, the Company shall have received either an opinion of counsel or a "no-action" letter referred to in Section 7(b) hereof to the effect that any transfer by such holder

of the shares evidenced by such certificate will not violate the Securities Act and applicable state securities laws; provided, however, that the Company shall not be obligated to remove any such legends prior to the closing date of the Company's IPO.

9. Fractional Shares. This Warrant may not be exercised for fractional shares, and the number of shares to be issued shall be rounded down to the nearest whole share. If a fractional share interest arises upon any exercise or conversion of the Warrant, the Company shall eliminate such fractional share interest by paying Holder an amount computed by multiplying the fractional interest by the fair market value of a full share of Class B Common Stock.

10. Representations and Warranties by the Holder. The Holder represents and warrants to the Company as follows:

(a) This Warrant is being acquired for the Holder's own account, for investment and not with a view to, or for resale in connection with, any distribution or public offering thereof within the meaning of the Securities Act. Upon exercise of this Warrant, the Holder shall, if so requested by the Company, confirm in writing, in a form reasonably satisfactory to the Company, that the Warrant Shares issuable upon exercise of this Warrant are being acquired for investment arid not with a view toward distribution or resale.

(b) The Holder understands that the Warrant and the Warrant Shares have not been registered under the Securities Act by reason of their issuance in a transaction exempt from the registration and prospectus delivery requirements of the Securities Act pursuant to Section 4(2) thereof, and that they must be held by the Holder indefinitely, and that the Holder must therefore bear the economic risk of such investment indefinitely, unless a subsequent disposition thereof is registered under the Securities Act or is exempted from such registration. The Holder further understands that the Warrant and the Warrant Shares have not been qualified under any state's blue sky laws by reason of their issuance in a transaction exempt from the qualification requirements of applicable blue sky laws, which exemptions depend upon, among other things, the bona fide nature of the Holder's investment intent expressed above.

(c) The Holder has such knowledge and experience in financial and business matters that it is capable of evaluating the merits and risks of the purchase of this Warrant and the Warrant Shares purchasable pursuant to the terms of this Warrant and of protecting its interests in connection therewith.

(d) The Holder is able to bear the economic risk of the purchase of the Warrant and the Warrant Shares pursuant to the terms of this Warrant.

(e) The Holder is an "accredited investor" within the meaning of Rule 501 or Regulation D promulgated under the Securities Act.

11. No Rights or Liabilities as Stockholders. This Warrant shall not entitle the Holder to any voting rights or other rights as a stockholder of the Company. In the absence of affirmative action by such Holder to purchase Warrant Shares by exercise of this Warrant, no provisions of this

Warrant, and no enumeration herein of the rights or privileges of the Holder hereof shall cause such Holder hereof to be a stockholder of the Company for any purpose.

12. Expiration of Warrant. This Warrant shall expire and shall no longer be exercisable at 5:00 p.m., Virginia local time, on September 27, 2007 (the "Expiration Date"). If the Expiration Date falls on a Saturday, Sunday or legal holiday, the Expiration Date shall automatically be extended until 5:00 p.m., Virginia local time, the next business day.

13. No Impairment. The Company will not, by amendment of its Certificate or bylaws, or through reorganization, consolidation, merger, dissolution, issue or sale of securities, sale of assets or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such action as may be necessary or appropriate in order to protect the rights of the Registered Holder of this Warrant against impairment.

14. Notices of Record Date. In case the Company shall take a record of the holders of its Class B Common Stock (or other stock or securities at the time receivable upon the exercise of this Warrant), for the purpose of entitling them to receive any dividend or other distribution, or any right to subscribe for or purchase any shares of stock of any class or any other securities or to receive any other right; or of any consolidation or merger of the Company with or into another corporation, any capital reorganization of the Company, any reclassification of the capital stock of the Company, or any conveyance of all or substantially all of the assets of the Company to another corporation in which holders of the Company's stock are to receive stock, securities or property of another corporation; or of any voluntary dissolution, liquidation or winding-up of the Company; then, and in each such case, the Company will mail or cause to be mailed to the Registered Holder of this Warrant a notice specifying, as the case may be, (i) the date on which a record is to be taken for the purpose of such dividend, distribution or right, or (ii) the date on which such reorganization, reclassification, consolidation, merger, conveyance, dissolution, liquidation, winding-up is to take place, and the time, if any is to be fixed, as of which the holders of record of Class B Common Stock (or such stock or securities as at the time are receivable upon the exercise of this Warrant), shall be entitled to exchange their shares of Class B Common Stock (or such other stock or securities), for securities or other property deliverable upon such reorganization, reclassification, consolidation, merger, conveyance, dissolution, liquidation or winding-up. Such notice shall be delivered at least fifteen (15) days prior to the date therein specified.

15. Miscellaneous.

(a) This Warrant shall be construed and enforced in accordance with and governed by the laws of the State of Delaware.

(b) The headings in this Warrant are for purposes of reference only, and shall not limit or otherwise affect any of the terms hereof.

(c) The terms of this Warrant shall be binding upon and shall inure to the benefit of any successors or assigns of the Company and of the Holder or holders hereof and of the Shares issued or issuable upon the exercise hereof.

(d) This Warrant and the other documents delivered pursuant hereto or referenced herein constitute the full and entire understanding and agreement between the parties with regard to the subjects hereof and thereof.

(e) Upon receipt of evidence reasonably satisfactory to the Company of the ownership of and the loss, theft, destruction or mutilation of this Warrant and, in the case of any such loss, theft or destruction, upon delivery of an indemnity agreement reasonably satisfactory hi form and amount to the Company or, in the case of any such mutilation, upon surrender and cancellation of such Warrant, the Company at its expense will execute and deliver to the holder of record, in lieu thereof, a new Warrant of like date, tenor and amount.

(f) This Warrant and any provision hereof may be amended, waived or terminated only by an instrument in writing signed by the Company and the holders representing at least a majority of the number of unissued Warrant Shares issuable hereunder.

(g) If any term, provision, covenant or restriction of this Warrant is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions of this Warrant shall remain in full force and effect and shall in no way be affected, impaired or invalidated.

(h) The Holder hereby waives any notice requirements provided for in the Prior Warrant with respect to the transactions contemplated by the Merger Agreement, accepts this Warrant as a replacement for the Prior Warrant and releases LTI and the Company from any claims related thereto.

[Signature Page Follows]

IN WITNESS WHEREOF, the undersigned have executed this Warrant as of the date first above written.

LUNA INNOVATIONS INCORPORATED

By: /s/ SCOTT A. GRAEFF
Name: **Scott A. Graeff**
Title: **Chief Financial Officer**

Address:
Luna Innovations Incorporated
2851 Commerce Street, S.E.
Blacksburg, VA 24060
Attention: Dr. Kent Murphy

VIRGINIA TECH FOUNDATION, INC.

By: /s/ RAYMOND D. SMOOT, JR.
Name: **Raymond D. Smoot, Jr.**
Title: **COO and Secretary-Treasurer**

Address:
Virginia Tech Foundation, Inc.
Attn: Raymond D. Smoot, Jr.
VirginiaTech
312 Burruss Hall
Blacksburg, VA 24061

[SIGNATURE PAGE TO THE WARRANT]

EXHIBIT A

NOTICE OF EXERCISE

TO: Luna Innovations Incorporated
2851 Commerce Street Southeast
Blacksburg, VA 24011
Attention: President

1. The undersigned hereby elects to purchase _____ shares of Class B Common Stock of Luna Innovations Incorporated pursuant to the terms of the attached Warrant.

2. Method of Exercise (Please initial the applicable blank):

☐ The undersigned elects to exercise the attached Warrant by means of a cash payment, and tenders herewith payment in full for the purchase price of the shares being purchased, together with all applicable transfer taxes, if any.

☐ The undersigned elects to exercise the attached Warrant by means of cancellation of indebtedness or other obligations of the Company and tenders herewith appropriate documentation, acceptable in form and substance to the Company, of such cancellation.

☐ The undersigned elects to exercise the attached Warrant by means of the net exercise provisions of Section 2(b) of the Warrant.

3. Please issue a certificate or certificates representing said _____ shares of Class B Common Stock in the name of the undersigned or in such other name as is specified below:

_____
(Name)

_____

_____
(Address)

EXHIBIT A-I

INVESTMENT REPRESENTATION STATEMENT

PURCHASER : _____

SELLER : LUNA INNOVATIONS INCORPORATED

COMPANY : LUNA INNOVATIONS INCORPORATED

SECURITY : CLASS B COMMON STOCK ISSUED UPON EXERCISE OF THE CLASS B COMMON STOCK PURCHASE WARRANT

AMOUNT : _____ SHARES

DATE : _____

In connection with the purchase of the above-listed Securities, I, the Purchaser, represent to the Seller and to the Company the following:

(a) I am aware of the Company's business affairs and financial condition, and have acquired sufficient information about the Company to reach an informed and knowledgeable decision to acquire the Securities. I am purchasing these Securities for my own account for investment purposes only and not with a view to, or for the resale in connection with, any "distribution" thereof for purposes of the Securities Act of 1933, as amended (the "Securities Act").

(b) I understand that the Securities have not been registered under the Securities Act in reliance upon a specific exemption therefrom, which exemption depends upon, among other things, the bona fide nature of my investment intent as expressed herein. In this connection, I understand that, in the view of the U.S. Securities and Exchange Commission (the "SEC"), the statutory basis for such exemption may be unavailable if my representation was predicated solely upon a present intention to hold these Securities for the minimum capital gains period specified under tax statutes, for a deferred sale, for or until an increase or decrease in the market price of the Securities, or for a period of one year or any other fixed period in the future.

(c) I further understand that the Securities must be held indefinitely unless subsequently registered under the Securities Act or unless an exemption from registration is otherwise available. In addition, I understand that the certificate evidencing the Securities will be imprinted with a legend which prohibits the transfer of the Securities unless they are registered or such registration is not required in the opinion of counsel for the Company.

(d) I am familiar with the provisions of Rule 144, promulgated under the Securities Act, which, in substance, permits limited public resale of "restricted securities" acquired, directly or indirectly, from the issuer thereof, in a non-public offering subject to the satisfaction of certain conditions.

The Securities may be resold in certain limited circumstances subject to the provisions of Rule 144, which requires among other things: (1) the availability of certain public information about the Company, (2) the resale occurring not less than one year after the party has purchased, and made full payment for, within the meaning of Rule 144, the securities to be sold; and, in the case of an affiliate, or of a non-affiliate who has held the securities less than two years, (3) the sale being made through a broker in an unsolicited "broker's transaction" or in transactions directly with a market maker (as said term is defined under the Securities Exchange Act of 1934) and (4) the amount of securities being sold during any three month period not exceeding the specified limitations stated therein, if applicable.

(e) I agree, in connection with the Company's initial underwritten public offering of the Company's securities, (1) not to sell, make short sale of, loan, grant any options for the purchase of, or otherwise dispose of any shares of common stock of the Company held by me (other than those shares included in the registration) without the prior written consent of the Company or the underwriters managing such initial underwritten public offering of the Company's securities for one hundred eighty (180) days from the effective date of such registration (or such other period as may be requested in writing by the managing underwriter and agreed to in writing by the Company), and, provided that if I beneficially own 5% or more of the Company's outstanding capital stock, for ninety (90) days following the effective date of a follow on registration statement of the Company filed under the Securities Act and (2) I further agree to execute any agreement reflecting (1) above as may be requested by the underwriters at the time of the public offering; provided, however, that the officers and directors of the Company who own the stock of the Company also agree to such restrictions.

(f) I further understand that in the event all of the applicable requirements of Rule 144 are not satisfied, registration under the Securities Act, compliance with Regulation A, or some other registration exemption will be required; and that, notwithstanding the fact that Rule 144 is not exclusive, the Staff of the SEC has expressed its opinion that persons proposing to sell private placement securities other than in a registered offering and otherwise than pursuant to Rule 144 will have a substantial burden of proof in establishing that an exemption from registration is available for such offers or sales, and that such persons and their respective brokers who participate in such transactions do so at their own risk.

_____
(Signature)

By: _____

Title: _____

Date: _____

EXHIBIT B

NOTICE OF TRANSFER

(To be signed only upon transfer of Warrant)

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto _____ the right represented by the attached Warrant to purchase _____ shares of Class B Common Stock of Luna Innovations Incorporated, to which the attached Warrant relates, and appoints _____ as Attorney to transfer such right on the books of Luna Innovations Incorporated, with full power of substitution in the premises.

Dated: _____

_____

(Signature must conform in all respects to the name of the Holder as specified on the face of the Warrant)

_____

_____

(Address)

Signed in the presence of: _____

EXHIBIT B-I

INVESTMENT REPRESENTATION STATEMENT

PURCHASER : _____

TRANSFEROR :

COMPANY : LUNA INNOVATIONS INCORPORATED

SECURITY : CLASS B COMMON STOCK PURCHASE WARRANT

AMOUNT : _____ SHARES

DATE : _____

In connection with the purchase of the above-listed Securities, I, the Purchaser, represent to the Seller and to the Company the following:

(a) I am aware of the Company's business affairs and financial condition, and have acquired sufficient information about the Company to reach an informed and knowledgeable decision to acquire the Securities. I am purchasing these Securities for my own account for investment purposes only and not with a view to, or for the resale in connection with, any "distribution" thereof for purposes of the Securities Act of 1933, as amended (the "Securities Act").

(b) I understand that the Securities have not been registered under the Securities Act in reliance upon a specific exemption therefrom, which exemption depends upon, among other things, the bona fide nature of my investment intent as expressed herein. In this connection, I understand that, in the view of the Securities and Exchange Commission (the "SEC"), the statutory basis for such exemption may be unavailable if my representation was predicated solely upon a present intention to hold these Securities for the minimum capital gains period specified under tax statutes, for a deferred sale, for or until an increase or decrease in the market price of the Securities, or for a period of one year or any other fixed period in the future.

(c) I further understand that the Securities must be held indefinitely unless subsequently registered under the Securities Act or unless an exemption from registration is otherwise available. In addition, I understand that the certificate evidencing the Securities will be imprinted with a legend which prohibits the transfer of the Securities unless they are registered or such registration is not required in the opinion of counsel for the Company.

(d) I am familiar with the provisions of Rule 144, promulgated under the Securities Act, which, in substance, permits limited public resale of "restricted securities" acquired, directly or indirectly, from the issuer thereof, in a non-public offering subject to the satisfaction of certain conditions.

The Securities may be resold in certain limited circumstances subject to the provisions of Rule 144, which requires among other things: (1) the availability of certain public information about the Company, (2) the resale occurring not less than one year after the party has purchased, and made full payment for, within the meaning of Rule 144, the securities to be sold; and, in the case of an affiliate, or of a non-affiliate who has held the securities less than two years, (3) the sale being made through a broker in an unsolicited "broker's transaction" or in transactions directly with a market maker (as said term is defined under the Securities Exchange Act of 1934) and the amount of securities being sold during any three month period not exceeding the specified limitations stated therein, if applicable.

(e) I agree, in connection with the Company's initial underwritten public offering of the Company's securities, (1) not to sell, make short sale of, loan, grant any options for the purchase of, or otherwise dispose of any shares of common stock of the Company held by me (other than those shares included in the registration) without the prior written consent of the Company or the underwriters managing such initial underwritten public offering of the Company's securities for one hundred eighty (180) days from the effective date of such registration (or such other period as may be requested in writing by the managing underwriter and agreed to in writing by the Company) and provided that if I beneficially own 5% or more of the Company's outstanding capital stock, for ninety (90) days following the effective date of a follow on registration statement of the Company filed under the Securities Act, and (2) I further agree to execute any agreement reflecting (1) above as may be requested by the underwriters at the time of the public offering; provided, however, that the officers and directors of the Company who own the stock of the Company also agree to such restrictions.

(f) I further understand that in the event all of the applicable requirements of Rule 144 is not satisfied, registration under the Securities Act, compliance with Regulation A, or some other registration exemption will be required; and that, notwithstanding the fact that Rule 144 is not exclusive, the Staff of the SEC has expressed its opinion that persons proposing to sell private placement securities other than in a registered offering and otherwise than pursuant to Rule 144 will have a substantial burden of proof in establishing that an exemption from registration is available for such offers or sales, and that such persons and their respective brokers who participate in such transactions do so at their own risk.

_____

(Signature)

By: _____

Title: _____

Date: _____

Exhibit 4.4

WARRANT TO PURCHASE 2,636 SHARES
OF CLASS B COMMON STOCK (SUBJECT TO ADJUSTMENT)

THIS WARRANT AND ALL SHARES OF CAPITAL STOCK ISSUABLE HEREUNDER, HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "ACT") AND MAY NOT BE SOLD, OFFERED FOR SALE, TRANSFERRED, PLEDGED OR HYPOTHECATED IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT UNDER THE ACT UNLESS THE COMPANY HAS RECEIVED AN OPINION OF COUNSEL, IN FORM AND SUBSTANCE REASONABLY SATISFACTORY TO THE COMPANY, TO THE EFFECT THAT REGISTRATION IS NOT REQUIRED IN CONNECTION WITH SUCH DISPOSITION.

WARRANT TO PURCHASE SHARES OF CLASS B COMMON STOCK

OF LUNA INNOVATIONS INCORPORATED

Date of Issuance: November 11, 2005
Void after November 11, 2008

WHEREAS, Virginia Tech Foundation, Inc. ("VTF") was previously the holder of a warrant issued by Luna Technologies, Inc., a Delaware corporation ("LTI"), which entitled VTF to purchase 500,000 shares of LTFs Series A Preferred Stock at an exercise price of $0.7222 per share.

WHEREAS, prior to September 30, 2005, by mutual agreement between VTF and the Company, the Company canceled and terminated the Prior Warrant.

WHEREAS, on September 30, 2005, Luna Innovations Incorporated, a Delaware corporation (the "Company") acquired LTI whereby LTI became a wholly-owned subsidiary of the Company.

NOW, THEREFORE, THIS WARRANT CERTIFIES THAT, VTF or its registered assigns (the "Holder"), is entitled to subscribe for and purchase such shares of fully paid and nonassessable capital stock of the Company in such number of shares and at such exercise price as is provided herein (the "Warrant"). As used herein, the term "Class B Common Stock" shall mean the Company's presently authorized Class B Common Stock, and any stock (including Common Stock) into or for which such Class B Common Stock may hereafter be converted or exchanged. The shares purchasable upon exercise of this Warrant, and the purchase price per share, each as adjusted from time to time pursuant to the provisions of this Warrant, are hereinafter referred to as the "Warrant Shares" and the "Purchase Price," respectively.

1. Purchase Right. This Warrant represents the right of the Holder to subscribe for and purchase up to an aggregate of 2,636 shares of fully paid and nonassessable Class B Common Stock of the Company (the "Warrant Amount") (subject to adjustment pursuant to Section 4 hereof). The Purchase Price for each share of Class B Common Stock is equal to $1.00 (subject to adjustment pursuant to Section 4 hereof).

2. Method of Exercise; Payment.

(a) Cash Exercise; Timing. The purchase rights represented by this Warrant may be exercised by the Holder, in whole or in part, by the surrender of this Warrant (with the notice of exercise form (the "Notice of Exercise") attached hereto as Exhibit A duly executed) at the principal office of the Company, and by the payment to the Company of an amount equal to the aggregate Purchase Price for the number of Warrant Shares being purchased (the "Exercise Amount"), which amount may be paid, at the election of the Holder, (i) by wire transfer or certified check payable to the order of the Company, (ii) by cancellation by the Holder of indebtedness or other obligations of the Company to the Holder or (iii) by a combination of (i) and (ii). The person or persons in whose name(s) any certificate(s) representing Warrant Shares that shall be issuable upon exercise of this Warrant shall be deemed to have become the holder(s) of record of, and shall be treated for all purposes as the record holder(s) of, the Warrant Shares represented thereby (and such Warrant Shares shall be deemed to have been issued) immediately prior to the close of business on the date or dates upon which this Warrant is exercised.

(b) Net Issue Exercise. In lieu of the payment methods set forth in Section 2(a) above, if the Fair Market Value of one Warrant Share is greater than the Purchase Price (at the date of calculation as set forth below), the Holder may elect to exchange all or some of the Warrant for Warrant Shares equal to the value of the Warrant (as determined below) being exercised on the date of exchange. If the Holder elects to exchange this Warrant as provided in this Section 2(b), the Holder shall tender to the Company at the principal office of the Company the Warrant for the amount being exchanged, along with properly endorsed Notice of Exercise, and the Company shall issue to the Holder the number of Warrant Shares computed using the following formula:

$$X = \frac{Y\,(A-B)}{A}$$

Where:

X = the number of Warrant Shares to be issued to the Holder.

Y = the number of Warrant Shares purchasable under this Warrant or, if only a portion of the Warrant is being exercised, the portion of the Warrant being cancelled (at the date of such calculation).

A = the Fair Market Value of one Warrant Share (at the date of such calculation).

B = the Purchase Price (as adjusted to the date of such calculation).

All references herein to an "exercise" of the Warrant shall include an exchange pursuant to this Section 2(b). Upon receipt of a written notice of the Company's intention to raise capital by selling shares of Common Stock in the initial public offering of the Company's Common Stock (the "IPO"), which notice (the "IPO Notice") shall be delivered to Holder at least thirty (30) but not more than ninety (90) days before the anticipated date of the filing with the SEC of the registration statement associated with the IPO, the Holder shall notify the Company within ten (10) days whether or not the Holder will exercise this Warrant pursuant to this Section 2(b) prior to

consummation of the IPO. Notwithstanding whether an IPO Notice has been delivered to Holder or any other provision of this Warrant to the contrary, if Holder decides to exercise this Warrant while a registration statement is on file with the Securities and Exchange Commission (the "SEC"), but prior to effectiveness of such Registration Statement, in connection with the IPO, this Warrant shall be deemed exercised on the consummation of the IPO and the Fair Market Value will be the price at which one share of Common Stock was sold to the public in the IPO. If Holder elects to exercise this Warrant pursuant to this Section 2(b) while a registration statement is on file with the SEC in connection with an IPO and the IPO is not consummated, then Holder's exercise of this Warrant shall not be effective unless Holder confirms in writing Holder's intention to go forward with the exercise of this Warrant.

(c) "Easy Sale" Exercise. In lieu of the payment methods set forth in Section 2(a) above, when permitted by law and applicable regulations (including Nasdaq and National Association of Securities Dealers ("NASD Rules"), the Holder may pay the Exercise Amount through a "same day sale" commitment from the Holder (and if applicable a broker-dealer that is a member of the NASD (an "NASD Dealer")), whereby the Holder will irrevocably elect to exercise this Warrant and to sell at least that number of Warrant Shares so purchased to pay the Exercise Amount (and up to all of the Warrant Shares so purchased) and the Holder (or, if applicable, the NASD Dealer) commits upon sale (or, in the case of the NASD Dealer, upon receipt) of such Warrant Shares to forward the Exercise Amount directly to the Company, with any sale proceeds in excess of the Exercise Amount being for the benefit of the Holder.

(d) Fair Market Value. For purposes of this Warrant, the "Fair Market Value" of a Warrant Share shall mean:

(i) if the conversion right is being exercised in connection with the IPO, the IPO price per share (before deducting commissions, discounts or expenses) at which the Common Stock is sold to the public in the IPO, multiplied by the number of shares of Common Stock into which a share of Class B Common Stock is convertible at the time of the exercise of the conversion right (the "Conversion Rate");

(ii) if the conversion right is being exercised in connection with a *bona fide* acquisition of the Company (an "Acquisition") (i.e., not a mere recapitalization, reincorporation for the sole purpose of changing corporate domicile, or similar transaction pursuant to which control of the Company is not transferred), regardless of the form of the transaction (e.g., merger, consolidation, sale or lease of assets or sale of stock), the price per share to be paid to the holders of the Company's Class B Common Stock by the acquiring entity, or, if no such price per share has been established, the price per share to be paid to the holders of the Company's Common Stock multiplied by the Conversion Rate;

(iii) if the Company's Common Stock is traded on a securities exchange or national over the counter trading system, the fair value shall be deemed to be the product of the average of the security's prices at 4:30 Eastern Time on such exchange or trading system over the 30-day period ending three (3) days prior to the closing of the Acquisition, multiplied by the Conversion Rate; and

(iv) in all other cases, the value shall be the fair market value thereof, as determined in good faith by the Board.

(e) Exercisability. This Warrant is fully exercisable by the Holder as of the date hereof, and shall remain exercisable prior to its expiration pursuant to Section 12 below.

(f) Stock Certificates; Fractional Shares. As soon as practicable on or after the date of exercise of this Warrant under Section 2(a), 2(b) or 2(c) above, as applicable, such date, the Company shall issue and deliver to the person or persons entitled to receive the same a certificate or certificates for the number of Warrant Shares issuable upon such exercise, together with cash in lieu of any fraction of a share equal to such fraction of the current Fair Market Value of one whole Warrant Share as of the date of exercise of this Warrant. No fractional shares or scrip representing fractional shares shall be issued upon an exercise of this Warrant.

(g) Partial Exercise; Effective Date of Exercise. In case of any partial exercise of this Warrant, the Company shall cancel this Warrant upon surrender hereof and shall execute and deliver a new Warrant of like tenor and date for the balance of the Warrant Shares purchasable hereunder. This Warrant shall be deemed to have been exercised immediately prior to the close of business on the date of its surrender for exercise as provided above. The person entitled to receive the Warrant Shares shall be treated for all purposes as the holder of record of such Warrant Shares as of the close of business on the date the Holder is deemed to have exercised this Warrant.

3. Stock Fully Paid; Reservation of Shares. All of the Warrant Shares issuable upon the exercise of the rights represented by this Warrant will, upon issuance and receipt of the Purchase Price therefor, be validly issued, fully paid and nonassessable, and free from all taxes, liens and charges except for restrictions on transfer provided for herein or under applicable federal and state securities laws. During the period within which the rights represented by this Warrant may be exercised, the Company shall at all times have authorized and reserved for issuance a sufficient number of shares of its Class B Common Stock to provide for the exercise of the rights represented by this Warrant and sufficient shares of Common Stock to provide for the conversion of such Class B Common Stock. The Company agrees that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of executing stock certificates to execute and issue the necessary certificates for the Shares upon the exercise of this Warrant.

4. Adjustment of Price and Number of Shares. The number and kind of securities purchasable upon the exercise of this Warrant and the Purchase Price therefor shall be subject to adjustment from time to time upon the occurrence of certain events, as follows:

(a) Merger, Sale of Assets, etc. If at any time while this Warrant, or any portion hereof, is outstanding and unexpired there shall be (i) a reorganization (other than a combination, reclassification, exchange or subdivision of shares otherwise provided for herein), (ii) a merger or consolidation of the Company with or into another corporation in which the Company is not the surviving entity, or a reverse triangular merger, or similar transaction, in which the Company is the surviving entity but the shares of the Company's capital stock outstanding immediately prior to the merger are converted by virtue of the merger into other property, whether in the form of securities, cash, or otherwise, and as a result of which the ownership of the Company shall change 50% or

more, or (iii) a sale or transfer of the Company's properties and assets as, or substantially as, an entirety to any other person, then, as a part of such reorganization, merger, consolidation, sale or transfer (collectively, a "Change of Control"), this Warrant shall cease to represent the right to receive Warrant Shares and shall automatically represent the right to receive upon exercise of this Warrant, during the period specified herein and upon payment of the Purchase Price then in effect, the number of shares of stock or other securities or property offered to the Company's holders of Class B Common Stock in connection with such Change of Control that a holder of the shares deliverable upon exercise of this Warrant would have been entitled to receive in such Change of Control if this Warrant had been exercised immediately before such Change of Control, subject to further adjustment as provided in this Section 4. The foregoing provisions of this Section 4(a) shall similarly apply to successive reorganizations, consolidations, mergers, sales and transfers and to the stock or securities of any other corporation that are at the time receivable upon the exercise of this Warrant. If the per share consideration payable to the holder hereof for Shares in connection with any such transaction is in a form other than cash or marketable securities, then the value of such consideration shall be determined in good faith by the Company's Board of Directors. In all events, appropriate adjustment (as determined in good faith by the Company's Board of Directors) shall be made in the application of the provisions of this Warrant with respect to the rights and interests of the Holder after the transaction, to the end that the provisions of this Warrant shall be applicable after that event, as near as reasonably may be, in relation to any shares or other property deliverable after that event upon exercise of this Warrant.

(b) Reclassification, etc. If the Company, at any time while this Warrant, or any portion hereof, remains outstanding and unexpired shall change the Warrant Shares (other than a change in par value, or solely as a result of a stock dividend, subdivision or combination) whether by reclassification, a merger or consolidation not subject to Section 4(a), or otherwise (a "Reclassification"), or shall change, by a Reclassification, any of the securities as to which purchase rights under this Warrant exist, into the same or a different number of securities of any other class or classes, this Warrant shall thereafter represent the right to acquire such number and kind of securities as would have been issuable as the result of such change with respect to the securities that were subject to the purchase rights under this Warrant immediately prior to such reclassification or other change and the Purchase Price therefore shall be appropriately adjusted, all subject to further adjustment as provided in this Section 4. The provisions of this Section 4(b) shall also apply to successive Reclassifications.

(c) Split, Subdivision or Combination of Shares. If the Company at any time while this Warrant, or any portion hereof, remains outstanding and unexpired shall split, subdivide or combine the shares of Class B Common Stock, as to which purchase rights under this Warrant exist, into a different number of securities of the same class, the number of shares of Class B Common Stock issuable upon exercise of this Warrant shall be proportionately increased and the Purchase Price for such securities shall be proportionately decreased in the case of a split or subdivision and he number of shares of Class B Common Stock issuable upon exercise of this Warrant shall be proportionately decreased and the Purchase Price shall be proportionately increased in the case of a combination.

(d) Adjustments for Dividends in Stock or Other Securities or Property. If while this Warrant, or any portion hereof, remains outstanding and unexpired, the holders of the securities

as to which purchase rights under this Warrant exist at the time shall have received, or, on or after the record date fixed for the determination of eligible stockholders, shall have become entitled to receive, without payment therefore, other or additional stock or other securities or property (other than cash) of the Company by way of dividend, then and in each case, this Warrant shall represent the right to acquire, in addition to the number of shares of the security receivable upon exercise of this Warrant, and without payment of any additional consideration therefore, the amount of such other or additional stock or other securities or property (other than cash) of the Company that such holder would hold on the date of such exercise had it been the holder of record of the security receivable upon exercise of this Warrant on the date hereof and had thereafter, during the period from the date hereof to and including the date of such exercise, retained such shares and/or all other additional stock available by it as aforesaid during such period, giving effect to all adjustments called for during such period by the provisions of this Section 4.

5. Notice of Adjustments.

(a) Upon any adjustment of the Purchase Price and any increase or decrease in the number of Shares purchasable upon the exercise of this Warrant in accordance with Section 4 hereof, then, and in each such case, the Company, within thirty (30) days thereafter, shall give written notice thereof to the Holder at the address of such Holder as shown on the books of the Company, which notice shall state (i) the event requiring the adjustment, (ii) the Purchase Price as adjusted and, if applicable, (iii) the increased or decreased number of shares of Class B Common Stock purchasable upon the exercise of this Warrant, setting forth in reasonable detail the method of calculation of each.

(b) Any such notices by the Company required or permitted hereunder may be given by hand delivery or first class mail, postage prepaid, addressed to the Holder at the address shown on the books of the Company for the Holder and shall be deemed to have been received (i) in the case of personal delivery, on the date of such delivery and (ii) in the case of mailing, on the third business day following the date of such mailing.

6. Lockup. If and to the extent required by any managing underwriter in the IPO, the Holder of this Warrant agrees not to effect any sale, transfer, disposition or distribution of any Shares (except as part of such offering) during (i) the 180-day period commencing with the effective date of the registration statement for such IPO filed under the Securities Act of 1933, as amended (the "Securities Act") (or such other period as may be requested in writing by the managing underwriter and agreed to in writing by the Company), and (ii) as to any Holder which beneficially owns 5% or more of the Company's outstanding capital stock, the 90-day period commencing with the effective date of a registration statement of the Company filed under the Securities Act for any public offering following the Company's IPO, provided that all officers, directors and holders of 1% or more of the Company's outstanding capital stock enter into similar agreements providing for similar restrictions on sales.

7. Conditions of Exercise of Warrant or Transfer of Shares. Except in accordance with the conditions contained herein, this Warrant, the Warrant Shares and all rights hereunder are not transferable or assignable by the Holder.

(a) It shall be a condition to any exercise or transfer of this Warrant that the Company shall have received, at the time of such exercise or transfer, a representation in writing from the recipient or transferee in the form attached hereto as Exhibit A-l or Exhibit B-l, respectively, that the shares of Class B Common Stock being issued upon exercise, or the Warrant (or portion hereof) being transferred, as the case may be, are being acquired for investment and not with a view to any sale or distribution thereof.

(b) It shall be a further condition to any transfer of this Warrant or of any or all of the shares of Class B Common Stock, other than a transfer registered under the Act, that the Holder shall have given written notice to the Company which shall describe the manner and circumstances of the proposed transfer and be accompanied by, at the Holder's option, a written opinion of Holder's legal counsel or a "no-action" letter reasonably satisfactory to the Company stating that such transfer is exempt from the registration and prospectus delivery requirements of the Act and applicable state securities laws. In order to effect any transfer or assignment of this Warrant, the transferor shall deliver a completed and duly executed Notice of Transfer in the form attached hereto as Exhibit B.

(c) Each certificate evidencing the Warrant Shares issued upon exercise of this Warrant, or transfer of such Warrant Shares (other than a transfer registered under the Act or any subsequent transfer of shares so registered) shall be stamped or imprinted with a legend substantially in the following form (in addition to any legend required by applicable state securities laws):

THE SHARES REPRESENTED BY THIS CERTIFICATE HAVE BEEN ACQUIRED FOR INVESTMENT AND NOT WITH A VIEW TO, OR FOR RESALE IN CONNECTION WITH, ANY DISTRIBUTION THEREOF, AND HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "ACT") OR ANY APPLICABLE STATE SECURITIES LAWS. SUCH SECURITIES MAY NOT BE SOLD, OFFERED FOR SALE, PLEDGED OR HYPOTHECATED IN THE ABSENCE OF SUCH REGISTRATION OR AN OPINION OF COUNSEL SATISFACTORY TO THE COMPANY AND ITS COUNSEL THAT SUCH REGISTRATION IS NOT REQUIRED UNDER THE ACT.

The Company may instruct its transfer agent not to register the transfer of this Warrant, or any of the Warrant Shares, unless the conditions specified in Section 8 hereof are satisfied.

8. Removal of Legend. Upon request of a holder of a certificate with the legend referred to in Section 7 hereof, the Company shall issue to such holder a new certificate therefor free of any transfer legend, if, with such request, the Company shall have received either an opinion of counsel or a "no-action" letter referred to in Section 7(b) hereof to the effect that any transfer by such holder of the shares evidenced by such certificate will not violate the Securities Act and applicable state securities laws; provided, however, that the Company shall not be obligated to remove any such legends prior to the closing date of the Company's IPO.

9. Fractional Shares. This Warrant may not be exercised for fractional shares, and the number of shares to be issued shall be rounded down to the nearest whole share. If a fractional share interest arises upon any exercise or conversion of the Warrant, the Company shall eliminate such

fractional share interest by paying Holder an amount computed by multiplying the fractional interest by the fair market value of a Ml share of Class B Common Stock.

10. Representations and Warranties by the Holder. The Holder represents and warrants to the Company as follows:

(a) This Warrant is being acquired for the Holder's own account, for investment and not with a view to, or for resale in connection with, any distribution or public offering thereof within the meaning of the Securities Act. Upon exercise of this Warrant, the Holder shall, if so requested by the Company, confirm in writing, in a form reasonably satisfactory to the Company, that the Warrant Shares issuable upon exercise of this Warrant are being acquired for investment and not with a view toward distribution or resale.

(b) The Holder understands that the Warrant and the Warrant Shares have not been registered under the Securities Act by reason of their issuance in a transaction exempt from the registration and prospectus delivery requirements of the Securities Act pursuant to Section 4(2) thereof, and that they must be held by the Holder indefinitely, and that the Holder must therefore bear the economic risk of such investment indefinitely, unless a subsequent disposition thereof is registered under the Securities Act or is exempted from such registration. The Holder further understands that the Warrant and the Warrant Shares have not been qualified under any state's blue sky laws by reason of their issuance in a transaction exempt from the qualification requirements of applicable blue sky laws, which exemptions depend upon, among other things, the bona fide nature of the Holder's investment intent expressed above.

(c) The Holder has such knowledge and experience in financial and business matters that it is capable of evaluating the merits and risks of the purchase of this Warrant and the Warrant Shares purchasable pursuant to the terms of this Warrant and of protecting its interests in connection therewith.

(d) The Holder is able to bear the economic risk of the purchase of the Warrant and the Warrant Shares pursuant to the terms of this Warrant.

(e) The Holder is an "accredited investor" within the meaning of Rule 501 or Regulation D promulgated under the Securities Act.

11. No Rights or Liabilities as Stockholders. This Warrant shall not entitle the Holder to any voting rights or other rights as a stockholder of the Company. In the absence of affirmative action by such Holder to purchase Warrant Shares by exercise of this Warrant, no provisions of this Warrant, and no enumeration herein of the rights or privileges of the Holder hereof shall cause such Holder hereof to be a stockholder of the Company for any purpose.

12. Expiration of Warrant. This Warrant shall expire and shall no longer be exercisable at 5:00 p.m., Virginia local time, on November 11, 2008 (the "Expiration Date"). If the Expiration Date falls on a Saturday, Sunday or legal holiday, the Expiration Date shall automatically be extended until 5:00 p.m., Virginia local time, the next business day.

13. No Impairment. The Company will not, by amendment of its Certificate or bylaws, or through reorganization, consolidation, merger, dissolution, issue or sale of securities, sale of assets or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such action as may be necessary or appropriate in order to protect the rights of the Registered Holder of this Warrant against impairment.

14. Notices of Record Date. In case the Company shall take a record of the holders of its Class B Common Stock (or other stock or securities at the time receivable upon the exercise of this Warrant), for the purpose of entitling them to receive any dividend or other distribution, or any right to subscribe for or purchase any shares of stock of any class or any other securities or to receive any other right; or of any consolidation or merger of the Company with or into another corporation, any capital reorganization of the Company, any reclassification of the capital stock of the Company, or any conveyance of all or substantially all of the assets of the Company to another corporation in which holders of the Company's stock are to receive stock, securities or property of another corporation; or of any voluntary dissolution, liquidation or winding-up of the Company; then, and in each such case, the Company will mail or cause to be mailed to the Registered Holder of this Warrant a notice specifying, as the case may be, (i) the date on which a record is to be taken for the purpose of such dividend, distribution or right, or (ii) the date on which such reorganization, reclassification, consolidation, merger, conveyance, dissolution, liquidation, winding-up is to take place, and the time, if any is to be fixed, as of which the holders of record of Class B Common Stock (or such stock or securities as at the time are receivable upon the exercise of this Warrant), shall be entitled to exchange their shares of Class B Common Stock (or such other stock or securities), for securities or other property deliverable upon such reorganization, reclassification, consolidation, merger, conveyance, dissolution, liquidation or winding-up. Such notice shall be delivered at least fifteen (15) days prior to the date therein specified.

15. Miscellaneous.

(a) This Warrant shall be construed and enforced in accordance with and governed by the laws of the State of Delaware.

(b) The headings in this Warrant are for purposes of reference only, and shall not limit or otherwise affect any of the terms hereof.

(c) The terms of this Warrant shall be binding upon and shall inure to the benefit of any successors or assigns of the Company and of the Holder or holders hereof and of the Shares issued or issuable upon the exercise hereof.

(d) This Warrant and the other documents delivered pursuant hereto or referenced herein constitute the full and entire understanding and agreement between the parties with regard to the subjects hereof and thereof.

(e) Upon receipt of evidence reasonably satisfactory to the Company of the ownership of and the loss, theft, destruction or mutilation of this Warrant and, in the case of any such loss, theft or destruction, upon delivery of an indemnity agreement reasonably satisfactory in

form and amount to the Company or, in the case of any such mutilation, upon surrender and cancellation of such Warrant, the Company at its expense will execute and deliver to the holder of record, in lieu thereof, a new Warrant of like date, tenor and amount.

(f) This Warrant and any provision hereof may be amended, waived or terminated only by an instrument in writing signed by the Company and the holders representing at least a majority of the number of unissued Warrant Shares issuable hereunder.

(g) If any term, provision, covenant or restriction of this Warrant is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions of this Warrant shall remain in full force and effect and shall in no way be affected, impaired or invalidated.

(h) The Holder hereby releases LTI and the Company from any and all claims related to the Prior Warrant.

[Signature Page Follows]

IN WITNESS WHEREOF, the undersigned have executed this Warrant as of the date first above written.

LUNA INNOVATIONS INCORPORATED

By: /s/ SCOTT A. GRAEFF
Name: **Scott A. Graeff**
Title: **Chief Financial Officer**

Address:
Luna Innovations Incorporated
2851 Commerce Street, S.E.
Blacksburg, VA 24060
Attention: Dr. Kent Murphy

VIRGINIA TECH FOUNDATION, INC.

/s/ RAYMOND D. SMOOT, JR.
Name: **Raymond D. Smoot, Jr.**
Title: **COO and Secretary-Treasurer**

Address:
Virginia Tech Foundation, Inc.
Attn: Raymond D. Smoot, Jr.
Virginia Tech
312 Burruss Hall
Blacksburg, VA 24061

[SIGNATURE PAGE TO THE WARRANT)

EXHIBIT A

NOTICE OF EXERCISE

TO: Luna Innovations Incorporated
2851 Commerce Street Southeast
Blacksburg,VA 24011
Attention: President

1. The undersigned hereby elects to purchase _____ shares of Class B Common Stock of Luna Innovations Incorporated pursuant to the terms of the attached Warrant.

2. Method of Exercise (Please initial the applicable blank):

☐ The undersigned elects to exercise the attached Warrant by means of a cash payment, and tenders herewith payment in full for the purchase price of the shares being purchased, together with all applicable transfer taxes, if any.

☐ The undersigned elects to exercise the attached Warrant by means of cancellation of indebtedness or other obligations of the Company and tenders herewith appropriate documentation, acceptable in form and substance to the Company, of such cancellation.

☐ The undersigned elects to exercise the attached Warrant by means of the net exercise provisions of Section 2(b) of the Warrant.

3. Please issue a certificate or certificates representing said _____ shares of Class B Common Stock in the name of the undersigned or in such other name as is specified below:

_____
(Name)

_____

_____
(Address)

EXHIBIT A-l

INVESTMENT REPRESENTATION STATEMENT

PURCHASER	:	_____
SELLER	:	LUNA INNOVATIONS INCORPORATED
COMPANY	:	LUNA INNOVATIONS INCORPORATED
SECURITY	:	CLASS B COMMON STOCK ISSUED UPON EXERCISE OF THE CLASS B COMMON STOCK PURCHASE WARRANT
AMOUNT	:	_____ SHARES
DATE	:	_____

In connection with the purchase of the above-listed Securities, I, the Purchaser, represent to the Seller and to the Company the following:

(a) I am aware of the Company's business affairs and financial condition, and have acquired sufficient information about the Company to reach an informed and knowledgeable decision to acquire the Securities. I am purchasing these Securities for my own account for investment purposes only and not with a view to, or for the resale in connection with, any "distribution" thereof for purposes of the Securities Act of 1933, as amended (the "Securities Act").

(b) I understand that the Securities have not been registered under the Securities Act in reliance upon a specific exemption therefrom, which exemption depends upon, among other things, the bona fide nature of my investment intent as expressed herein. In this connection, I understand that, in the view of the U.S. Securities and Exchange Commission (the "SEC"), the statutory basis for such exemption may be unavailable if my representation was predicated solely upon a present intention to hold these Securities for the minimum capital gains period specified under tax statutes, for a deferred sale, for or until an increase or decrease in the market price of the Securities, or for a period of one year or any other fixed period in the future.

(c) I further understand that the Securities must be held indefinitely unless subsequently registered under the Securities Act or unless an exemption from registration is otherwise available. In addition, I understand that the certificate evidencing the Securities will be imprinted with a legend which prohibits the transfer of the Securities unless they are registered or such registration is not required in the opinion of counsel for the Company.

(d) I am familiar with the provisions of Rule 144, promulgated under the Securities Act, which, in substance, permits limited public resale of "restricted securities" acquired, directly or indirectly, from the issuer thereof, in a non-public offering subject to the satisfaction of certain conditions.

The Securities may be resold in certain limited circumstances subject to the provisions of Rule 144, which requires among other things: (1) the availability of certain public information about the Company, (2) the resale occurring not less than one year after the party has purchased, and made full payment for, within the meaning of Rule 144, the securities to be sold; and, in the case of an affiliate, or of a non-affiliate who has held the securities less than two years, (3) the sale being made through a broker in an unsolicited "broker's transaction" or in transactions directly with a market maker (as said term is defined under the Securities Exchange Act of 1934) and (4) the amount of securities being sold during any three month period not exceeding the specified limitations stated therein, if applicable.

(e) I agree, in connection with the Company's initial underwritten public offering of the Company's securities, (1) not to sell, make short sale of, loan, grant any options for the purchase of, or otherwise dispose of any shares of common stock of the Company held by me (other than those shares included in the registration) without the prior written consent of the Company or the underwriters managing such initial underwritten public offering of the Company's securities for one hundred eighty (180) days from the effective date of such registration (or such other period as may be requested in writing by the managing underwriter and agreed to in writing by the Company), and, provided that if I beneficially own 5% or more of the Company's outstanding capital stock, for ninety (90) days following the effective date of a follow on registration statement of the Company filed under the Securities Act and (2) I further agree to execute any agreement reflecting (1) above as may be requested by the underwriters at the time of the public offering; provided, however, that the officers and directors of the Company who own the stock of the Company also agree to such restrictions.

(f) I further understand that in the event all of the applicable requirements of Rule 144 are not satisfied, registration under the Securities Act, compliance with Regulation A, or some other registration exemption will be required; and that, notwithstanding the fact that Rule 144 is not exclusive, the Staff of the SEC has expressed its opinion that persons proposing to sell private placement securities other than in a registered offering and otherwise than pursuant to Rule 144 will have a substantial burden of proof in establishing that an exemption from registration is available for such offers or sales, and that such persons and their respective brokers who participate in such transactions do so at their own risk.

_____

(Signature)

By: _____

Title: _____

Date: _____

EXHIBIT B

NOTICE OF TRANSFER

(To be signed only upon transfer of Warrant)

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto _____ the right represented by the attached Warrant to purchase _____ shares of Class B Common Stock of Luna Innovations Incorporated, to which the attached Warrant relates, and appoints _____ as Attorney to transfer such right on the books of Luna Innovations Incorporated, with full power of substitution in the premises.

Dated: _____

_____

(Signature must conform in all respects to the name of the Holder as specified on the face of the Warrant)

_____

_____

(Address)

Signed in the presence of: _____

EXHIBIT B-l

INVESTMENT REPRESENTATION STATEMENT

PURCHASER :

TRANSFEROR :

COMPANY : LUNA INNOVATIONS INCORPORATED

SECURITY : CLASS B COMMON PURCHASE WARRANT

AMOUNT : _____ SHARES

DATE : _____

In connection with the purchase of the above-listed Securities, I, the Purchaser, represent to the Seller and to the Company the following:

(a) I am aware of the Company's business affairs and financial condition, and have acquired sufficient information about the Company to reach an informed and knowledgeable decision to acquire the Securities. I am purchasing these Securities for my own account for investment purposes only and not with a view to, or for the resale in connection with, any "distribution" thereof for purposes of the Securities Act of 1933, as amended (the "Securities Act").

(b) I understand that the Securities have not been registered under the Securities Act in reliance upon a specific exemption therefrom, which exemption depends upon, among other things, the bona fide nature of my investment intent as expressed herein. In this connection, I understand that, in the view of the Securities and Exchange Commission (the "SEC"), the statutory basis for such exemption may be unavailable if my representation was predicated solely upon a present intention to hold these Securities for the minimum capital gains period specified under tax statutes, for a deferred sale, for or until an increase or decrease in the market price of the Securities, or for a period of one year or any other fixed period in the future.

(c) I further understand that the Securities must be held indefinitely unless subsequently registered under the Securities Act or unless an exemption from registration is otherwise available. In addition, I understand that the certificate evidencing the Securities will be imprinted with a legend which prohibits the transfer of the Securities unless they are registered or such registration is not required in the opinion of counsel for the Company.

(d) I am familiar with the provisions of Rule 144, promulgated under the Securities Act, which, in substance, permits limited public resale of "restricted securities" acquired, directly or indirectly, from the issuer thereof, in a non-public offering subject to the satisfaction of certain conditions.

The Securities may be resold in certain limited circumstances subject to the provisions of Rule 144, which requires among other things: (1) the availability of certain public information about

the Company, (2) the resale occurring not less than one year after the party has purchased, and made full payment for, within the meaning of Rule 144, the securities to be sold; and, in the case of an affiliate, or of a non-affiliate who has held the securities less than two years, (3) the sale being made through a broker in an unsolicited "broker's transaction" or in transactions directly with a market maker (as said term is defined under the Securities Exchange Act of 1934) and the amount of securities being sold during any three month period not exceeding the specified limitations stated therein, if applicable.

(e) I agree, in connection with the Company's initial underwritten public offering of the Company's securities, (1) not to sell, make short sale of, loan, grant any options for the purchase of, or otherwise dispose of any shares of common stock of the Company held by me (other than those shares included in the registration) without the prior written consent of the Company or the underwriters managing such initial underwritten public offering of the Company's securities for one hundred eighty (180) days from the effective date of such registration (or such other period as may be requested in writing by the managing underwriter and agreed to in writing by the Company) and provided that if I beneficially own 5% or more of the Company's outstanding capital stock, for ninety (90) days following the effective date of a follow on registration statement of the Company filed under the Securities Act, and (2) I further agree to execute any agreement reflecting (1) above as may be requested by the underwriters at the time of the public offering; provided, however, that the officers and directors of the Company who own the stock of the Company also agree to such restrictions.

(f) I further understand that in the event all of the applicable requirements of Rule 144 is not satisfied, registration under the Securities Act, compliance with Regulation A, or some other registration exemption will be required; and that, notwithstanding the fact that Rule 144 is not exclusive, the Staff of the SEC has expressed its opinion that persons proposing to sell private placement securities other than in a registered offering and otherwise than pursuant to Rule 144 will have a substantial burden of proof in establishing that an exemption from registration is available for such offers or sales, and that such persons and their respective brokers who participate in such transactions do so at their own risk.

_____

(Signature)

By: _____

Title: _____

Date: _____

Exhibit 4.5

THIS WARRANT AND THE SHARES ISSUABLE HEREUNDER HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933 (THE "1933 ACT"), AS AMENDED OR ANY APPLICABLE STATE SECURITIES LAW, AND MAY NOT BE SOLD, PLEDGED, OR OTHERWISE TRANSFERRED WITHOUT AN EFFECTIVE REGISTRATION THEREOF UNDER SUCH ACT OR PURSUANT TO RULE 144 AND AN EXEMPTION UNDER APPLICABLE STATE LAW OR AN OPINION OF COUNSEL REASONABLY SATISFACTORY TO THE CORPORATION AND ITS COUNSEL, THAT SUCH REGISTRATION IS NOT REQUIRED.

WARRANT TO PURCHASE STOCK

Company:	LUNA INNOVATIONS INCORPORATED, a Delaware corporation
Number of Shares:	2,554
Class of Stock:	Class B Common Stock
Warrant Price:	$21.06 per share
Issue Date:	September 30, 2005
Expiration Date:	August 30, 2008

WHEREAS, pursuant to that certain warrant, dated August 31, 2001 (the "Prior Warrant"), issued by Luna Technologies, Inc., a Delaware corporation ("LTI"), Silicon Valley Bank ("SVB") was entitled to purchase 88,642 shares of LTI's Series A Preferred Stock at an exercise price of $0.7222 per share.

WHEREAS, pursuant to that certain Agreement and Plan of Merger, dated September 30, 2005, by and among Luna Innovations Incorporated, a Delaware corporation (the "Company"), Luna Technologies Acquisition Corp., a Delaware corporation and wholly-owned subsidiary of the Company ("Sub"), LTI, and the principal stockholders listed on Annex A thereto (the "Merger Agreement"), LTI merged with and into Sub with LTI being the surviving corporation.

WHEREAS, pursuant to the Merger Agreement, all unexpired and unexercised warrants of LTI were assumed by the Company and were deemed to be exercisable for the corresponding number of Class B Common Stock.

WHEREAS, pursuant to Section 1.6(e) of the Merger Agreement, the Company is offering to exchange this Warrant, which is of substantially like tenor, for the Prior Warrant.

NOW, THEREFORE, **THIS WARRANT CERTIFIES THAT**, for value received, SILICON VALLEY BANK ("Holder") is entitled to purchase the number of fully paid and nonassessable shares of the class of securities (the "Shares") of the Company at the Warrant Price all as set forth above and as adjusted pursuant to Article 2 of this Warrant, subject to the provisions and upon the terms and conditions set forth in this Warrant.

ARTICLE 1. EXERCISE.

1.1 Method of Exercise. Holder may exercise this Warrant by delivering a duly executed Notice of Exercise in substantially the form attached as Appendix 1 to the principal office of the Company. Unless Holder is exercising the conversion right set forth in Section 1.2, Holder shall also deliver to the Company a check for the aggregate Warrant Price for the Shares being purchased.

1.2 Conversion Right. In lieu of exercising this Warrant as specified in Section 1.1, Holder may from time to time convert this Warrant, in whole or in part, into a number of Shares determined by dividing (a) the aggregate fair market value of the Shares or other securities otherwise issuable upon exercise of this Warrant minus the aggregate Warrant Price of

such Shares by (b) the fair market value of one Share. The fair market value of the Shares shall be determined pursuant to Section 1.3.

1.3 Fair Market Value. If the Shares are traded in a public market, the fair market value of the Shares shall be the closing price of the Shares (or the closing price of the Company's stock into which the Shares are convertible) reported for the business day immediately before Holder delivers its Notice of Exercise to the Company. If the Shares are not traded in a public market, the Board of Directors of the Company shall determine fair market value in its reasonable good faith judgment.

1.4 Delivery of Certificate and New Warrant. Promptly after Holder exercises or converts this Warrant, the Company shall deliver to Holder certificates for the Shares acquired and, if this Warrant has not been fully exercised or converted and has not expired, a new Warrant representing the Shares not so acquired.

1.5 Replacement of Warrants. On receipt of evidence reasonably satisfactory to the Company of the loss, theft, destruction or mutilation of this Warrant and, in the case of loss, theft or destruction, on delivery of an indemnity agreement reasonably satisfactory in form and amount to the Company or, in the case of mutilation, or surrender and cancellation of this Warrant, the Company shall execute and deliver, in lieu of this Warrant, a new warrant of like tenor.

1.6 Assumption on Sale, Merger, or Consolidation of the Company .

1.6.1 "Acquisition". For the purpose of this Warrant, "Acquisition" means any sale, license, or other disposition of all or substantially all of the assets of the Company, or any reorganization, consolidation, or merger of the Company where the holders of the Company's securities before the transaction beneficially own less than 50% of the outstanding voting securities of the surviving entity after the transaction.

1.6.2 Assumption of Warrant. Upon the closing of any Acquisition, the successor entity shall assume the obligations of this Warrant, and this Warrant shall be exercisable for the same securities, cash, and property as would be payable for the Shares issuable upon exercise of the unexercised portion of this Warrant as if such Shares were outstanding on the record date for the Acquisition and subsequent closing. The Warrant Price and/or number of Shares shall be adjusted accordingly.

ARTICLE 2. ADJUSTMENTS TO THE SHARES.

2.1 Stock Dividends, Splits, Etc. If the Company declares or pays a dividend on its common stock (or the Shares if the Shares are securities other than common stock) payable in common stock, or other securities, subdivides the outstanding common stock into a greater amount of common stock, or, if the Shares are securities other than common stock, subdivides the Shares in a transaction that increases the amount of common stock into which the Shares are convertible, then upon exercise of this Warrant, for each Share acquired, Holder shall receive, without cost to Holder, the total number and kind of securities to which Holder would have been entitled had Holder owned the Shares of record as of the date the dividend or subdivision occurred. If the outstanding shares are combined or consolidated, by reclassification or otherwise, into a lesser number of shares, the Warrant Price shall be proportionately increased and the number of shares shall be proportionately decreased.

2.2 Reclassification, Exchange, Combinations or Substitution . Upon any reclassification, exchange, substitution, or other event that results in a change of the number and/or class of the securities issuable upon exercise or conversion of this Warrant, Holder shall be entitled to receive, upon exercise or conversion of this Warrant, the number and kind of securities and property that Holder would have received for the Shares if this Warrant had been

exercised immediately before such reclassification, exchange, substitution, or other event. Such an event shall include any automatic conversion of the outstanding or issuable securities of the Company of the same class or series as the Shares to common stock pursuant to the terms of the Company's Certificate of Incorporation upon the closing of a registered public offering of the Company's common stock. The Company or its successor shall promptly issue to Holder a new Warrant for such new securities or other property. The new Warrant shall provide for adjustments which shall be as nearly equivalent as may be practicable to the adjustments provided for in this Article 2 including, without limitation, adjustments to the Warrant Price and to the number of securities or property issuable upon exercise of the new Warrant. The provisions of this Section 2.2 shall similarly apply to successive reclassifications, exchanges, substitutions, or other events.

2.3 No Impairment. The Company shall not, by amendment of its Certificate of Incorporation or through a reorganization, transfer of assets, consolidation, merger, dissolution, issue, or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms to be observed or performed under this Warrant by the Company, but shall at all times in good faith assist in carrying out of all the provisions of this Article 2 and in taking all such action as may be necessary or appropriate to protect Holder's rights under this Article against impairment.

2.4 Fractional Shares. No fractional Shares shall be issuable upon exercise or conversion of the Warrant and the number of Shares to be issued shall be rounded down to the nearest whole Share. If a fractional share interest arises upon any exercise or conversion of the Warrant, the Company shall eliminate such fractional share interest by paying Holder the amount computed by multiplying the fractional interest by the fair market value of a full Share.

2.5 Certificate as to Adjustments. Upon each adjustment of the Warrant Price, the Company shall promptly notify Holder in writing, and, at the Company's expense, promptly compute such adjustment, and furnish Holder with a certificate of its Chief Financial Officer setting forth such adjustment and the facts upon which such adjustment is based. The Company shall, upon written request, furnish Holder a certificate setting forth the Warrant Price in effect upon the date thereof and the series of adjustments leading to such Warrant Price.

ARTICLE 3. REPRESENTATIONS AND COVENANTS OF THE COMPANY.

3.1 Representations and Warranties. The Company represents and warrants to the Holder that all Shares which may be issued upon the exercise of the purchase right represented by this Warrant, and all securities, if any, issuable upon conversion of the Shares, shall, upon issuance, be duly authorized, validly issued, fully paid and nonassessable, and free of any liens and encumbrances except for restrictions on transfer provided for herein or under applicable federal and state securities laws.

3.2 Notice of Certain Events. If the Company proposes at any time (a) to declare any dividend or distribution upon its common stock, whether in cash, property, stock, or other securities and whether or not a regular cash dividend; (b) to offer for sale of additional shares of any class or series of the Company's stock other than stock options; (c) to effect any reclassification or recapitalization of common stock; (d) to merge or consolidate with or into any other corporation, or sell, lease, license, or convey all or substantially all of its assets, or to liquidate, dissolve or wind up; or (e) to offer holders of registration rights the opportunity to participate in an underwritten public offering of the company's securities for cash, then, in connection with each such event, the Company shall give Holder (1) at least 10 days prior written notice of the date on which a record will be taken for such dividend, distribution, or subscription rights (and specifying the date on which the holders of common stock will be entitled thereto) or for determining rights to vote, if any, in respect of the matters referred to in (c) and (d) above; (2) in the case of the matters referred to in (c) and (d) above at least 10 days prior written notice of the date when the same will take place (and specifying the date on which the holders of

common stock will be entitled to exchange their common stock for securities or other property deliverable upon the occurrence of such event); and (3) in the case of the matter referred to in (e) above, the same notice as is given to the holders of such registration rights.

3.3 No Shareholder Rights. Except as provided in this Warrant, the Holder will not have any rights as a shareholder of the Company until the exercise of this Warrant.

ARTICLE 4. REPRESENTATIONS, WARRANTIES OF THE HOLDER. The Holder represents and warrants to the Company as follows:

4.1 Purchase for Own Account. Except for transfers to Holder's affiliates, this Warrant and the securities to be acquired upon exercise of this Warrant by the Holder will be acquired for investment for the Holder's account, not as a nominee or agent, and not with a view to the public resale or distribution within the meaning of the 1933 Act, and the Holder has no present intention of selling, granting any participation in, or otherwise distributing the same. If not an individual, the Holder also represents that the Holder has not been formed for the specific purpose of acquiring this Warrant or the Shares.

4.2 Disclosure of Information. The Holder has received or has had full access to all the information it considers necessary or appropriate to make an informed investment decision with respect to the acquisition of this Warrant and its underlying securities. The Holder further has had an opportunity to ask questions and receive answers from the Company regarding the terms and conditions of the offering of this Warrant and its underlying securities and to obtain additional information (to the extent the Company possessed such information or could acquire it without unreasonable effort or expense) necessary to verify any information furnished to the Holder or to which the Holder has access.

4.3 Investment Experience. The Holder understands that the purchase of this Warrant and its underlying securities involves substantial risk. The Holder: (a) has experience as an investor in securities of companies in the development stage and acknowledges that the Holder is able to fend for itself, can bear the economic risk of such Holder's investment in this Warrant and its underlying securities and has such knowledge and experience in financial or business matters that the Holder is capable of evaluating the merits and risks of its investment in this Warrant and its underlying securities and/or (b) has a preexisting personal or business relationship with the Company and certain of its officers, directors or controlling persons of a nature and duration that enables the Holder to be aware of the character, business acumen and financial circumstances of such persons.

4.4 Accredited Investor Status. The Holder is an "accredited investor" within the meaning of Regulation D promulgated under the 1933 Act.

ARTICLE 5. MISCELLANEOUS.

5.1 Term. This Warrant is exercisable in whole or in part at any time and from time to time on or before the Expiration Date.

5.2 Legends. This Warrant and the Shares (and the securities issuable, directly or indirectly, upon conversion of the Shares, if any) shall be imprinted with a legend in substantially the following form:

THIS SECURITY HAS NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED OR UNDER ANY APPLICABLE STATE LAWS, AND MAY NOT BE SOLD, PLEDGED OR OTHERWISE TRANSFERRED WITHOUT AN EFFECTIVE REGISTRATION THERE OF UNDER SUCH ACT AND AN EXEMPTION UNDER APPLICABLE STATE LAW OR PURSUANT TO RULE 144 OR

AN OPINION OF COUNSEL REASONABLY SATISFACTORY TO THE CORPORATION AND ITS COUNSEL THAT SUCH REGISTRATION IS NOT REQUIRED.

5.3 Compliance with Securities Laws on Transfer. This Warrant and the Shares issuable upon exercise of this Warrant (and the securities issuable, directly or indirectly, upon conversion of the Shares, if any) may not be transferred or assigned in whole or in part without compliance with applicable federal and state securities laws by the transferor and the transferee (including, without limitation, the delivery of investment representation letters and legal opinions reasonably satisfactory to the Company, as reasonably requested by the Company). The Company shall not require Holder to provide an opinion of counsel if the transfer is to Silicon Valley Bancshares (Holder's parent company) or any other affiliate of Holder or if there is no material question as to the availability of current information as referenced in Rule 144(c), Holder represents that it has complied with Rule 144(d) and (e) in reasonable detail, the selling broker represents that it has complied with Rule 144(f), and the Company is provided with a copy of Holder's notice of proposed sale.

5.4 Transfer Procedure. Subject to the provisions of Section 5.3, upon receipt by Holder of the executed Warrant, Holder will transfer all or part of this Warrant or the Shares issuable upon exercise of this Warrant (or the securities issuable, directly or indirectly, upon conversion of the Shares, if any) to Silicon Valley Bancshares, Holder's parent company. Subject to the provisions of Section 5.3, and upon providing Company with written notice, Holder or Silicon Valley Bancshares (if applicable) may transfer all or part of this Warrant or the Shares issuable upon exercise of this Warrant (or the securities issuable, directly or indirectly, upon conversion of the Shares, if any) to The Silicon Valley Bank Foundation, or to any affiliate of Holder, or to any other transferee by providing to the Company notice of the portion of the Warrant being transferred with the name, address and taxpayer identification number of the transferee and surrendering this Warrant to the Company for reissuance to the transferee(s) (and Holder if applicable). The Company may refuse to transfer this Warrant to any person who directly competes with the Company unless the Company's stock is publicly traded.

5.5 Notices. All notices and other communications from the Company to the Holder, or vice versa, shall be deemed delivered and effective when given personally or mailed by first-class registered or certified mail, postage prepaid, at such address as may have been furnished to the Company or the Holder, as the case may be, in writing by the Company or such holder from time to time. All notices to the Holder shall be addressed as follows:

Silicon Valley Bank
Attn: Treasury Department
3003 Tasman Drive, HG 110
Santa Clara, CA 95054

5.6 Waiver. This Warrant and any term hereof may be changed, waived, discharged or terminated only by an instrument in writing signed by the party against which enforcement of such change, waiver, discharge or termination is sought.

5.7 Attorney's Fees. In the event of any dispute between the parties concerning the terms and provisions of this Warrant, the party prevailing in such dispute shall be entitled to collect from the other party all costs incurred in such dispute, including reasonable attorney's fees.

5.8 Automatic Conversion upon Expiration. In the event that, upon the Expiration Date, the fair market value of one Share (or other security issuable upon the exercise hereof) as determined in accordance with Section 1.3 above is greater than the Exercise Price in effect on such date, then this Warrant shall automatically be deemed on and as of such date to be converted pursuant to Section 1.2 above as to all Shares (or such other securities) for which it

shall not previously have been exercised or converted, and the Company shall promptly deliver a certificate representing the Shares (or such other securities) issued upon such conversion to the Holder.

5.9 Governing Law. This Warrant shall be governed by and construed in accordance with the laws of the State of California, without giving effect to its principles regarding conflicts of law.

5.10 Notice under Prior Warrant; Replacement of Prior Warrant; Release. The Holder hereby waives any notice requirements provided for in the Prior Warrant with respect to the transactions contemplated by the Merger Agreement, accepts this Warrant as a replacement for the Prior Warrant and releases LTI and the Company from any claims related thereto.

[Signature Page Follows]

IN WITNESS WHEREOF, the undersigned have executed this Warrant as of the date first above written.

"COMPANY"
LUNA INNOVATIONS INCORPORATED

By: /S/ SCOTT A. GRAEFF
Name: **Scott A. Graeff**
Title: **Chief Financial Officer**

"HOLDER"
Silicon Valley Bank

By: /S/
Name:
Title:

[Signature Page to Warrant]

APPENDIX 1

NOTICE OF EXERCISE

1. Holder elects to purchase _____ shares of the Class B Common Stock of _____ pursuant to the terms of the attached Warrant, and tenders payment of the purchase price of the shares in full.

[or]

1. Holder elects to convert the attached Warrant into Shares/cash [strike one] in the manner specified in the Warrant. This conversion is exercised for _____ of the Shares covered by the Warrant.

[Strike paragraph that does not apply.]

2. Please issue a certificate or certificates representing the shares in the name specified below:

_____
Holders Name

_____

_____
(Address)

3. The undersigned represents it is acquiring the shares solely for its own account and not as a nominee for any other party and not with a view toward the resale or distribution except in compliance with applicable securities laws.

HOLDER:

_____

By: _____
Name: _____
Title: _____

_____
(Date)

Exhibit 4.6

THIS WARRANT AND THE UNDERLYING SECURITIES HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "ACT"). THEY MAY NOT BE SOLD, OFFERED FOR SALE, PLEDGED OR HYPOTHECATED IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT AS TO SUCH SECURITIES UNDER THE ACT OR AN OPINION OF COUNSEL SATISFACTORY TO THE COMPANY THAT SUCH REGISTRATION IS NOT REQUIRED.

LUNA INNOVATIONS INCORPORATED

WARRANT TO PURCHASE COMMON STOCK

No. CW-__ _____, _____

Void After _____

THIS CERTIFIES THAT, for value received, _____, or assigns (the "***Holder***"), is entitled to subscribe for and purchase at the Exercise Price (defined below) from **LUNA INNOVATIONS INCORPORATED**, a Delaware corporation, with its principal office at 10 South Jefferson Street, Suite 130, Roanoke, Virginia 24011 (the "***Company***") up to that number of Exercise Shares of the Common Stock (as defined below) of the Company determined in accordance with the terms hereof.

1. DEFINITIONS. As used herein, the following terms shall have the following respective meanings:

(a) "***Common Stock***" shall mean the shares of the Class B Common Stock, or, if applicable, upon conversion, shares of the Company's Common Stock.

(b) "***Exercise Period***" shall mean the period commencing with the date hereof and ending ten (10) years from the date of this Warrant.

(c) "***Exercise Price***" shall mean $_____ per share, subject to adjustment pursuant to Section 5 below.

(d) "***Exercise Shares***" shall mean the [_____] shares of Common Stock issuable upon exercise of this Warrant, subject to adjustment pursuant to the terms herein, including but not limited to adjustment pursuant to Section 5 below.

2. EXERCISE OF WARRANT. The rights represented by this Warrant may be exercised in whole or in part at any time during the Exercise Period, by delivery of the following to the Company at its address set forth above (or at such other address as it may designate by notice in writing to the Holder):

(a) An executed Notice of Exercise in the form attached hereto;

(b) Payment of the Exercise Price either (i) in cash or by check, or (ii) by cancellation of indebtedness; and

(c) This Warrant.

Upon the exercise of the rights represented by this Warrant, a certificate or certificates for the Exercise Shares so purchased, registered in the name of the Holder or persons affiliated with the Holder, if the Holder so designates, shall be issued and delivered to the Holder within a reasonable time after the rights represented by this Warrant shall have been so exercised.

The person in whose name any certificate or certificates for Exercise Shares are to be issued upon exercise of this Warrant shall be deemed to have become the holder of record of such shares on the date on which this Warrant was surrendered and payment of the Exercise Price was made, irrespective of the date of delivery of such certificate or certificates, except that, if the date of such surrender and payment is a date when the stock transfer books of the Company are closed, such person shall be deemed to have become the holder of such shares at the close of business on the next succeeding date on which the stock transfer books are open.

2.2 Net Exercise. Notwithstanding any provisions herein to the contrary, if the fair market value of one share of the Company's Common Stock is greater than the Exercise Price (at the date of calculation as set forth below), in lieu of exercising this Warrant by payment of cash, the Holder may elect to receive shares equal to the value (as determined below) of this Warrant (or the portion thereof being canceled) by surrender of this Warrant at the principal office of the Company together with the properly endorsed Notice of Exercise in which event the Company shall issue to the Holder a number of shares of Common Stock computed using the following formula:

$$X = \frac{Y\ (A-B)}{A}$$

Where X = the number of shares of Common Stock to be issued to the Holder

Y = the number of shares of Common Stock purchasable under the Warrant or, if only a portion of the Warrant is being exercised, the portion of the Warrant being canceled (at the date of such calculation)

A = the fair market value of one share of the Company's Common Stock (at the date of such calculation)

B = Exercise Price (as adjusted to the date of such calculation)

For purposes of the above calculation, the fair market value of one share of Common Stock shall mean the average of the closing bid and asked prices of Common Stock quoted in the over-the-counter market in which the Common Stock is traded or the closing price quoted on any exchange on which the Common Stock is listed, whichever is applicable, as published in the Western Edition of The Wall Street Journal for the ten (10) trading days prior to the date of determination of fair market value (or such shorter period of time during which such stock was traded over-the-counter or on such exchange). If the Common Stock is not traded on the over-the-counter market or on an exchange, the fair market value shall be the price per share that the Company could obtain from a willing buyer for Common Stock sold by the Company from authorized but unissued shares, as such price shall be determined in good faith by the Company's Board of Directors; provided, however, that in the event that this Warrant is exercised pursuant to this Section 2.1 in connection with the Company's initial public offering of its Common Stock, the fair market value per share shall be the per share offering price to the public of the Company's initial public offering.

3. COVENANTS OF THE COMPANY.

3.1 Covenants as to Exercise Shares. The Company covenants and agrees that all Exercise Shares that may be issued upon the exercise of the rights represented by this Warrant will, upon issuance, be validly issued and outstanding, fully paid and nonassessable, and free from all taxes, liens and charges with respect to the issuance thereof. The Company further covenants and agrees that the Company will at all times during the Exercise Period, have authorized and reserved a sufficient number of

shares of its Common Stock to provide for the exercise of the rights represented by this Warrant. If at any time during the Exercise Period the number of authorized but unissued shares of Common Stock shall not be sufficient to permit exercise of this Warrant, the Company will take such corporate action as may, in the opinion of its counsel, be necessary to increase its authorized but unissued shares of Common Stock to such number of shares as shall be sufficient for such purposes.

3.2 No Impairment. Except and to the extent as waived or consented to by the Holder, the Company will not, by amendment of its Certificate of Incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms to be observed or performed hereunder by the Company, but will at all times in good faith assist in the carrying out of all the provisions of this Warrant and in the taking of all such action as may be necessary or appropriate in order to protect the exercise rights of the Holder against impairment.

4. REPRESENTATIONS OF HOLDER.

4.1 Acquisition of Warrant for Personal Account. The Holder represents and warrants that it is acquiring the Warrant and the Exercise Shares solely for its account for investment and not with a view to or for sale or distribution of said Warrant or Exercise Shares or any part thereof. The Holder also represents that the entire legal and beneficial interests of the Warrant and Exercise Shares the Holder is acquiring is being acquired for, and will be held for, its account only.

4.2 Securities Are Not Registered.

(a) The Holder understands that the Warrant and the Exercise Shares have not been registered under the Securities Act of 1933, as amended (the "***Act***") on the basis that no distribution or public offering of the stock of the Company is to be effected. The Holder realizes that the basis for the exemption may not be present if, notwithstanding its representations, the Holder has a present intention of acquiring the securities for a fixed or determinable period in the future, selling (in connection with a distribution or otherwise), granting any participation in, or otherwise distributing the securities. The Holder has no such present intention.

(b) The Holder recognizes that the Warrant and the Exercise Shares must be held indefinitely unless they are subsequently registered under the Act or an exemption from such registration is available. The Holder recognizes that the Company has no obligation to register the Warrant or the Exercise Shares of the Company, or to comply with any exemption from such registration.

(c) The Holder is aware that neither the Warrant nor the Exercise Shares may be sold pursuant to Rule 144 adopted under the Act unless certain conditions are met, including, among other things, the existence of a public market for the shares, the availability of certain current public information about the Company, the resale following the required holding period under Rule 144 and the number of shares being sold during any three month period not exceeding specified limitations. The Holder is aware that the conditions for resale set forth in Rule 144 have not been satisfied and that the Company presently has no plans to satisfy these conditions in the foreseeable future.

4.3 Disposition of Warrant and Exercise Shares.

(a) The Holder further agrees not to make any disposition of all or any part of the Warrant or Exercise Shares in any event unless and until:

(i) The Company shall have received a letter secured by the Holder from the Securities and Exchange Commission stating that no action will be recommended to the Commission with respect to the proposed disposition;

(ii) There is then in effect a registration statement under the Act covering such proposed disposition and such disposition is made in accordance with said registration statement; or

(iii) The Holder shall have notified the Company of the proposed disposition and shall have furnished the Company with a detailed statement of the circumstances surrounding the proposed disposition, and if reasonably requested by the Company, the Holder shall have furnished the Company with an opinion of counsel, reasonably satisfactory to the Company, for the Holder to the effect that such disposition will not require registration of such Warrant or Exercise Shares under the Act or any applicable state securities laws.

(b) The Holder understands and agrees that all certificates evidencing the shares to be issued to the Holder may bear the following legend:

THESE SECURITIES HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "ACT"). THEY MAY NOT BE SOLD, OFFERED FOR SALE, PLEDGED OR HYPOTHECATED IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT AS TO THE SECURITIES UNDER THE ACT OR AN OPINION OF COUNSEL SATISFACTORY TO THE COMPANY THAT SUCH REGISTRATION IS NOT REQUIRED.

5. ADJUSTMENT OF EXERCISE SHARES AND EXERCISE PRICE.

(a) Stock Splits, Combinations, etc. In the event of changes in the outstanding Common Stock of the Company by reason of stock dividends, split-ups, recapitalizations, reclassifications, combinations or exchanges of shares, separations, reorganizations, liquidations, or the like, the number and class of shares available under the Warrant in the aggregate and the Exercise Price shall be correspondingly adjusted to give the Holder of the Warrant, on exercise for the same aggregate Exercise Price, the total number, class, and kind of shares as the Holder would have owned had the Warrant been exercised prior to the event and had the Holder continued to hold such shares until after the event requiring adjustment. The form of this Warrant need not be changed because of any adjustment in the number of Exercise Shares subject to this Warrant. The foregoing provisions of this Section 5(a) shall similarly apply to successive stock dividends, split-ups, recapitalizations, reclassifications, combinations or exchanges of shares, separations, reorganizations, liquidations, or the like and to the stock or securities of any other entity that are at the time receivable upon the exercise of this Warrant.

(b) Merger, Sale of Assets, etc. If at any time while this Warrant, or any portion hereof, is outstanding and unexpired there shall occur (i) the sale, conveyance, exchange, license or other transfer of all or substantially all of the intellectual property or assets of the Company, (ii) any acquisition of the Company by means of a consolidation, stock exchange, merger or other form of corporate reorganization of the Company with any other corporation in which the Company's stockholders prior to the consolidation or merger own less than a majority of the voting securities of the surviving entity or (iii) any transaction or series of related transactions following which the Company's stockholders prior to such transaction or series of related transactions own less than a majority of the voting securities of the Company (collectively, a " **Change of Control**"), this Warrant shall cease to represent the right to receive Exercise Shares and shall automatically and without further action represent the right to receive upon exercise of this Warrant, during the period specified herein and upon payment of the Exercise Price then

in effect, the number of shares of stock or other securities or property offered to the Company's holders of Common Stock in connection with such Change of Control that a holder of the shares deliverable upon exercise of this Warrant would have been entitled to receive in such Change of Control if this Warrant had been exercised immediately before such Change of Control, subject to further adjustment as provided in this Section 5. The foregoing provisions of this Section 5(b) shall similarly apply to successive reorganizations, consolidations, mergers, sales and transfers and to the stock or securities of any other entity that are at the time receivable upon the exercise of this Warrant. If the per share consideration payable to the holder hereof in connection with any such transaction is in a form other than cash or marketable securities, then the value of such consideration shall be determined in good faith by the Company's Board of Directors. In all events, appropriate adjustment (as determined in good faith by the Company's Board of Directors) shall be made in the application of the provisions of this Warrant with respect to the rights and interests of the Holder after the transaction, to the end that the provisions of this Warrant shall be applicable after that event, as near as reasonably may be, in relation to any shares or other property deliverable after that event upon exercise of this Warrant.

6. FRACTIONAL SHARES. No fractional shares shall be issued upon the exercise of this Warrant as a consequence of any adjustment pursuant hereto. All Exercise Shares (including fractions) issuable upon exercise of this Warrant may be aggregated for purposes of determining whether the exercise would result in the issuance of any fractional share. If, after aggregation, the exercise would result in the issuance of a fractional share, the Company shall, in lieu of issuance of any fractional share, pay the Holder otherwise entitled to such fraction a sum in cash equal to the product resulting from multiplying the then current fair market value of an Exercise Share by such fraction.

7. NOTICE OF CERTAIN EVENTS. The Company shall provide to the Holder written notice of any event that would result in an adjustment to the Exercise Shares or Exercise Price pursuant to Section 5 hereof.

8. MARKET STAND-OFF AGREEMENT.

(a) In connection with any public offering of securities of the Company registered under the Act, the Holder hereby agrees not to sell, transfer, make any short sale of, grant any option for the purchase of, enter into any hedging or similar transaction with the same economic effect as a sale or otherwise transfer or dispose of any Common Stock (or any other securities of the Company) held by the Holder (other than those included in the registration) for a period of one hundred eighty (180) calendar days following the effective date of a registration statement of the Company filed under the Act in connection with such offering (or such other period specified by the representative of the underwriters of the Common Stock (or any other securities) of the Company and agreed to by the Company) (the "***Lock-Up Period***"). The Holder agrees to execute and deliver such other agreements as may be reasonably requested by the Company or the underwriter that are consistent with the Holder's obligations under this Section 8 or that are necessary to give further effect thereto. The Company may impose stop-transfer instructions with respect to the shares of Common Stock (or any other securities) subject to the foregoing restriction until the end of the market stand-off day period.

(b) Notwithstanding the foregoing, if (1) during the last 17 days of the Lock-Up Period, the Company issues an earnings release or material news or a material event relating to the Company occurs or (2) prior to the expiration of the Lock-Up Period, the Company announces that it will release earnings results during the 16-day period beginning on the last day of the Lock-Up Period, then the restrictions imposed under this Section 8 shall continue to apply until the expiration of the 18-day period beginning on the issuance of the earnings release or the announcement of the material news or the occurrence of the material event, unless the underwriter waives, in writing, such extension. The Holder hereby further agrees that, prior to engaging in any transaction or taking any other action that is subject to

the terms hereof during the period from the date hereof to and including the 34 th day following the expiration of the Lock-Up Period, it will give notice thereof to the Company and will not consummate such transaction or take any such action unless it has received written confirmation from the Company that the Lock-Up Period (as such may have been extended pursuant to this paragraph) has expired.

9. NO STOCKHOLDER RIGHTS. This Warrant in and of itself shall not entitle the Holder to any voting rights or other rights as a stockholder of the Company.

10. TRANSFER OF WARRANT. Subject to applicable laws and the restriction on transfer set forth on the first page of this Warrant, this Warrant and all rights hereunder shall not be transferable without the prior written consent of the Company and subject to any conditions that the Company may request in its sole discretion. In the event of any transfer, the transferee shall sign an investment letter in form and substance satisfactory to the Company.

11. LOST, STOLEN, MUTILATED OR DESTROYED WARRANT. If this Warrant is lost, stolen, mutilated or destroyed, the Company may, on such terms as to indemnity or otherwise as it may reasonably impose (which shall, in the case of a mutilated Warrant, include the surrender thereof), issue a new Warrant of like denomination and tenor as the Warrant so lost, stolen, mutilated or destroyed. Any such new Warrant shall constitute an original contractual obligation of the Company, whether or not the allegedly lost, stolen, mutilated or destroyed Warrant shall be at any time enforceable by anyone.

12. NOTICES, ETC. All notices required or permitted hereunder shall be in writing and shall be deemed effectively given: (a) upon personal delivery to the party to be notified, (b) when sent by confirmed telex or facsimile if sent during normal business hours of the recipient, if not, then on the next business day, (c) five (5) days after having been sent by registered or certified mail, return receipt requested, postage prepaid, or (d) one (1) day after deposit with a nationally recognized overnight courier, specifying next day delivery, with written verification of receipt. All communications shall be sent to the Company or to the Holder at their respective addresses set forth above or at such other address as the Company or the Holder may designate by ten (10) days advance written notice to the other parties hereto.

13. ACCEPTANCE. Receipt of this Warrant by the Holder shall constitute acceptance of and agreement to all of the terms and conditions contained herein.

14. GOVERNING LAW. This Warrant and all rights, obligations and liabilities hereunder shall be governed by the laws of the State of Delaware.

* * * * * *

IN WITNESS WHEREOF, the Company has caused this Warrant to be executed by its duly authorized officer as of _____ ____, _____.

LUNA INNOVATIONS INCORPORATED

By: _____

Name: _____

Title: _____

Agreed and accepted:

By: _____

Name: _____

Title: _____

NOTICE OF EXERCISE

TO: LUNA INNOVATIONS INCORPORATED

(1) ☐ The undersigned hereby elects to purchase _____ shares of the Common Stock of **LUNA INNOVATIONS INCORPORATED** (the "***Company***") pursuant to the terms of the attached Warrant, and tenders herewith payment of the exercise price in full, together with all applicable transfer taxes, if any.

☐ The undersigned hereby elects to purchase _____ shares of the Common Stock of **LUNA INNOVATIONS INCORPORATED** (the "***Company***") pursuant to the terms of the net exercise provisions set forth in Section 2.1 of the attached Warrant, and shall tender payment of all applicable transfer taxes, if any.

(2) Please issue a certificate or certificates representing said shares of Common Stock in the name of the undersigned or in such other name as is specified below:

_____
(Name)

_____

_____
(Address)

(3) The undersigned represents that (i) the aforesaid shares of Common Stock are being acquired for the account of the undersigned for investment and not with a view to, or for resale in connection with, the distribution thereof and that the undersigned has no present intention of distributing or reselling such shares; (ii) the undersigned is aware of the Company's business affairs and financial condition and has acquired sufficient information about the Company to reach an informed and knowledgeable decision regarding its investment in the Company; (iii) the undersigned is experienced in making investments of this type and has such knowledge and background in financial and business matters that the undersigned is capable of evaluating the merits and risks of this investment and protecting the undersigned's own interests; (iv) the undersigned understands that the shares of Common Stock issuable upon exercise of this Warrant have not been registered under the Securities Act of 1933, as amended (the "***Securities Act***"), by reason of a specific exemption from the registration provisions of the Securities Act, which exemption depends upon, among other things, the bona fide nature of the investment intent as expressed herein, and, because such securities have not been registered under the Securities Act, they must be held indefinitely unless subsequently registered under the Securities Act or an exemption from such registration is available; (v) the undersigned is aware that the aforesaid shares of Common Stock may not be sold pursuant to Rule 144 adopted under the Securities Act unless certain conditions are met and until the undersigned has held the shares for the number of years prescribed by Rule 144, that among the conditions for use of the Rule is the availability of current information to the public about the Company and the Company has not made such information available and has no present plans to do so; and (vi) the undersigned agrees not to make any disposition of all or any part of the aforesaid shares of Common Stock unless and until there is then in effect a registration statement under the Securities Act covering such proposed disposition and such disposition is made in accordance with said registration statement, or the undersigned has provided the Company with an opinion of counsel satisfactory to the Company, stating that such registration is not required.

(Date)

(Signature)

(Print name)

Exhibit 4.7

LUNA INNOVATIONS INCORPORATED

2003 STOCK PLAN

STOCK OPTION AGREEMENT

Unless otherwise defined herein, the terms defined in the 2003 Stock Plan shall have the same defined meanings in this Stock Option Agreement.

I. NOTICE OF STOCK OPTION GRANT

Name:

Address:

The undersigned Optionee has been granted an Option to purchase Class B Common Stock of the Company, subject to the terms and conditions of the Plan and this Option Agreement, as follows:

Date of Grant	_____
Vesting Commencement Date	_____
Exercise Price per Share	_____
Total Number of Shares Granted	_____
Total Exercise Price	_____
Type of Option:	☐ Incentive Stock Option
	☐ Nonstatutory Stock Option
Term (years):	_____

Vesting Schedule:

This Option shall be exercisable, in whole or in part, according to the following vesting schedule:

Termination Period:

This Option shall be exercisable for three (3) months after Optionee ceases to be a Service Provider. Upon Optionee's death or Disability, this Option may be exercised for one (1) year after Optionee ceases to be a Service Provider. In no event may Optionee exercise this Option after the Term/Expiration Date as provided above.

II. AGREEMENT

1. Grant of Option. The Plan Administrator of the Company hereby grants to the Optionee named in the Notice of Grant (the "Optionee"), an option (the "Option") to purchase the number of Shares set forth in the Notice of Grant, at the exercise price per Share set forth in the Notice of Grant (the "Exercise Price"), and subject to the terms and conditions of the Plan, which is incorporated herein by reference. Subject to Section 15(c) of the Plan, in the event of a conflict between the terms and conditions of the Plan and this Option Agreement, the terms and conditions of the Plan shall prevail.

If designated in the Notice of Grant as an Incentive Stock Option ("ISO"), this Option is intended to qualify as an Incentive Stock Option as defined in Section 422 of the Code. Nevertheless, to the extent that it exceeds the $100,000 rule of Code Section 422(d), this Option shall be treated as a Nonstatutory Stock Option ("NSO").

2. Exercise of Option.

(a) Right to Exercise. This Option shall be exercisable during its term in accordance with the Vesting Schedule set out in the Notice of Grant and with the applicable provisions of the Plan and this Option Agreement.

(b) Method of Exercise. This Option shall be exercisable by delivery of an exercise notice in the form attached as Exhibit A (the "Exercise Notice") which shall state the election to exercise the Option, the number of Shares with respect to which the Option is being exercised, and such other representations and agreements as may be required by the Company. The Exercise Notice shall be accompanied by payment of the aggregate Exercise Price as to all Exercised Shares. This Option shall be deemed to be exercised upon receipt by the Company of such fully executed Exercise Notice accompanied by the aggregate Exercise Price.

No Shares shall be issued pursuant to the exercise of an Option unless such issuance and such exercise comply with Applicable Laws. Assuming such compliance, for income tax purposes the Shares shall be considered transferred to the Optionee on the date on which the Option is exercised with respect to such Shares.

3. Optionee's Representations. In the event the Shares have not been registered under the Securities Act of 1933, as amended, at the time this Option is exercised, the Optionee shall, if required by the Company, concurrently with the exercise of all or any portion of this Option, deliver

to the Company his or her Investment Representation Statement in the form attached hereto as Exhibit B.

4. Lock-Up Period. Optionee hereby agrees that Optionee shall not offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, any Class B Common Stock (or other securities) of the Company or enter into any swap, hedging or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of any Class B Common Stock (or other securities) of the Company held by Optionee (other than those included in the registration) for a period specified by the representative of the underwriters of Class B Common Stock (or other securities) of the Company not to exceed one hundred eighty (180) days following the effective date of any registration statement of the Company filed under the Securities Act.

Optionee agrees to execute and deliver such other agreements as may be reasonably requested by the Company or the underwriter which are consistent with the foregoing or which are necessary to give further effect thereto. In addition, if requested by the Company or the representative of the underwriters of Class B Common Stock (or other securities) of the Company, Optionee shall provide, within ten (10) days of such request, such information as may be required by the Company or such representative in connection with the completion of any public offering of the Company's securities pursuant to a registration statement filed under the Securities Act. The obligations described in this Section shall not apply to a registration relating solely to employee benefit plans on Form S-1 or Form S-8 or similar forms that may be promulgated in the future, or a registration relating solely to a Commission Rule 145 transaction on Form S-4 or similar forms that may be promulgated in the future. The Company may impose stop-transfer instructions with respect to the shares of Class B Common Stock (or other securities) subject to the foregoing restriction until the end of said one hundred eighty (180) day period. Optionee agrees that any transferee of the Option or shares acquired pursuant to the Option shall be bound by this Section.

5. Method of Payment. Payment of the aggregate Exercise Price shall be by any of the following, or a combination thereof, at the election of the Optionee:

(a) cash or check;

(b) consideration received by the Company under a formal cashless exercise program adopted by the Company in connection with the Plan; or

(c) surrender of other Shares which, (i) in the case of Shares acquired from the Company, either directly or indirectly, have been owned by the Optionee for more than six (6) months on the date of surrender, and (ii) have a Fair Market Value on the date of surrender equal to the aggregate Exercise Price of the Exercised Shares.

6. Restrictions on Exercise. This Option may not be exercised until such time as the Plan has been approved by the shareholders of the Company, or if the issuance of such Shares upon such exercise or the method of payment of consideration for such shares would constitute a violation of any Applicable Law.

7. Non-Transferability of Option. This Option may not be transferred in any manner otherwise than by will or by the laws of descent or distribution and may be exercised during the lifetime of Optionee only by Optionee. The terms of the Plan and this Option Agreement shall be binding upon the executors, administrators, heirs, successors and assigns of the Optionee.

8. Term of Option. This Option may be exercised only within the term set out in the Notice of Grant, and may be exercised during such term only in accordance with the Plan and the terms of this Option.

9. Tax Obligations.

(a) Withholding Taxes. Optionee agrees to make appropriate arrangements with the Company (or the Parent or Subsidiary employing or retaining Optionee) for the satisfaction of all Federal, state, local and foreign income and employment tax withholding requirements applicable to the Option exercise. Optionee acknowledges and agrees that the Company may refuse to honor the exercise and refuse to deliver Shares if such withholding amounts are not delivered at the time of exercise.

(b) Notice of Disqualifying Disposition of ISO Shares . If the Option granted to Optionee herein is an ISO, and if Optionee sells or otherwise disposes of any of the Shares acquired pursuant to the ISO on or before the later of (1) the date two years after the Date of Grant, or (2) the date one year after the date of exercise, the Optionee shall immediately notify the Company in writing of such disposition. Optionee agrees that Optionee may be subject to income tax withholding by the Company on the compensation income recognized by the Optionee.

10. Entire Agreement; Governing Law . The Plan is incorporated herein by reference. The Plan and this Option Agreement constitute the entire agreement of the parties with respect to the subject matter hereof and supersede in their entirety all prior undertakings and agreements of the Company and Optionee with respect to the subject matter hereof, and may not be modified adversely to the Optionee's interest except by means of a writing signed by the Company and Optionee. This agreement is governed by the internal substantive laws but not the choice of law rules of Virginia.

11. No Guarantee of Continued Service. OPTIONEE ACKNOWLEDGES AND AGREES THAT THE VESTING OF SHARES PURSUANT TO THE VESTING SCHEDULE HEREOF IS EARNED ONLY BY CONTINUING AS A SERVICE PROVIDER AT THE WILL OF THE COMPANY (NOT THROUGH THE ACT OF BEING HIRED, BEING GRANTED THIS OPTION OR ACQUIRING SHARES HEREUNDER). OPTIONEE FURTHER ACKNOWLEDGES AND AGREES THAT THIS AGREEMENT, THE TRANSACTIONS CONTEMPLATED HEREUNDER AND THE VESTING SCHEDULE SET FORTH HEREIN DO NOT CONSTITUTE AN EXPRESS OR IMPLIED PROMISE OF CONTINUED ENGAGEMENT AS A SERVICE PROVIDER FOR THE VESTING PERIOD, FOR ANY PERIOD, OR AT ALL, AND SHALL NOT INTERFERE IN ANY WAY WITH OPTIONEE'S RIGHT OR THE COMPANY'S RIGHT TO TERMINATE OPTIONEE'S RELATIONSHIP AS A SERVICE PROVIDER AT ANY TIME, WITH OR WITHOUT CAUSE.

Optionee acknowledges receipt of a copy of the Plan and represents that he or she is familiar with the terms and provisions thereof, and hereby accepts this Option subject to all of the terms and provisions thereof. Optionee has reviewed the Plan and this Option in their entirety, has had an opportunity to obtain the advice of counsel prior to executing this Option and fully understands all provisions of the Option. Optionee hereby agrees to accept as binding, conclusive and final all decisions or interpretations of the Administrator upon any questions arising under the Plan or this Option. Optionee further agrees to notify the Company upon any change in the residence address indicated below.

OPTIONEE	LUNA INNOVATIONS INCORPORATED
Signature	By: Kent A. Murphy
Print Name	Title: President/CEO
Residence Address	

EXHIBIT A

2003 STOCK PLAN

EXERCISE NOTICE

Luna Innovations Incorporated
2851 Commerce Street
Blacksburg, Virginia 24060

Attention: [_____]

1. Exercise of Option. Effective as of today, _____, _____, the undersigned ("Optionee") hereby elects to exercise Optionee's option to purchase _____ shares of the Class B Common Stock (the "Shares") of Luna Innovations Incorporated (the "Company") under and pursuant to the 2003 Stock Plan (the "Plan") and the Stock Option Agreement dated _____, _____(the "Option Agreement").

2. Delivery of Payment. Purchaser herewith delivers to the Company the full purchase price of the Shares, as set forth in the Option Agreement, and any and all withholding taxes due in connection with the exercise of the Option.

3. Representations of Optionee. Optionee acknowledges that Optionee has received, read and understood the Plan and the Option Agreement and agrees to abide by and be bound by their terms and conditions.

4. Rights as Shareholder. The Company's Class B Common Stock is non-voting except to the extent otherwise required under the General Corporation Law of Delaware. Until the issuance of the Shares (as evidenced by the appropriate entry on the books of the Company or of a duly authorized transfer agent of the Company), no right to receive dividends or any other rights as a shareholder shall exist with respect to the Optioned Stock, notwithstanding the exercise of the Option. The Shares shall be issued to the Optionee as soon as practicable after the Option is exercised in accordance with the Option Agreement. No adjustment shall be made for a dividend or other right for which the record date is prior to the date of issuance except as provided in Section 13 of the Plan.

5. Company's Right of First Refusal. Before any Shares held by Optionee or any transferee (either being sometimes referred to herein as the "Holder") may be sold or otherwise transferred (including transfer by gift or operation of law), the Company or its assignee(s) shall have a right of first refusal to purchase the Shares on the terms and conditions set forth in this Section (the "Right of First Refusal").

(a) Notice of Proposed Transfer. The Holder of the Shares shall deliver to the Company a written notice (the "Notice") stating: (i) the Holder's bona fide intention to sell or

otherwise transfer such Shares; (ii) the name of each proposed purchaser or other transferee ("Proposed Transferee"); (iii) the number of Shares to be transferred to each Proposed Transferee; and (iv) the bona fide cash price or other consideration for which the Holder proposes to transfer the Shares (the "Offered Price"), and the Holder shall offer the Shares at the Offered Price to the Company or its assignee(s).

(b) Exercise of Right of First Refusal. At any time within thirty (30) days after receipt of the Notice, the Company and/or its assignee(s) may, by giving written notice to the Holder, elect to purchase all, but not less than all, of the Shares proposed to be transferred to any one or more of the Proposed Transferees, at the purchase price determined in accordance with subsection (c) below.

(c) Purchase Price. The purchase price ("Purchase Price") for the Shares purchased by the Company or its assignee(s) under this Section shall be the Offered Price. If the Offered Price includes consideration other than cash, the cash equivalent value of the non-cash consideration shall be determined by the Board of Directors of the Company in good faith.

(d) Payment. Payment of the Purchase Price shall be made, at the option of the Company or its assignee(s), in cash (by check), by cancellation of all or a portion of any outstanding indebtedness of the Holder to the Company (or, in the case of repurchase by an assignee, to the assignee), or by any combination thereof within thirty (30) days after receipt of the Notice or in the manner and at the times set forth in the Notice.

(e) Holder's Right to Transfer. If all of the Shares proposed in the Notice to be transferred to a given Proposed Transferee are not purchased by the Company and/or its assignee(s) as provided in this Section, then the Holder may sell or otherwise transfer such Shares to that Proposed Transferee at the Offered Price or at a higher price, provided that such sale or other transfer is consummated within 120 days after the date of the Notice, that any such sale or other transfer is effected in accordance with any applicable securities laws and that the Proposed Transferee agrees in writing that the provisions of this Section shall continue to apply to the Shares in the hands of such Proposed Transferee. If the Shares described in the Notice are not transferred to the Proposed Transferee within such period, a new Notice shall be given to the Company, and the Company and/or its assignees shall again be offered the Right of First Refusal before any Shares held by the Holder may be sold or otherwise transferred.

(f) Exception for Certain Family Transfers. Anything to the contrary contained in this Section notwithstanding, the transfer of any or all of the Shares during the Optionee's lifetime or on the Optionee's death by will or intestacy to the Optionee's immediate family or a trust for the benefit of the Optionee's immediate family shall be exempt from the provisions of this Section. "Immediate Family" as used herein shall mean spouse, lineal descendant or antecedent, father, mother, brother or sister. In such case, the transferee or other recipient shall receive and hold the Shares so transferred subject to the provisions of this Section, and there shall be no further transfer of such Shares except in accordance with the terms of this Section.

(g) Termination of Right of First Refusal. The Right of First Refusal shall terminate as to any Shares upon the earlier of (i) the first sale of Class B Common Stock of the

Company to the general public, or (ii) a Change in Control in which the successor corporation has equity securities that are publicly traded.

6. Tax Consultation. Optionee understands that Optionee may suffer adverse tax consequences as a result of Optionee's purchase or disposition of the Shares. Optionee represents that Optionee has consulted with any tax consultants Optionee deems advisable in connection with the purchase or disposition of the Shares and that Optionee is not relying on the Company for any tax advice.

7. Restrictive Legends and Stop-Transfer Orders.

(a) Legends. Optionee understands and agrees that the Company shall cause the legends set forth below or legends substantially equivalent thereto, to be placed upon any certificate(s) evidencing ownership of the Shares together with any other legends that may be required by the Company or by state or federal securities laws:

THE SECURITIES REPRESENTED HEREBY HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933 (THE "ACT") AND MAY NOT BE OFFERED, SOLD OR OTHERWISE TRANSFERRED, PLEDGED OR HYPOTHECATED UNLESS AND UNTIL REGISTERED UNDER THE ACT OR, IN THE OPINION OF COMPANY COUNSEL SATISFACTORY TO THE ISSUER OF THESE SECURITIES, SUCH OFFER, SALE OR TRANSFER, PLEDGE OR HYPOTHECATION IS IN COMPLIANCE THEREWITH.

THE SHARES REPRESENTED BY THIS CERTIFICATE ARE SUBJECT TO CERTAIN RESTRICTIONS ON TRANSFER AND A RIGHT OF FIRST REFUSAL HELD BY THE ISSUER OR ITS ASSIGNEE(S) AS SET FORTH IN THE EXERCISE NOTICE BETWEEN THE ISSUER AND THE ORIGINAL HOLDER OF THESE SHARES, A COPY OF WHICH MAY BE OBTAINED AT THE PRINCIPAL OFFICE OF THE ISSUER. SUCH TRANSFER RESTRICTIONS AND RIGHT OF FIRST REFUSAL ARE BINDING ON TRANSFEREES OF THESE SHARES.

(b) Stop-Transfer Notices. Optionee agrees that, in order to ensure compliance with the restrictions referred to herein, the Company may issue appropriate "stop transfer" instructions to its transfer agent, if any, and that, if the Company transfers its own securities, it may make appropriate notations to the same effect in its own records.

(c) Refusal to Transfer. The Company shall not be required (i) to transfer on its books any Shares that have been sold or otherwise transferred in violation of any of the provisions of this Exercise Notice or (ii) to treat as owner of such Shares or to accord the right to pay dividends to any purchaser or other transferee to whom such Shares shall have been so transferred.

8. Successors and Assigns. The Company may assign any of its rights under this Exercise Notice to single or multiple assignees, and this Exercise Notice shall inure to the benefit of

the successors and assigns of the Company. Subject to the restrictions on transfer herein set forth, this Exercise Notice shall be binding upon Optionee and his or her heirs, executors, administrators, successors and assigns.

9. Interpretation. Any dispute regarding the interpretation of this Exercise Notice shall be submitted by Optionee or by the Company forthwith to the Administrator which shall review such dispute at its next regular meeting. The resolution of such a dispute by the Administrator shall be final and binding on all parties.

10. Governing Law; Severability. This Exercise Notice is governed by the internal substantive laws but not the choice of law rules, of Virginia. In the event that any provision hereof becomes or is declared by a court of competent jurisdiction to be illegal, unenforceable or void, this Option Agreement will continue in full force and effect.

11. Entire Agreement. The Plan and Option Agreement are incorporated herein by reference. This Exercise Notice, the Plan, the Option Agreement and the Investment Representation Statement constitute the entire agreement of the parties with respect to the subject matter hereof and supersede in their entirety all prior undertakings and agreements of the Company and Optionee with respect to the subject matter hereof, and may not be modified adversely to the Optionee's interest except by means of a writing signed by the Company and Optionee.

Submitted by:	Accepted by:
[OPTIONEE NAME]	LUNA INNOVATIONS INCORPORATED
_____	_____
Signature	By
_____	_____
Print Name	Title
Address:	Address:
_____	_____
_____	_____
_____	
	_____
	Date Received

EXHIBIT B

INVESTMENT REPRESENTATION STATEMENT

OPTIONEE:

COMPANY: LUNA INNOVATIONS INCORPORATED

SECURITY: CLASS B COMMON STOCK

AMOUNT:

DATE:

In connection with the purchase of the above-listed Securities, the undersigned Optionee represents to the Company the following:

(a) Optionee is aware of the Company's business affairs and financial condition and has acquired sufficient information about the Company to reach an informed and knowledgeable decision to acquire the Securities. Optionee is acquiring these Securities for investment for Optionee's own account only and not with a view to, or for resale in connection with, any "distribution" thereof within the meaning of the Securities Act of 1933, as amended (the "Securities Act").

(b) Optionee acknowledges and understands that the Securities constitute "restricted securities" under the Securities Act and have not been registered under the Securities Act in reliance upon a specific exemption therefrom, which exemption depends upon, among other things, the bona fide nature of Optionee's investment intent as expressed herein. In this connection, Optionee understands that, in the view of the Securities and Exchange Commission, the statutory basis for such exemption may be unavailable if Optionee's representation was predicated solely upon a present intention to hold these Securities for the minimum capital gains period specified under tax statutes, for a deferred sale, for or until an increase or decrease in the market price of the Securities, or for a period of one year or any other fixed period in the future. Optionee further understands that the Securities must be held indefinitely unless they are subsequently registered under the Securities Act or an exemption from such registration is available. Optionee further acknowledges and understands that the Company is under no obligation to register the Securities. Optionee understands that the certificate evidencing the Securities will be imprinted with any legend required under applicable state securities laws.

(c) Optionee is familiar with the provisions of Rule 701 and Rule 144, each promulgated under the Securities Act, which, in substance, permit limited public resale of "restricted securities" acquired, directly or indirectly from the issuer thereof, in a non-public offering subject to the satisfaction of certain conditions. Rule 701 provides that if the issuer qualifies under Rule 701 at the time of the grant of the Option to the Optionee, the exercise will be exempt from registration under the Securities Act. In the event the Company becomes subject to the reporting requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, ninety (90) days thereafter (or such

longer period as any market stand-off agreement may require) the Securities exempt under Rule 701 may be resold, subject to the satisfaction of certain of the conditions specified by Rule 144, including: (1) the resale being made through a broker in an unsolicited "broker's transaction" or in transactions directly with a market maker (as said term is defined under the Securities Exchange Act of 1934); and, in the case of an affiliate, (2) the availability of certain public information about the Company, (3) the amount of Securities being sold during any three month period not exceeding the limitations specified in Rule 144(e), and (4) the timely filing of a Form 144, if applicable.

In the event that the Company does not qualify under Rule 701 at the time of grant of the Option, then the Securities may be resold in certain limited circumstances subject to the provisions of Rule 144, which requires the resale to occur not less than one year after the later of the date the Securities were sold by the Company or the date the Securities were sold by an affiliate of the Company, within the meaning of Rule 144; and, in the case of acquisition of the Securities by an affiliate, or by a non-affiliate who subsequently holds the Securities less than two years, the satisfaction of the conditions set forth in sections (1), (2), (3) and (4) of the paragraph immediately above.

(d) Optionee further understands that in the event all of the applicable requirements of Rule 701 or 144 are not satisfied, registration under the Securities Act, compliance with Regulation A, or some other registration exemption will be required; and that, notwithstanding the fact that Rules 144 and 701 are not exclusive, the Staff of the Securities and Exchange Commission has expressed its opinion that persons proposing to sell private placement securities other than in a registered offering and otherwise than pursuant to Rules 144 or 701 will have a substantial burden of proof in establishing that an exemption from registration is available for such offers or sales, and that such persons and their respective brokers who participate in such transactions do so at their own risk. Optionee understands that no assurances can be given that any such other registration exemption will be available in such event.

Signature of Optionee:

_____

Date: _____, ____

Exhibit 10.1

LUNA INNOVATIONS INCORPORATED

FORM OF INDEMNIFICATION AGREEMENT

This Indemnification Agreement ("**Agreement**") is made as of _____, 2006 by and between LUNA INNOVATIONS INCORPORATED, a Delaware corporation (the "**Company**"), and _____ ("**Indemnitee**").

WHEREAS, the Company and Indemnitee recognize the increasing difficulty in obtaining directors' and officers' liability insurance, the significant increases in the cost of such insurance and the general reductions in the coverage of such insurance;

WHEREAS, the Company and Indemnitee further recognize the substantial increase in corporate litigation in general, subjecting officers and directors to expensive litigation risks at the same time as the coverage of liability insurance has been limited;

WHEREAS, Indemnitee does not regard the current protection available as adequate under the present circumstances, and Indemnitee and other officers and directors of the Company may not be willing to continue to serve as officers and directors without additional protection; and

WHEREAS, the Company desires to attract and retain the services of highly qualified individuals, such as Indemnitee, to serve as officers and directors of the Company and to indemnify its officers and directors so as to provide them with the maximum protection permitted by law.

NOW, THEREFORE, the Company and Indemnitee hereby agree as follows:

1. Indemnification.

(a) Third Party Proceedings. The Company shall indemnify Indemnitee if Indemnitee is or was or becomes a party to or witness or other participant in, or is threatened to be made a party to or witness or other participant in, any threatened, pending or completed action, suit, proceeding or any alternative dispute resolution mechanism, or any hearing, inquiry or investigation, whether civil, criminal, administrative or investigative (other than an action by or in the right of the Company) by reason of the fact that Indemnitee is or was a director, officer, employee, agent or fiduciary of the Company, or any subsidiary of the Company, by reason of any action or inaction on the part of Indemnitee while an officer or director or by reason of the fact that Indemnitee is or was serving at the request of the Company as a director, officer, employee, agent or fiduciary of another corporation, partnership, joint venture, trust or other enterprise, against any and all expenses (including attorneys' fees and all other costs, expenses and obligations incurred in connection with investigating, defending, being a witness in or participating in (including on appeal), or preparing to defend, be a witness in or participate in, any such action, suit, proceeding, alternative dispute resolution mechanism, hearing, inquiry or investigation), judgments, fines and amounts paid in settlement (if such settlement is approved in advance by the Company, which approval shall not be unreasonably withheld) actually and reasonably incurred by Indemnitee in connection with such action, suit or proceeding if Indemnitee acted in good faith and in a manner Indemnitee reasonably believed to be in or not opposed to the best interests of the Company, and, with respect to any

criminal action or proceeding, had no reasonable cause to believe Indemnitee's conduct was unlawful. The termination of any action, suit or proceeding by judgment, order, settlement, conviction, or upon a plea of nolo contendere or its equivalent, shall not, of itself, create a presumption that (i) Indemnitee did not act in good faith, (ii) Indemnitee did not act in a manner which Indemnitee reasonably believed to be in or not opposed to the best interests of the Company, or (iii) with respect to any criminal action or proceeding, Indemnitee had no reasonable cause to believe that Indemnitee's conduct was unlawful.

(b) Proceedings By or in the Right of the Company. The Company shall indemnify Indemnitee if Indemnitee was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the Company or any subsidiary of the Company to procure a judgment in its favor by reason of the fact that Indemnitee is or was a director, officer, employee or agent of the Company, or any subsidiary of the Company, by reason of any action or inaction on the part of Indemnitee while an officer or director or by reason of the fact that Indemnitee is or was serving at the request of the Company as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees) and, to the fullest extent permitted by law, amounts paid in settlement, in each case to the extent actually and reasonably incurred by Indemnitee in connection with the defense or settlement of such action or proceeding if Indemnitee acted in good faith and in a manner Indemnitee reasonably believed to be in or not opposed to the best interests of the Company and its stockholders, except that no indemnification shall be made in respect of any claim, issue or matter as to which Indemnitee shall have been adjudged to be liable to the Company in the performance of Indemnitee's duty to the Company and its stockholders unless and only to the extent that the court in which such action or suit is or was pending shall determine upon application that, in view of all the circumstances of the case, Indemnitee is fairly and reasonably entitled to indemnity for such expenses and then only to the extent that the court shall determine.

(c) Change in Control. The Company agrees that if there is a Change in Control (as defined in Section 10(c) hereof) of the Company (other than a Change in Control which has been approved by a majority of the Company's Board of Directors who were directors immediately prior to such Change in Control) then, with respect to all matters thereafter arising concerning the rights of Indemnitees to payments of expenses and advancement of expenses under this Agreement or any other agreement or under the Company's Certificate of Incorporation or Bylaws as now or hereafter in effect, Independent Legal Counsel (as defined in Section 10(d) hereof) shall be selected by Indemnitee and approved by the Company (which approval shall not be unreasonably withheld). Such counsel, among other things, shall render its written opinion to the Company and Indemnitee as to whether and to what extent Indemnitee would be permitted to be indemnified under applicable law and the Company agrees to abide by such opinion. The Company agrees to pay the reasonable fees of the Independent Legal Counsel referred to above and to fully indemnify such counsel against any and all expenses (including attorneys' fees), claims, liabilities and damages arising out of or relating to this Agreement or its engagement pursuant hereto.

(d) Mandatory Payment of Expenses. To the extent that Indemnitee has been successful on the merits or otherwise in defense of any action, suit or proceeding referred to in Subsections (a) and (b) of this Section 1, or in defense of any claim, issue or matter therein,

Indemnitee shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by Indemnitee in connection therewith.

2. Agreement to Serve. In consideration of the protection afforded by this Agreement, if Indemnitee is a director of the Company, Indemnitee agrees to serve at least for 30 days after the effective date of this Agreement as a director and not to resign voluntarily during such period without the written consent of a majority of the Board of Directors. If Indemnitee is an officer of the Company not serving under an employment contract, Indemnitee agrees to serve in such capacity at least for 30 days and not to resign voluntarily during such period without the written consent of a majority of the Board of Directors. Following the applicable period set forth above, Indemnitee (who serves in a capacity other than as a director) agrees to continue to serve in such capacity at the will of the Company (or under separate agreement, if such agreement exists) so long as Indemnitee (who serves in a capacity other than as a director) is duly appointed or elected and qualified in accordance with the applicable provisions of the Bylaws of the Company or any subsidiary of the Company or until such time as the Indemnitee tenders his or her resignation in writing. Nothing contained in this Agreement is intended to or shall create in Indemnitee any right to continued employment.

3. Expenses; Indemnification Procedure.

(a) Advancement of Expenses. The Company shall advance all expenses incurred by Indemnitee in connection with the investigation, defense, settlement or appeal of any civil or criminal action, suit or proceeding referenced in Section 1(a) or (b) hereof (but not amounts actually paid in settlement of any such action, suit or proceeding). Indemnitee hereby undertakes to repay such expenses advanced only if, and to the extent that, it shall ultimately be determined that Indemnitee is not entitled to be indemnified by the Company as authorized hereby. The advances to be made hereunder shall be paid by the Company to Indemnitee within forty-five (45) days following delivery of a written request therefore by Indemnitee to the Company.

(b) Notice/Cooperation by Indemnitee. Indemnitee shall, as a condition precedent to Indemnitee's right to be indemnified under this Agreement, give the Company notice in writing as soon as practicable of any claim made against Indemnitee for which indemnification will or could be sought under this Agreement. Notice to the Company shall be directed to the Chief Executive Officer of the Company at the address shown on the signature page of this Agreement (or such other address as the Company shall designate in writing to Indemnitee). Notice shall be deemed received three (3) business days after the date postmarked if sent by domestic certified or registered mail, properly addressed; otherwise notice shall be deemed received when such notice shall actually be received by the Company. In addition, Indemnitee shall give the Company such information and cooperation as it may reasonably require and as shall be within Indemnitee's power.

(c) Procedure. Any indemnification and advances provided for in Section 1 and in this Section 3 shall be made no later than forty-five (45) days after receipt of the written request of Indemnitee. If a claim under this Agreement, under any statute, or under any provision of the Company's Certificate of Incorporation or Bylaws providing for indemnification, is not paid in full by the Company within forty-five (45) days after a written request for payment thereof has first been received by the Company, Indemnitee may, but need not, at any time thereafter submit Indemnitee's

claim to arbitration as described in Section 14 to recover the unpaid amount of the claim and, subject to Section 15 of this Agreement, Indemnitee shall also be entitled to be paid for the expenses (including attorneys' fees) of bringing such claim. It shall be a defense to any such action (other than a claim brought for expenses incurred in connection with any action or proceeding in advance of its final disposition) that Indemnitee has not met the standards of conduct which make it permissible under applicable law for the Company to indemnify Indemnitee for the amount claimed, but the burden of proving such defense shall be on the Company, and Indemnitee shall be entitled to receive interim payments of expenses pursuant to Section 3(a) unless and until such defense may be finally adjudicated by court order or judgment from which no further right of appeal exists or an arbitration panel as described in Section 14. It is the parties' intention that if the Company contests Indemnitee's right to indemnification, the question of Indemnitee's right to indemnification shall be for the court or arbitration panel to decide, and neither the failure of the Company (including its Board of Directors, any committee or subgroup of the Board of Directors, independent legal counsel, or its stockholders) to have made a determination that indemnification of Indemnitee is proper in the circumstances because Indemnitee has met the applicable standard of conduct required by applicable law, nor an actual determination by the Company (including its Board of Directors, any committee or subgroup of the Board of Directors, independent legal counsel, or its stockholders) that Indemnitee has not met such applicable standard of conduct, shall create a presumption that Indemnitee has or has not met the applicable standard of conduct.

(d) Notice to Insurers. If, at the time of the receipt of a notice of a claim pursuant to Section 3(b) hereof, the Company has director and officer liability insurance in effect, the Company shall give prompt notice of the commencement of such proceeding to the insurers in accordance with the procedures set forth in the respective policies. The Company shall thereafter take all necessary or desirable action to cause such insurers to pay, on behalf of the Indemnitee, all amounts payable as a result of such proceeding in accordance with the terms of such policies.

(e) Selection of Counsel. In the event the Company shall be obligated under Section 3(a) hereof to pay the expenses of any proceeding against Indemnitee, the Company, if appropriate, shall be entitled to assume the defense of such proceeding, with counsel approved by Indemnitee, which approval shall not be unreasonably withheld, upon the delivery to Indemnitee of written notice of its election so to do. After delivery of such notice, approval of such counsel by Indemnitee and the retention of such counsel by the Company, the Company will not be liable to Indemnitee under this Agreement for any fees of counsel subsequently incurred by Indemnitee with respect to the same proceeding, provided that (i) Indemnitee shall have the right to employ Indemnitee's own counsel in any such proceeding at Indemnitee's expense; and (ii) if (A) the employment of counsel by Indemnitee has been previously authorized by the Company, (B) Indemnitee shall have reasonably concluded that there may be a conflict of interest between the Company and Indemnitee in the conduct of any such defense or (C) the Company shall not, in fact, have employed counsel to assume the defense of such proceeding, then the fees and expenses of Indemnitee's counsel shall be at the expense of the Company.

4. Additional Indemnification Rights; Nonexclusivity.

(a) Scope. Notwithstanding any other provision of this Agreement, the Company hereby agrees to indemnify the Indemnitee to the fullest extent permitted by law, notwithstanding

that such indemnification is not specifically authorized by the other provisions of this Agreement, the Company's Certificate of Incorporation, the Company's Bylaws or by statute. In the event of any change, after the date of this Agreement, in any applicable law, statute or rule which expands the right of a Delaware corporation to indemnify a member of its Board of Directors or an officer, such changes shall be, ipso facto, within the purview of Indemnitee's rights and Company's obligations under this Agreement. In the event of any change in any applicable law, statute or rule which narrows the right of a Delaware corporation to indemnify a member of its Board of Directors or an officer, such changes, to the extent not otherwise required by such law, statute or rule to be applied to this Agreement shall have no effect on this Agreement or the parties' rights and obligations hereunder.

(b) Nonexclusivity. The indemnification provided by this Agreement shall not be deemed exclusive of any rights to which Indemnitee may be entitled under the Company's Certificate of Incorporation, its Bylaws, any agreement, any vote of stockholders or disinterested directors, the General Corporation Law of the State of Delaware, or otherwise, both as to action in Indemnitee's official capacity and as to action in another capacity while holding such office. The indemnification provided under this Agreement shall continue as to Indemnitee for any action taken or not taken while serving in an indemnified capacity even though Indemnitee may have ceased to serve in such capacity at the time of any action or other covered proceeding.

5. Partial Indemnification. If Indemnitee is entitled under any provision of this Agreement to indemnification by the Company for some or a portion of the expenses, judgments, fines, penalties or amounts paid in settlement actually or reasonably incurred by Indemnitee in the investigation, defense, appeal or settlement of any civil or criminal action or proceeding, but not, however, for the total amount thereof, the Company shall nevertheless indemnify Indemnitee for the portion of such expenses, judgments, fines or penalties to which Indemnitee is entitled.

6. Mutual Acknowledgement. Both the Company and Indemnitee acknowledge that in certain instances, Federal law or applicable public policy may prohibit the Company from indemnifying its directors and officers under this Agreement or otherwise. Indemnitee understands and acknowledges that the Company has undertaken or may be required in the future to undertake with the Securities and Exchange Commission to submit the question of indemnification to a court in certain circumstances for a determination of the Company's right under public policy to indemnify Indemnitee.

7. Directors' and Officers' Liability Insurance. The Company shall, from time to time, make a good faith determination whether or not it is practicable for the Company to obtain and maintain a policy or policies of insurance with reputable insurance companies providing the officers and directors of the Company with coverage for losses from wrongful acts, or to ensure the Company's performance of its indemnification obligations under this Agreement. Among other considerations, the Company will weigh the costs of obtaining such insurance coverage against the protection afforded by such coverage. In all policies of directors' and officers' liability insurance, Indemnitee shall be named as an insured in such a manner as to provide Indemnitee the same rights and benefits as are accorded to the most favorably insured of the Company's directors, if Indemnitee is a director; or of the Company's officers, if Indemnitee is not a director of the Company but is an officer; or of the Company's key employees, if Indemnitee is not an officer or director but is a key

employee. Notwithstanding the foregoing, the Company shall have no obligation to obtain or maintain such insurance if the Company determines in good faith that such insurance is not reasonably available, if the premium costs for such insurance are disproportionate to the amount of coverage provided, if the coverage provided by such insurance is limited by exclusions so as to provide an insufficient benefit, or if Indemnitee is covered by similar insurance maintained by a subsidiary or parent of the Company.

8. Severability. Nothing in this Agreement is intended to require or shall be construed as requiring the Company to do or fail to do any act in violation of applicable law. The Company's inability, pursuant to court order, to perform its obligations under this Agreement shall not constitute a breach of this Agreement. The provisions of this Agreement shall be severable as provided in this Section 8. If this Agreement or any portion hereof shall be invalidated on any ground by any court of competent jurisdiction, then the Company shall nevertheless indemnify Indemnitee to the full extent permitted by any applicable portion of this Agreement that shall not have been invalidated, and the balance of this Agreement not so invalidated shall be enforceable in accordance with its terms.

9. Exceptions. Any other provision herein to the contrary notwithstanding, the Company shall not be obligated pursuant to the terms of this Agreement:

(a) Excluded Acts. To indemnify Indemnitee for any acts or omissions or transactions from which a director may not be indemnified under the Delaware General Corporation Law; or

(b) Claims Initiated by Indemnitee. To indemnify or advance expenses to Indemnitee with respect to proceedings or claims initiated or brought voluntarily by Indemnitee and not by way of defense, except with respect to proceedings brought to establish or enforce a right to indemnification under this Agreement or any other statute or law or otherwise as required under Section 145 of the Delaware General Corporation Law, but such indemnification or advancement of expenses may be provided by the Company in specific cases if the Board of Directors has approved the initiation or bringing of such claim; or

(c) Lack of Good Faith. To indemnify Indemnitee for any expenses incurred by the Indemnitee with respect to any proceeding instituted by Indemnitee to enforce or interpret this Agreement, if a court of competent jurisdiction or the arbitration panel determines that each of the material assertions made by the Indemnitee in such proceeding was not made in good faith or was frivolous; or

(d) Insured Claims. To indemnify Indemnitee for expenses or liabilities of any type whatsoever (including, but not limited to, judgments, fines, ERISA excise taxes or penalties, and amounts paid in settlement) which have been paid directly to Indemnitee by an insurance carrier under a policy of directors' and officers' liability insurance maintained by the Company; or

(e) Claims Under Section 16(b). To indemnify Indemnitee for expenses and the payment of profits arising from the purchase and sale by Indemnitee of securities in violation of Section 16(b) of the Securities Exchange Act of 1934, as amended, or any similar successor statute.

10. Effectiveness of Agreement. To the extent that the indemnification permitted under the terms of certain provisions of this Agreement exceeds the scope of the indemnification provided for in the Delaware General Corporation Law, such provisions shall not be effective unless and until the Company's Certificate of Incorporation authorizes such additional rights of indemnification. In all other respects, the balance of this Agreement shall be effective as of the date set forth on the first page and may apply to acts or omissions of Indemnitee which occurred prior to such date if Indemnitee was an officer, director, employee or other agent of the Company, or was serving at the request of the Company as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, at the time such act or omission occurred.

11. Construction of Certain Phrases.

(a) For purposes of this Agreement, references to the "**Company**" shall include, in addition to the resulting corporation, any constituent corporation (including any constituent of a constituent) absorbed in a consolidation or merger which, if its separate existence had continued, would have had power and authority to indemnify its directors, officers, employees or agents, so that if Indemnitee is or was a director, officer, employee or agent of such constituent corporation, or is or was serving at the request of such constituent corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, Indemnitee shall stand in the same position under the provisions of this Agreement with respect to the resulting or surviving corporation as Indemnitee would have with respect to such constituent corporation if its separate existence had continued.

(b) For purposes of this Agreement, references to "**other enterprises**" shall include employee benefit plans; references to "**fines**" shall include any excise taxes assessed on Indemnitee with respect to an employee benefit plan; and references to "**serving at the request of the Company**" shall include any service as a director, officer, employee or agent of the Company which imposes duties on, or involves services by, such director, officer, employee or agent with respect to an employee benefit plan, its participants, or beneficiaries.

(c) For purposes of this Agreement a "**Change in Control**" shall be deemed to have occurred if (i) any "person" (as such term is used in Sections 13(d) and 14(d) of the Securities Exchange Act of 1934, as amended), other than a trustee or other fiduciary holding securities under an employee benefit plan of the Company acting in such capacity or a corporation owned directly or indirectly by the stockholders of the Company in substantially the same proportions as their ownership of stock of the Company, becomes the "beneficial owner" (as defined in Rule 13d-3 under said Act), directly or indirectly, of securities of the Company representing more than 50% of the total voting power represented by the Company's then outstanding Voting Securities (as defined below), (ii) during any period of two consecutive years, individuals who at the beginning of such period constitute the Board of Directors of the Company and any new director whose election by the Board of Directors or nomination for election by the Company's stockholders was approved by a vote of at least two-thirds of the directors then still in office who either were directors at the beginning of the period or whose election or nomination for election was previously so approved, cease for any reason to constitute a majority thereof, or (iii) the stockholders of the Company approve a merger or consolidation of the Company with any other corporation other than a merger or consolidation which would result in the Voting Securities of the Company outstanding immediately prior thereto

continuing to represent (either by remaining outstanding or by being converted into Voting Securities of the surviving entity) at least 80% of the total voting power represented by the Voting Securities of the Company or such surviving entity outstanding immediately after such merger or consolidation, or the stockholders of the Company approve a plan of complete liquidation of the Company or an agreement for the sale or disposition by the Company of (in one transaction or a series of transactions) all or substantially all of the Company's assets.

(d) For purposes of this Agreement, "**Independent Legal Counsel**" shall mean an attorney or firm of attorneys, selected in accordance with the provisions of Section 1(c) hereof, who shall not have otherwise performed services for the Company or Indemnitee within the last three years (other than with respect to matters concerning the rights of Indemnitee under this Agreement, or of other indemnitees under similar indemnity agreements).

(e) For purposes of this Agreement, "**Voting Securities**" shall mean any securities of the Company that vote generally in the election of directors.

12. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall constitute an original.

13. Successors and Assigns. This Agreement shall be binding upon the Company and its successors and assigns, and shall inure to the benefit of Indemnitee and Indemnitee's estate, heirs, legal representatives and assigns.

14. Arbitration. It is understood and agreed that the Company and Indemnitee shall carry out this Agreement in the spirit of mutual cooperation and good faith and that any differences, disputes or controversies shall be resolved and settled amicably among the parties hereto. In the event that the dispute, controversy or difference is not so settled in the above manner within forty-five (45) days, then the matter shall be exclusively submitted to arbitration in Fairfax County, Virginia before three independent technically qualified arbitrators in accordance with the Commercial Arbitration Rules of the American Arbitration Association and under the laws of Delaware, without reference to conflict of laws principles. Subject to Sections 1(b) and 6, arbitration shall be the exclusive forum and the decision and award by the arbitrator(s) shall be final and binding upon the parties concerned and may be entered in any state court of California having jurisdiction.

15. Attorneys' Fees. In the event that any action is instituted or claim is submitted to arbitration by Indemnitee under this Agreement to enforce or interpret any of the terms hereof, Indemnitee shall be entitled to be paid all court costs and expenses, including reasonable attorneys' fees, incurred by Indemnitee with respect to such action or arbitration, unless as a part of such action, a court of competent jurisdiction or the arbitrator(s) determines that each of the material assertions made by Indemnitee as a basis for such claim were not made in good faith or were frivolous. In the event of an action instituted or a claim submitted to arbitration by or in the name of the Company under this Agreement or to enforce or interpret any of the terms of this Agreement, Indemnitee shall be entitled to be paid all court costs and expenses, including attorneys' fees, incurred by Indemnitee in defense of such action or claim (including with respect to Indemnitee's counterclaims and cross-claims made in such action or arbitration), unless as a part of such action

the court or the arbitrator(s) determines that each of Indemnitee's material defenses to such action or claim were made in bad faith or were frivolous.

16. Notice. All notices, requests, demands and other communications under this Agreement shall be in writing and shall be deemed duly given (i) if delivered by hand and receipted for by the party addressee, on the date of such receipt, or (ii) if mailed by domestic certified or registered mail with postage prepaid, on the third business day after the date postmarked. Addresses for notice to either party are as shown on the signature page of this Agreement, or as subsequently modified by written notice.

17. Consent to Jurisdiction. The Company and Indemnitee each hereby irrevocably consent to the jurisdiction of the courts of the Commonwealth of Virginia for all purposes in connection with any proceeding which arises out of or relates to this Agreement and agree that any action instituted under this Agreement shall be brought only in the state courts of the Commonwealth of Virginia in Fairfax County and that any arbitration proceeding which arises out of or relates to this Agreement shall be held in Fairfax County, Virginia.

18. Choice of Law. This Agreement shall be governed by and its provisions construed in accordance with the laws of the State of Delaware as applied to contracts between Delaware residents entered into and performed entirely within Delaware.

19. Subrogation. In the event of payment under this Agreement, the Company shall be subrogated to the extent of such payment to all of the rights of recovery of Indemnitee, who shall execute all documents required and shall do all acts that may be necessary to secure such rights and to enable the corporation effectively to bring suit to enforce such rights.

20. Continuation of Indemnification. All agreements and obligations of the Company contained herein shall continue during the period that Indemnitee is a director, officer or agent of the Company and shall continue thereafter so long as Indemnitee shall be subject to any possible claim or threatened, pending or completed action, suit or proceeding, whether civil, criminal, arbitrational, administrative or investigative, by reason of the fact that Indemnitee was serving in the capacity referred to herein.

21. Amendment and Termination. Subject to Section 20, no amendment, modification, termination or cancellation of this Agreement shall be effective unless in writing signed by both parties hereto.

22. Integration and Entire Agreement. This Agreement (a) sets forth the entire understanding between the parties, (b) supersedes all previous written or oral negotiations, commitments, understandings and agreements relating to the subject matter hereof and (c) merges all prior and contemporaneous discussions between the parties.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the date first above written.

LUNA INNOVATIONS INCORPORATED

By: _____
Name:
Title:

Address:

AGREED TO AND ACCEPTED:

INDEMNITEE:

_____
Signature

_____
Print Name

_____

_____
Address

Exhibit 10.2

REVISED
April 14, 2005

Mr. Scott A. Graeff
641 White Oak Road
Roanoke, VA 24014

Dear Scott:

I am pleased to extend you an invitation to join Luna Innovations in the position of Chief Financial Officer, reporting to the Luna Innovations Chief Executive Officer, Kent Murphy, starting on July 1, 2005. This position will be exempt.

We can offer a monthly salary of $12,500.00. You will be eligible for a 35% bonus, payable quarterly, based on achievement of a milestone bonus plan to be mutually determined by you and the Board of Directors within 45 days of your date of hire. We will recommend to the Board of Directors that, at the first Board meeting following your employment, you be provided with a stock option grant to purchase 100,000 shares of Luna Innovations Common Stock at an exercise price equal $0.20/share. The grant will be subject to the normal vesting schedule. In addition to a generous 401(k) retirement plan, our benefits include a Paid Time Off program, 10 paid holidays, health insurance, dental plan, life insurance, short and long-term disability. These benefit programs are detailed in the information packet you received during your interview and will be reviewed with you on your first day of employment.

I think you will find the position professionally stimulating and challenging. Our programs cover a cross-section of interesting activities/assignments. Luna's mission and operating style is focused and straightforward, and is essentially embodied in our primary goal – "Solutions for today, products for tomorrow." I believe your contributions will greatly assist the continued growth and success of Luna.

Should you have questions relative to our offer of employment or if you require further information on any point that we may have failed to cover, do not hesitate to contact the Human Resources Department at 540-953-4275. After careful consideration of our total employment package, we hope to receive a written affirmative response from you as soon as possible. Please address your response to Ms. Lori Engebritson.

Sincerely,

/S/ KENT A. MURPHY, PH.D.

Kent A. Murphy, Ph.D.
President & Chief Executive Officer

Exhibit 10.3

REVISED
August 13, 2005

Robert Lenk
12595 FM1097
Willis, TX 77318

Dear Dr. Lenk:

I am pleased to extend you an invitation to join Luna Innovations in the position of CEO of Luna nano Works, a division of Luna Innovations, reporting to me, at your earliest convenience.

Your responsibilities will include the setting strategy of Luna nano Works (LnW) with a medical products/MRI contrast agent focus. In addition to the leadership role at LnW, your background and skills are needed in leading and assisting the commercialization of various medical and biotech product development efforts within Luna Innovations. Our efforts will be focused on getting LnW prepared to be spun out as a separate company and it is expected as equity is built and the spinoff is created that all will be rewarded with ownership in LnW and share in the creation of value as it is harvested with other opportunities as well. As an example, Luna Quest, and other medical and biomedical and any other opportunities where value is added, created and liquidity is created through spinoff ownership, licensing or outright sale of the technology.

The purpose of this offer letter is to align ourselves to a shared goal of building equity and share in the value created.

We can offer you a monthly salary of $14,825.00. You will be eligible for a bonus that will, in sum, be equal to 35% of your salary, payable quarterly, based on achievement of agreed upon milestones. For your first year your goals are:

- Filing of an agreed upon Investigational New Drug (IND) application with the Food and Drug Administration;
- Production and testing of a suitable method for scaling up production of Trimetasphere and Single Wall Carbon Nano Tube (SWCNT) synthesis, separation and purification processes; and
- Produce and begin to execute a plan to develop the Nano business.

The payout of the first, second and third quarter bonuses will be based on satisfactory reports showing appropriate progress towards achievement of the above first year goals. You will provide these reports to me on a timely basis. The fourth quarter bonus payout will be contingent upon full achievement of the above first year goals.

In addition, you will be provided with a stock option grant to purchase 100,000 shares of Luna Innovations Common Stock at an exercise price equal to the current fair market value ($0.20/share), vesting 25% after one year, and monthly pro-rata over the following three years. And, you will be eligible for future options as the company grows and your contributions continue.

Your benefits under Luna's comprehensive benefits program will begin on your first day of employment, with the exception of the 401(K) plan which you can participate in after 3 full months of employment. In addition to our generous 401(k) retirement plan, our benefits include a Paid Time Off program, 10 paid holidays, health insurance, dental plan, life insurance and short and long-term disability. We can also offer relocation benefits for your move to the Danville, Virginia area, to include physical move of household goods, temporary housing and storage up to 90 days if required.

As is our practice with all new employees, we will ask you to sign an Employee Confidentiality agreement and provide a full disclosure of your involvement in all outside corporate, civic, professional, and business-related activities.

We are excited about the work you have done with Luna to date, and the work we can do together in the future. Upon acceptance of our offer, we would like to have a press release with wide circulation noting your affiliation with the Luna Group.

I think you will find the position professionally stimulating and challenging, and I believe your contributions will greatly assist the continued growth and success of Luna. It has been a great pleasure working with you as a consultant for the past few months, and I look forward to continuing this relationship as you become a full time Luna employee.

Should you have questions relative to our offer of employment or if you require further information on any point that we may have failed to cover, do not hesitate to contact the Human Resources Department at 540-953-4275. After careful consideration of our total employment package, we hope to receive a written affirmative response from you as soon as possible. Please address your response to Ms. Lori Engebritson.

Sincerely,

/S/ KENT A. MURPHY, PH.D.

Kent A. Murphy, Ph.D.
President & Chief Executive Officer

Exhibit 10.4

September 20, 2005

John Goehrke

Dear John:

I am pleased to extend you an invitation to join Luna Innovations in the position of Chief Operating Officer, reporting to me. This position will be exempt.

We can offer a monthly salary of $16,667.00. During the 4th quarter of calendar year 2005, you will be eligible for a one-fourth of a 25% ($12,500.00) bonus based on Luna Innovations milestones to be mutually determined at a later date. Starting January 1, 2006, you will be eligible for up to a 50% bonus, payable quarterly, based on achievement of a Luna Innovations milestone bonus plan also to be mutually determined at a later date. You will continue to be eligible for the Luna Technologies bonus plan through the end of the 2005 calendar year, and payout will be as follows:

- If Q3 YTD Revenue of $2,123k is met, 75% ($75,000.00) of annual bonus will be payable in October 2005.
- If Q4 YTD Revenue of $3,338k is met, remaining 25% ($25,000.00) of annual bonus will be paid in January 2006.

We will recommend to the Board of Directors that, at the first Board meeting following your employment, you will be provided with a stock option grant to purchase 300,000 shares of Luna Innovations Common Stock at an exercise price equal fair market value at time of hire. 50% of the shares shall vest twelve (12) months after the vesting commencement date, and the balance of the shares subject to the option shall vest monthly pro-rata over three (3) years thereafter on the same day of the month as the vesting commencement date, subject to continued service on such dates. In addition to a generous 401(k) retirement plan, our benefits include a Paid Time Off program, 10 paid holidays, health insurance, dental plan, life insurance, short and long-term disability. These benefits will be reviewed with you on your first day of employment. You will receive PTO at the level of a 5 year employee. This means that you would have 184 hours or 23 days of Paid Time Off per year available to you (prorated based on your start date). Luna also will pay 100% of expenses associated with your temporary relocation to Blacksburg. This is limited to travel expenses between Blacksburg, VA and Cary, NC, and associated hotel costs. This benefit will continue until you relocate to Roanoke, Virginia.

I think you will find the position professionally stimulating and challenging. Our programs cover a cross-section of interesting activities/assignments. Luna's mission and operating style is focused and straightforward, and is essentially embodied in our primary goal – "Solutions for today, products for tomorrow." I believe your contributions will greatly assist the continued growth and success of Luna.

Should you have questions relative to our offer of employment or if you require further information on any point that we may have failed to cover, do not hesitate to contact the Human Resources Department at 540-953-4275.

This offer of employment by Luna Innovations is contingent upon your review, agreement and acceptance of the Letter Agreement attached as Exhibit A to this offer letter. By signing in the noted area at the end of this letter, and at the end of Exhibit A, you knowingly and voluntarily agree to all terms and conditions of the agreement as noted in this offer letter and in Exhibit A.

After careful consideration of our total employment package, we hope to receive a written affirmative response from you by September 29, 2005.

Sincerely,

/s/ Kent A. Murphy, Ph.D.
Kent A. Murphy, Ph.D.
President & Chief Executive Officer

ACCEPTED AND AGREED TO:

/s/ John Goerke
(Signature)

John Goerke
(Print Name)

Date: _____

Exhibit 10.5

October 24, 2005

Mr. Kenneth Ferris
1449 Etzler Road
Troutville, VA 24175

Dear Ken:

I am pleased to extend you an invitation to join Luna Innovations in the position of President, Advanced Systems, reporting to the Luna Innovations Chief Operating Officer, and starting at your earliest convenience. This position will be exempt.

We can offer a monthly salary of $13,750.00. You will be eligible for a 25% bonus, payable quarterly, based on achievement of a milestone bonus plan to be mutually determined within 45 days of your date of hire. We will recommend to the Board of Directors that, at the first Board meeting following your employment, you be provided with a stock option grant to purchase 100,000 shares of Luna Innovations Common Stock at an exercise price equal fair market value at time of hire. The grant will be subject to the normal vesting schedule. In addition to a generous 401(k) retirement plan, our benefits include a Paid Time Off program, 10 paid holidays, health insurance, dental plan, life insurance, short and long-term disability. These benefits will be reviewed with you on your first day of employment. In addition, your original hire date with Luna Innovations of May 13, 2002 will be used in determining your 401(K) vesting. And, you will receive PTO at the level of a 5 year employee. This means that you would have 184 hours or 23 days of Paid Time Off per year available to you (prorated based on your start date).

I think you will find the position professionally stimulating and challenging. Our programs cover a cross-section of interesting activities/assignments. Luna's mission and operating style is focused and straightforward, and is essentially embodied in our primary goal – "Solutions for today, products for tomorrow." I believe your contributions will greatly assist the continued growth and success of Luna.

Should you have questions relative to our offer of employment or if you require further information on any point that we may have failed to cover, do not hesitate to contact the Human Resources Department at 540-953-4275. After careful consideration of our total employment package, we hope to receive a written affirmative response from you as soon as possible. Please address your response to Ms. Lori Engebritson.

Sincerely,

/S/ KENT A. MURPHY, PH.D.

Kent A. Murphy, Ph.D.
President & Chief Executive Officer

Exhibit 10.6

LOAN AGREEMENT

This LOAN AGREEMENT, amended as of November 10, 2005, is by and between Luna Innovations Incorporated and First National Bank, headquartered in Christiansburg, VA.

BORROWER:

Luna Innovations Incorporated, a Delaware Corporation

TYPE OF LOAN:

Revolving Line of Credit 953469

PURPOSE:

Loan proceeds may be used by the Borrower to finance working capital needs.

AMOUNT OF LOAN:

Up to $2,500,000.00

INTEREST RATE:

Prime Rate Daily: Interest on the daily unpaid principal balance from date until paid in full at a rate per annum equal to the Wall Street Journal Prime Rate +0% in effect on each respective day. During the term of this loan, the interest rate will not exceed 10.0% per annum or fall below 6.0% per annum.

LOAN AGREEMENT:

This agreement shall serve as the loan agreement.

REPAYMENT TERMS:

During the term of this loan, Borrower may borrow, prepay and re-borrow under this loan so long as the maximum principal amount outstanding does not exceed the maximum amount permitted under the Borrowing Base and no default has occurred. The outstanding principal balance of the loan will be payable in full on demand or at expiration, whichever occurs first. The Revolving Line of Credit shall expire on 5/23/06. Interest on the outstanding principal balance will be due and payable monthly on the 10th day of each month. Any renewal, extension of maturity and/or expiration date, or increase in amount of this loan by the Bank shall be governed by the terms of this agreement unless otherwise agreed to by the Bank, in writing. The Bank will review the loan annually prior to expiration to determine whether the Bank will extend, modify or renew it.

COLLATERAL:

This loan is secured by a first lien Uniform Commercial Code security interest in (i) all of the Borrower's Inventory, Equipment, Farm Products, whether now owned by Borrower or hereafter acquired, (ii) Accounts, Instruments, Documents, Chattel Paper and Other Rights to Payment, General Intangibles, Government Payments and Programs, whether presently existing or arising in the future, and (iii) all proceeds and products from the foregoing (including insurance proceeds).

ADVANCES GOVERNED BY BORROWING BASE / CONDITIONS TO EACH ADVANCE:

A Borrowing Base will govern advances up to the maximum amount of $2,500,000.00 under the Revolving Line of Credit. Upon each request, or monthly while the Line of Credit maintains a balance, the Borrower will submit a Borrowing Base Certificate to the Bank together with a copy of a current aging of the Borrower's accounts receivable, a listing of Furniture, Fixtures, and Equipment, and the Contract Backlog Report. The report will be certified as to accuracy by the Borrower's CFO, and will be presented in the format attached hereto.

The Borrowing Base will exclude accounts receivable from affiliates and subsidiary companies, and as any accounts receivable associated with intellectual property or license revenue. Any Borrowing Base shortfall evidenced by a monthly Borrowing Base Certificate shall not exceed the amount of $300,000 for more than sixty days. To the extent the total of advances outstanding hereunder at any time exceeds the Borrowing Base by $300,000 or less than more than sixty days, Borrower shall immediately prepay this loan to such extent.

The Borrower may advance additional principal under the Line of Credit according to the following calculation:

90% of Amount of Accounts Receivable* 0-60 days old

Plus, 70% of Amounts of Accounts Receivable* 61 -90 days old

Plus, 60% of the net depreciated value of Furniture, Fixtures and Equipment **

Less, Existing Principal Balance on Line of Credit

Equals: Additional Availability under Line of Credit

---

* Excludes Accounts Receivable from affiliates and subsidiary companies, and as any accounts receivable associated with intellectual property or license revenue

** The net asset value of leasehold improvements and leased equipment will be deducted from this calculation

FINANCIAL COVENANTS:

During the Term of the Loan, the Borrower will be subject to maintenance of the following financial covenants. Compliance with the covenants will be calculated annually based upon the Borrower's fiscal year-end financial statements.

The covenants are as follows:

- The Borrower will maintain a minimum interest coverage ratio of 2.25:1.00. The ratio will be calculated as Numerator: Earnings Before Interest and Taxes *divided* by Denominator: Annual interest expense.
- The Borrower will maintain a maximum overall debt to worth ratio of 2.0:1.0. The ratio will be calculated as Numerator: Total Liabilities *divided* by Denominator: Total Net Worth.

OTHER CONDITIONS/COVENANTS:

The Borrower will be subject to the maintenance of a Liquidity Covenant at all times during the term of the Revolving Line of Credit. The Liquidity Covenant is defined as follows:

- The Borrower will maintain a minimum dollar amount of cash and cash equivalents at all times in an amount equal to the balance outstanding on the Revolving Line of Credit; however, the minimum liquidity requirement is $1,000,000, regardless of the balance outstanding on the Revolving Line of Credit, and the maximum liquidity requirement is $2,000,000, regardless of the balance outstanding on the Revolving Line of Credit.
- Without prior approval, the Borrower will not
    a. Make a direct loan to an affiliate or subsidiary of the Borrower exceeding $500,000 annually
    b. Guaranty the debt of an affiliate or subsidiary
    c. Incur debt in excess of $200,000.00 non-First National Bank debt annually
- The Borrower will continue to provide the Bank an assignment of life insurance in a minimum amount of $1,000,000.00 on the life of Kent A. Murphy. This assignment will cover all indebtedness of the Borrower to the Bank.

REPORTING REQUIREMENTS:

So long as the Borrower is indebted to the Bank, the Borrower shall submit to the Bank the following:

Within 120 days following the Borrower's fiscal year end, the Borrower will deliver to the Bank its Audit quality financial statements (to include a balance sheet, income statement and supporting schedules) prepared according to generally accepted accounting principles by an accounting firm acceptable to us.

Within 20 days after the end of each quarter, the Borrower will deliver to the Bank its internally generated financial statements, certified by the Borrower to be true and accurate.

Until the loan is repaid in full, the Borrower and each Guarantor will be obligated on a continuing basis to provide the Bank with such financial information concerning the Borrower and each Guarantor as the Bank may request from time to time.

The Borrower will immediately inform the Bank of any material change in the condition, financial or otherwise, of the Borrower and of any actual or threatened litigation, which might substantially affect the condition, financial or otherwise, of the Borrower.

INSURANCE:

At the time the loan closes and all times thereafter until the loan is paid in full, you must maintain hazard insurance on the collateral for this line of credit against such risks and in such form and amount as the Bank may require. The Bank must be named as a lender loss payee on the policy and

you must provide us with an insurance certificate. A company approved by the Bank and licensed to transact business in the state in which the collateral is located must issue the insurance.

REPRESENTATIONS AND WARRANTIES:

All information that has been and continues to be furnished to the Bank is true and accurate and the Borrower has not failed to disclose any information of a material nature regarding its business or financial condition.

All financial statements, certificates and other information furnished, or to be furnished, to the Bank are, or shall be, true and accurate; the Borrower has not failed to disclose any information that could materially affect its properties, business or financial condition; and there has occurred no material adverse change in the financial condition of the Borrower or any other person liable to the Bank for the repayment of this loan since the date of the Borrower's most recent financial statement.

The Borrower is a corporation duly organized, validly existing and in good standing under the laws of Delaware and is authorized to transact business in the Commonwealth of Virginia and all necessary jurisdictions.

This loan, when accepted, and all documents and instruments to be executed and delivered to the Bank in connection with this loan and the funding thereof, shall be duly authorized, valid, enforceable and binding on the parties thereto, and shall not conflict with or constitute a breach of any other agreements or corporate documents of the Borrower.

SURVIVAL:

The terms and provisions of this loan shall survive the closing of the loan made hereunder, the delivery of all documents necessary to carry out the provision of this loan, and the funding and making of loans and disbursements hereunder.

NON-ASSIGNABLE:

This loan and the right of Borrower to receive loans hereunder may not be assigned by Borrower.

AMENDMENT AND WAIVER:

No alteration, modification, amendment or waiver of any terms and conditions of this loan, or of any of the documents required by or delivered to the Bank under this loan, shall be effective or enforceable against the Bank unless set forth in a writing signed by the Bank.

INTEGRATION:

The terms set forth above represent the entire understanding between the Borrower and the Bank with respect to the subject matter of this loan, and this loan supersedes any prior and contemporaneous agreements, loans, discussions and understandings, oral or written, with respect to the subject matter of this loan.

The terms and conditions set forth above are accepted this 10th day of November, 2005.

First National Bank

By: /s/ KAREN W. TURNER
Karen W. Turner, SVP

Luna Innovations Inc.

By: /S/ KENT MURPHY
Kent Murphy, President and CEO

First National Bank Borrowing Base Certificate

Luna Innovations Incorporated Line of Credit 953469
Status As Of Month Ended 00/00/05

Accounts Receivable* (≤ 60 Days Past Invoice)	$ —
Accounts Receivable* (> 60 Days Past Invoice)	$ —
Total Accounts Receivable	$ —

* Excludes AR from affiliates and subsidiaries, and AR associated with intellectual property or license revenue

Less Ineligible (≥ 90 Days Past Invoice)	$ —
Net Accounts Receivable	$ —
Net Depreciated FF&E *	$ —

* Excludes net asset value of leasehold improvements and leased equipment

Advance Calculations	$ —
a. 90% Eligible AR (≤ 60 Days Past Invoice)	
b. 70% Eligible AR (> 60 Days Past Invoice)	$ —
c. 60% Net Depreciated FF&E	$ —
Equals Total Available Per Advance Calculation	$ —
Maximum Loan Amount (*Lesser of $2,500,000 and Line #5*)	$ —
Outstanding Balance on RLOC	$ —
Total Available for Future Advances (*Line 6 Minus Line 7*)	$ —
Liquidity Requirement Confirmation:	
Cash and Equivalents shall be equal to the balance outstanding under the line of credit (Line 7)	$ —
Subject To:	
Minimum Liquidity Required	$1,000,000
Maximum Liquidity Required	$2,000,000
Minimum Liquidity Required	$ —
Liquidity Requirement Met? (Yes/No)	

Attachments Required for Calculation of Availability:	Report Dated	Attached YES/NO
Accounts Receivable Aging Report Dated (Monthly)		
Backlog Report (Monthly)		
Furniture, Fixture, and Equipment Listing (Monthly)		
Financial Statements (Quarterly)		

Certified By: LUNA INNOVATIONS INCORPORATED

Prepared By: _____ Date: 00/00/05

Mark Mariotti, Controller
Authorized By: _____

Scott Graeff, Chef Financial Officer Date: 00/00/05

Exhibit 10.7

LUNA INNOVATIONS INCORPORATED

2003 STOCK PLAN

As Amended February 4, 2006

1. Purposes of the Plan. The purposes of this Plan are to attract and retain the best available personnel for positions of substantial responsibility, to provide additional incentive to Employees, Directors and Consultants and to promote the success of the Company's business. Options granted under the Plan may be Incentive Stock Options or Nonstatutory Stock Options, as determined by the Administrator at the time of grant.

2. Definitions. As used herein, the following definitions shall apply:

(a) "Administrator" means the Board or any of its Committees as shall be administering the Plan in accordance with Section 4 hereof.

(b) "Applicable Laws" means the requirements relating to the administration of stock option plans under U.S. state corporate laws, U.S. federal and state securities laws, the Code, any stock exchange or quotation system on which the Class B Common Stock is listed or quoted and the applicable laws of any other country or jurisdiction where Options are granted under the Plan.

(c) "Board" means the Board of Directors of the Company.

(d) "Change in Control" means the occurrence of any of the following events:

(i) Any "person" (as such term is used in Sections 13(d) and 14(d) of the Exchange Act) becomes the "beneficial owner" (as defined in Rule 13d-3 of the Exchange Act), directly or indirectly, of securities of the Company representing fifty percent (50%) or more of the total voting power represented by the Company's then outstanding voting securities; provided, however, that any such "person" becoming a "beneficial owner" of securities of the Company representing fifty percent (50%) or more of the total voting power represented by the Company's then outstanding voting securities as a result of a private financing of the Company (as reasonably determined by the Company) shall not constitute a Change of Control; or

(ii) The consummation of the sale or disposition by the Company of all or substantially all of the Company's assets; or

(iii) The consummation of a merger or consolidation of the Company with any other corporation, other than a merger or consolidation which would result in the voting securities of the Company outstanding immediately prior thereto continuing to represent (either by remaining outstanding or by being converted into voting securities of the surviving entity or its parent) at least fifty percent (50%) of the total voting power represented by the voting securities of the Company or such surviving entity or its parent outstanding immediately after such merger or consolidation.

(e) "Code" means the Internal Revenue Code of 1986, as amended.

(f) "Committee" means a committee of Directors or of other individuals satisfying Applicable Laws appointed by the Board in accordance with Section 4 hereof.

(g) "Class B Common Stock" means the Class B Common Stock of the Company.

(h) "Company" means Luna Innovations, a Delaware corporation.

(i) "Consultant" means any person who is engaged by the Company or any Parent or Subsidiary to render consulting or advisory services to such entity.

(j) "Director" means a member of the Board.

(k) "Disability" means total and permanent disability as defined in Section 22(e)(3) of the Code.

(l) "Employee" means any person, including officers and Directors, employed by the Company or any Parent or Subsidiary of the Company. Neither service as a Director nor payment of a director's fee by the Company shall be sufficient to constitute "employment" by the Company.

(m) "Exchange Act" means the Securities Exchange Act of 1934, as amended.

(n) "Fair Market Value" means, as of any date, the value of Class B Common Stock determined as follows:

(i) If the Class B Common Stock is listed on any established stock exchange or a national market system, including without limitation the Nasdaq National Market or The Nasdaq SmallCap Market of The Nasdaq Stock Market, its Fair Market Value shall be the closing sales price for such stock (or the closing bid, if no sales were reported) as quoted on such exchange or system on the day of determination, as reported in *The Wall Street Journal* or such other source as the Administrator deems reliable;

(ii) If the Class B Common Stock is regularly quoted by a recognized securities dealer but selling prices are not reported, its Fair Market Value shall be the mean between the high bid and low asked prices for the Class B Common Stock on the day of determination; or

(iii) In the absence of an established market for the Class B Common Stock, the Fair Market Value thereof shall be determined in good faith by the Administrator.

(o) "Incentive Stock Option" means an Option intended to qualify as an incentive stock option within the meaning of Section 422 of the Code.

(p) "Nonstatutory Stock Option" means an Option not intended to qualify as an Incentive Stock Option.

(q) "Option" means a stock option granted pursuant to the Plan.

(r) "Option Agreement" means a written or electronic agreement between the Company and an Optionee evidencing the terms and conditions of an individual Option grant. The Option Agreement is subject to the terms and conditions of the Plan.

(s) "Optioned Stock" means the Class B Common Stock subject to an Option.

(t) "Optionee" means the holder of an outstanding Option granted under the Plan.

(u) "Parent" means a "parent corporation," whether now or hereafter existing, as defined in Section 424(e) of the Code.

(v) "Plan" means this 2003 Stock Plan.

(w) "Restricted Stock" means Shares of restricted stock issued pursuant to an Option.

(x) "Restricted Stock Purchase Agreement" means a written agreement between the Company and the Optionee evidencing the terms and restrictions applying to Shares of restricted stock purchased under an Option. The Restricted Stock Purchase Agreement is subject to the terms and conditions of the Plan and the notice of grant.

(y) "Service Provider" means an Employee, Director or Consultant.

(z) "Share" means a share of the Class B Common Stock, as adjusted in accordance with Section 12 below.

(aa) "Subsidiary" means a "subsidiary corporation," whether now or hereafter existing, as defined in Section 424(f) of the Code.

3. Stock Subject to the Plan. Subject to the provisions of Section 12 of the Plan, the maximum aggregate number of Shares that may be subject to option and sold under the Plan is Nine Million Seven Hundred Fifteen Thousand (9,715,000) Shares. The Shares may be authorized but unissued, or reacquired Class B Common Stock.

If an Option expires or becomes unexercisable without having been exercised in full, the unpurchased Shares that were subject thereto shall become available for future grant or sale under the Plan (unless the Plan has terminated). However, Shares that have actually been issued under the Plan, upon exercise of an Option, shall not be returned to the Plan and shall not become available for future distribution under the Plan, except that if unvested Shares of Restricted Stock are repurchased by the Company at their original purchase price, such Shares shall become available for future grant under the Plan.

4. Administration of the Plan.

(a) Administrator. The Plan shall be administered by the Board or a Committee appointed by the Board, which Committee shall be constituted to comply with Applicable Laws.

(b) Powers of the Administrator. Subject to the provisions of the Plan and, in the case of a Committee, the specific duties delegated by the Board to such Committee, and subject to the approval of any relevant authorities, the Administrator shall have the authority in its discretion:

(i) to determine the Fair Market Value;

(ii) to select the Service Providers to whom Options may from time to time be granted hereunder;

(iii) to determine the number of Shares to be covered by each such award granted hereunder;

(iv) to approve forms of agreement for use under the Plan;

(v) to determine the terms and conditions of any Option granted hereunder. Such terms and conditions include, but are not limited to, the exercise price, the time or times when Options may be exercised (which may be based on performance criteria), any vesting acceleration or waiver of forfeiture restrictions, and any restriction or limitation regarding any Option or the Class B Common Stock relating thereto, based in each case on such factors as the Administrator, in its sole discretion, shall determine;

(vi) to prescribe, amend and rescind rules and regulations relating to the Plan, including rules and regulations relating to sub-plans established for the purpose of satisfying applicable foreign laws;

(vii) to allow Optionees to satisfy withholding tax obligations by electing to have the Company withhold from the Shares to be issued upon exercise of an Option that number of Shares having a Fair Market Value equal to the minimum amount required to be withheld. The Fair Market Value of the Shares to be withheld shall be determined on the date that the amount of tax to be withheld is to be determined. All elections by Optionees to have Shares withheld for this purpose shall be made in such form and under such conditions as the Administrator may deem necessary or advisable; and

(viii) to construe and interpret the terms of the Plan and Options granted pursuant to the Plan.

(c) Effect of Administrator's Decision. All decisions, determinations and interpretations of the Administrator shall be final and binding on all Optionees.

5. Eligibility. Nonstatutory Stock Options may be granted to Service Providers. Incentive Stock Options may be granted only to Employees.

6. Limitations.

(a) Incentive Stock Option Limit. Each Option shall be designated in the Option Agreement as either an Incentive Stock Option or a Nonstatutory Stock Option. However, notwithstanding such designation, to the extent that the aggregate Fair Market Value of the Shares with respect to which Incentive Stock Options are exercisable for the first time by the Optionee

during any calendar year (under all plans of the Company and any Parent or Subsidiary) exceeds $100,000, such Options shall be treated as Nonstatutory Stock Options. For purposes of this Section 6(a), Incentive Stock Options shall be taken into account in the order in which they were granted. The Fair Market Value of the Shares shall be determined as of the time the Option with respect to such Shares is granted.

(b) At-Will Employment. Neither the Plan nor any Option shall confer upon any Optionee any right with respect to continuing the Optionee's relationship as a Service Provider with the Company, nor shall it interfere in any way with his or her right or the Company's right to terminate such relationship at any time, with or without cause, and with or without notice.

7. Term of Plan. Subject to shareholder approval in accordance with Section 18, the Plan shall become effective upon its adoption by the Board. Unless sooner terminated under Section 14, it shall continue in effect for a term of ten (10) years from the later of (i) the effective date of the Plan, or (ii) the earlier of the most recent Board or shareholder approval of an increase in the number of Shares reserved for issuance under the Plan.

8. Term of Option. The term of each Option shall be stated in the Option Agreement; provided, however, that the term shall be no more than ten (10) years from the date of grant thereof. In the case of an Incentive Stock Option granted to an Optionee who, at the time the Option is granted, owns stock representing more than ten percent (10%) of the voting power of all classes of stock of the Company or any Parent or Subsidiary, the term of the Option shall be five (5) years from the date of grant or such shorter term as may be provided in the Option Agreement.

9. Option Exercise Price and Consideration.

(a) Exercise Price. The per share exercise price for the Shares to be issued upon exercise of an Option shall be such price as is determined by the Administrator, but shall be subject to the following:

(i) In the case of an Incentive Stock Option

(A) granted to an Employee who, at the time of grant of such Option, owns stock representing more than ten percent (10%) of the voting power of all classes of stock of the Company or any Parent or Subsidiary, the exercise price shall be no less than 110% of the Fair Market Value per Share on the date of grant.

(B) granted to any other Employee, the per Share exercise price shall be no less than 100% of the Fair Market Value per Share on the date of grant.

(ii) In the case of a Nonstatutory Stock Option, the per Share exercise price shall be determined by the Administrator.

(iii) Notwithstanding the foregoing, Options may be granted with a per Share exercise price other than as required above pursuant to a merger or other corporate transaction.

(b) Forms of Consideration. The consideration to be paid for the Shares to be issued upon exercise of an Option, including the method of payment, shall be determined by the

Administrator (and, in the case of an Incentive Stock Option, shall be determined at the time of grant). Such consideration may consist of, without limitation, (1) cash, (2) check, (3) promissory note, (4) other Shares, provided Shares acquired directly from the Company (x) have been owned by the Optionee for more than six months on the date of surrender, and (y) have a Fair Market Value on the date of surrender equal to the aggregate exercise price of the Shares as to which such Option shall be exercised, (5) consideration received by the Company under a cashless exercise program implemented by the Company in connection with the Plan, or (6) any combination of the foregoing methods of payment. In making its determination as to the type of consideration to accept, the Administrator shall consider if acceptance of such consideration may be reasonably expected to benefit the Company.

10. Exercise of Option.

(a) Procedure for Exercise; Rights as a Shareholder. Any Option granted hereunder shall be exercisable according to the terms hereof at such times and under such conditions as determined by the Administrator and set forth in the Option Agreement. An Option may not be exercised for a fraction of a Share.

An Option shall be deemed exercised when the Company receives: (i) written or electronic notice of exercise (in accordance with the Option Agreement) from the person entitled to exercise the Option, and (ii) full payment for the Shares with respect to which the Option is exercised. Full payment may consist of any consideration and method of payment authorized by the Administrator and permitted by the Option Agreement and the Plan. Shares issued upon exercise of an Option shall be issued in the name of the Optionee or, if requested by the Optionee, in the name of the Optionee and his or her spouse. Until the Shares are issued (as evidenced by the appropriate entry on the books of the Company or of a duly authorized transfer agent of the Company), no right to vote or receive dividends or any other rights as a shareholder shall exist with respect to the Shares, notwithstanding the exercise of the Option. The Company shall issue (or cause to be issued) such Shares promptly after the Option is exercised. No adjustment will be made for a dividend or other right for which the record date is prior to the date the Shares are issued, except as provided in Section 12 of the Plan.

Exercise of an Option in any manner shall result in a decrease in the number of Shares thereafter available, both for purposes of the Plan and for sale under the Option, by the number of Shares as to which the Option is exercised.

(b) Termination of Relationship as a Service Provider. If an Optionee ceases to be a Service Provider, such Optionee may exercise his or her Option within such period of time as is specified in the Option Agreement to the extent that the Option is vested on the date of termination (but in no event later than the expiration of the term of the Option as set forth in the Option Agreement). In the absence of a specified time in the Option Agreement, the Option shall remain exercisable for three (3) months following the Optionee's termination. If, on the date of termination, the Optionee is not vested as to his or her entire Option, the Shares covered by the unvested portion of the Option shall revert to the Plan. If, after termination, the Optionee does not exercise his or her Option within the time specified by the Administrator, the Option shall terminate, and the Shares covered by such Option shall revert to the Plan.

(c) Disability of Optionee. If an Optionee ceases to be a Service Provider as a result of the Optionee's Disability, the Optionee may exercise his or her Option within such period of time as is specified in the Option Agreement to the extent the Option is vested on the date of termination (but in no event later than the expiration of the term of such Option as set forth in the Option Agreement). In the absence of a specified time in the Option Agreement, the Option shall remain exercisable for twelve (12) months following the Optionee's termination. If, on the date of termination, the Optionee is not vested as to his or her entire Option, the Shares covered by the unvested portion of the Option shall revert to the Plan. If, after termination, the Optionee does not exercise his or her Option within the time specified herein, the Option shall terminate, and the Shares covered by such Option shall revert to the Plan.

(d) Death of Optionee. If an Optionee dies while a Service Provider, the Option may be exercised within such period of time as is specified in the Option Agreement (but in no event later than the expiration of the term of such Option as set forth in the Option Agreement), by the Optionee's designated beneficiary, provided such beneficiary has been designated prior to Optionee's death in a form acceptable to the Administrator. If no such beneficiary has been designated by the Optionee, then such Option may be exercised by the personal representative of the Optionee's estate or by the person(s) to whom the Option is transferred pursuant to the Optionee's will or in accordance with the laws of descent and distribution. In the absence of a specified time in the Option Agreement, the Option shall remain exercisable for twelve (12) months following the Optionee's termination. If, at the time of death, the Optionee is not vested as to his or her entire Option, the Shares covered by the unvested portion of the Option shall immediately revert to the Plan. If the Option is not so exercised within the time specified herein, the Option shall terminate, and the Shares covered by such Option shall revert to the Plan.

(e) Leaves of Absence.

(i) Unless the Administrator provides otherwise, vesting of Options granted hereunder shall be suspended during any unpaid leave of absence.

(ii) A Service Provider shall not cease to be an Employee in the case of (A) any leave of absence approved by the Company or (B) transfers between locations of the Company or between the Company, its Parent, any Subsidiary, or any successor.

(iii) For purposes of Incentive Stock Options, no such leave may exceed ninety (90) days, unless reemployment upon expiration of such leave is guaranteed by statute or contract. If reemployment upon expiration of a leave of absence approved by the Company is not so guaranteed, then three (3) months following the 91st day of such leave, any Incentive Stock Option held by the Optionee shall cease to be treated as an Incentive Stock Option and shall be treated for tax purposes as a Nonstatutory Stock Option.

11. Transferability of Options. Unless determined otherwise by the Administrator, Options may not be sold, pledged, assigned, hypothecated, transferred, or disposed of in any manner other than by will or the laws of descent and distribution, and may be exercised during the lifetime of the Optionee, only by the Optionee.

12. Adjustments; Dissolution or Liquidation; Merger or Change in Control .

(a) Adjustments. In the event that any dividend or other distribution (whether in the form of cash, Shares, other securities, or other property), recapitalization, stock split, reverse stock split, reorganization, merger, consolidation, split-up, spin-off, combination, repurchase, or exchange of Shares or other securities of the Company, or other change in the corporate structure of the Company affecting the Shares occurs, the Administrator, in order to prevent diminution or enlargement of the benefits or potential benefits intended to be made available under the Plan, may (in its sole discretion) adjust the number and class of Shares that may be delivered under the Plan and/or the number, class, and price of Shares covered by each outstanding Option.

(b) Dissolution or Liquidation. In the event of the proposed dissolution or liquidation of the Company, the Administrator shall notify each Optionee as soon as practicable prior to the effective date of such proposed transaction. To the extent it has not been previously exercised, an Option will terminate immediately prior to the consummation of such proposed action.

(c) Merger or Change in Control. In the event of a merger of the Company with or into another corporation, or a Change in Control, each outstanding Option shall be assumed or an equivalent option substituted by the successor corporation or a Parent or Subsidiary of the successor corporation. In the event that the successor corporation in a merger or Change in Control refuses to assume or substitute for the Option, then the Optionee shall fully vest in and have the right to exercise the Option as to all of the Optioned Stock, including Shares as to which it would not otherwise be vested or exercisable. If an Option becomes fully vested and exercisable in lieu of assumption or substitution in the event of a merger or Change in Control, the Administrator shall notify the Optionee in writing or electronically that this Option shall be fully exercisable for a period of fifteen (15) days from the date of such notice, and the Option shall terminate upon expiration of such period. For the purposes of this paragraph, the Option shall be considered assumed if, following the merger or Change in Control, the option confers the right to purchase or receive, for each Share of Optioned Stock subject to the Option immediately prior to the merger or Change in Control, the consideration (whether stock, cash, or other securities or property) received in the merger or Change in Control by holders of Class B Common Stock for each Share held on the effective date of the transaction (and if holders were offered a choice of consideration, the type of consideration chosen by the holders of a majority of the outstanding Shares); provided, however, that if such consideration received in the merger or Change in Control is not solely Class B Common Stock of the successor corporation or its Parent, the Administrator may, with the consent of the successor corporation, provide for the consideration to be received upon the exercise of the Option, for each Share of Optioned Stock subject to the Option, to be solely Class B Common Stock of the successor corporation or its Parent equal in fair market value to the per share consideration received by holders of Class B Common Stock in the merger or Change in Control.

13. Time of Granting Options. The date of grant of an Option shall, for all purposes, be the date on which the Administrator makes the determination granting such Option, or such later date as is determined by the Administrator. Notice of the determination shall be given to each Service Provider to whom an Option is so granted within a reasonable time after the date of such grant.

14. Amendment and Termination of the Plan.

(a) Amendment and Termination. The Board may at any time amend, alter, suspend or terminate the Plan.

(b) Shareholder Approval. The Board shall obtain shareholder approval of any Plan amendment to the extent necessary and desirable to comply with Applicable Laws.

(c) Effect of Amendment or Termination. No amendment, alteration, suspension or termination of the Plan shall impair the rights of any Optionee, unless mutually agreed otherwise between the Optionee and the Administrator, which agreement must be in writing and signed by the Optionee and the Company. Termination of the Plan shall not affect the Administrator's ability to exercise the powers granted to it hereunder with respect to Options granted under the Plan prior to the date of such termination.

15. Conditions Upon Issuance of Shares.

(a) Legal Compliance. Shares shall not be issued pursuant to the exercise of an Option unless the exercise of such Option and the issuance and delivery of such Shares shall comply with Applicable Laws and shall be further subject to the approval of counsel for the Company with respect to such compliance.

(b) Investment Representations. As a condition to the exercise of an Option, the Administrator may require the person exercising such Option to represent and warrant at the time of any such exercise that the Shares are being purchased only for investment and without any present intention to sell or distribute such Shares if, in the opinion of counsel for the Company, such a representation is required.

16. Inability to Obtain Authority. The inability of the Company to obtain authority from any regulatory body having jurisdiction, which authority is deemed by the Company's counsel to be necessary to the lawful issuance and sale of any Shares hereunder, shall relieve the Company of any liability in respect of the failure to issue or sell such Shares as to which such requisite authority shall not have been obtained.

17. Reservation of Shares. The Company, during the term of this Plan, shall at all times reserve and keep available such number of Shares as shall be sufficient to satisfy the requirements of the Plan.

18. Shareholder Approval. The Plan shall be subject to approval by the shareholders of the Company within twelve (12) months after the date the Plan is adopted. Such shareholder approval shall be obtained in the degree and manner required under Applicable Laws.

Exhibit 10.8

EXECUTION COPY

LUNA INNOVATIONS INCORPORATED

AMENDED & RESTATED INVESTOR RIGHTS AGREEMENT

December 30, 2005

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LUNA INNOVATIONS INCORPORATED

AMENDED AND RESTATED INVESTOR RIGHTS AGREEMENT

This Amended and Restated Investor Rights Agreement (this " **Agreement**") is made as of December 30, 2005, by and among Luna Innovations Incorporated, a Delaware corporation (the "**Company**"), the entity (the "**Investor**") listed on Exhibit A hereto, and the existing stockholders of the Company listed on Exhibit B hereto (the "**Stockholders**"). Unless otherwise defined herein, capitalized terms used in this Agreement have the meanings ascribed to them in **Section 1**.

RECITALS

WHEREAS: The Investor is a party to the Class C Common Stock and Note Purchase Agreement of even date herewith, by and between the Company and the Investor (the "**Purchase Agreement**"), pursuant to which, among other things, Investor is purchasing shares of Class C Common Stock and senior convertible promissory notes (the "**Notes**").

WHEREAS: The Investor, the Company and certain of the Stockholders are parties to that certain Investor Rights Agreement made and entered into as of August 2, 2005 (the "**Prior Agreement**") entered into in connection with a prior Class C Common Stock financing of the Company (the " **Prior Financing**");

WHEREAS: The Company, the holders of a majority of the Class A Common Stock issued and outstanding as of the date hereof, and the holders of a majority of the Class C Common Stock issued pursuant to the Prior Agreement (the " **Requisite Stockholders**") desire to amend and restate the Prior Agreement as provided herein;

WHEREAS, the obligations in the Purchase Agreement are conditioned upon the execution and delivery of this Agreement by the Company and the Requisite Stockholders; and

WHEREAS, in consideration of the Company's sale and the investor's purchase of the Notes and the Class C Common Stock under the Purchase Agreement and in the Prior Financing, the Company, the Investor and the Stockholders have agreed to the provisions set forth below.

NOW, THEREFORE: In consideration of the mutual promises and covenants set forth herein, and other consideration, the receipt and adequacy of which is hereby acknowledged, the parties hereto agree as follows:

Section 1
Definitions

1.1 *Certain Definitions*. As used in this Agreement, the following terms shall have the meanings set forth below:

(a) "**CHS**" shall mean Carilion Health System or its assigns.

(b) "**Class A Common Stock**" shall mean shares of the Company's Class A Common Stock, par value $0.001 per share.

(c) "**Class B Common Stock**" shall mean shares of the Company's Class B Common Stock, par value $0.001 per share.

(d) "**Class C Common Stock**" shall mean shares of the Company's Class C Common Stock, par value $0.001 per share.

(e) "**Class Common Stock**" shall mean the Class A Common Stock, Class B Common Stock and Class C Common Stock of the Company.

(f) "**Commission**" shall mean the Securities and Exchange Commission or any other federal agency at the time administering the Securities Act.

(g) "**Common Stock**" shall mean shares of the Company's Common Stock, par value $0.001 per share.

(h) "**Conversion Stock**" shall mean shares of Common Stock issued or issuable, directly or indirectly, upon conversion of the Class Common Stock held by the Holders.

(i) "**Exchange Act**" shall mean the Securities Exchange Act of 1934, as amended, or any similar successor federal statute and the rules and regulations thereunder, all as the same shall be in effect from time to time.

(j) "**Holder**" shall mean any Investor or Major Stockholder who holds Registrable Securities and any holder of Registrable Securities to whom the registration rights conferred by this Agreement have been duly and validly transferred in accordance with **Section 2.12** of this Agreement.

(k) "**Indemnified Party**" shall have the meaning set forth in **Section 2.6(c)** hereto.

(l) "**Indemnifying Party**" shall have the meaning set forth in **Section 2.6(c)** hereto.

(m) "**Initial Public Offering**" shall mean the closing of the Company's first firm commitment underwritten public offering of the Company's Common Stock registered under the Securities Act.

(n) "**Initiating Holders**" shall mean any Holder or Holders who in the aggregate hold not less than a majority of (i) the outstanding Registrable Securities or (ii) the outstanding Registrable Securities issued or issuable, directly or indirectly, pursuant to the conversion of Class C Common Stock.

(o) "**Major Stockholder**" shall mean Kent A. Murphy, Ph.D. or any permitted transferee.

(p) "**New Securities**" shall have the meaning set forth in **Section 4.1(a)** hereto.

(q) "**Other Selling Stockholders**" shall mean persons other than Holders who, by virtue of agreements with the Company, are entitled to include their Other Shares in certain registrations hereunder.

(r) "**Other Shares**" shall mean shares of Common Stock, other than Registrable Securities (as defined below), with respect to which registration rights have been granted.

(s) "**Purchase Agreement**" shall have the meaning set forth in the Recitals hereto.

(t) "**Registrable Securities**" shall mean (i) shares of Common Stock issued or issuable, directly or indirectly, pursuant to the conversion of the Shares or the Notes and (ii) any Class C Common Stock issued as a dividend or other distribution with respect to or in exchange for or in replacement of the shares referenced in (i) above; provided, however, that Registrable Securities shall not include any shares of Common Stock described in clause (i) or (ii) above which have previously been registered or which have been sold to the public either pursuant to a registration statement or Rule 144, or which have been sold in a private transaction in which the transferor's rights under this Agreement are not validly assigned in accordance with this Agreement.

(u) The terms "**register**," "**registered**" and "**registration**" shall refer to a registration effected by preparing and filing a registration statement in compliance with the Securities Act and applicable rules and regulations thereunder, and the declaration or ordering of the effectiveness of such registration statement.

(v) "**Registration Expenses**" shall mean all expenses incurred in effecting any registration pursuant to this Agreement, including, without limitation, all registration, qualification, and filing fees, printing expenses, escrow fees, fees and disbursements of counsel for the Company, blue sky fees and expenses, and expenses of any regular or special audits incident to or required by any such registration, but shall not include Selling Expenses, fees and disbursements of counsel for the Holders and the compensation of regular employees of the Company, which shall be paid in any event by the Company.

(w) "**Restricted Securities**" shall mean any Registrable Securities required to bear the first legend set forth in **Section 2.8(c)** hereof.

(x) "**Rule 144**" shall mean Rule 144 as promulgated by the Commission under the Securities Act, as such rule may be amended from time to time, or any similar successor rule that may be promulgated by the Commission.

(y) "**Rule 145**" shall mean Rule 145 as promulgated by the Commission under the Securities Act, as such rule may be amended from time to time, or any similar successor rule that may be promulgated by the Commission

(z) "**Rule 415**" shall mean Rule 415 as promulgated by the Commission under the Securities Act, as such rule may be amended from time to time, or any similar successor rule that may be promulgated by the Commission.

(aa) "**Securities Act**" shall mean the Securities Act of 1933, as amended, or any similar successor federal statute and the rules and regulations thereunder, all as the same shall be in effect from time to time.

(bb) "**Selling Expenses**" shall mean all underwriting discounts, selling commissions and stock transfer taxes applicable to the sale of Registrable Securities and fees and disbursements of counsel for any Holder.

(cc) "**Shares**" shall mean the Company's Class Common Stock held by any Holder, whether initially issued pursuant to the Purchase Agreement or pursuant to the Prior Agreement.

(dd) "**Withdrawn Registration**" shall mean a forfeited demand registration under **Section 2.1** in accordance with the terms and conditions of **Section 2.4**.

Section 2
Registration Rights

2.1 *Requested Registration*.

(a) Request for Registration. Subject to the conditions set forth in this **Section 2.1**, if the Company shall receive from Initiating Holders a written request signed by such Initiating Holders that the Company effect any registration with respect to Registrable Securities held by such Initiating Holders, provided such request states the number of shares of Registrable Securities to be disposed of and the intended methods of disposition of such shares by such Initiating Holders, the Company will:

(i) promptly give written notice of the proposed registration to all other Holders; and

(ii) file and use its best efforts to effect such registration within ninety (90) days of such written request from the Initiating Holders (including, without limitation, filing post-effective amendments, appropriate qualifications under applicable blue sky or other state securities laws, and appropriate compliance with the Securities Act) and to permit or facilitate the sale and distribution of all or such portion of such Registrable Securities as are specified in such request, together with all or such portion of the Registrable Securities of any Holder or Holders joining in such request as are specified in a written request received by the Company within twenty (20) days after such written notice from the Company is mailed or delivered.

(b) Limitations on Requested Registration. The Company shall not be obligated to effect, or to take any action to effect, any such registration pursuant to this **Section 2.1**:

(i) Prior to the earlier of (x) the Company's Initial Public Offering or (y) August 2, 2011;

(ii) During the one hundred eighty (180) days following the effective date of the first registration statement filed by the Company covering an underwritten offering of any of its securities to the general public, except upon receipt of the written consent of the applicable underwriter(s);

(iii) If the Initiating Holders, together with the holders of any other securities of the Company entitled to inclusion in such registration statement, propose to sell Registrable Securities and such other securities (if any) the aggregate proceeds of which (after deduction for underwriter's discounts and expenses related to the issuance) are less than $500,000.

(iv) In any particular jurisdiction in which the Company would be required to execute a general consent to service of process in effecting such registration, qualification, or compliance, unless the Company is already subject to service in such jurisdiction and except as may be required by the Securities Act;

(v) After the Company has initiated two (2) such registrations pursuant to this **Section 2.1**;

(vi) If the Initiating Holders propose to dispose of shares of Registrable Securities which may be immediately registered on Form S-3 pursuant to a request made under **Section 2.3** hereof; or

(vii) If the Company, within thirty (30) days of its receipt of the request from the Initiating Holders, provides written notice to all Initiating Holders of its intent to file a registration statement for its Initial Public Offering within ninety (90) days.

(c) Deferral. If (i) in the good faith judgment of the board of directors of the Company (the " **Board**"), the filing of a registration statement covering the Registrable Securities would be detrimental to the Company and the Board concludes, as a result, that it is in the best interests of the Company to defer the filing of such registration statement at such time, and (ii) the Company shall furnish to such Holders a certificate signed by the President of the Company stating that in the good faith judgment of the Board, it would be detrimental to the Company for such registration statement to be filed in the near future and that it is, therefore, in the best interests of the Company to defer the filing of such registration statement, then (in addition to the limitations set forth in **Section 2.1(b)** above) the Company shall have the right to defer such filing for a period of not more than one hundred eighty (180) days after receipt of the request of the Initiating Holders, and, provided further, that the Company shall not defer its obligation in this manner more than once in any twelve-month period.

(d) Other Shares. The registration statement filed pursuant to the request of the Initiating Holders may, subject to the provisions of **Section 2.1(e)**, include Other Shares, and may include securities of the Company being sold for the account of the Company.

(e) Underwriting. If the Initiating Holders intend to distribute the Registrable Securities covered by their request by means of an underwriting, they shall so advise the Company as a part of their request made pursuant to this **Section 2.1** and the Company shall include such information in the written notice given pursuant to **Section 2.1(a)(i)** . In such event, the right of any Holder to include all or any portion of its Registrable Securities in such registration pursuant to this **Section 2.1** shall be conditioned upon such Holder's participation in an underwriting and the inclusion of such Holder's Registrable Securities to the extent provided herein. If the Company shall request inclusion in any registration pursuant to **Section 2.1** of securities being sold for its own account, or if other persons shall request inclusion in any registration pursuant to **Section 2.1**, the Initiating Holders shall, on behalf of all Holders, offer to include such securities in the underwriting and such offer shall be conditioned upon the participation of the Company or such other persons in such underwriting and the inclusion of the Company's and such person's other securities of the Company and their acceptance of the further applicable provisions of this **Section 2** (including **Section 2.10)**. The Company shall (together with all Holders and other persons proposing to distribute their securities through such underwriting) enter into an underwriting agreement in customary form with the representative of the underwriter or underwriters selected for such underwriting by a majority in interest of the Initiating Holders, which underwriters are reasonably acceptable to the Company.

Notwithstanding any other provision of this Section 2.1, if the underwriter determines in good faith that marketing factors require a limitation of the number of shares to be underwritten, the number of shares that may be included in the underwriting shall be allocated in the following order of priority: first, to the Investor; second, to any other Initiating Holders; third, to the Company for securities being sold for its own account; fourth, to the Major Holder; and fifth, to any other Holders that have requested inclusion of their shares in the underwriting on a *pro rata* basis based on the total number of Registrable Securities held by such Holders; *provided, however*, that no such reduction shall reduce the amount of securities of the Initiating Holders included in the registration below twenty-five percent (25%) of the total amount of securities

included in such registration, unless such offering is the Initial Public Offering and such registration does not include shares of any other Holders, in which event any or all of the Registrable Securities of the Initiating Holders may be excluded in accordance with the immediately preceding clause; *provided, further*, that, notwithstanding the any of the foregoing to the contrary, in no event shall the amount of Registrable Securities of the Investor to be included in such underwriting be reduced until all Registrable Securities held by the Major Holder, by the other Holders and by any Other Selling Stockholders have been first excluded from the underwriting in their entirety. In no event will shares of any Other Selling Stockholder be included in such registration without the written consent of the Initiating Holder(s) if such inclusion would reduce the number of shares that may be included by the Initiating Holders.

If a person who has requested inclusion in such registration as provided above does not agree to the terms of any such underwriting, such person shall be excluded therefrom by written notice from the Company, the underwriter or the Initiating Holders. The securities so excluded shall also be withdrawn from registration. Any Registrable Securities or other securities excluded or withdrawn from such underwriting shall also be withdrawn from such registration. If shares are so withdrawn from the registration and if the number of shares to be included in such registration was previously reduced as a result of marketing factors pursuant to this **Section 2.1(e)**, then the Company shall then offer to all Holders and Other Selling Stockholders who have retained rights to include securities in the registration the right to include additional Registrable Securities or Other Shares in the registration in an aggregate amount equal to the number of shares so withdrawn, with such shares to be allocated among such Holders and Other Selling Stockholders requesting additional inclusion, as set forth above.

2.2 *Company Registration*.

(a) Company Registration. If the Company shall determine to register any of its securities either for its own account or the account of a security holder or holders, other than a registration pursuant to **Section 2.1** or **2.3**, a registration relating solely to employee benefit plans, a registration relating to the offer and sale of debt securities, a registration relating to a corporate reorganization or other Rule 145 transaction, or a registration on any registration form that does not permit secondary sales, the Company will:

(i) promptly give written notice of the proposed registration to all Holders; and

(ii) use its commercially reasonable efforts to include in such registration (and any related qualification under blue sky laws or other compliance), except as set forth in **Section 2.2(b)** below, and in any underwriting involved therein, all of such Registrable Securities as are specified in a written request or requests made by any Holder or Holders received by the Company within ten (10) days after such written notice from the Company is mailed or delivered. Such written request may specify all or a part of a Holder's Registrable Securities.

(b) Underwriting. If the registration of which the Company gives notice is for a registered public offering involving an underwriting, the Company shall so advise the Holders as a part of the written notice given pursuant to **Section 2.2(a)(i)**. In such event, the right of any Holder to registration pursuant to this **Section 2.2** shall be conditioned upon such Holder's participation in such underwriting and the inclusion of such Holder's Registrable Securities in the underwriting to the extent provided herein. All Holders proposing to distribute their securities through such underwriting shall (together with the Company, the Other Selling Stockholders and the other holders of securities of the Company with registration rights to participate therein distributing their securities through such underwriting) enter into an underwriting

agreement in customary form with the representative of the underwriter or underwriters selected by the Company.

Notwithstanding any other provision of this **Section 2.2**, if the underwriters advise the Company in writing that marketing factors require a limitation on the number of shares to be underwritten, the underwriters may (subject to the limitations set forth below) exclude all Registrable Securities from, or limit the number of Registrable Securities to be included in, the registration and underwriting. The Company shall so advise all holders of securities requesting registration, and the number of shares of securities that are entitled to be included in the registration and underwriting shall be allocated in the following order of priority: first, to the Company for securities being sold for its own account; second, to the Investor; third, to the Major Holder; and fourth, to any other Holders that have requested inclusion of their shares in the underwriting on a *pro rata* basis based on the total number of Registrable Securities held by such Holders; *provided, however*, that no such reduction shall reduce the amount of securities of the Holders included in the registration below twenty-five percent (25%) of the total amount of securities included in such registration, unless such offering is the Initial Public Offering and such registration does not include shares of any Other Selling Stockholders, in which event any or all of the Registrable Securities of the Holders may be excluded in accordance with the immediately preceding clause; *provided, further*, that, notwithstanding the any of the foregoing to the contrary, in no event shall the amount of Registrable Securities of the Investor to be included in such underwriting be reduced until all Registrable Securities held by the Major Holder, by the other Holders and by any Other Selling Stockholders have been first excluded from the underwriting in their entirety.

If a person who has requested inclusion in such registration as provided above does not agree to the terms of any such underwriting, such person shall also be excluded therefrom by written notice from the Company or the underwriter. The Registrable Securities or other securities so excluded shall also be withdrawn from such registration. Any Registrable Securities or other securities excluded or withdrawn from such underwriting shall be withdrawn from such registration.

(c) Right to Terminate Registration. The Company shall have the right to terminate or withdraw any registration initiated by it under this **Section 2.2** prior to the effectiveness of such registration whether or not any Holder has elected to include securities in such registration.

2.3 *Registration on Form S-3*.

(a) Request for Form S-3 Registration. At any time after the Company has qualified for the use of Form S-3, in addition to the rights contained in the foregoing provisions of this **Section 2** and subject to the conditions set forth in this **Section 2.3**, if the Company shall receive from a Holder or Holders of Registrable Securities a written request that the Company effect any registration on Form S-3 or any similar short form registration statement with respect to all or part of the Registrable Securities (such request shall state the number of shares of Registrable Securities to be disposed of and the intended methods of disposition of such shares by such Holder or Holders), the Company will take all such action with respect to such Registrable Securities as required by **Section 2.1(a)(i)** and **(ii)**; provided further that the Company shall keep such registrations effective until the earlier to occur of such time as (i) all Registrable Securities registered thereunder have been sold, (ii) the Holders whose shares are registered thereon agree to terminate the registration, or (iii) the registration rights of all such Holders terminate.

(b) Limitations on Form S-3 Registration. The Company shall not be obligated to effect, or take any action to effect, any such registration pursuant to this **Section 2.3**:

(i) In the circumstances described in either **Sections 2.1(b)(i)** or **2.1(b)(iv)**;

(ii) If the Holders, together with the holders of any other securities of the Company entitled to inclusion in such registration, propose to sell Registrable Securities and such other securities (if any) on Form S-3 at an aggregate price to the public of less than $500,000; or

(iii) In a given twelve-month period if, during such period, the Company has already effected one (1) or more registrations pursuant to this Section 2.3.

(c) Deferral. The provisions of **Section 2.1(c)** shall apply to any registration pursuant to this **Section 2.3**.

(d) Underwriting. If the Holders of Registrable Securities requesting registration under this **Section 2.3** intend to distribute the Registrable Securities covered by their request by means of an underwriting, the provisions of **Sections 2.1(e)** shall apply to such registration. Notwithstanding anything contained herein to the contrary, registrations effected pursuant to this **Section 2.3** shall not be counted as requests for registration or registrations effected pursuant to **Section 2.1**.

2.4 *Expenses of Registration*. All Registration Expenses incurred in connection with registrations pursuant to **Sections 2.1, 2.2** and **2.3** hereof shall be borne by the Company. All Selling Expenses relating to securities registered on behalf of the Holders shall be borne by the holders of securities included in such registration pro rata among each other on the basis of the number of Registrable Securities so registered.

2.5 *Registration Procedures*. In the case of each registration effected by the Company pursuant to **Section 2**, the Company will keep each Holder advised in writing as to the initiation of each registration and as to the completion thereof. At its expense, the Company will use its commercially reasonable efforts to:

(a) Keep such registration effective for a period of ending on the earlier of the date which is sixty (60) days from the effective date of the registration statement or such time as the Holder or Holders have completed the distribution described in the registration statement relating thereto.

(b) Prepare and file with the Commission such amendments and supplements to such registration statement and the prospectus used in connection with such registration statement as may be necessary to comply with the provisions of the Securities Act with respect to the disposition of all securities covered by such registration statement for the period set forth in subsection (a) above;

(c) Furnish such number of prospectuses, including any preliminary prospectuses, and other documents incident thereto, including any amendment of or supplement to the prospectus, as a Holder from time to time may reasonably request;

(d) Use its reasonable best efforts to register and qualify the securities covered by such registration statement under such other securities or Blue Sky laws of such jurisdiction as shall be reasonably requested by the Holders; provided, that the Company shall not be required in connection therewith or as a condition thereto to qualify to do business or to file a general consent to service of process in any such states or jurisdictions.

(e) Notify each seller of Registrable Securities covered by such registration statement at any time when a prospectus relating thereto is required to be delivered under the Securities Act of the happening of any event as a result of which the prospectus included in such registration statement, as then in

effect, includes an untrue statement of a material fact or omits to state a material fact required to be stated therein or necessary to make the statements therein not misleading or incomplete in light of the circumstances then existing, and following such notification promptly prepare and furnish to such seller a reasonable number of copies of a supplement to or an amendment of such prospectus as may be necessary so that, as thereafter delivered to the purchasers of such shares, such prospectus shall not include an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading or incomplete in light of the circumstances then existing;

(f) Provide a transfer agent and registrar for all Registrable Securities registered pursuant to such registration statement and a CUSIP number for all such Registrable Securities, in each case not later than the effective date of such registration;

(g) Cause all such Registrable Securities registered pursuant hereunder to be listed on each securities exchange on which similar securities issued by the Company are then listed; and

(h) In connection with any underwritten offering pursuant to a registration statement filed pursuant to **Section 2.1** hereof, enter into an underwriting agreement in form reasonably necessary to effect the offer and sale of Common Stock, provided such underwriting agreement contains reasonable and customary provisions, and provided further, that each Holder participating in such underwriting shall also enter into and perform its obligations under such an agreement.

2.6 *Indemnification*.

(a) To the extent permitted by law, the Company will indemnify and hold harmless each Holder, each of its officers, directors and partners, legal counsel, and accountants and each person controlling such Holder within the meaning of Section 15 of the Securities Act, with respect to which registration, qualification, or compliance has been effected pursuant to this **Section 2**, and each underwriter, if any, and each person who controls within the meaning of Section 15 of the Securities Act any underwriter, against all expenses, claims, losses, damages, and liabilities (or actions, proceedings, or settlements in respect thereof) arising out of or based on: (i) any untrue statement (or alleged untrue statement) of a material fact contained or incorporated by reference in any prospectus, offering circular, or other document (including any related registration statement, notification, or the like) incident to any such registration, qualification, or compliance, (ii) any omission (or alleged omission) to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, or (iii) any violation (or alleged violation) by the Company of the Securities Act, any state securities laws or any rule or regulation thereunder applicable to the Company and relating to action or inaction required of the Company in connection with any offering covered by such registration, qualification, or compliance, and the Company will reimburse each such Holder, each of its officers, directors, partners, legal counsel, and accountants and each person controlling such Holder, each such underwriter, and each person who controls any such underwriter, for any legal and any other expenses reasonably incurred in connection with investigating and defending or settling any such claim, loss, damage, liability, or action; provided that the Company will not be liable in any such case to the extent that any such claim, loss, damage, liability, or action is caused by any untrue statement or omission based upon written information furnished to the Company by (a) such Holder, or (b) any of such Holder's officers, directors, partners, legal counsel or accountants, and any person controlling such Holder, such underwriter or any person who controls any such underwriter and stated to be specifically for use therein; and provided, further that, the indemnity agreement contained in this **Section 2.6(a)** shall not apply to amounts paid in settlement of any such loss, claim, damage, liability, or action if such settlement is effected without the consent of the Company (which consent shall not be unreasonably withheld or delayed).

(b) To the extent permitted by law, each Holder will, severally and not jointly, if Registrable Securities held by such Holder are included in the securities as to which such registration, qualification, or compliance is being effected, indemnify and hold harmless the Company, each of its directors, officers, partners, legal counsel, and accountants and each underwriter, if any, of the Company's securities covered by such a registration statement, each person who controls the Company or such underwriter within the meaning of Section 15 of the Securities Act, each other such Holder, and each of their officers, directors, and partners, and each person controlling such Holder, against all claims, losses, damages and liabilities (or actions in respect thereof) caused by: (i) any untrue statement (or alleged untrue statement) of a material fact contained or incorporated by reference in any such registration statement, prospectus, offering circular, or other document, or (ii) any omission (or alleged omission) to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, and will reimburse the Company and such Holders, directors, officers, partners, legal counsel, and accountants, persons, underwriters, or control persons for any legal or any other expenses reasonably incurred in connection with investigating or defending any such claim, loss, damage, liability, or action, in each case to the extent, but only to the extent, that such untrue statement (or alleged untrue statement) or omission (or alleged omission) is made in such registration statement, prospectus, offering circular, or other document in reliance upon and in conformity with written information furnished to the Company by such Holder and stated to be specifically for use therein; provided, however, that the obligations of such Holder hereunder shall not apply to amounts paid in settlement of any such claims, losses, damages, or liabilities (or actions in respect thereof) if such settlement is effected without the consent of such Holder (which consent shall not be unreasonably withheld or delayed); and provided that in no event shall any indemnity under this **Section 2.6** exceed the net proceeds from the offering received by such Holder.

(c) Each party entitled to indemnification under this **Section 2.6** (the "**Indemnified Party**") shall give notice to the party required to provide indemnification (the "**Indemnifying Party**") promptly after such Indemnified Party has actual knowledge of any claim as to which indemnity may be sought, and shall permit the Indemnifying Party to assume the defense of such claim or any litigation resulting therefrom; provided that counsel for the Indemnifying Party, who shall conduct the defense of such claim or any litigation resulting therefrom, shall be approved by the Indemnified Party (whose approval shall not be unreasonably withheld), and the Indemnified Party may participate in such defense at such party's expense; and provided further that the failure of any Indemnified Party to give notice as provided herein shall not relieve the Indemnifying Party of its obligations under this **Section 2.6**, to the extent such failure is not prejudicial. No Indemnifying Party, in the defense of any such claim or litigation, shall, except with the consent of each Indemnified Party, consent to entry of any judgment or enter into any settlement that does not include as an unconditional term thereof the giving by the claimant or plaintiff to such Indemnified Party of a release from all liability in respect to such claim or litigation. Each Indemnified Party shall furnish such information regarding itself or the claim in question as an Indemnifying Party may reasonably request in writing and as shall be reasonably required in connection with defense of such claim and litigation resulting therefrom.

(d) If the indemnification provided for in this **Section 2.6** is held by a court of competent jurisdiction to be unavailable to an Indemnified Party with respect to any loss, liability, claim, damage, or expense referred to herein, then the Indemnifying Party, in lieu of indemnifying such Indemnified Party hereunder, shall contribute to the amount paid or payable by such Indemnified Party as a result of such loss, liability, claim, damage, or expense in such proportion as is appropriate to reflect the relative fault of the Indemnifying Party on the one hand and of the Indemnified Party on the other in connection with the statements or omissions that resulted in such loss, liability, claim, damage, or expense as well as any other relevant equitable considerations. The relative fault of the Indemnifying Party and of the Indemnified Party

shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission to state a material fact relates to information supplied by the Indemnifying Party or by the Indemnified Party and the parties' relative intent, knowledge, access to information, and opportunity to correct or prevent such statement or omission.

(e) Notwithstanding the foregoing, to the extent that the provisions on indemnification and contribution contained in the underwriting agreement entered into in connection with the underwritten public offering are in conflict with the foregoing provisions, the provisions in the underwriting agreement shall control.

(f) The obligations of the Company and Holders under this Section 2.6 shall survive the completion of any offering of Registrable Securities in a registration statement under this Section 2, and otherwise.

2.7 *Information by Holder*. Each Holder of Registrable Securities shall furnish to the Company such information regarding such Holder and the distribution proposed by such Holder as the Company may reasonably request in writing and as shall be reasonably required in connection with any registration, qualification or compliance referred to in this **Section 2**.

2.8 *Restrictions on Transfer*.

(a) The holder of each certificate representing Registrable Securities by acceptance thereof agrees to comply in all respects with the provisions of this **Section 2.8**. Each Holder agrees not to make any sale, assignment, transfer, pledge or other disposition of all or any portion of the Restricted Securities, or any beneficial interest therein, unless and until (x) the transferee thereof has agreed in writing for the benefit of the Company to take and hold such Restricted Securities subject to, and to be bound by, the terms and conditions set forth in this Agreement, including, without limitation, this **Section 2.8** and **Section 2.10**, except for transfers permitted under **Section 2.8(b)**, and (y):

(i) There is then in effect a registration statement under the Securities Act covering such proposed disposition and such disposition is made in accordance with such registration statement; or

(ii) Such Holder shall have given prior written notice to the Company of such Holder's intention to make such disposition and shall have furnished the Company with a detailed description of the manner and circumstances of the proposed disposition, and, if requested by the Company, such Holder shall have furnished the Company, at its expense, with (i) an opinion of counsel, reasonably satisfactory to the Company, to the effect that such disposition will not require registration of such Restricted Securities under the Securities Act (it being understood that an opinion of Woods Rogers PLC shall be deemed satisfactory with respect to CHS or any permitted transferee of Registrable Securities held by CHS) or (ii) a "no action" letter from the Commission to the effect that the transfer of such securities without registration will not result in a recommendation by the staff of the Commission that action be taken with respect thereto, whereupon the holder of such Restricted Securities shall be entitled to transfer such Restricted Securities in accordance with the terms of the notice delivered by the Holder to the Company. It is agreed that the Company will not require opinions of counsel for transactions made pursuant to Rule 144, except in unusual circumstances.

(b) Permitted transfers include (i) a transfer not involving a change in beneficial ownership, or (ii) in transactions involving the distribution without consideration of Restricted Securities by

any Holder to (x) a parent, subsidiary or other affiliate of Holder that is a corporation, or (y) any of its partners, members or other equity owners, or retired partners, retired members or other equity owners, or to the estate of any of its partners, members or other equity owners or retired partners, retired members or other equity owners, or (iii) transfers in compliance with Rule 144(k), as long as the Company is furnished with satisfactory evidence of compliance with such Rule; provided, in each case, that the Holder thereof shall give written notice to the Company of such Holder's intention to effect such disposition and shall have furnished the Company with a detailed description of the manner and circumstances of the proposed disposition.

(c) Each certificate representing Registrable Securities shall (unless otherwise permitted by the provisions of this Agreement) be stamped or otherwise imprinted with a legend substantially similar to the following (in addition to any legend required under applicable state securities laws):

THE SECURITIES REPRESENTED HEREBY HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "**ACT**"), OR UNDER THE SECURITIES LAWS OF CERTAIN STATES. THESE SECURITIES MAY NOT BE OFFERED, SOLD OR OTHERWISE TRANSFERRED, PLEDGED OR HYPOTHECATED EXCEPT AS PERMITTED UNDER THE ACT AND APPLICABLE STATE SECURITIES LAWS PURSUANT TO REGISTRATION OR AN EXEMPTION THEREFROM. THE ISSUER OF THESE SECURITIES MAY REQUIRE AN OPINION OF COUNSEL SATISFACTORY TO THE ISSUER THAT SUCH OFFER, SALE OR TRANSFER, PLEDGE OR HYPOTHECATION OTHERWISE COMPLIES WITH THE ACT AND ANY APPLICABLE STATE SECURITIES LAWS.

THE SHARES REPRESENTED BY THIS CERTIFICATE ARE SUBJECT TO (1) RESTRICTIONS ON TRANSFERABILITY AND RESALE, INCLUDING A LOCK-UP PERIOD OF UP TO 180 DAYS IN THE EVENT OF A PUBLIC OFFERING (SUBJECT TO EXTENSIONS TO COMPLY WITH THE RULES OF THE NATIONAL ASSOCIATION OF SECURITIES DEALERS RELATING TO ANALYST REPORTS), AS SET FORTH IN AN INVESTOR RIGHTS AGREEMENT, AND (2) VOTING RESTRICTIONS AS SET FORTH IN A RIGHT OF FIRST REFUSAL, CO-SALE AND VOTING AGREEMENT AMONG THE COMPANY AND THE ORIGINAL HOLDERS OF THESE SHARES, COPIES OF WHICH MAY BE OBTAINED AT THE PRINCIPAL OFFICE OF THE COMPANY.

The Holders consent to the Company making a notation on its records and giving instructions to any transfer agent of the Restricted Securities in order to implement the restrictions on transfer established in this **Section 2.8**.

(d) The first legend referring to federal and state securities laws identified in **Section 2.8(c)** hereof stamped on a certificate evidencing the Restricted Securities and the stock transfer instructions and record notations with respect to such Restricted Securities shall be removed and the Company shall issue a certificate without such legend to the holder of such Restricted Securities if (i) such securities are registered under the Securities Act, or (ii) such holder provides the Company with an opinion of counsel reasonably acceptable to the Company to the effect that a public sale or transfer of such securities may be made without registration under the Securities Act, or (iii) such holder provides the Company with

reasonable assurances, which may, at the option of the Company, include an opinion of counsel satisfactory to the Company, that such securities can be sold pursuant to Section (k) of Rule 144 under the Securities Act.

2.9 *Rule 144 Reporting*. With a view to making available the benefits of certain rules and regulations of the Commission that may permit the sale of the Restricted Securities to the public without registration, the Company agrees to use its commercially reasonable efforts to:

(a) Make and keep public information regarding the Company available as those terms are understood and defined in Rule 144 under the Securities Act, at all times from and after ninety (90) days following the effective date of the first registration under the Securities Act filed by the Company for an offering of its securities to the general public;

(b) File with the Commission in a timely manner all reports and other documents required of the Company under the Securities Act and the Exchange Act at any time after it has become subject to such reporting requirements; and

(c) So long as a Holder owns any Restricted Securities, furnish to the Holder forthwith upon written request a written statement by the Company as to its compliance with the reporting requirements of Rule 144 (at any time from and after ninety (90) days following the effective date of the first registration statement filed by the Company for an offering of its securities to the general public), and of the Securities Act and the Exchange Act (at any time after it has become subject to such reporting requirements), a copy of the most recent annual or quarterly report of the Company, and such other reports and documents so filed as a Holder may reasonably request in availing itself of any rule or regulation of the Commission allowing a Holder to sell any such securities without registration.

2.10 *Market Stand-Off Agreement*. If requested by the Board and any representative of an underwriter of Common Stock (or other securities) of the Company, Investors and all Stockholders and all holders of options and warrants to purchase Class Common Stock and/or Common Stock (collectively, the "**Restricted Holders**"), hereby agree that such Restricted Holder shall not sell or otherwise transfer, make any short sale of, grant any option for the purchase of, or enter into any hedging or similar transaction with the same economic effect as a sale, of any Class Common Stock or Common Stock (or other securities) of the Company held by such Restricted Holder (other than those included in the registration) during the one hundred eighty (180) day period following the effective date of the Company's Initial Public Offering filed under the Securities Act (subject to extensions to comply with the rules of the National Association of Securities Dealers relating to analyst reports), provided that: all officers and directors of the Company and holders of at least one percent (1%) of the Company's voting securities are bound by and have entered into similar agreements. The obligations described in this **Section 2.10** shall not apply to a registration relating solely to employee benefit plans on Form S-l or Form S-8 or similar forms that may be promulgated in the future, or a registration relating solely to a transaction on Form S-4 or similar forms that may be promulgated in the future. The Company may impose stop-transfer instructions and may stamp each such certificate with the second legend set forth in **Section 2.8(c)** hereof with respect to the shares of Common Stock (or other securities) subject to the foregoing restriction until the end of such one hundred eighty (180) day period (subject to extensions to comply with the rules of the National Association of Securities Dealers relating to analyst reports). Each Restricted Holder agrees to execute a market standoff agreement with said underwriters in customary form consistent with the provisions of this **Section 2.10**.

2.11 *Delay of Registration*. No Holder shall have any right to take any action to restrain, enjoin, or otherwise delay any registration as the result of any controversy that might arise with respect to the interpretation or implementation of this **Section 2**.

2.12 *Transfer or Assignment of Registration Rights*. The rights to cause the Company to register securities granted to a Holder by the Company under this **Section 2** may be transferred or assigned by a Holder only to a transferee or assignee (a) of not less than 750,000 of the Registrable Securities (as presently constituted and subject to subsequent adjustments for stock splits, stock dividends, reverse stock splits, and the like), (b) that is a partner or retired partner of any Holder that is a partnership, (c) that is a member or former member of any Holder that is a limited liability company, (d) that is an affiliate of any Holder or (e) that is a family member or trust for the benefit of any individual Holder; provided that (i) such transfer or assignment of Registrable Securities is effected in accordance with the terms of **Section 2.8** hereof, that certain Right of First Refusal, Co-Sale and Voting Agreement by and among the Company, the Investor and other parties thereto dated as of the date hereof (the "**Right of First Refusal, Co-Sale and Voting Agreement**"), and applicable securities laws, (ii) the transferee or assignee of such rights assumes in writing the obligations of such Holder under this Agreement, including without limitation the obligations set forth in **Section 2.10**, and (iii) with respect to a proposed transfer pursuant to this **Section 2.12**, the Company is given written notice within 30 days after said transfer or assignment, stating the name and address of the transferee or assignee and identifying the securities with respect to which such registration rights are intended to be transferred or assigned and such transferee is not, in the Company's reasonable opinion, a competitor of the Company or a party who is demonstrably hostile toward the Company.

2.13 *Limitations on Subsequent Registration Rights*. From and after the date of this Agreement, the Company shall not, without the prior written consent of Holders of at least a majority of the Registrable Securities, enter into any agreement with any holder or prospective holder of any securities of the Company giving such holder or prospective holder any registration rights the terms of which are *pari passu* with or senior to the registration rights granted to the Holders hereunder.

2.14 *Termination of Registration Rights*. The right of any Holder to request registration or inclusion in any registration pursuant to **Section 2.1**, **2.2** or **2.3** shall terminate on the earlier of (i) such date, on or after the closing of the Company's first registered public offering of Common Stock, on which all shares of Registrable Securities held or entitled to be held upon conversion by such Holder may immediately be sold under Rule 144 in a given ninety (90) day period, and (ii) such date as all of the Registrable Securities held or entitled to be held upon conversion by such Holder may transferred under Rule 144(k).

Section 3
Covenants of the Company

The Company hereby covenants and agrees, as follows:

3.1 *Basic Financial Information and Inspection Rights.*

(a) Basic Financial Information. The Company shall furnish to the Investor, so long as such Investor continues to hold any shares of Class C Common Stock or Class A Common Stock, the following information:

(i) As soon as practicable after the end of each fiscal year of the Company, and in any event within ninety (90) days after the end of each such fiscal year of the Company, a consolidated

balance sheet of the Company and its subsidiaries, if any, as of the end of such fiscal year, and consolidated statements of income and cash flows of the Company and its subsidiaries, if any, for such year, prepared in accordance with U.S. generally accepted accounting principles consistently applied and audited by an accounting firm mutually acceptable to the Company and the Investor; and

(ii) As soon as practicable after the end of the first, second and third quarterly accounting periods in each fiscal year of the Company, and in any event within thirty (30) days after the end of such quarterly accounting periods, an unaudited consolidated balance sheet of the Company and its subsidiaries, if any, as of the end of each such quarterly period, and unaudited consolidated statements of income and cash flows of the Company and its subsidiaries, if any, for such period, prepared in accordance with U.S. generally accepted accounting principles consistently applied, subject to changes resulting from normal year-end audit adjustments.

(b) Supplementary Financial Information. The Company shall furnish to the Investor, so long as such Investor continues to hold any shares of Class C Common Stock or Class A Common Stock, the following information:

(i) No later than thirty (30) days prior to the beginning of each fiscal year of the Company, an annual budget and business/operating plan, with financial projections, approved by the Board; and

(ii) Any documents primarily relating to Company affairs that have been delivered by the Company to any other stockholders of the Company.

(c) Tax Matters. The Company at least quarterly shall provide to Investors satisfactory evidence of the payment of withholding taxes and at least annually provide to the Investor searches from such jurisdiction(s) as the Investor reasonably may request showing that no tax liens have been filed against the Company.

(d) Litigation Matters. The Company will promptly provide to the Investor notice of any litigation of material adverse claims, disputes or other actions or proceedings involving the Company.

3.2 *Inspection Rights*. The Investor shall have the right, upon reasonable advance notice to the Company and so long as such Investor continues to hold any shares of Class C Common Stock or Class A Common Stock, to visit and inspect any of the properties of the Company, and to discuss the affairs, finances and accounts of the Company with its officers, and to review such information as is reasonably requested all during normal business hours. The Company shall make its officers available to the Investor during all such visits and inspections. The Investor agrees to keep, and to use the same degree of care as such Investor uses to protect its own confidential information, to keep confidential and not misuse any Company information that the Company identifies as being confidential or proprietary (so long as such information is not in the public domain) that is obtained by such Investor.

3.3 *Confidentiality*. The Company shall not be required to comply with any information rights of **Section 3** in respect of any Holder whom the Company reasonably determines to be a competitor or an officer, employee, director or holder of more than ten percent (10%) of a competitor. Each Holder acknowledges that the information received by them pursuant to this Agreement may be confidential and for its use only, and it will not use such confidential information in violation of the Exchange Act or reproduce, disclose or disseminate such information to any other person (other than its employees or agents having a

need to know the contents of such information, and its attorneys), except in connection with the exercise of rights under this Agreement, unless the Company has made such information available to the public generally. With respect to such confidential information, each Holder agrees to enter into a confidentiality agreement with provisions at least as restrictive as those to which the Company itself is subject to with respect to such confidential information. Notwithstanding anything herein to the contrary, the Company reserves the right to preclude any Holder from access to any materials or information if the Company believes upon advice of counsel that such preclusion is reasonably necessary to preserve attorney-client privilege.

3.4 *Use of Proceeds*. The Company shall use the proceeds from the sale of the Shares solely for general corporate and working capital purposes and research and development, unless a majority of the Board approves in good faith and in its reasonable business judgment other uses thereof.

3.5 *Reservation of Common Stock*. The Company will at all times reserve and keep available, solely for issuance and delivery upon the conversion of the Class C Common Stock, all Common Stock issuable from time to time upon such conversion.

3.6 *Protection of Intellectual Property*. The Company shall pursue the protection of all intellectual property, including, but not limited to, the pursuit of all appropriate patents, copyrights and trademarks.

3.7 *Expenses*. Each party shall be responsible for their own fees and expenses associated with the closing of the transaction contemplated by this Agreement.

3.8 *Future Market Standoff Agreements*. The Company covenants that all future purchasers of the Company's securities prior to the Company's Initial Public Offering will execute a market standoff agreement in a form substantially similar to the market standoff provision provided in **Section 2.10** hereunder.

3.9 *Compensation Committee and Project Evaluation*. The Company shall, by amending its Bylaws or otherwise, establish and maintain a Compensation Committee of the Board (the "**Compensation Committee**"), which shall consist of not more than three directors elected by the Board, one of which shall be a Class C Director (as such term is defined in the Amended and Restated Certificate of Incorporation of the Company). The unanimous approval of all standing members of the Compensation Committee, including without limitation the Class C Director, shall be required to effect the following:

(a) any increase in the annual salary of the senior executive officers of the Company, including the Chief Executive Officer, the President, the Chief Financial Officer and any Vice-President;

(b) the implementation of any employee stock option plan, employee stock purchase plan, employee restricted stock plan or other employee incentive or bonus plan (each a "**Company Plan**") covering employees of the Company; including any individual payments or grants of equity securities thereunder;

(c) any payment of one-time bonuses for specific employees;

(d) any increase in the number of shares of capital stock reserved and issuable under any Company Plan; or

(e) any grants of equity incentives (including stock options) to employees, directors, consultants or any other person or entity pursuant to a Company Plan or otherwise.

Further, so long as shares of the Company's Class C Common Stock remain outstanding, the Class C Director shall be entitled to be a member of any committee responsible for evaluation of internal project investments by the Company or any committee having similar responsibilities.

3.10 *Right of First Review*. So long as CHS continues to hold any of the Notes or 750,000 shares of Class C Common Stock or Class A Common Stock (or Common Stock issuable upon the conversion thereof), and to the extent such technology is not restricted by other contractual arrangements in effect as of August 2, 2005, the Company shall disclose to Carilion Consolidated Laboratory (" **CCL**") for review on a confidential basis, that technology developed now or in the future by the employees of the Company or its affiliates which impacts, or has an application to, the clinical laboratory industry, at least sixty (60) days prior to disclosing such technology to any third-party for purpose of commercialization.

3.11 *Termination of Covenants*. The covenants set forth in this **Section 3** (other than the covenants set forth in Section 3.10) shall terminate and be of no further force and effect after the closing of the Company's Initial Public Offering.

Section 4
Preemptive Right

4.1 *Preemptive Right*. The Company hereby grants to each Holder the preemptive right to purchase (on the same terms and conditions and at the same price offered to third parties) its pro rata share of New Securities (as defined in **Section 4.1(a)**) which the Company may, from time to time, propose to sell and issue after the date of this Agreement. A holder's pro rata share, for purposes of this right of first refusal, is equal to the ratio of (a) the number of shares of Common Stock owned by such Holder immediately prior to the issuance of New Securities (assuming full conversion of the Shares and exercise of all outstanding convertible securities, rights, options and warrants, directly or indirectly, into Common Stock held by said Holder) to (b) the total number of shares of Common Stock outstanding immediately prior to the issuance of New Securities (assuming full conversion of the Shares and exercise of all outstanding convertible securities, rights, options and warrants, directly or indirectly, then outstanding).

(a) "**New Securities**" shall mean any capital stock (including Class A Common Stock, Class B Common Stock and Class C Common Stock) of the Company whether now authorized or not, and rights, convertible securities, options or warrants to purchase such capital stock, and securities of any type whatsoever that are, or may become, exercisable or convertible into capital stock; provided that the term "**New Securities**" does not include:

(i) shares of Class C Common Stock issued or issuable pursuant to the Purchase Agreement and shares of Conversion Stock;

(ii) shares of Common Stock issued or issuable to officers, directors and employees of, or consultants or advisors to, the Company or any subsidiary pursuant to any Company Plan approved by the Compensation Committee, or upon exercise of options or warrants granted to such parties pursuant to any such Company Plan or arrangement;

(iii) securities issued pursuant to the conversion or exercise of any other outstanding convertible or exercisable securities as of this date of this Agreement;

(iv) securities issued or issuable as a dividend or distribution on preferred stock of the Company or pursuant to any event for which adjustment is made pursuant to paragraph 4(e), 4(f), 4(g) or 4(h) of Article V of the Amended and Restated Certificate of Incorporation of the Company;

(v) securities offered pursuant to a bona fide Initial Public Offering;

(vi) securities issued or issuable pursuant to the acquisition of another corporation by the Company by merger, purchase of substantially all of the assets or other reorganization or pursuant to a joint venture agreement, provided, that such issuances are approved by the Board and Compensation Committee;

(vii) securities issued or issuable to banks, equipment lessors or other financial institutions pursuant to a commercial leasing or debt financing transaction approved by the Board;

(viii) shares of Common Stock issued or issuable in connection with any settlement of any action, suit, proceeding or litigation approved by the Board;

(ix) securities issued or issuable in connection with sponsored research, collaboration, technology license, development, OEM, marketing or other similar agreements or strategic partnerships approved by the Compensation Committee and the Board;

(x) securities issued or issuable to suppliers or third party service providers in connection with the provision of goods or services pursuant to transactions approved by the Board and Compensation Committee;

(xi) securities of the Company which are otherwise excluded by the affirmative unanimous vote of the Board; and

(xii) any right, option or warrant to acquire any security convertible into the securities excluded from the definition of New Securities pursuant to subsections (i) through (xi) above.

(b) In the event the Company proposes to undertake an issuance of New Securities, it shall give each Holder written notice of its intention, describing the type of New Securities, and their price and the general terms upon which the Company proposes to issue the same. Each Holder shall have thirty (30) days after any such notice is mailed or delivered to such Holder (the " **Election Period**") to agree to purchase such Holder's pro rata share of such New Securities for the price and upon the terms specified in the notice by giving written notice to the Company and stating therein the quantity of New Securities to be purchased.

(c) In the event the Holders fail to exercise fully the preemptive right within said Election Period, the Company shall have ninety (90) days thereafter to sell or enter into an agreement (pursuant to which the sale of New Securities covered thereby shall be closed, if at all, within ninety (90) days from the date of said agreement) to sell that portion of the New Securities with respect to which the Holders' preemptive right set forth in this **Section 4.1** was not exercised, at a price and upon terms no more favorable to the purchasers thereof than specified in the Company's notice to Holders delivered pursuant to **Section 4.1(b)**. In the event the Company has not sold within such ninety (90) day period following the

Election Period, or such ninety (90) day period following the date of said agreement, the Company shall not thereafter issue or sell any New Securities, without first again offering such securities to the Holders in the manner provided in this **Section 4.1**.

(d) The preemptive right granted under this Agreement shall expire upon, and shall not be applicable to, the Company's Initial Public Offering.

Section 5
Miscellaneous

5.1 *Amendment*. This Agreement amends and restates the Prior Agreement, and the Prior Agreement is of no further force or effect. Except as expressly provided herein, neither this Agreement nor any term hereof may be amended, waived, discharged or terminated other than by a written instrument referencing this Agreement and signed by (i) the Company, (ii) the Holders holding a majority of the Class A Common Stock issued and outstanding, and (iii) the Holders holding a majority of the Class C Common Stock issued pursuant to the Purchase Agreement (excluding any of such shares that have been sold to the public or pursuant to Rule 144); provided, however, that Holders acquiring shares of Class C Common Stock after the Closing (as defined in the Purchase Agreement) may become parties to this Agreement by executing a counterpart of this Agreement without any amendment of this Agreement pursuant to this paragraph or any consent or approval of any other Holder. Any such amendment, waiver, discharge or termination effected in accordance with this paragraph shall be binding upon each Holder and each future holder of all such securities of Holder. Each Holder acknowledges that by the operation of this paragraph, the holders of a majority of the Common Stock issued or issuable upon conversion of the Shares issued pursuant to the Purchase Agreement (excluding any of such shares that have been sold to the public or pursuant to Rule 144) will have the right and power to diminish or eliminate all rights of such Holder under this Agreement.

5.2 *Notices*. All notices and other communications required or permitted hereunder shall be in writing and shall be mailed by registered or certified mail, postage prepaid, or otherwise delivered by hand or by messenger addressed:

(a) if to an Investor, at the Investor's address as shown on Exhibit A hereto or in the Company's records, as may be updated in accordance with the provisions hereof

(b) if to any Holder, at such address as shown in the Company's records, or, until any such holder so furnishes an address to the Company, then to and at the address of the last holder of such shares for which the Company has contact information in its records; or

(c) if to the Company, one copy should be sent to 2851 Commerce Street Southeast, Blacksburg, Virginia 24060, Attn: Chief Executive Officer, or at such other address as the Company shall have furnished to the Investor, with a copy to Trevor Chaplick, Esq. Wilson Sonsini Goodrich & Rosati, Professional Corporation, 11921 Freedom Drive, Suite 600, Reston, Virginia 20190-5634.

Each such notice or other communication shall for all purposes of this Agreement be treated as effective or having been given when delivered if delivered personally, or, if sent by mail, at the earlier of its receipt or 72 hours after the same has been deposited in a regularly maintained receptacle for the deposit of the United States mail, addressed and mailed as aforesaid.

5.3 *Governing Law*. This Agreement shall be governed in all respects by the internal laws of the Commonwealth of Virginia as applied to agreements entered into among Virginia residents to be performed entirely within Virginia, without regard to principles of conflicts of law.

5.4 *Successors and Assigns*. This Agreement, and any and all rights, duties and obligations hereunder, shall not be assigned, transferred, delegated or sublicensed by any Investor without the prior written consent of the Company. Any attempt by an Investor without such permission to assign, transfer, delegate or sublicense any rights, duties or obligations that arise under this Agreement shall be void. Subject to the foregoing and except as otherwise provided herein, the provisions of this Agreement shall inure to the benefit of, and be binding upon, the successors, assigns, heirs, executors and administrators of the parties hereto.

5.5 *Entire Agreement.* This Agreement and the exhibits hereto and the agreements and documents referenced herein constitute the full and entire understanding and agreement between the parties with regard to the subjects hereof. No party hereto shall be liable or bound to any other party in any manner with regard to the subjects hereof or thereof by any warranties, representations or covenants except as specifically set forth herein.

5.6 *Delays or Omissions*. Except as expressly provided herein, no delay or omission to exercise any right, power or remedy accruing to any party to this Agreement upon any breach or default of any other party under this Agreement shall impair any such right, power or remedy of such non-defaulting party, nor shall it be construed to be a waiver of any such breach or default, or an acquiescence therein, or of or in any similar breach or default thereafter occurring, nor shall any waiver of any single breach or default be deemed a waiver of any other breach or default theretofore or thereafter occurring. Any waiver, permit, consent or approval of any kind or character on the part of any party of any breach or default under this Agreement, or any waiver on the part of any party of any provisions or conditions of this Agreement, must be in writing and shall be effective only to the extent specifically set forth in such writing. All remedies, either under this Agreement or by law or otherwise afforded to any party to this Agreement, shall be cumulative and not alternative.

5.7 *Severability*. If any provision of this Agreement becomes or is declared by a court of competent jurisdiction to be illegal, unenforceable or void, portions of such provision, or such provision in its entirety, to the extent necessary, shall be severed from this Agreement, and such court will replace such illegal, void or unenforceable provision of this Agreement with a valid and enforceable provision that will achieve, to the extent possible, the same economic, business and other purposes of the illegal, void or unenforceable provision. The balance of this Agreement shall be enforceable in accordance with its terms.

5.8 *Titles and Subtitles*. The titles and subtitles used in this Agreement are used for convenience only and are not to be considered in construing or interpreting this Agreement. All references in this Agreement to sections, paragraphs and exhibits shall, unless otherwise provided, refer to sections and paragraphs hereof and exhibits attached hereto.

5.9 *Counterparts*. This Agreement may be executed in any number of counterparts, each of which shall be enforceable against the parties that execute such counterparts, and all of which together shall constitute one instrument.

5.10 *Telecopy Execution and Delivery*. A facsimile, telecopy or other reproduction of this Agreement may be executed by one or more parties hereto and delivered by such party by facsimile or any

similar electronic transmission device pursuant to which the signature of or on behalf of such party can be seen. Such execution and delivery shall be considered valid, binding and effective for all purposes. At the request of any party hereto, all parties hereto agree to execute and deliver an original of this Agreement as well as any facsimile, telecopy or other reproduction hereof.

5.11 *Jurisdiction; Venue.* With respect to any disputes arising out of or related to this Agreement, the parties consent to the exclusive jurisdiction of, and venue in, the state courts in the City of Roanoke in the Commonwealth of Virginia (or in the event of exclusive federal jurisdiction, the courts of the Western District of Virginia, Roanoke Division).

5.12 *Further Assurances*. Each party hereto agrees to execute and deliver, by the proper exercise of its corporate, limited liability company, partnership or other powers, all such other and additional instruments and documents and do all such other acts and things as may be necessary to more fully effectuate this Agreement.

5.13 *Termination Upon Qualified Change of Control*. Notwithstanding anything in this Agreement to the contrary, this Agreement shall terminate upon a Qualified Change of Control (as such term is defined in the Company's Amended and Restated Certificate of Incorporation).

5.14 *Conflict*. In the event of any conflict between the terms of this Agreement and the Company's Amended and Restated Certificate of Incorporation or its Bylaws, the terms of the Company's Amended and Restated Certificate of Incorporation or its Bylaws, as the case may be, will control.

5.15 *Attorneys' Fees*. In the event that any suit or action is instituted to enforce any provisions in this Agreement, the each party hereto shall be responsible for its own fees, costs and expenses incurred with respect to enforcing its rights under this Agreement, including without limitation, all fees, costs and expenses of appeals.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the parties hereto have executed this Amended and Restated Investor Rights Agreement effective as of the day and year first above written.

"COMPANY"

LUNA INNOVATIONS INCORPORATED
a Delaware corporation

By: /s/

Name:

Title:

SIGNATURE PAGE TO AMENDED & RESTATED INVESTOR RIGHTS AGREEMENT

"INVESTOR"

CARILION HEALTH SYSTEM

By: /s/ _____

Name: _____

Title: _____

SIGNATURE PAGE TO AMENDED & RESTATED INVESTOR RIGHTS AGREEMENT

“STOCKHOLDERS”

/S/ _____

Name:

SIGNATURE PAGE TO AMENDED & RESTATED INVESTOR RIGHTS AGREEMENT

EXHIBIT A

SCHEDULE OF INVESTORS

Carilion Health System
213 S. Jefferson Street
Suite 720
P.O. Box 40032
Roanoke, VA 24022-0032
Attn: Briggs W. Andrews, General Counsel

EXHIBIT B

SCHEDULE OF STOCKHOLDERS

Class A Common Stockholders
Kent A. Murphy
Ashish Vengsarkar
Mike Gunther

Exhibit 10.10

WAREHOUSE AND OFFICE LEASE

THIS WAREHOUSE AND OFFICE LEASE ("Lease"), made as of this ____ day of June, 2003 is by and between Georgia Anne Snyder-Falkinham ("Lessor") and Luna Innovations, Inc. ("Lessee"), (collectively, "the Parties").

:WITNESSETH:

1. Demised Premises. In consideration of the rents and covenants herein set forth, Lessor does hereby lease to Lessee and Lessee hereby leases from Lessor the warehouse and office building (containing approximately 14,700 sq. ft.) at 2851 Commerce Street, S.E., Blacksburg, Virginia, for the period of time(s) and upon the terms and conditions hereinafter set forth.

2. Commencement And Term. The term of this Lease shall commence on the first day of July, 2003, and terminate at midnight on June 30, 2006 ("Term"), unless renewed as provided for hereinafter.

3. Rental. Lessee hereby covenants and agrees to pay Lessor as rental for the Leased Premises, which amount shall be payable without deduction, offset, notice, or demand, ONE HUNDRED FORTY-SEVEN THOUSAND AND NO/100 DOLLARS ($147,000.00) each year during the Term of this Lease, with monthly payments of TWELVE THOUSAND TWO HUNDRED FIFTY AND NO/100 DOLLARS ($12,250.00) being due and payable in advance on the first day of each month. Payments are to be made to Lessor at 500 South Main Street, Blacksburg, Virginia 24060. As additional rent, Lessee shall be responsible for all janitorial services, water, sewage, and garbage pickup related to the Leased Premises. Further, Lessee shall pay as additional rent all charges for electricity and natural gas related to the Leased Premises.

4. Renewal. Lessee shall have the right and option to renew this Lease for an additional period of THREE (3) years, immediately subsequent to the original Term of this Lease, at a rental rate to be negotiated between the parties in good faith, based upon the economic circumstances and the market conditions then existing. Notice of the exercise of the renewal option shall be given no less than NINETY (90) days prior to the expiration of the original Term of this Lease.

5. Late Payment. Lessee hereby covenants and agrees to pay Lessor or agent thereof a late charge of TEN PERCENT (10%) of the amount of any installment of rent or any other sum due Lessor for each late payment when any installment of rent or any other sum due Lessor under the terms of this Lease is paid more than TEN (10) days after the due date thereof.

6. Use of Leased Premises. Lessee shall use and occupy the Leased Premises, subject to the terms and condition hereof, for the operation of a fiber optic sensing business and for such other uses as may be customary and incidental thereto.

7. Utilities and Taxes. The Lessee shall pay promptly all business and personal property taxes, licenses, and bills for utilities (including telephone) related to the warehouse and office space at 2851 Commerce Street. Lessor shall pay all real estate taxes related to the Leased Premises.

8. Maintenance and Repairs. Lessor at her sole expense, within a reasonable time after being notified in writing by Lessee of the need therefor, shall be responsible for the following: structural repairs to the building; repairs to the roof, gutters, and downspouts; painting of the exterior of the building; maintenance of the yard, hard surfaced areas, and exterior lighting; as well as repairs to the plumbing, electrical, and HVAC equipment installed by the Lessor; unless the need for such repairs/maintenance is occasioned by the negligent or willful act of Lessee, its agents, employees, or invitees, in which event such repairs shall be charged to Lessee. All modifications installed by the Lessee shall be the sole responsibility of the Lessee to repair and maintain.

The Lessee at its sole expense shall provide all other maintenance and make repairs, including repairs and replacements to the interior finishes necessary to keep the Leased Premises, building and improvements, and equipment in good order and repair. Lessee shall be responsible for keeping the interior of the building neat and attractive. Snow removal from parking lots and sidewalks shall be the responsibility of the Lessee. Lessee will, at the expiration of the original Term of this Lease or any renewal thereof, deliver up the Leased Premises in as good order and condition as received, excepting reasonable wear and tear and damage by fire or other casualty of the kind insured against in standard policies of fire insurance with extended coverage.

Except as provided herein, Lessor shall not be under any obligation to make other repairs to the Leased Premises. Lessor shall not be chargeable with any liability by reason of negligence or otherwise for not making repairs to the Leased Premises and shall not be liable for any damages (or for any reason whatsoever in connection with the Leased Premises whether caused by the use of the Leased Premises, water, electricity, heating equipment, or by theft or otherwise) to personal property that the Lessee or assigns or any other person may sustain on or about the Leased Premises. Lessee shall not be entitled to any reduction in rent, or any claim for damages, by reason of any inconvenience, annoyance, injury to business, or loss of natural light or ventilation arising from any repairs, alternations, or replacements made by Lessor pursuant to this Section.

9. Insurance and Damage to Leased Premises. (a) The Lessee shall insure at its own expense its property, improvements, inventory, and contents against loss or damage by fire or other hazards. (b) If the building of which the Leased Premises are a part shall be damaged by fire, the elements, or the casualty, but is not thereby rendered untenantable in whole or in part, Lessor shall promptly, at her own expense, cause such damage to be repaired, and the rent shall not be abated. If by reason of such occurrence the Leased Premises shall be rendered untenantable only in part, Lessor shall promptly, at her own expense, cause the damage to be repaired and fixed, and the rent shall be abated proportionately to the portion of the Leased Premises rendered untenantable for such time as may elapse until the whole space is again tenantable. If by reason of such occurrence the Leased Premises shall be rendered wholly untenantable, Lessor shall promptly, at her own expense, cause such damage to be repaired, and the rent shall be abated in whole until the Leased Premises are restored, unless within SIXTY (60) days after such occurrence Lessor shall give Lessee written notice that she has elected not to reconstruct the destroyed premises. In which event, this Lease and the tenancy hereby created shall cease as of the day of said occurrence. In no event shall Lessor be responsible for any resulting inconvenience to the Lessee. (c) Notwithstanding the foregoing provisions, if at any time the obligee of any indebtedness secured by a lien on the Leased Premises shall be obligated to apply all or a substantial part of the proceeds from any insurance to the payment of such indebtedness with the result that the remaining proceeds are insufficient to pay the cost of

making the repairs, restorations, or replacements required hereby and neither the Lessee nor the Lessor agrees to pay such cost, then this Lease shall terminate THIRTY (30) days after receipt by either the Lessee or the Lessor to the other of written notice of such termination and all remaining proceeds of insurance on the Leased Premises shall be paid to and retained by the Lessor. (d) Lessee covenants that, without prior written consent of Lessor, it will not do anything which will increase the rate of fire insurance on the building of which the Leased Premises are a part and that, if such consent is given, Lessee will pay Lessor the amount of the increase in the cost of such insurance as and when the premiums become due. In the event that the Lessee causes an increase in the rate of fire insurance on the building in which the Leased Premises is located, Lessee covenants and agrees to pay to Lessor the full amount of such rate increase caused by Lessee's actions.

10. Condemnation. If the building of which the Leased Premises are a part shall be partially condemned by public authorities under the power of eminent domain, or purchased in lieu thereof, Lessor shall in no way be responsible for any resulting inconvenience or damage to Lessee, nor shall there be any reduction in the rent unless as a direct result of such occurrence part of such building shall be rendered untenantable, in which case there shall be a reasonable reduction in rent for such time as may elapse until there be again on the Leased Premises a building of as much value to the Lessee for its use as the one affected by such occurrence. Lessor shall then proceed to make such repairs and alterations as may be necessary to provide a building of as much value to Lessee as the one existing prior to such occurrence, unless within SIXTY (60) days after the date of such taking Lessor gives Lessee written notice that she has elected not to reconstruct, repair, or alter such building, in which event this Lease and the tenancy hereby created shall cease as of the day of such taking or sale without any further liability on the part of either the Lessor and the Lessee to the other. All compensation awarded or paid upon such total or partial taking of the Leased Premises shall belong to and be the property of the Lessor without any participation therein by the Lessee. In no event shall the Lessor be responsible for any resulting inconvenience to Lessee.

11. Indemnity to Lessor. Lessee will indemnify and save harmless the Lessor against any and all liability, damage, expense, causes of action, suits, claims or judgments, and attorney's fees and costs incurred in connection therewith, arising from injury to persons or property on the Leased Premises or arising by reason of the use of the Leased Premises. Lessee will keep in force at its own expense so long as this Lease remains in effect broad-form public liability insurance in the amount of $500,000.00 per occurrence and property damage of $100,000.00 per occurrence, or such higher limits as the Lessor may reasonably from time to time require, protecting and indemnifying Lessee, Lessor, and Lessor's agents, naming the Lessor as an additional insured against all claims for damage to person or property or for loss of life or property occurring on, in, or about the Leased Premises. Such certificates of insurance and any endorsement thereto shall be furnished to Lessor by Lessee at or prior to the commencement of the original Term of this Lease and thereafter at least TEN (10) days prior to the expiration of any such policy. Each such policy shall provide for at least TEN (10) days' written notice to Lessor of any change or cancellation thereof.

12. Assignment and Subletting. During the original Term hereof or any renewal hereof, the Lessee shall not have the right to assign this Lease or to sublet or to permit any other person to occupy the Leased Premises, or any part thereof, except with the prior written consent of the Lessor, which consent shall not be unreasonably withheld. No such assignment or subletting, whatever, shall relieve the Lessee, or any guarantor of Lessee's obligations hereunder, of its/their obligations

hereunder. For any such assignment or sublease, Lessee shall pay all cost (including legal fees) incurred by Lessor.

13. Default. All items of indebtedness or damages which may become owing to the Lessor by the Lessee under the covenants and provisions hereof shall be considered as items of rent, and the Lessor shall have the same liens and the same remedies for the collection thereof as are provided herein and by law for the collection of rent. Lessee covenants and agrees to pay interest at the rate of TWELVE PERCENT (12%) per annum on all rents or other sums accrued if not paid when due, Lessor expressly reserving all other rights and remedies provided herein and by law in respect thereto. If the Lessee shall default in the performance of any of the covenants and conditions contained in this Lease, the Lessor may, but shall not be obligated to, cure any such default and add the cost thereof, with interest at the rate of TWELVE PERCENT (12%) per annum, to the amount of the next installment of rent to be paid by the Lessee hereunder, but it is expressly agreed that such curing of any default or payment of any indebtedness by the Lessor shall not be deemed a waiver or release of any default hereunder or of any remedy provided herein. In addition, upon the breach of any covenants, term, condition, or provision herein contained, or the repudiation of this Lease by the Lessee, or the failure of the Lessee to occupy the Leased Premises at the beginning of the Term, or the abandonment or vacation of Leased Premises by the Lessee, or the Lessee's (or any guarantor of this Lease) being adjudicated as bankrupt, or the insolvency of Lessee, or the appointment of a Receiver or Trustee of the Lessee's property, or upon the business conducted on the Leased Premises being substantially terminated at any time, the total rent herein identified, whether accrued or not, shall at the option of Lessor immediately become due and payable, and the Lessor shall have the right to enter the Leased Premises at once, by force or otherwise, and to remove any property therein without liability for damage thereto, and without obligation to store such property, and without being liable to any prosecution therefore, and to distrain for rent, and also to re-rent the Leased Premises as agent for the Lessee for the unexpired portion of the Term and to receive the rent and to apply the same, after deduction of appropriate expenses, to the payment of the rent payable hereunder, Lessee remaining liable for any deficiency; or the Lessor may, at her option, immediately terminate this Lease. In the event of termination, Lessee shall quit and surrender the Leased Premises to the Lessor, providing that neither terminating this Lease under this clause nor recovering possession of the Leased Premises shall deprive the Lessor of any other action or remedy against the Lessee for possession, for rent, or for damages. All of Lessor's rights shall be cumulative and shall not preclude the Lessor from exercising all other rights and remedies provided by law.

14. Waiver of Subrogation. Any other provision hereof notwithstanding, but subject to the consent of Lessor's and Lessee's insurance carriers, it is understood and agreed that, in the event of any loss or damage to the Leased Premises by fire or any other perils insured customarily under extended coverage portions of fire or other insurance policies, regardless of the cause thereof, and whether or not the same be caused by carelessness or negligence of the Lessor or Lessee, their servants, employees, agents, visitors, or licensees, neither the Lessee or Lessor nor their insurance carriers shall have any right of subrogation against the Lessee or Lessor, their servants, employees, agents, visitors, or licensees for any such damage or loss so sustained. Lessor and Lessee agree to apply to their respective insurance carriers for a policy rider consenting to the foregoing waiver of subrogation provisions.

15. Improvements. Any improvements or changes, including enlargements, to the Leased Premises shall be made at the expense of the Lessee. Before making any alterations or improvements, the written consent of the Lessor shall be first obtained, which consent shall not be unreasonably withheld. All repairs, improvement, replacements, or alterations to the Leased Premises, including without limitations all electric wiring, electric fixtures, plumbing, floor coverings (including carpeting, but excepting rugs), heating and air conditioning systems, shall be deemed to be part of the realty and shall become the property of the Lessor at the termination of this Lease, except those expressly agreed in writing to not be part of the reality, and shall not be removed at the expiration or earlier termination of this Lease unless removal is requested by Lessor, in which event Lessee agrees to do so and to repair promptly any damage caused by such removal. No improvements or changes shall be made without obtaining all necessary permits.

16. Removal Upon Termination. Lessee shall at the end of this Lease or any renewal or extension, or sooner termination thereof, remove from the Leased Premises any ashes, dirt, rubbish, or any refuse matter and leave each room clean. Provided Lessee is not in default hereunder, Lessee shall have the right to remove any of its trade fixtures from the Leased Premises providing it repairs any damages by such removal. All goods and property on the Leased Premises left after Lessee's removal shall be liable to distress and may be distrained and sold for any rent in arrears or cost of repairs to the Leased Premises or fixtures thereof made necessary by misuse or neglect on the part of the Lessee or cost of removing rubbish, refuse matter, or anything else found upon the Leased Premises.

17. Signs. Lessee, at its sole expense, may attach to the building and maintain on the Leased Premises a neat and appropriate sign advertising its business as it shall desire, provided the size, color, style, and method of lighting is acceptable to Lessor, further provided that the Lessee complies with all applicable governmental ordinances and regulations and that written permission is first obtained from Lessor. Lessee will not place or suffer to be placed or maintained any fixture, awning, or canopy or any decoration, lettering, or advertising matter on any exterior wall or on the glass of any window or door of the Leased Premises. In the event of the violation of the foregoing by the Lessee, Lessor may remove such fixture, awning, canopy, sign, decorating advertising, or lettering without any liability and may charge for expenses incurred by such removal to the Lessee. Lessee shall keep any such sign freshly painted and in good repair at all times. Upon the termination of this Lease, Lessee shall remove such sign and repair any damages to the Leased Premises caused by the erection, maintenance, and removal of such sign.

The Lessor shall have the right to prescribe the general type of window treatment (draperies, curtains, blinds, etc.) which are to be used by Lessee, and Lessee shall place no curtains, draperies, or blinds in the windows without prior consultation with and approval by Lessor, which approval shall not be unreasonably withheld.

18. Covenant and Agreement of Lessor. Lessor covenants and agrees that Lessee, upon paying the rental herein reserved and upon the performance of the covenants, conditions, and agreements herein provided to be observed and performed by Lessee, shall peaceably, and quietly hold and enjoy the Leased Premises for and during the Term hereof and any extension thereof.

19. Waiver of Homestead Exemption and Attorney's Fees. Lessee and any guarantor of Lessee's obligation hereunder hereby expressly waive the benefit of the homestead exemption laws of the State of Virginia as to all obligations hereunder. The Lessee and any such guarantor hereby agree to pay all expenses and costs incurred by Lessor pertaining thereto and in enforcement of any remedy available to Lessor and attorney's fees of TWENTY-FIVE PERCENT (25%) of any amount due by Lessee, or a reasonable attorney's fees in the event that no amount is due, if the Lessor employs the services of an attorney to enforce the performance of the covenants hereof by the Lessee, to evict the Lessee, to collect money due by the Lessee, or to perform any services based upon Lessee's default in the performance of any covenants of this Lease.

20. Security Deposit. Lessor herewith acknowledges receipt from Lessee of TWO THOUSAND TWO HUNDRED THIRTY AND NO/100 DOLLARS ($2,230.00), which Lessor is to retain, without liability or interest, as security for the faithful performance of all the covenants, conditions, and agreements of this Lease, but in no event shall the Lessor be obligated to apply the same to rents or other charges in arrears or to damages due to the Lessee's failure to perform the said covenants, conditions, and agreements. Lessor may apply this security at her option; and Lessor's right to possession of the Leased Premises for nonpayment of rent or for any other reason, or to exercise any other right or remedy to which Lessor may be entitled hereunder or in law or equity, shall not in any event be affected by reason of the fact that the Lessor holds this security or has applied the same as aforesaid. If, without termination of this Lease, the security shall have been reduced, by application towards rents or otherwise, below the sum stated above, Lessee upon demand shall immediately deposit with Lessor the amount of the difference to be held as security hereunder. The same security, if not applied toward payment of the rent in arrears or toward payment of damages suffered by the Lessor by reason of the Lessee's breach of the covenants, conditions, or agreements of this Lease is to be returned to the Lessee when this Lease is terminated, according to these terms. In no event is the said security to be returned until the Lessee has properly cleaned and vacated the premises and delivered possession to the Lessor. In the event that the Lessor repossesses said premises because of the Lessee's default or because of the Lessee's failure to carry out the covenants, conditions, and agreements of this Lease, Lessor may apply the said security on all damages up to such damages as may be suffered or shall accrue thereafter by reason of the Lessee's default or breach.

21. Miscellaneous Covenants of Lessee. Lessee covenants that it will comply with all Federal, State, and/or municipal laws, ordinances, and regulations relating to its business conducted in the Leased Premises and to its use of the Leased Premises; that it will not use, or permit to be used, the Leased Premises for any illegal or immoral purpose; that it will not use the sidewalks for business purposes, that it will not, without prior written consent of the Lessor, use or permit to be used any advertising medium or device such as phonographs, radio, or public address system to hold a fire, bankruptcy, going out-of-business or auction sale; and that it will permit Lessor or its representatives (i) to enter the Leased Premises at any reasonable time for purposes of making inspections and/or repairs and, during the last TWELVE (12) months of the Term, for the purpose of exhibiting the Leased Premises to prospective tenants and (ii) to place a "For Rent" sign in a front window during such period of time.

22. Security/Alarm System. The Lessee may, at its sole expense, install a security/alarm system at the Leased Premises.

23. Notices. All notices required or permitted to be given under this Lease shall be in writing and shall be sent by registered or certified mail addressed to Lessor at 500 South Main Street, Blacksburg, Virginia 24060, and to Lessee at 2851 Commerce Street, S.E., Blacksburg, Virginia 24060, or at such other address as either Lessor or Lessee shall designated in the manner herein set forth for giving of the notice. Any such notice shall be deemed to have been given at the time it is postmarked by the Untied States Postal service. Lessee will surrender all keys at the termination of this Lease or pay the cost of replacing all locks for the Leased Premises.

24. Miscellaneous. (a) This Lease Agreement may be executed by the Lessor and the Lessee in any number of counterparts (each of which shall be deemed a single instrument), merges all understandings and agreement between the parties hereto with respect to the Leased Premises, and shall constitute the entire Lease Agreement. (b) The failure to insist, in any one or more instances, upon strict performance of any of the covenants of this Lease, or to exercise any option herein contained, shall not be construed as a waiver or a relinquishment for the future of such covenants or option, but the same shall continue and remain in full force and effect. The receipt by the Lessor of rent with knowledge of the breach of any covenant hereof shall not be deemed a waiver of such a breach, and no waiver by the Lessor of any provision hereof shall be deemed to have been made unless expressed in writing and signed by the parties so charged with the waiver. (c) This Lease and the covenants and conditions herein contained shall inure to the benefit and be binding upon the Lessor and the Lessee and their respective successors and their permitted assigns. (d) This Lease shall be governed by the construed in accordance with the laws of the State of Virginia. (e) Masculine and/or feminine pronouns are to be substituted for those of the neuter form and the plural is to be substituted for the singular number of any place or places herein in which the context may require such substitution. (f) The headings of the Sections herein are inserted for convenience only and shall not control or affect the meaning or construction of any of the provisions of this Lease. (g) Both Lessor and Lessee represent and warrant that there are no claims for brokerage commissions or finders' fees in connection with the execution of this Lease.

25. Subordination. Lessee agrees that this Lease, and all the rights included herein, shall be subordinate to the rights of any existing or subsequently created mortgage or deed of trust placed upon the Leased Premises by Lessor or other fee owner of the Leased Premises.

26. Mortgage Protection. Lessee agrees to give any mortgagees and/or trust deed holders, by Registered Mail, a copy of any Notice of Default served upon the Lessor, provided that prior to such notice Lessee has been notified in writing (by way of Notice of Assignment of Rents and Leases or otherwise) of the address of such mortgages and/or trust deed holders. Lessee further agrees that if Lessor shall have failed to cure such default within the time provided in this Lease, then the mortgages and/or trust deed holders shall have an additional THIRTY (30) days within which to cure such default. If such default cannot be cured within that time, then such additional time as may be necessary to cure such default shall be granted if within such THIRTY (30) days any mortgagee and/or trust deed holder has commenced and is diligently pursuing the remedies necessary to cure such default (including but not limited to commencement of foreclosure proceedings, if necessary to effect such cure), in which event this Lease shall not be terminated while such remedies are being diligently pursued.

WITNESS the following signatures and seals:

LESSOR:

/s/ GEORGIA ANNE SNYDER-FALKINHAM (SEAL)

Georgia Anne Snyder-Falkinham

LESSEE:

Luna Innovations, Inc.

By: /s/ KENT MURPHY (SEAL)

ATTEST:

I hereby guarantee the compliance by the Lessee with all the terms of this Lease.

(SEAL)

Kent Murphy

(SEAL)

Michael F. Gunther

Exhibit 10.11

July 1, 2005

William M. Sterrett, Jr.
2357 Mount Tabor Road
Blacksburg, Virginia 24060

Dear Bill:

Per our email notes recently, Luna desires to go month to month on Suite A and C in the Blacksburg Business Condominiums, 2903 Commerce Street, Blacksburg, Virginia. At the expiration of each lease for both A & C; the new payment for each unit will increases by 3% and there will be a minimum of 30 days notice to vacate should a new tenant acquire the space.

We appreciate your assistance and support.

Sincerely,

/S/ MICHAEL F. GUNTHER

Michael F. Gunther
VP Operations

Cc.

KAM – CEO
SAG – CFO
MAM – Accounting
MDH/JMW – facilities/safety

2851 Commerce Street
Blacksburg, VA 24060
P: 540.552-5128
F: 540.951.0760
www.lunainnovations.com

THIS LEASE AGREEMENT, made this _____, by and between **WILLIAM M. STERRETT, JR., FAMILY LIMITED PARTNERSHIP**, a Virginia limited Partnership, Grantor, hereinafter referred to as "Lessor", and Luna Innovations, Grantee, hereinafter referred to as "Lessee", whose address is 2903 Commerse Street, Blacksburg, VA.

WITNESSETH:

WHEREAS, William M. Sterrett, Jr. is the sole owner of the following described real estate, to-wit:

Blacksburg Industrial Condominiums, 2903-A Commerce Street, Blacksburg Industrial Park, Blacksburg, Virginia, 24060.

WHEREAS, Luna Innovations desires to lease a portion of the aforesaid premises for the purpose of conducting their business.

NOW THEREFORE, in consideration of the mutual covenants contained herein the parties hereby agree as follows:

DESCRIPTION OF THE PREMISES

Lessor agrees to lease and Lessee agrees to rent certain space of Blacksburg Industrial Condominiums, containing 5,000 square feet, as shown on the attached floor plan, labeled Exhibit "A", a copy of which is attached hereto and made a part hereof, which space is hereafter referred to as the "premises."

TERMS OF LEASE

Lessee agrees to lease the above described premises for a period of three (3) years commencing on the 1st day of August, 2002, and continuing until the 31st day of July 2005. In addition, the Lessee will have the option to renew this lease for one additional three (3) year period, on the terms and conditions as hereinafter set forth. The Lessee's option to renew shall be exercised by Lessee giving written notice to Lessor one hundred twenty (120) days prior to the expiration of the current lease term.

RENT

Lessee agrees to pay to Lessor at 3101 Commerce, Blacksburg Industrial Park, Blacksburg, Virginia, 24060, the sum of Fifty Thousand Dollars ($50,000) per year, payable in installments of four thousand one hundred sixty-six dollars and sixty-six cents ($4,166.66) per month, for the lease of the premises, to be due and payable on the 1st day of each month beginning on the 1st day of August 2002.

Lessee shall pay the Lessor two (2) months rent as deposit in advance of occupancy and upon execution of this lease. One half of the deposit will be applied to the first month's rent, and one half

will be kept as a security deposit. At the termination of this lease, the security deposit will be returned within 30 days, provided all terms of this lease have been complied with.

In addition, the parties hereto agree that during the term of this lease and any extensions thereof, there will be a 3% annual increase of the rent each year, beginning on August 1, 2003, and each succeeding year thereafter.

USE OF THE PREMISES

The parties expressly agree that this Lease is executed in order that the Lessee may conduct the business of Luna Innovations upon the premises, and that the demised premises shall not be put to any other use without the prior written consent of Lessor.

SERVICES

During the term of this Lease, Lessor shall be responsible for maintenance and repair of the roof and all structural portions of the premises. In addition, lessor will be responsible for ground maintenance such as mowing and mow removal.

During the term of this Lease, Lessee will pay all water, sewer, and electrical service, as well as interior maintenance, and all exterior non-structural maintenance. In addition, Lessee will pay for 100% of the cost to repair damage caused by Lessee.

Lessee shall not during the term of this lease or any renewals thereof, make any alterations or changes to the premises without first obtaining the written consent of the Lessor, which consent will not be unreasonably withheld.

Provided the Lessee is not in default hereunder, all fixtures, furnishings and equipment placed on the Premises at Lessee's expense shall be and remain the Lessee's personal property. Except for permanently affixed plumbing, heating, ventilating, air conditioning, and attached electrical fixtures and equipment, all such fixtures, furnishings and equipment may be removed by Lessee, at its expense, at any time prior to the expiration of this Lease.

Any permanent improvements to the Premises constructed by Lessee and all structural alteration, additions and changes thereto shall become the property of the Lessor at the expiration of this Lease without any compensation being paid Lessee therefore, except as otherwise provided herein.

Lessor warrants that he has full right, authority, and power to execute and perform this Lease and to grant the estate demised herein. Further, the Lessor covenants and warrants that the Lessee will have quiet and peaceable possession and enjoyment of the Premises for the full term of the Lease without hindrance or molestation by any person, provided the Lessee is not in default in the performance of any of the covenants and terms of this Lease.

ASSIGNMENT AND SUBLEASE

This Lease may not be assigned or transferred, and the premises may not be sublet, either in whole or in part, by Lessee without Lessor's prior written consent Lessor's approval shall not be unreasonably withheld.

RIGHT OF ENTRY TO REPAIR

Lessor reserves the right of himself, his agents and employees to enter upon the premises at any reasonable time to make repairs, alterations or improvements; provided, however, that such repairs, alterations, or improvements shall not unreasonably interfere with the Tenant's business operations. Such right to enter shall also include the right to enter upon the premises for the purposes of inspection.

INSURANCE – TAXES

Lessor shall be responsible for all property and real estate taxes. In addition, Lessor shall be responsible for maintaining fire and casualty insurance on the building.

Lessee shall maintain at its expense, through the term, insurance against loss or liability in connection with bodily injury, death, property damage and destruction, occurring within the premises or arising out of the use thereof by the Lessee or its agents, employees, officers or invitees, visitors and guests under one or more policies of general public liability insurance having such limits as to each as are reasonably required by the Lessor from time to time (but in any event of not less than Five Hundred Thousand ($500,000.00) combined single limit for injury to or death of any one or more persons during any one occurrence, and for property damage or destruction during any one occurrence). Such policies shall name the Lessor and the Lessee (and, at the Lessor's request, any Mortgagee) as the insured parties, shall provide that they shall not be cancelable without at least thirty (30) days' prior written notice to the Lessor (and at the Lessor's request, any such Mortgagee), and shall be issued by Insurers of recognized responsibility licensed to do business in Virginia. Lessee shall furnish Lessor with a certificate of said insurance and resubmit same to Lessor upon any change or renewal of said policy.

That all personal property in said premises shall be and remain at Lessee's sole risk, and Lessor shall not be liable for any damage to nor loss of such personal property arising from any acts or negligence of any other persons, nor from the bursting, leaking or overflowing of water, sewer or steam pipes, nor from heating or plumbing fixtures, nor from electric wires or fixtures, nor from any other cause whatsoever; nor shall the Lessor be liable for any injury to the person of the lessee or other persons in said premises; the Lessee expressly agreeing to save the Lessor harmless in all such cases.

BANKRUPTCY OR INSOLVENCY

It is expressly agreed that if at any time during the term of this lease, Lessee shall be adjudged bankrupt or insolvent by any Federal or State Court of competent jurisdiction, Lessor may, at his option, declare this lease to be terminated and canceled, and may take possession of demised

premises. In the event of the such bankruptcy or insolvency of the Lessor, or in the event the premises are sold, Lessee may elect to terminate this lease, but he will not be required to do so.

DAMAGE OR DESTRUCTION BY FIRE OR NATURAL CAUSES

If, during the term of this lease, and absence of any negligence on behalf of the Lessee, the building on the demised premises is destroyed by fire, natural causes, or other casualty, or so damaged thereby that it cannot be repaired with reasonable diligence within sixty (60) days, this lease shall terminate as of the date of such damage or destruction. However, if said buildings can with reasonable diligence be repaired within 60 days, said buildings shall be, by Lessor, repaired as quickly as is reasonably possible, and this lease shall remain in full force and effect; provided, however, rent shall be abated for any part of said building which is rendered unfit for occupancy for the period that such unfitness continues.

DEFAULT ON PAYMENT OF RENT

If any monthly installment of rent as herein called for remains overdue and unpaid for five (5) days, Lessor shall impose a penalty of five (5) percent of the monthly rental amount for each month overdue. If any monthly installment of rent and interest as herein called for remains overdue and unpaid for thirty (30) days, Lessor may, at his option, at any time during such default, declare this lease terminated and take possession of the demised premises.

In the event there is a default by either party to this lease, then the defaulting party will be responsible for the court costs and reasonable attorney fees and any other expenses incurred by the other party in enforcing this lease.

SIGNS

Lessee may display signs and shingles advertising his place of business with the prior written consent of the Lessor, which shall not be unreasonably withheld.

NOTICES AND LICENSES

All notices required or permitted herein shall be in writing and shall be deemed to have been given if mailed, postage prepaid, in any United States Post Office by certified or registered mail, return receipt requested or any other delivery service providing a delivery receipt. The first (1 st) day following receipt of such notice shall be the start date for all time periods stated herein. The giving of notice of termination as provided for herein shall terminate this Lease with the same force and effect as though that date were the date originally specified herein for the expiration of this Lease, unless otherwise provided herein. All notices shall be addressed to Lessor or Lessee, respectively, at the following addresses, or to such other address as the parties may designate in writing from time to time.

LESSOR	LESSEE
William M. Sterrett, Jr. Family Limited Partnership 3101 Commerce Street Blacksburg, VA 24060	Luna Innovations 2851 Commerce St Blacksburg, VA 24060

With a copy to:

Lessee shall obtain all governmental licenses, certificates, and permits necessary for Lessee's intended use and leasehold improvements. In the event that the Lessee cannot obtain such licenses, certificates, and permits proceeding diligently and in good faith, Lessee, at its option, may terminate this Lease by giving written notice to the Lessor, provided such notice is given within sixty (60) days from the Commencement Date, except that such period be extended if Lessee is proceeding diligently and in good faith to obtain such governmental approval.

The parties, having read and understood the provisions of this lease, agree for themselves, their heirs, administrators, personal representatives, executors, and assigns to be bound thereby.

This lease shall be governed by the applicable laws of the Commonwealth of Virginia.

This lease, including exhibits, expresses the entire understanding and all agreements of the parties. Neither party has made or shall be bound by any agreement or representation to the other party, which is not expressly set forth herein or in the exhibits attached hereto.

In Witness Whereof, the parties have executed this lease on the _____.

WILLIAM M. STERRETT, JR.

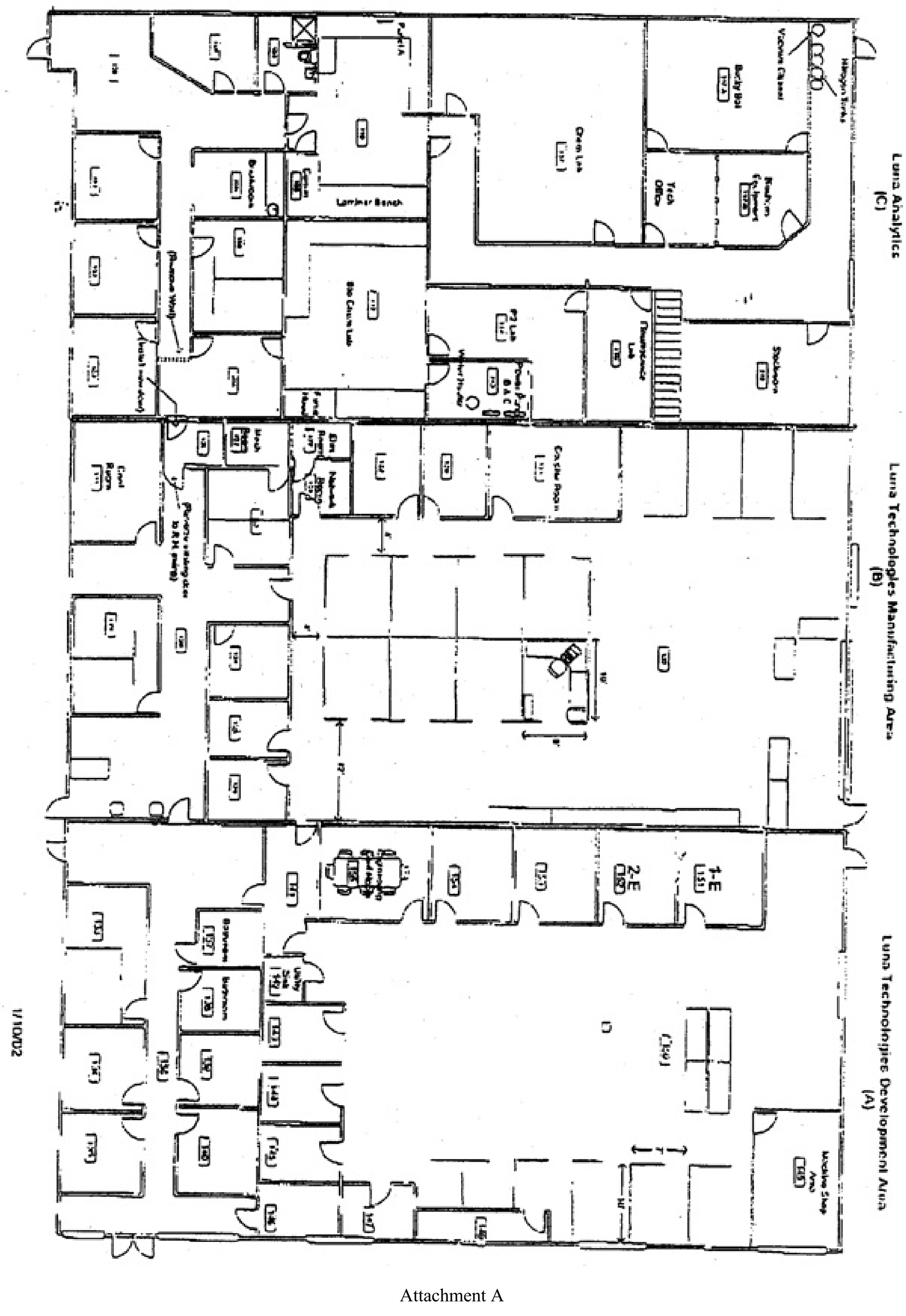
BY: /s/ WILLIAM M. STERRETT, JR.

ITS: **G.P.**
Lessor

LUNA INNOVATIONS

BY: /s/ KENT MURPHY

ITS: **President**
Lessee



Attachment A

Exhibit 10.12

March 31, 2005

William M. Sterrett, Jr.
2357 Mount Tabor Road
Blacksburg, Virginia 24060

Dear Bill:

Per our phone conversations recently, I would like to thank you for the opportunity to exercise the lease option on Suite B, Blacksburg Business Condominiums, 2903 Commerce Street, Blacksburg, Virginia from the current lease commencing on the 1 st of August 2002, and continuing until the 31 st days of July 2005.

We appreciate your assistance as our ability to grow is strengthened by your continual support.

Sincerely,

/S/ MICHAEL F. GUNTHER

Michael F. Gunther
VP Operations

Cc.

KAM – CEO
DJ – VC
MM – Accounting
MH/JMW – facilities/safety

2851 Commerce Street
Blacksburg, VA 24060
P: 540.552-5128
F: 540.951.0760
www.lunainnovations.com

THIS LEASE AGREEMENT, made this _____, by and between **WILLIAM M. STERRETT, JR., FAMILY LIMITED PARTNERSHIP**, a Virginia limited Partnership, Grantor, hereinafter referred to as "Lessor", and Luna Innovations, Grantee, hereinafter referred to as "Lessee", whose address is 2903 Commerse Street, Blacksburg, VA.

WITNESSETH:

WHEREAS, William M. Sterrett, Jr. is the sole owner of the following described real estate, to-wit:

Blacksburg Industrial Condominiums, 2903-B Commerce Street, Blacksburg Industrial Park, Blacksburg, Virginia, 24060.

WHEREAS, Luna Innovations desires to lease a portion of the aforesaid premises for the purpose of conducting their business.

NOW THEREFORE, in consideration of the mutual covenants contained herein the parties hereby agree as follows:

DESCRIPTION OF THE PREMISES

Lessor agrees to lease and Lessee agrees to rent certain space of Blacksburg Industrial Condominiums, containing 5,000 square feet, as shown on the attached floor plan, labeled Exhibit "A", a copy of which is attached hereto and made a part hereof, which space is hereafter referred to as the "premises."

TERMS OF LEASE

Lessee agrees to lease the above described premises for a period of three (3) years commencing on the 1st day of August 2002, and continuing until the 31st day of July 2005. In addition, the Lessee will have the option to renew this lease for one additional three (3) year period, on the terms and conditions as hereinafter set forth. The Lessee's option to renew shall be exercised by Lessee giving written notice to Lessor one hundred twenty (120) days prior to the expiration of the current lease term.

RENT

Lessee agrees to pay to Lessor at 3101 Commerce, Blacksburg Industrial Park, Blacksburg, Virginia, 24060, Forty thousand fifty-five dollars ($40,055.00) per year, payable in installments of three thousand three hundred thirty-seven dollars and ninety-one cents ($3,337.91) per month, for the lease of the premises, to be due and payable on the 1st day of each month beginning on the 1st day of August 2002.

Lessee shall pay the Lessor two (2) months rent as deposit in advance of occupancy and upon execution of this lease. One half of the deposit will be applied to the first month's rent, and one half

will be kept as a security deposit. At the termination of this lease, the security deposit will be returned within 30 days, provided all terms of this lease have been complied with.

In addition, the parties hereto agree that during the term of this lease and any extensions thereof, there will be a 3% annual increase of the rent each year, beginning on August 1, 2003, and each succeeding year thereafter.

USE OF THE PREMISES

The parties expressly agree that this Lease is executed in order that the Lessee may conduct the business of Luna Innovations upon the premises, and that the demised premises shall not be put to any other use without the prior written consent of Lessor.

SERVICES

During the term of this Lease, Lessor shall be responsible for maintenance and repair of the roof and all structural portions of the premises. In addition, lessor will be responsible for ground maintenance such as mowing and snow removal.

During the term of this Lease, Lessee will pay all water, sewer, and electrical service, as well as interior maintenance, and all exterior non-structural maintenance. In addition, Lessee will pay for 100% of the cost to repair damage caused by Lessee.

Lessee shall not during the term of this lease or any renewals thereof, make any alterations or changes to the premises without first obtaining the written consent of the Lessor, which consent will not be unreasonably withheld.

Provided the Lessee is not in default hereunder, all fixtures, furnishings and equipment placed on the Premises at Lessee's expense shall be and remain the Lessee's personal property. Except for permanently affixed plumbing, heating, ventilating, air conditioning, and attached electrical fixtures and equipment, all such fixtures, furnishings and equipment may be removed by Lessee, at its expense, at any time prior to the expiration of this Lease.

Any permanent improvements to the Premises constructed by Lessee and all structural alteration, additions and changes thereto shall become the property of the Lessor at the expiration of this Lease without any compensation being paid Lessee therefore, except as otherwise provided herein.

Lessor warrants that he has full right, authority, and power to execute and perform this Lease and to grant the estate demised herein. Further, the Lessor covenants and warrants that the Lessee will have quiet and peaceable possession and enjoyment of the Premises for the full term of the Lease without hindrance or molestation by any person, provided the Lessee is not in default in the performance of any of the covenants and terms of this Lease.

ASSIGNMENT AND SUBLEASE

This Lease may not be assigned or transferred, and the premises may not be sublet, either in whole or in part, by Lessee without Lessor's prior written consent. Lessor's approval shall not be unreasonably withheld.

RIGHT OF ENTRY TO REPAIR

Lessor reserves the right of himself, his agents and employees to enter upon the premises at any reasonable time to make repairs, alterations or improvements; provided, however, that such repairs, alterations, or improvements shall not unreasonably interfere with the Tenant's business operations. Such right to enter shall also include the right to enter upon the premises for the purposes of inspection.

INSURANCE – TAXES

Lessor shall be responsible for all property and real estate taxes. In addition, Lessor shall be responsible for maintaining fire and casualty insurance on the building.

Lessee shall maintain at its expense, through the term, insurance against loss or liability in connection with bodily injury, death, property damage and destruction, occurring within the premises or arising out of the use thereof by the Lessee or its agents, employees, officers or invitees, visitors and guests under one or more policies of general public liability insurance having such limits as to each as are reasonably required by the Lessor from time to time (but in any event of not less than Five Hundred Thousand ($500,000.00) combined single limit for injury to or death of any one or more persons during any one occurrence, and for property damage or destruction during any one occurrence). Such policies shall name the Lessor and the Lessee (and, at the Lessor's request, any Mortgagee) as the insured parties, shall provide that they shall not be cancelable without at least thirty (30) days' prior written notice to the Lessor (and at the Lessor's request, any such Mortgagee), and shall be issued by Insurers of recognized responsibility licensed to do business in Virginia. Lessee shall furnish Lessor with a certificate of said insurance and resubmit same to Lessor upon any change or renewal of said policy.

That all personal property in said premises shall be and remain at Lessee's sole risk, and Lessor shall not be liable for any damage to nor loss of such personal property arising from any acts or negligence of any other persons, nor from the bursting, leaking or overflowing of water, sewer or steam pipes, nor from heating or plumbing fixtures, nor from electric wires or fixtures, nor from any other cause whatsoever; nor shall the Lessor be liable for any injury to the person of the lessee or other persons in said premises; the Lessee expressly agreeing to save the Lessor harmless in all such cases.

BANKRUPTCY OR INSOLVENCY

It is expressly agreed that if at any time during the term of this lease, Lessee shall be adjudged bankrupt or insolvent by any Federal or State Court of competent jurisdiction, Lessor may, at his option, declare this lease to be terminated and canceled, and may take possession of demised

premises. In the event of the such bankruptcy or insolvency of the Lessor, or in the event the premises are sold, Lessee may elect to terminate this lease, but he will not be required to do so.

DAMAGE OR DESTRUCTION BY FIRE OR NATURAL CAUSES

If, during the term of this lease, and absence of any negligence on behalf of the Lessee, the building on the demised premises is destroyed by fire, natural causes, or other casualty, or so damaged thereby that it cannot be repaired with reasonable diligence within sixty (60) days, this lease shall terminate as of the date of such damage or destruction. However, if said buildings can with reasonable diligence be repaired within 60 days, said buildings shall be, by Lessor, repaired as quickly as is reasonably possible, and this lease shall remain in full force and effect; provided, however, rent shall be abated for any part of said building which is rendered unfit for occupancy for the period that such unfitness continues.

DEFAULT ON PAYMENT OF RENT

If any monthly installment of rent as herein called for remains overdue and unpaid for five (5) days, Lessor shall impose a penalty of five (5) percent of the monthly rental amount for each month overdue. If any monthly installment of rent and interest as herein called for remains overdue and unpaid for thirty (30) days, Lessor may, at his option, at any time during such default, declare this lease terminated and take possession of the demised premises.

In the event there is a default by either party to this lease, then the defaulting party will be responsible for the court costs and reasonable attorney fees and any other expenses incurred by the other party in enforcing this lease.

SIGNS

Lessee may display signs and shingles advertising his place of business with the prior written consent of the Lessor, which shall not be unreasonably withheld.

NOTICES AND LICENSES

All notices required or permitted herein shall be in writing and shall be deemed to have been given if mailed, postage prepaid, in any United States Post Office by certified or registered mail, return receipt requested or any other delivery service providing a delivery receipt. The first (1 st) day following receipt of such notice shall be the start date for all time periods stated herein. The giving of notice of termination as provided for herein shall terminate this Lease with the same force and effect as though that date were the date originally specified herein for the expiration of this Lease, unless otherwise provided herein. All notices shall be addressed to Lessor or Lessee, respectively, at the following addresses, or to such other address as the parties may designate in writing from time to time.

LESSOR	LESSEE
William M. Sterrett, Jr. Family Limited Partnership 3101 Commerce St Blacksburg, VA 24060	Luna Innovations 2851 Commerce St Blacksburg, VA 24060

With a copy to:

_____
_____
_____

Lessee shall obtain all governmental licenses, certificates, and permits necessary for Lessee's intended use and leasehold improvements. In the event that the Lessee cannot obtain such licenses, certificates, and permits proceeding diligently and in good faith, Lessee, at its option, may terminate this Lease by giving written notice to the Lessor, provided such notice is given within sixty (60) days from the Commencement Date, except that such period be extended if Lessee is proceeding diligently and in good faith to obtain such governmental approval.

The parties, having read and understood the provisions of this lease, agree for themselves, their heirs, administrators, personal representatives, executors, and assigns to be bound thereby.

This lease shall be governed by the applicable laws of the Commonwealth of Virginia.

This lease, including exhibits, expresses the entire understanding and all agreements of the parties. Neither party has made or shall be bound by any agreement or representation to the other party, which is not expressly set forth herein or in the exhibits attached hereto.

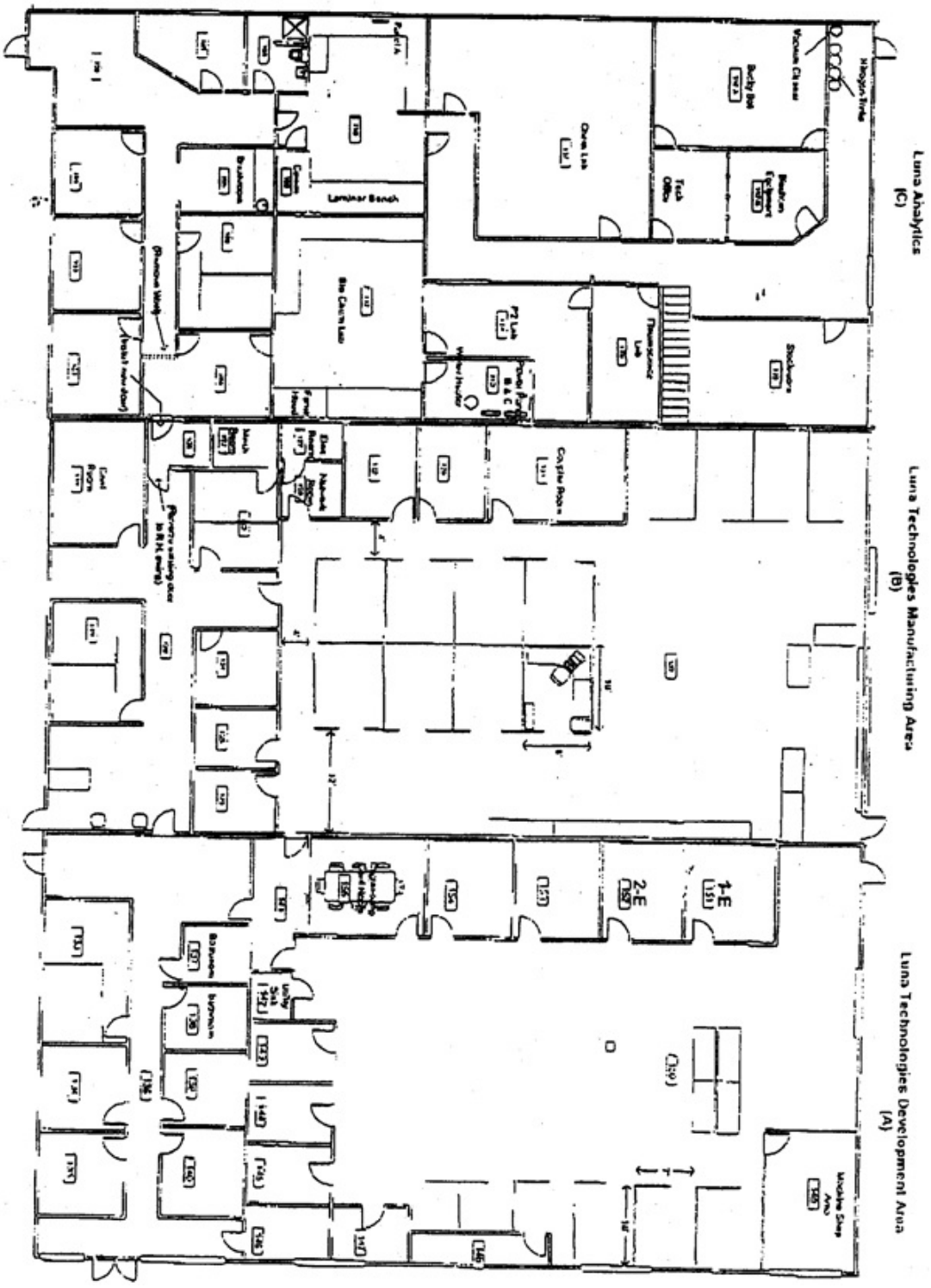
In Witness Whereof, the parties have executed this lease on the .

WILLIAM M. STERRETT, JR.

BY: /s/ WILLIAM M. STERRETT, JR.
ITS: G.P.
Lessor

LUNA INNOVATIONS

BY: /s/ KENT MURPHY
ITS: President
Lessee



Attachment A

Exhibit 10.13

THIS LEASE AGREEMENT, made this 29th day of November, 1999, by and between **WILLIAM M. STERRETT, JR. FAMILY LIMITED PARTNERSHIP**, a Virginia limited Partnership, Grantor, hereinafter referred to as "Lessor", and **LUNA ANALYTICS**, Grantee, hereinafter referred to as "Lessee", whose address is 2903 Commerse St., Blacksburg, VA.

WITNESSETH:

WHEREAS, William M. Sterrett, Jr. Family Limited Partnership is the sole owner of the following described real estate, to-wit:

Blacksburg Industrial Condominiums, 2903 Commerce Street, Blacksburg Industrial Park, Blacksburg, Virginia, 24060.

WHEREAS, Luna Analytics desires to lease a portion of the aforesaid premises for the purpose of conducting their business.

NOW THEREFORE, in consideration of the mutual covenants contained herein the parties hereby agree as follows:

DESCRIPTION OF THE PREMISES

Lessor agrees to lease and Lessee agrees to rent certain space of Blacksburg Industrial Condominiums, containing 5,000 square feet, as shown on the attached floor plan, labeled Exhibit "A", a copy of which is attached hereto and made a part hereof, which space is hereafter referred to as the "premises."

TERMS OF LEASE

Lessee agrees to lease the above described premises for a period of three (3) years commencing on the 1st day of January, 2000, and continuing until the 31st day of December, 2003. In addition, the Lessee will have the option to renew this lease for one additional 3 year period, on the terms and conditions as hereinafter set forth. The Lessee's option to renew shall be exercised by Lessee giving written notice to Lessor one hundred twenty (120) days prior to the expiration of the current lease term.

RENT

Lessee agrees to pay to Lessor at 3101 Commerce, Blacksburg Industrial Park, Blacksburg, Virginia, 24060, the sum of forty thousand two hundred fifty dollars ($40,250.00) per year, payable in installments of three thousand fifty-four dollars and seventeen cents ($3,354.17) per month, for the lease of the premises, to be due and payable on the 1st day of each month beginning on the 1st day of January, 2000.

Lessee shall pay the Lessor two (2) months rent as deposit in advance of occupancy and upon execution of this lease. One half of the deposit will be applied to the first month's rent, and one half

will be kept as a security deposit. At the termination of this lease, the security deposit will be returned within 30 days, provided all terms of this lease have been complied with.

In addition, the parties hereto agree that during the term of this lease and any extensions thereof, there will be a 2% annual increase of the rent each year, beginning on January 1, 2001, and each succeeding year thereafter.

USE OF THE PREMISES

The parties expressly agree that this Lease is executed in order that the Lessee may conduct the business of Luna Analytics upon the premises, and that the demised premises shall not be put to any other use without the prior written consent of Lessor.

SERVICES

During the term of this Lease, Lessor shall be responsible for maintenance and repair of the roof and all structural portions of the premises. In addition, lessor will be responsible for ground maintenance such as mowing and snow removal.

During the term of this Lease, Lessee will pay all water, sewer, and electrical service, as well as interior maintenance, and all exterior non-structural maintenance. In addition, Lessee will pay for 100% of the cost to repair damage caused by Lessee.

Lessee shall not during the term of this lease or any renewals thereof, make any alterations or changes to the premises without first obtaining the written consent of the Lessor, which consent will not be unreasonably withheld.

Provided the Lessee is not in default hereunder, all fixtures, furnishings and equipment placed on the Premises at Lessee's expense shall be and remain the Lessee's personal property. Except for permanently affixed plumbing, heating, ventilating, air conditioning, and attached electrical fixtures and equipment, all such fixtures, furnishings and equipment may be removed by Lessee, at its expense, at any time prior to the expiration of this Lease.

Any permanent improvements to the Premises constructed by Lessee and all structural alteration, additions and changes thereto shall become the property of the Lessor at the expiration of this Lease without any compensation being paid Lessee therefore, except as otherwise provided herein.

Lessor warrants that he has full right, authority, and power to execute and perform this Lease and to grant the estate demised herein. Further, the Lessor covenants and warrants that the Lessee will have quiet and peaceable possession and enjoyment of the Premises for the full term of the Lease without hindrance or molestation by any person, provided the Lessee is not in default in the performance of any of the covenants and terms of this Lease.

ASSIGNMENT AND SUBLEASE

This Lease may not be assigned or transferred, and the premises may not be sublet, either in whole or in part, by Lessee without Lessor's prior written consent. Lessor's approval shall not be unreasonably withheld.

RIGHT OF ENTRY TO REPAIR

Lessor reserves the right of himself, his agents and employees to enter upon the premises at any reasonable time to make repairs, alterations or improvements; provided, however, that such repairs, alterations, or improvements shall not unreasonably interfere with the Tenant's business operations. Such right to enter shall also include the right to enter upon the premises for the purposes of inspection.

INSURANCE-TAXES

Lessor shall be responsible for all property and real estate taxes. In addition, Lessor shall be responsible for maintaining fire and casualty insurance on the building.

Lessee shall maintain at its expense, through the term, insurance against loss or liability in connection with bodily injury, death, property damage and destruction, occurring within the premises or arising out of the use thereof by the Lessee or its agents, employees, officers or invitees, visitors and guests under one or more policies of general public liability insurance having such limits as to each as are reasonably required by the Lessor from time to time (but in any event of not less than Five Hundred Thousand ($500,000.00) combined single limit for injury to or death of any one or more persons during any one occurrence, and for property damage or destruction during any one occurrence). Such policies shall name the Lessor and the Lessee (and, at the Lessor's request, any Mortgagee) as the insured parties, shall provide that they shall not be cancelable without at least thirty (30) days' prior written notice to the Lessor (and at the Lessor's request, any such Mortgagee), and shall be issued by Insurers of recognized responsibility licensed to do business in Virginia. Lessee shall furnish Lessor with a certificate of said insurance and resubmit same to Lessor upon any change or renewal of said policy.

That all personal property in said premises shall be and remain at Lessee's sole risk, and Lessor shall not be liable for any damage to nor loss of such personal property arising from any acts or negligence of any other persons, nor from the bursting, leaking or overflowing of water, sewer or steam pipes, nor from heating or plumbing fixtures, nor from electric wires or fixtures, nor from any other cause whatsoever; nor shall the Lessor be liable for any injury to the person of the lessee or other persons in said premises; the Lessee expressly agreeing to save the Lessor harmless in all such cases.

BANKRUPTCY OR INSOLVENCY

It is expressly agreed that if at any time during the term of this lease, Lessee shall be adjudged bankrupt or insolvent by any Federal or State Court of competent jurisdiction, Lessor may, at his option, declare this lease to be terminated and canceled, and may take possession of demised

premises. In the event of the such bankruptcy or insolvency of the Lessor, or in the event the premises are sold, Lessee may elect to terminate this lease, but he will not be required to do so.

DAMAGE OR DESTRUCTION BY FIRE OR NATURAL CAUSES

If, during the term of this lease, and absence of any negligence on behalf of the Lessee, the building on the demised premises is destroyed by fire, natural causes, or other casualty, or so damaged thereby that it cannot be repaired with reasonable diligence within sixty (60) days, this lease shall terminate as of the date of such damage or destruction. However, if said buildings can with reasonable diligence be repaired within 60 days, said buildings shall be, by Lessor, repaired as quickly as is reasonably possible, and this lease shall remain in full force and effect; provided, however, rent shall be abated for any part of said building which is rendered unfit for occupancy for the period that such unfitness continues.

DEFAULT ON PAYMENT OF RENT

If any monthly installment of rent as herein called for remains overdue and unpaid for five (5) days, Lessor shall impose a penalty of five (5) percent of the monthly rental amount for each month overdue. If any monthly installment of rent and interest as herein called for remains overdue and unpaid for thirty (30) days, Lessor may, at his option, at any time during such default, declare this lease terminated and take possession of the demised premises.

In the event there is a default by either party to this lease, then the defaulting party will be responsible for the court costs and reasonable attorney fees and any other expenses incurred by the other party in enforcing this lease.

SIGNS

Lessee may display signs and shingles advertising his place of business with the prior written consent of the Lessor, which shall not be unreasonably withheld.

NOTICES AND LICENSES

All notices required or permitted herein shall be in writing and shall be deemed to have been given if mailed, postage prepaid, in any United States Post Office by certified or registered mail, return receipt requested or any other delivery service providing a delivery receipt. The first (1 st) day following receipt of such notice shall be the start date for all time periods stated herein. The giving of notice of termination as provided for herein shall terminate this Lease with the same force and effect as though that date were the date originally specified herein for the expiration of this Lease, unless otherwise provided herein. All notices shall be addressed to Lessor or Lessee, respectively, at the following addresses, or to such other address as the parties may designate in writing from time to time.

LESSOR
William M. Sterrett, Jr.
Family Limited Partnership
3101 Commerce St.
Blacksburg, VA 24060

LESSEE
Luna Analytics
2903 Commerce St.
Blacksburg, VA 24060

With a copy to:

Lessee shall obtain all governmental licenses, certificates, and permits necessary for Lessee's intended use and leasehold improvements. In the event that the Lessee cannot obtain such licenses, certificates, and permits proceeding diligently and in good faith, Lessee, at its option, may terminate this Lease by giving written notice to the Lessor, provided such notice is given within sixty (60) days from the Commencement Date, except that such period be extended if Lessee is proceeding diligently and in good faith to obtain such governmental approval.

The parties, having read and understood the provisions of this lease, agree for themselves, their heirs, administrators, personal representatives, executors, and assigns to be bound thereby.

This lease shall be governed by the applicable laws of the Commonwealth of Virginia.

This lease, including exhibits, expresses the entire understanding and all agreements of the parties. Neither party has made or shall be bound by any agreement or representation to the other party, which is not expressly set forth herein or in the exhibits attached hereto.

In Witness Whereof, the parties have executed this lease on the 29th day of November, 1999.

WILLIAM M. STERRETT, JR. FAMILY LIMITED PARTNERSHIP, a Virginia Limited Partnership

BY: /s/ William M. Sterrett, Jr.
ITS: G.P
Lessor

LUNA ANALYTICS

BY: /s/ Kent Murphy
ITS: President
Lessee

Addendum to Lease for 2903 Commerce St. made the 29th day of November 1999

The following addendum items made this 27th of November, 2001 relate to the lease made November 29, 1999 by and between **William M. Sterrett, Jr. Family Limited Partnership** and **Luna Analytics**.

Addendum 1: The name of the Lessor is changed to **Luna Innovations**.

Addendum 2: The address of the leased space is to be designated as Suite C, (see the attached Exhibit A for Suite location), with a change to read: "**Whereas,** Luna Innovations desires to lease the aforesaid premises for the purpose

Exhibit 10.14

COMMERCIAL LEASE

This lease, made the 17th day of March 2003 by and between **Canvasback Real Estate & Investments LLC** ("Lessor"), and **Luna Innovations, Inc.** ("Lessee").

WITNESSETH

That Lessor, for and in consideration of the covenants and agreements hereinafter set forth and further consideration of the rent which Lessee agrees to pay, hereby leases and demises unto Lessee, and the Lessee hereby takes, accepts and rents from Lessor, the premises hereinafter set forth for the period, at the rental, and upon the terms and conditions hereinafter set forth:

1. Premises. The demised premises, description as follows:

8500 SF (+/-) of space at 705 Dale Avenue, Charlottesville, VA [$15.28/SF]

2. Existing Conditions. Lessee accepts premises in its condition, with the exception of latent detects, as of the execution of the lease, subject to the completion of all noted improvements and conditions of Exhibit "A". Lessee acknowledges that he has made whatever physical inspection of the premises he deems appropriate to ascertain the condition of the premise under this provision of the lease.

3. Permitted Uses and Manner of Use. Lessee shall use premises solely as: Office, research and laboratory space.

4. Term. The lease shall be for a term of five (5) years beginning on the first day of June 2003 and shall end at 12:00 noon on the 31st day of May 2008. Lessee shall have the option to extend the lease for one (1) additional term(s) of five (5) years at the same terms and conditions, with the same annual percentage of increase.

5. Rent.

	Month	Annual
Year 1	$ 10,820.00	$129,840.00
Year 2	$ 11,144.60	$133,735.20
Year 3	$ 11,479.00	$ 137,748.00
Year 4	$ 11,823.00	$141,882.00
Year 5	$12,178.20	$146,138.40

6. Common Area Maintenance. The Lessor shall maintain, in good and clean condition, the exterior common areas, including parking lot and sidewalks and shall provide a common dumpster for Lessee's use and supply water and sewer services. Lessee shall reimburse expense of such common area maintenance in the amount of $.20 per SF of demised space per month ($141.66 per month).

7. Security Deposit. Upon execution of this lease, Lessee's deposit with the Lessor in the amount of $10,820.00, and the amount previously designed as the deposit for demised premises at 701 Charlton Avenue shall be credited against deposit on these demised premises and held by Lessor as security for performance by the Lessee of all covenants, terms, conditions, and provisions required to be kept and performed by Tenant under this lease. Lessor may apply all or part of the security deposit to any unpaid rent or other charges due from Lessee, or to cure any other defaults of the Lessee. If the Lessor uses any part of the security deposit, Lessee shall restore the security deposit to its full amount with ten (10) days after the Lessor's written request. Lessee's failure to do so shall be a material default under this lease. No interest shall be paid on the security deposit. The Lessor shall not be required to keep the security deposit separate from its other accounts and no trust relationship is created with respect to the security deposit. Lessee shall not be entitled to apply the security deposit to any rent or other sum due under this lease. Following the expiration of the lease period, the final damage inspection of the premises in Section 13, and the correction of any damages, the Lessor will return the damage deposit to the Lessee minus the costs of any unrepaired damage or outstanding charges. As the request of the Lessor, Lessee agrees to provide additional security to the Lessor for the terms of the lease.

Lessee's Guarantor: If required. If none, so state. None.

8. Late Fees. In the event the Lessor does not receive from Lessee any installments of rent within five (5) business days of the date for which such installment is due, a late fee of five percent (5%) of the monthly rent installment shall be due as additional rent. Any rental payment amounts, which are past due more than thirty (30) days shall bear interest at the rate of ten percent (10%) per year.

9. Cost of Enforcement of the Lease. Lessee hereby agrees to pay all reasonable costs, expenses, fees, and charges incurred by Lessor in enforcing by legal action or otherwise, any provisions, covenants, conditions of the lease including reasonable attorney's fees, and Lessee hereby waives the benefit of any homestead or similar exemption laws with respect to the obligations of this lease.

10. Property Taxes. Lessor will be responsible for real estate property taxes on the building shell and those improvements provided by the Lessor under the terms of this lease. Lessee shall be responsible for all property and business taxes due on his business property, fixtures, materials, equipment and improvements to the premises made by the Lessee. If the property is not separately assessed, Lessee's share of the real property tax payable shall be determined from the assessor's worksheets or other reasonably available information. Lessor shall make a reasonable determination of the lessee's proportionate share of such real property taxes, if any, and Lessee shall pay such share to the Lessor within fifteen (15) days of the Lessor's written statement.

11. Improvements by Lessee. The Lessee shall have the right from time to time, to make such alterations and improvements to, and decoration of, the interior of the leased property as shall be reasonably necessary or appropriate for the conduct of Lessee's business therein; provided that prior to the commencement of any such alterations or improvements the Lessee shall have submitted to Lessor plans in writing of the proposed alterations and/or improvements. If within fifteen (15) days after such plans are submitted by the Lessee to the Lessor for approval, Lessor shall not have

given Lessee notice in writing of Lessor's disapproval, stating the reasons for such disapproval, such plans and specifications shall be considered approved by Lessor. Any alteration, addition or improvement made by the Lessee after such consent shall have been given, and any fixtures which have been installed and which would damage the building if removed, shall at the Lessor's option become the property of the Lessor upon the expiration or sooner termination of this lease, or at the Lessor's option, with the property returned to its original condition.

In the event that the leasehold improvements by the lessee are extensive and at the option of the Lessor, the Lessor may require the Lessee to post a construction completion bond for the work. Such bond shall be released by the Lessor following satisfaction of all materials and labor suppliers as evidenced by lien waivers for the completed construction. Lessor requires that all plans for alterations or improvements to the property meet applicable building code and utility company requirements and shall fit with the overall aesthetics of the building, as determined by the Lessor.

12. Rules and Regulations. Lessee shall observe and comply with the rules and regulations hereinafter set forth which are made a part hereof, and with such other further reasonable rules and regulations Lessor may prescribe, on written notice to the Lessee for the safety, care and cleanliness of the building and adjacent areas for the comfort, quiet, safety and convenience of other occupants of the building.

13. Repairs and Maintenance. Lessee shall at its sole expense keep the interior of the premises in good working order and repair as it was at the commencement of this lease agreement, reasonable wear and tear expected. A walk through shall be made by representatives of Lessee and Lessor with ten (10) days of the commencement of this lease and a checklist shall be prepared which states the condition of all leased property. This checklist shall be signed by both representatives at the time of the walk through. Any repairs noted as required to be made by the Lessor shall be completed by the Lessor within a reasonable time. The second walk through shall be made immediately following the expiration of this lease and the vacation of the premises by the Lessee and any repairs noted as required by the Lessor. Lessee shall, in the usual occupancy of the premises, conform to all laws, orders and regulations of federal, state, municipal governments have jurisdiction and further agrees to maintain the interior of said leased premises in good and safe condition. Lessee shall not place equipment with a weight greater than 250 lbs. per square foot on the ground floor of the building of the property without the written consent of the Lessor and agrees to indemnify the Lessor for all damages resulting from the placement or moving of any such article.

Lessor agrees to maintain and keep in good repair the heating/cooling systems, plumbing, electrical, roof, the exterior of the building, the grounds, and the parking areas.

Lessee agrees to operate all heating/cooling systems, plumbing, and electrical systems in the building in accordance with their operating instructions if provided and consistent with normal operating for such systems.

14. Utilities and Services. Lessor shall pay for electric and HVAC service. Lessee shall reimburse Lessor for amount of electricity used. Lessor shall bill Lessee monthly based upon actual use readings of E-MON meter. Lessee shall pay for all other services, including removal of any

waste materials, which are above the normal range of waste produced, or are hazardous in nature, in the course of a business day and any janitorial services.

15. Lessor's Insurance. Lessor shall maintain property insurance on the building shell and general liability insurance for the building shell and premises.

16. Destruction by Casualty.

A. Lessee's Responsibilities. Lessee shall not be responsible for the destruction or damage to the premises caused by fire, the elements, casualty or other cause, unless such damage or destruction is caused by the misuse or gross neglect of Lessee of Lessee's agents, servants, visitors, licenses, equipment and/or supplies. Lessee shall notify the Lessor immediately in writing upon the occurrence of any damage to the property.

B. Restoration of Damaged Premises. If the property is only partially damaged and of the proceeds received by the Lessor from the insurance policies available are sufficient to pay for the necessary repairs, this lease shall remain in effect and the Lessor shall repair the property as soon as reasonably possible. Lessor may elect to repair any damage to the Lessee's fixtures, equipment or improvements. If the insurance available to the Lessor is not sufficient to pay the entire cost of the repair, or if the cause of the damage is not covered by the insurance policies which the owner maintains, the Lessor may elect to either repair the damage as soon as possible, in which case the lease shall remain in full force and effect, or terminate the lease as of the date that the damage occurred. The Lessor shall notify the Lessee within thirty (30) days after receipt of notice of damage whether Lessor will repair the damage or terminate the lease. If the Lessor elects to repair the damage, and if damage is the result of the acts of omissions of the Lessee, then Lessee shall pay the Lessor the "deductible amount" (if any) under Lessor's insurance policies, and of the damage was due to an act of omission of the Lessee, the difference between the actual cost of the repair and any insurance proceeds received by the Lessor. If the Lessor elects to terminate the lease, Lessee may elect to continue this lease in full force and effect, in which case Lessee shall repair any damage to the property. Lessee shall pay the cost of such repairs, except that, upon satisfactory completion of such repairs, the Lessor shall deliver to the Lessee any insurance proceeds received by the Lessor for the damage repaired by the Lessee. Lessee shall give Lessor written notice of election within ten (10) days after receiving Lessor's notice of termination. If the damage to the property occurs during the last six (6) months of the lease term, the Lessor may elect to terminate this as of the date the damage occurred, regardless of the sufficiency of any insurance proceeds. In such event, Lessor shall not be obligated to repair or restore the property and the Lessee shall have no right to continue the lease. Lessor shall notify Lessee of its election within thirty (30) after receipt of notice of the occurrence of the damage.

C. Destruction of Premises. If the property is totally or substantially destroyed by any cause whatsoever, this lease shall terminate as of the date the destruction occurred and Lessor will return security deposit. The Lessor may elect to rebuild the property at Lessor's own expense, in which case this lease shall remain in occurrence or total or substantial destruction. If the destruction was caused by an act or omission of the Lessee, Lessee shall pay the Lessor the difference on the costs of rebuilding and any insurance proceeds received by the Lessor.

D. Rent Abatement. If the property is damaged or destroyed and the Lessor or the Lessee repairs or restores the property pursuant to the provisions of this Article, the rent payable during the period of such damage, repair and/or restoration shall be reduced according to the degree, if any, to which Lessee's use of the property is impaired. Except for such possible reduction in rent, Lessee shall not be entitled to any compensation, reduction, or reimbursement from Lessor as a result of any damage, destruction, repair, or restoration of or to the property. Notwithstanding the foregoing provisions, in the event the leased property shall be damaged by fire or other insured casualty due to the fault or gross neglect of the Lessee, of the Lessee's servants, employees, contractors, agents, visitors or licenses, then, without prejudicing any other rights and remedies of the Lessor, there shall be no apportionment or abatement of any rent. Consistent with the insurance requirements of this lease, Lessee shall obtain insurance to cover any damage to the premises caused by fire or other casualty due to the deliberate or gross negligent act of the Lessee of the Lessee's agents, servants, employees, visitors or licensees.

17. Eminent Domain. If, the premises or any part thereof or any estate therein, or any other part of the building materially affecting Lessee's use of the premises, be taken by virtue of eminent domain, this lease shall terminate on the date when title vests pursuant to such taking, and no additional rent shall be owing by Lessee from that date forward. Lessee shall not be entitled to any part of any award or any payment in lieu thereof; but Lessee may file a claim for Security Deposit any taking of fixtures and improvements owned by the Lessee with authority taking said property by virtue of eminent domain.

18. Insurance. Upon request by Lessor of occupancy, the Lessee shall provide Lessor with verification from Lessee's insurance company showing compliance with the requirement that he obtain insurance coverage and shall maintain such insurance coverage necessary to cover the value of Lessee's property located on or about the demised premises. Lessee agrees that Lessor shall not be responsible for any damage to Lessee's property located on or about the demised premises caused by fire, water, or other casualty. Lessee shall maintain in force insurance against liability for personal injury and/or property damage with limits of no less than $500,000 per occurrence. All insurance required by this paragraph 18 shall be carried in favor of Lessor and lessee as their respective interests may appear and all insurance must be written with companies acceptable to Lessor and shall require ten (10) business days notice to Lessor by registered mail of any cancellation or change affecting any interest of Lessor. Lessee will provide Lessor with its certificate of insurance in lieu of naming Lessor as an additional secured.

19. Entry by Lessor. Lessor may enter and have access to the demised premises at any reasonable time, with 48 hours notice to Lessee (except that no notice need be given in the case of emergency) for the purpose of showing the property to potential buyers, investors, tenants, or other parties, or for the purpose of inspecting or the making of such repairs, replacements, and additions necessary or desirable either for the Lessee or for other tenants in the building, under the terms of this agreement.

20. Assignment and Subletting. Lessee shall not assign this lease agreement, sublet the premises, or allow other to use the premises or any portion thereof without the prior written consent of Lessor.

21. Default or Breach. Each of the following events shall constitute a default or breach of this lease by Lessee:

A. Lessee, or any successor assignee of Lessee while in possession, shall file a voluntary petition in bankruptcy or shall voluntarily take advantage of any act by answer or otherwise, or shall make an assignment for the benefit of creditors. Similarly, if involuntary proceedings under any bankruptcy law or insolvency act be instituted against Lessee or if a received or trustee shall be appointed for all or substantially all of the property of Lessee, and such proceedings shall not be dismissed if the receivership or trusteeship vacated within thirty (30) days after the institution of this agreement or appointment.

B. If five (5) business days have elapsed after Lessor has given Lessee written notice that the Lessee has failed to pay any rent or portion thereof when due under this lease.

C. If Lessee fails to conform or comply with any of the conditions of this lease and if a non-performance shall continue for a period of five (5) business days after written notice thereof by Lessor to Lessee, if performance cannot be reasonably completed within the five (5) business day period, Lessee shall have failed to make a good faith commencement of performance within the five (5) business day period and shall have failed to diligently proceed to completion of performance.

D. If Lessee shall vacate the demised premises.

E. If this lease shall be transferred to or shall be transferred to or shall pass to or default to any other person except in the manner herein permitted.

22. Effect of Default. In the vent of any default hereunder, as set forth in the immediately preceding paragraph, the rights of the Lessor shall be as follows:

A. Lessor shall have the right to cancel and terminate this lease as well as the right, title and interest in Lessee hereunder giving Lessee at least ten (10) business days notice of the cancellation and termination. Upon the expiration of the time affixed in the notice in accordance with this paragraph, this lease and the right, title and interest in Lessee hereunder, shall terminate in the same manner and with the same force and effect, except as to Lessee's liability, as if the date fixed in the notice of cancellation and termination were the end of the term herein originally determined and Lessee had not exercised any right to renew said lease there under. As of the date fixed in said notice of termination and cancellation, Lessor shall have the right to re-enter the premises and take possession thereof.

B. Lessor may elect, but shall not be obligated, to make any payment required of Lessee and to comply with agreement, term or condition required hereby to be performed by Lessee, and Lessor shall have the right to re-enter the demised premises for the purpose of correcting or remedying any such default and to remain until the default has been corrected or remedied, but any expenditure or the correction by Lessor shall not be deemed waive payments due to the Lessor or release the default of Lessee or the right of Lessor to take any action as otherwise would be permissible hereunder in the case of any default.

C. After the time period mentioned in paragraph 22A has elapsed, Lessor may remove the property and personnel of Lessee, and restore the property at the cost of and for the account of Lessee. Such restoration of property by Lessor shall be to a like condition.

D. Lessee's liability to Lessor shall survive Lessee's eviction and Lessor shall be entitled to recover the rent reserved for the full lease term which shall come due and payable in full, offset only by rent actually received, after the time period in the notice of termination and cancellation has elapsed. Lessor's remedies hereunder are in addition to any remedies allowed by law.

23. Subordination. This lease shall be subordinate to all mortgages or deeds of trust, which may now or hereinafter affect the real estate of which the premises form a part, and also to all renewals, modification, consolidations and replacements of said mortgages or deed of trust. Lessee shall on demand execute, acknowledge, and deliver to Lessor without expense to Lessor any and all instruments that may be necessary or proper to subordinate this lease and all rights therein to any such deeds of trust or renewals, modifications, extensions and of Lessee shall fail at any time to execute, acknowledge and deliver any such subordinations, Lessor in addition to any other remedies available in consequence thereof, may execute, acknowledge and deliver the same as Lessee's attorney and in Lessee's name.

24. Constructive Eviction. Lessee shall not be entitled to claim constructive eviction from the premises until Lessee shall first notify Lessor in writing of the condition or conditions giving rise thereto, and, if the complaints be justified and sufficient to make out a claim of construction eviction, unless Lessor shall have failed within a reasonable time after receipt of notice to remedy such conditions.

Lessor may show premises to prospective purchasers and mortgagees at any time, and, during the four months prior to termination of this lease, to prospective tenants, during business hours upon reasonable notice to Lessee, which said notice shall not be subject to the requirement of paragraph 27 herein.

All property of Lessee remaining on the premises at the expiration of the lease, or any renewal thereto, shall conclusively be deemed abandoned and may be removed by the Lessor, and Lessee hereby agrees to reimburse the Lessor the costs of such removal.

Lessor may have any such property stored at Lessee's risk and expense.

25. Quiet Possession. Lessor covenants that so long as Lessee pays the rent and performs the covenants herein, Lessee shall peaceably and quietly have, hold and enjoy the premises for the term herein mentioned subject to the provisions of this lease.

26. Public Areas. Except as otherwise herein provided, Lessor will keep all entry ways, sidewalks, parking areas in a clean and presentable condition, and will as soon as is reasonably possible, remove all snow and ice from the parking lots and other public areas.

27. Notice. All notices to be given with respect to this lease shall be in writing. Each notice shall be sent by registered or certified mail, postage prepaid and return receipt requested, to

the party to be notified at the address set forth herein, or at such address as the party may from time to time designate in writing. Any notice shall be deemed to have been given at the time it shall be deposited in the United States mails in the manner prescribed herein. Nothing contained herein shall be construed to preclude personal service of summons or other legal process. All notices to Lessor shall be mailed to the Lessor's address at Canvasback Real Estate & Investments LLC, PO Box 2378, Charlottesville, VA 22902. All notices to Lessee shall be mailed to: Luna Innovations, PO Box 11704, Blacksburg, VA 24062.

28. Waiver. No waiver of any breach or default under this agreement shall be deemed to be a waiver of any subsequent breach or default of the same or similar nature.

29. Miscellaneous. This lease contains the entire agreement between the parties and cannot be changed or terminate except by written instrument subsequently executed by the parties hereto. This lease and the terms and conditions hereof apply to and are binding on the heirs, legal representatives, successors and assigns of both parties.

30. Other Provisions.

A. Signage. The Lessee shall be entitled to install identification signage at Lessee's expense on the exterior of the building. Such signage shall conform to the requirements of the Charlottesville signage ordinance and approval of the Lessor.

B. Parking. The Lessee shall be entitled to the exclusive use of parking spaces across Dale Avenue from the demised space. All other parking will be on the street, as lawfully permitted by the City of Charlottesville.

C. Lessor Improvements. Lessor agrees to finish space, including the laboratory upfit described in Exhibit A, supplying all material s and labor as shown in Exhibit B. Lessee shall pay Lessor the non-refundable payment of Fifty-eight thousand seven hundred fifty dollars ($20,750.00) at signing of lease for their share of upfit costs.

D. Lessee may at their option, with 120 day notice, cancel the remainder of this lease commencing in the 37 th month. Lessee agrees that there will be a cash penalty for any early termination of this lease paid in cash or certified check with notice of said termination. If termination is in the 37 th month the penalty will be $44,838.00. The penalty will diminish at the rate of $1,869.00 per month until the end of the lease term.

31. Previous Lease Voided. Upon the occupancy of the demised premises by Lessee and Lessee's vacation of premises at 701 Charlton Avenue, the lease dated October 28, 2001 shall be voided and both Lessee and Lessor released of all responsibility to act under the terms and conditions of that Lease.

32. Brokerage Disclosure. The Lessor in this transaction has been represented by Charles A. Kabbash of Summit Commercial Realty Inc. and the Lessee has represented themselves.

Witness the following seals and signatures:

LESSOR:

Canvasback Real Estate & Investments LLC

/s/ WILLIAM J. NITCHMANN (SEAL) 3-21-03

William J. Nitchmann Date

Mgr
Title

LESSEE:

Luna Innovations, Inc.

/s/ MICHAEL GUNTHER (SEAL) 3-20-03

Michael Gunther Date

VP Operations
Title

If a corporation Lessee shall attach a formal corporate resolution for this lease.

EXHIBIT A

Lessor and Lessee agree that Lessor shall furnish and install the following improvements as shown on Exhibit B.

1. Cabinets
2. Shower
3. Eyewash
4. Emergency Shower
5. Air/Vac Valves
6. Storage Cabinets
7. Sink Labs
8. Additional Electric
9. Additional plumbing
10. Additional HV/AC
11. Additional Doors & Hardware
12. Sign
13. Roof Penetration and Repair
14. Security System
15. Additional Data Lines
16. Vacuum Pump installed (supplied by Lessee)
17. Kemresin Top 6’
18. Refrigerator
19. Two Baker Class 2 Hoods
20. Additional Office Configuration
21. Customized Lab Space
22. Additional Walls
23. Additional sheet rock, finishing and painting
24. Floor covering and carpets
25. Delivered in ready to occupy condition.

Exhibit 10.15

FULL SERVICE OFFICE LEASE

THIS FULL SERVICE OFFICE LEASE (this "Lease") is made this _____ day of August, 2003 by and between HAMPTON R & D PROPERTIES, LLC, a Virginia limited liability company ("Landlord") and LUNA INNOVATIONS INCORPORATED, a Delaware corporation ("Tenant").

For and in consideration of their mutual obligations and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

1. Definitions. The following terms used in this Lease shall have the following meanings:

(a) "Additional Rent" shall mean any payment referred to as such in this Lease and any payment required to be made by Tenant to Landlord under this Lease other than the Base Rent.

(b) "Base Rent" shall mean the monthly payment of rent to be paid Landlord as provided in paragraph 6 of this Lease.

(c) "Base Year" shall mean the period beginning as of the Lease Commencement Date and expiring one calendar year after the Lease Commencement Date.

(d) "Building" shall mean the Landlord's office building located at 130 Research Drive in the City of Hampton, Virginia. Unless otherwise specified, the term "Building" shall be deemed to include the Demised Premises.

(e) "Common Areas" shall mean all drive aisles, sidewalks, parking lots, lobbies, hallways, stairways, common entrances, or other common elements designated by Landlord as being for the use in common by all tenants of the Building or of any other building now or hereafter constructed by Landlord upon property adjacent to the Property.

(f) "Demised Premises" shall mean the office space to be constructed by Landlord and leased by Tenant.

(g) "Lease Commencement Date" shall mean the later of October 24, 2003, or the date that the City of Hampton, Virginia issues a temporary certificate of occupancy concerning the Demised Premises.

(h) "Lease Year" shall mean each, successive anniversary of the Lease Commencement Date during the Term.

(i) "Normal Business Hours" shall mean the hours of 7:00 a.m. to 7:00 p.m., Monday through Saturdays. Sundays and all legal holidays recognized by the governments of the United States or the Commonwealth of Virginia are excluded from Normal Business Hours.

(j) “Plans” shall mean the construction plans and floor plans attached to this Lease as Exhibit “A”, which have been agreed upon by Landlord and Tenant.

(k) “Property” shall mean 130 Research Drive, Langley R&D Park, Hampton, Virginia. Unless otherwise specified, the term “Property” shall be deemed to include the Demised Premises, Building, and Common Areas.

(l) “Rent” shall mean the Base Rent and any Additional Rent payable hereunder.

(m) “Rules and Regulations” shall mean the Landlord’s rules and regulations applicable to the Building, as may be amended by Landlord from time to time, and which are attached to this Lease as Exhibit “B”.

(n) “Term” shall mean the Initial Term and any applicable Renewal Term of this Lease.

2. Premises. Landlord leases to Tenant and Tenant leases from Landlord, the Demised Premises, together with the right and privilege to use all Common Areas. Tenant’s office space shall not exceed 9,935 square feet, measured to BOMA standards by Landlord’s architect, whose measurement shall constitute the final measurement hereunder. A more detailed description of the office space is outlined in the Plans attached hereto as Exhibit “A”. For purposes of calculating the payment of Rent hereunder, the parties agree that the office space shall be equal to 9,935 square feet, even though the actual office space may vary according to Tenant’s specifications.

3. Construction of Demised Premises. Landlord shall construct the Demised Premises in substantial conformity with the Plans. After the execution of this Lease, Tenant may change the Plans, only if approved by the Landlord. Upon Tenant’s request, Landlord may agree, in its sole discretion, to allow minor deviations and changes in the Plans. However, if Landlord consents to Tenant’s requested changes, the Lease Commencement Date shall be extended by the number of days Landlord determines shall be reasonably necessary to accommodate those changes. Any changes in the Plans shall be subject to an increase in cost, which shall be the responsibility of and shall be born by Tenant. If, at any time after execution of this Lease, Landlord determines, in its sole discretion, that construction of the Demised Premises cannot be complete by Landlord prior to the Lease Commencement Date, Landlord may extend the Lease Commencement Date by giving Tenant written notice thereof. Except as expressly provided by this Lease, Landlord shall have no liability to Tenant for any loss or damage resulting from Landlord’s failure to construct or Landlord’s delays in construction of the Demised Premises.

4. Acceptance of Demised Premises. Landlord shall notify Tenant upon the issuance of a temporary certificate of occupancy from the City of Hampton and Tenant shall be deemed to have accepted the Demised Premises as of the date. Tenant and Landlord shall perform a walk-through inspection of the space prior to Tenant’s occupancy of the Demised Premises, and tenant shall prepare a punch-list of items required to bring the Demised Premises into substantial conformance with Tenant’s plans. Landlord shall use its best efforts to complete any items required to bring the Demised Premises into substantial conformance with Tenant’s Plans as soon as reasonably possible following the Lease Commencement Date. Tenant shall execute and deliver a letter to landlord

confirming the commencement of this Lease in the form attached as Exhibit "C" to this Lease. If the Lease Commencement Date is other than October 24, 2003, the letter shall include a revised rent schedule reflecting the actual Lease Commencement Date.

5. Term. Provided that this Lease is not terminated by Tenant in accordance with paragraph 41, the initial term of this Lease shall begin as of the Lease Commencement Date and shall end on March 31, 2009 (the "Initial Term"). Provided Tenant is not in default of this Lease, Tenant shall have the option to renew this Lease for one (1) renewal term of three (3) years (the "Renewal Term"). Tenant shall exercise any of its rights of renewal hereunder by giving Landlord written notice of the exercise of its option at least one hundred twenty (120) days prior to the expiration of any Term of this Lease, time being of the essence for Tenant's exercise of any such option to renew. Landlord shall provide a rent concession during the period of free rent, beginning as of the Lease Commencement Date and ending on March 31, 2004.

6. Rent. Rent shall be payable in advance of the first day of every calendar month during the Term, without offset by Tenant or demand by Landlord having been made. Rent shall be payable at the office of Landlord located at 4016 Holland Boulevard, Chesapeake, Virginia 23323, or at such other place as Landlord may direct from time to time. Any Rent payable during a partial calendar month shall be prorated on a daily basis for that month and, if any Term begins on other than the first day of a calendar month, then Rent for that month only shall be due and payable as of the date that Term begins, all future payments of Rent becoming due on the first day of every calendar month thereafter. Rent during the Initial Term and Renewal Term of this Lease is payable according to the following schedule and is based upon a base rate of $8.90 per square foot, plus $4.60 per square foot in operating expenses and taxes. In addition to these amounts, Tenant may be responsible for monthly payment of Adjusted Expenses, as set forth in paragraph 13 below.

	Period	Annual	PSF	Monthly
	Initial Term			
Free	Oct. 24, 2003 - Mar. 31, 2004	$ 0	$ 0	$ 0
Yr. 1	Apr. 1, 2004 - March 31, 2005	$ 134,122.50	$ 13.50	$ 11,176.88
Yr. 2	Apr. 1, 2005 - Mar. 31, 2006	$ 135,513.40	$ 13.64	$ 11,292.78
Yr. 3	April 1, 2006 - March 31, 2007	$ 136,804.95	$ 13.77	$ 11,400.41
Yr. 4	April 1,2007 - March 31, 2008	$ 138,195.85	$ 13.91	$ 11,516.32
Yr. 5	April 1,2008 - March 31, 2009	$ 139,586.75	$ 14.05	$ 11,632.23
	Renewal Term			
Yr. 6	April 1, 2009 - March 31, 2010	$ 140,977.65	$ 14.19	$ 11,748.14
Yr. 7	April 1, 2010 - March 31, 2011	$ 142,368.55	$ 14.33	$ 11,864.05
Yr. 8	April 1, 2011 - March 31, 2012	$ 143,759.45	$ 14.47	$ 11,979.95

7. Use. The Demised Premises shall be used only for general office and research & development laboratory use and for no other purpose without Landlord's prior written consent, which may be withheld by Landlord for any reason. All Common Areas shall be used only for their intended purposes and subject to Landlord's Rules and Regulations. Tenant shall use the Demised Premises and Common Areas in accordance with all federal, state, and local laws, rules, regulations, codes, and ordinances. Tenant shall not commit waste of the Demised Premises, Common Areas, or Building, nor shall Tenant use the same in any manner which would constitute a nuisance or otherwise interfere with the rights of Landlord or other tenants of the Building.

8. Services. Landlord shall furnish the following services to Tenant, during Normal Business Hours, unless otherwise specified and without additional charge, except as agreed in this Lease: (i) janitorial and cleaning service (Monday through Friday only); (ii) water, sewer, and natural gas, (iii) electricity for lighting, ordinary business machines and laboratory equipment, specifically 6-8 digital oscilloscopes and data acquisition systems; 15 desktop computers and associated peripheral devices; ultrasonic immersion scan tank; 5-6 benchtop ultrasonic test systems; power amplifiers; soldering stations; air compressor; drill press; knee mill, metal lathe; sanders and grinders; and benchtop, ductless fume hood; (iv) and heating and air conditioning during Normal Business Hours in such seasons of the year as the same shall be reasonably necessary. In the event of interruption or suspension of any service, howsoever caused, Landlord shall restore such service with reasonable dispatch, subject to the provisions of paragraph 13 hereof with regard to Tenant's repairs. Tenant shall not use any method of heating or cooling the Demised Premises other than that provided by Landlord. Tenant may obtain electricity, heating and air conditioning services, for periods other than Normal Business Hours, by making arrangements with Landlord's property manager. Charges for electricity and heating and air conditioning used by Tenant during hours other than Normal Business Hours shall be charged at the rate of $25.00 per hour for use of the office area (zones 1-7) billable in minimum one-hour increments, or $10.00 per hour for use of the Laboratory and warehouse areas (zones 8-10) billable in minimum twelve-hour increments. Payment for the hours other than Normal Business Hours shall be due as Additional Rent for the month following the month during which Landlord delivers an invoice to Tenant's agent or designee for such charges. Landlord shall provide, along with its invoice, a copy of a statement showing the number of hours of Tenant's excess electricity, heating and air conditioning consumption. Tenant may elect, prior to full execution of this Lease, to pay for its own electrical and janitorial services, by giving written notice to Landlord. In the event Tenant elects to pay for its own electrical and janitorial services, Tenant shall cause electricity to be monitored by a separate meter installed for that purpose and shall provide Landlord satisfactory evidence that it has entered into a contract for janitorial services reasonably acceptable to Landlord.

9. Alterations. Tenant shall make no structural alterations, additions, or improvements to the Demised Premises without Landlord's prior written consent, which shall not be unreasonably withheld. Any permitted alterations, additions, or improvements shall (a) be performed at Tenant's sole cost and expense; (b) be performed according to plans prepared by Tenant's professional architect or engineer and approved by Landlord and its architect or engineer; (c) be performed by duly licensed and qualified contractors, bonded and insured in the Commonwealth of Virginia; (d) be performed in a good and workmanlike manner using materials equal in quality and kind to those used in construction of the Building; (e) be completed in compliance with all federal, state, and local laws, regulations, ordinances and codes including, but not limited to, the American with Disabilities Act, building codes, and fire codes; and (f) with the sole exception of Tenant's movable office furniture and trade fixtures, shall become the sole property of Landlord upon termination or expiration of this Lease. All damage and injury to the Demised Premises, its fixtures, appurtenances and equipment, and to the Building, its fixtures, appurtenances and equipment, caused by Tenant, its agents, employees or contractors shall be repaired, restored or replaced promptly to Landlord's satisfaction by Tenant at Tenant's sole cost and expense.

10. Liens. Tenant shall permit no voluntary or involuntary liens, mortgages, deeds of trust, mechanic's or materialmen's liens, or other encumbrances to attach to the Property. In the event any lien should arise because of the acts of Tenant, its agents, or employees, Tenant shall immediately satisfy, discharge or settle such liens within thirty (30) days of the date such lien arises. If Tenant fails to satisfy, discharge or settle any such lien, Landlord may, without any obligation to do so and reserving its rights under this Lease, satisfy, discharge or settle such lien on Tenant's behalf and Tenant shall pay as Additional Rent, all of Landlord's costs and expense in doing so, including reasonable attorneys fees and costs associated therewith.

11. Tenant's Maintenance. Tenant shall maintained the Demised Premises and its personal property in good condition at all times. Tenant shall promptly notify Landlord of any and all repairs required to be performed by Landlord hereunder. Landlord shall use its best efforts to make such repairs as soon as reasonably possible after Tenant has requested the repairs.

12. Signs. Tenant shall have the right to display its name on the front glass door located at the entrance to the Demised Premises, in a design reasonably acceptable to Landlord. Tenant shall further have the right to display its name on the monument sign serving the Building, subject to the rights of existing tenants, availability of space, and to Landlord's approval of the design and location of the sign, which shall not be unreasonably withheld. Tenant's rights with regard to signs shall be subject to applicable building codes, zoning ordinance, and restrictive covenants applicable to the Property. Initial costs and expenses associated with Tenant's signs including, without limitation, all permits, approvals, or variances, shall be borne by Landlord.

13. Operating Expenses and Taxes.

(a) Expenses and Adjusted Expenses. "Base Year Expenses", as used herein, means the greater of $4.60/square foot/year or the actual total of Tenant's Proportionate Share of Operating Expenses and Taxes during the Base Year. The term "Expenses", as used herein, shall mean "Operating Expenses" and "Taxes", as both of those terms are defined below. Beginning as of the first day of the second calendar month following the Base Year, and continuing for every month thereafter during the Term, Tenant shall be responsible for payment, as Additional Rent due on a monthly basis, any positive difference between Tenant's Proportionate Share of actual Expenses, calculated on a monthly basis, and the Base Year Expenses, calculated on a monthly basis (the "Adjusted Expenses"). The Adjusted Expenses shall be measured and determined by Landlord on a monthly basis, and Landlord shall send Tenant a statement showing the amount of Adjusted Expenses due from Tenant. In no event shall Tenant be responsible for paying Adjusted Expenses for any particular month in excess of the greater of one percent (1%) or the Consumer Price Index – All Urban Consumers, as published by the United States Department of Labor, Bureau of Labor Statistics for that month ("CPI"); provided, however, that if any increase in Adjusted Expenses is attributable to changes in Tenant's business practices including, without limitation, increased density of office space resulting from Tenant maintaining in excess forty-five (45) employee workspaces in the Demised Premises, the addition of equipment or devices not described in paragraph 7 above, or similar circumstances, then the Adjusted Expenses due from Tenant shall not be limited.

(b) Operating Expenses. "Operating Expenses" shall mean all costs and expenses incurred by Landlord in each Lease Year in connection with operating, maintaining, repairing, and managing the Demised Premises, Building and Property of which the Demised Premises is a part including, without limitation, the following:

1. Labor costs, including wages, salaries, social security and employment taxes, medical and other types of employee insurance, uniforms, training, and retirement and pension plans for personnel at or below the level of property manager and building manager.

2. Management fees, the cost of equipping and maintaining a management office, accounting and bookkeeping services, legal fees not attributable to leasing or collection activity, and other customary administrative costs. Landlord, by itself or through an affiliate, shall have the right to directly perform or provide any services under this Lease (including management services), provided that the costs of any such services shall not exceed the cost that would have been incurred had Landlord entered into an arms-length contract for such services with an unaffiliated entity of comparable skill and experience.

3. The costs of services, including amounts paid to service providers and the rental costs and purchase costs of parts, supplies, tools and equipment.

4. Premiums and deductibles paid by Landlord for insurance, including workers compensation, fire and extended coverage, earthquake, general liability, rental loss, elevator, boiler and other insurance carried by Landlord with respect to the Demised Premises.

5. Electrical Costs, as defined below, and charges for water, gas and sewer, but excluding those charges for which Landlord is reimbursed by Tenant or other tenants. "Electrical Costs" means: (a) charges paid by Landlord for electricity; (b) costs incurred in connection with an energy management program for the Demised Premises; and (c) if and to the extent permitted by law, a fee for the services provided by Landlord in connection with the selection of utility companies and the negotiation of administrative contracts for electricity, provided that such fee shall not exceed fifty percent (50%) of any saving obtained by Landlord. Electrical Costs shall be adjusted as follows: (i) amounts received by Landlord as reimbursement for above standard electrical consumption shall be deducted from Electrical Costs and (ii) the cost of electricity incurred to provide overtime HVAC to specific tenants shall be deducted from Electrical Costs. Increases in Electrical Coots for the Building that are directly attributable to material changes in business operations by other tenants of the Building shall not be factored into Tenant's Proportionate Share of Expenses for purposes of Tenant's payment of Adjusted Expenses hereunder.

6. If Landlord incurs Operating Expenses in common with other buildings or properties owned by Landlord, whether by a reciprocal easement agreement, common area agreement, or otherwise, the shared costs and expenses shall be equitably prorated and apportioned between such properties.

7. Operating Expenses shall not include the following expenses: the cost of capital improvements; depreciation; interest; principal payments of mortgage and other non-operating debts of Landlord; the costs of repairs or other work to the extent Landlord is reimbursed by insurance or condemnation proceeds; costs in connection with leasing space in the Building to tenants other than Tenant including brokerage commissions, lease concessions, and costs incurred with the sale and refinancing of the building; or organizational expenses associated with the creation and operation of the entity which constitutes the Landlord.

(c) Taxes. "Taxes" shall mean: (1) all real estate taxes and other assessments on the Building or Property, without limitation, special assessments; (2) personal property taxes for property that is owned by Landlord and used in connection with the operation, maintenance, and repair of the Building or Property; and (3) all costs and fees incurred with seeking reductions, if requested by the Tenant, in any tax liabilities related to the Property.

(d) Tenant's Proportionate Share. The term "Tenant's Proportionate Share" shall mean the Tenant's share of Expenses, as determined by multiplying the total of Expenses or any increases in Expenses by a fraction, the numerator of which is the gross square feet of floor area, leased to Tenant and the denominator of which is the gross square feet of rentable floor area in the entire Building. All costs shall be aggregated and a statement provided to Tenant annually. Tenant shall be responsible for payment of Adjusted Expenses only in the event of an increase in Expenses.

14. Rules and Regulations. Tenant, its agents, employees, guests and invitees shall faithfully observe Landlord's Rules and Regulations, which may be amended and/or supplemented from time to time by Landlord without Tenant's consent, so long as the Rules apply equally to all tenants of the Building, and so long as changes to the Rules are reasonable and do not inhibit Tenant's business.

15. Sublease and Assignment.

(a) Neither Tenant nor any of its permitted assigns or sublessees shall assign or sublet this Lease or any portion of the Demised Premises without Landlord's consent, which may be withheld by Landlord for any reason. For purposes of this paragraph, any transfer by sale, encumbrance or otherwise of a majority of Tenant's issued and outstanding stock (if Tenant is a corporation), or any lawful levy or sale on execution or other legal process, or any assignment or sale in bankruptcy or insolvency or under any compulsory procedure, shall be deemed an assignment within the meaning of this Lease.

(b) Notwithstanding the preceding paragraph, Tenant shall have the right to sublet any unused portion of the Demised Premises, not to exceed 3,000 square feet, to a subtenant approved and accepted in writing by Landlord, whose approval and acceptance shall not be unreasonably withheld. Prior to approval and acceptance of any permitted subtenant, the subtenant shall be required to acknowledge and agree to abide by the Tenant's obligations under this Lease, shall provide an insurance policy meeting the requirements of paragraph 17 of this Lease, shall use the Demised Premises for the same or similar purpose as Tenant, and shall enter into a written agreement with Tenant for the use of that portion of the Demised Premises. No sublease approved by Landlord shall relieve Tenant of any of its obligations to Landlord under this Lease. Tenant may engage a broker to assist with finding a subtenant for a portion of the Demised Premises, and Tenant may post a sign in a place and design reasonably acceptable to Landlord, advertising that a portion of the Demised Premises is available for sublease.

(c) If Tenant shall sublease or assign its rights hereunder, Tenant shall pay Landlord fifty percent (50%) of any profit Tenant receives from the sublease. Tenant's profit shall be measured by subtracting the amount of Rent paid by Tenant hereunder, calculated based upon its rate of rent per square foot, from the amount of rent received by Tenant under any sublease or assignment, calculated upon the rate of rent received per square foot by Tenant; provided, however, that Tenant may deduct any cost of Tenant's legal fees (not exceeding $1,000), brokerage fees (not exceeding market rates for any brokerage services, or improvements made on behalf of any subtenant or assignee.

16. Indemnification. Except to the extent caused by the gross negligence or willful misconduct of Landlord, its agents or employees, Tenant shall indemnify and hold Landlord harmless from and against any and all liabilities, obligations, damages, claims, actions, settlements, costs, charges, or expenses including, without limitation, reasonable attorney's fees and costs, which may be imposed upon or incurred by Landlord as a result of or in connection with any damage or injury occurring with the Demised Premises to any party or property because of the negligent or intentional acts or omissions of Tenant, its agents, employees, guests and invitees.

Except to the extent caused by the negligence or willful misconduct of Tenant, its agents or employees, Landlord shall indemnify and hold Tenant harmless from and against any and all liabilities, obligations, damages, claims, actions, settlements, costs, charges, or expenses including, without limitation, reasonable attorney's fees and costs, which may be imposed upon or incurred by Tenant as a result of or in connection with any damage or injury occurring with the Building, Demised Premises or to any party or property because of the negligent or intentional acts or omissions of Landlord, its agents, employees, guests and invitees.

Tenant shall give to Landlord immediate notice of any accident to or occurring in and of any known defects in the Demised Premises or the Building, including fire, accident involving a person, and accident to or defects in the water pipes, electric wires and heating and cooling apparatus, which defects shall thereupon be remedied by Landlord with due diligence.

17. Insurance. Tenant shall at all times and at his own cost and expense, carry with a company or companies reasonably satisfactory to Landlord, public liability insurance on the Demised Premises and adjoining Common Areas, with limits of not less than Five Hundred Thousand Dollars ($500,000.00) for injury or death to one person and One Million Dollars ($1,000,000.00) for injury or death to more than one person, and property damage of Fifty Thousand Dollars ($50,000.00) for each accident. Tenant's insurance policy or policies shall contain a provision insuring Tenant against all liability which Tenant might have under the indemnity provisions set forth in this Lease and shall deliver certificates of coverage to Landlord. Tenant's insurance policies shall also contain an endorsement that they may not be terminated or cancelled without thirty (30) days written notice to Landlord, and shall name the Landlord as an additional insured but solely with respect to those matters for which Tenant is required to provide indemnification under this Lease. If Tenant fails to provide such insurance, Landlord may, but shall not be required to, obtain such insurance on Tenant's behalf and collect the cost thereof as Additional Rent.

Tenant, its agents, employees, guests or invitees, shall store their property in, and shall occupy and use the Demised Premises and all other portions of the Building solely at their own risk. Tenant hereby releases Landlord from all claims of every kind, including loss of life, personal or bodily injury, damage to merchandise, equipment, fixtures or other property, or damage to businesses or for business interruption, arising, directly or indirectly, out of or from or on account of such occupancy and use of the Demised Premises, or resulting from any present or future condition or state of repair thereof.

Landlord shall maintain "All Risk" property insurance on the Building at replacement cost value, as reasonably estimated by Landlord. Except as specifically provided to the contrary, the limits of either party's insurance shall not limit such party's liability under this Lease.

18. Subrogation. Notwithstanding anything in this Lease to the contrary, Landlord and Tenant hereby waive and shall cause their respective insurance carriers to waive, any and all rights of recovery, claim, action or causes of action against the other and their respective trustees, principals, beneficiaries, partners, officers, directors, agents, and employees, for any loss or damage that may occur to Landlord or Tenant or any party claiming by, through, or under Landlord or Tenant, as the case may be, with respect to the Tenant's property, the Building, the Demised Premises or any contents thereof, including all rights of recovery, claims, actions or causes of action arising out of the negligence of Landlord, its agents, employees, guests or invitees or Tenant, its agents, employees, guests or invitees, which loss or damage is covered by insurance.

19. Damage, Destruction and Restoration. If the Demised Premises is damaged by fire, elements, or other casualty to such an extent that more than thirty (30) days shall be required to restore the Building or restoration cannot be completed solely with proceeds provided by any insurance policy, Landlord shall have the right to cancel this Lease by giving Tenant written notice of cancellation within thirty (30) days after such damage occurs. If the Demised Premises is damaged by fire, elements, or other casualty to such an extent that more than ninety (90) days shall be required to restore the Demised Premises, either Landlord or Tenant shall have the right to cancel this Lease by giving the other written notice of its cancellation within thirty (30) days after such damage occurs; provided, however, that if such damage is the result of the intentional act or omission to act of Tenant, its servants, employees, agents or visitors, Tenant shall forfeit its option to cancel. If this Lease is not cancelled as aforesaid, Landlord shall cause the Demised Premises to be restored with reasonable dispatch and the rental due shall be equitably and proportionately abated, according to the loss of use of the Demised Premises, from time of such damage until the Building and the Demised Premises shall have been restored to tenantable condition.

20. Condemnation Proceedings. If the whole or any part of the Demised Premises shall be taken or condemned (or sold pursuant to the threat of such taking) by a competent authority for any public or quasi-public use or purpose, and the condemnation or threat of condemnation shall materially impair the rights of either party in the Demised Premises, then this Lease, at the option of either party, shall terminate from the date when possession is delivered to the condemning authority. In the event the Demised Premises are similarly taken, condemned or sold, in whole or part, then this Lease shall, at the option of either party hereto, terminate on the date when possession is delivered to the condemning authority. In no event shall Tenant have any claim against Landlord for the value of any unexpired term of this lease, but Rent shall be abated as of the date of such termination.

21. Default. Tenant shall be in default of this Lease upon the occurrence of any of the following events of default: (a) Tenant's failure to pay all or any portion of Rent due under this Lease within five (5) days of the date it is due; (b) Tenant's failure to comply with any term, provision or covenant of this Lease, other than the payment of Rent, if the failure is not cured within thirty (30) days of Tenant's receipt of written notice from Landlord of such failure; provided, however, that Tenant shall not be in default of this Lease if the failure reasonably requires more than thirty (30) days to cure and Tenant has undertaken such cure and continues to diligently pursue such cure; (c) Tenant violates any term, provision, or covenant of this Lease more than three (3) times in any twelve (12) month period, regardless of Tenant's previous cure of the violation; (d) Tenant declares bankruptcy, becomes insolvent, makes an assignment for the benefit or creditors, engages in any fraudulent transfer, or admits in writing its inability to pay its debts when due.

22. Remedies. In the event of Tenant's default under this Lease, Landlord shall have the right provided by law, to re-enter the Demised Premises peaceably or by force, and to take possession of the Demised Premises and terminate this Lease. Neither termination of this Lease nor Landlord's recovery of possession shall deprive Landlord of any action against Tenant for possession, rent (accrued or to accrue) or damage, nor shall it constitute a waiver of any lien of Landlord upon the property of the Tenants. Without having any obligation so to do, Landlord may, in the event of default, re-let the Demised Premises in whole or in part for the unexpired portion of the Term and Tenant shall reimburse Landlord for all of its expenses in connection with such re-taking, re-letting, and any loss of rend including, without limitation, all court costs and reasonable attorney's fees.

23. Landlord's Liability. Except for liabilities otherwise expressly assumed by Landlord in this Lease, it is agreed that Landlord shall not be liable or responsible in any way for damage to or loss or theft of property sustained in or about the Demised Premises or the Building. The obligations of Landlord hereunder shall be binding only upon its interest in the project, and not upon any other assets of Landlord or any partner of Landlord personally. Tenant agrees to look solely to the equity of Landlord in the Project for the satisfaction of any remedies of Tenant or judgment obtained by Tenant as a result of a breach by Landlord of this lease. Such exculpation of liability shall be absolute and without any exception.

24. Quiet Enjoyment. Landlord covenants and agrees that upon Tenant's paying the rent and observing and performing all the covenants, conditions and provisions, on Tenant's part to be observed and performed, Tenant may peaceable and quietly enjoy the Demised Premises. Tenant's interest in the Demised Premises is subject to all easements, covenants, and restrictions applicable to the Property, as well as all prior leases, mortgages, liens or other encumbrances or record.

25. Surrender. Upon expiration or termination of this Lease, Tenant shall remove all Tenant's personal property, furniture, trade fixtures and equipment ("Tenant's Property") from the Demised Premises and shall surrender the Demised Premises to Landlord, broom clean and in good order, condition and repair, ordinary wear and tear excepted. If Tenant fails to remove any of Tenant's Property from the Demised Premises within five (5) days of expiration or termination of this Lease, then Landlord shall be entitled (but not obligated) to remove and store Tenant's Property at Tenant's sole cost and expense. Landlord shall not be responsible for the value, preservation or safekeeping of Tenant's Property. In addition, if Tenant fails to remove Tenant's Property from the

Premises or storage within thirty (30) days after written notice, Landlord may deem all or any part of Tenant's Property to be abandoned, and title to Tenant's Property shall be deemed to be immediately vested in Landlord. No act or thing done by Landlord or Landlord's agents or employees during the term hereof shall be deemed a surrender of the Demised Premises, save and except an agreement to accept such surrender in writing and signed by Landlord. If Tenant fails to surrender the Premises at the expiration or earlier termination of this Lease, occupancy after the termination or expiration shall be that of a tenancy from month-to-month. Tenant' s occupancy of the Premises during the holder shall be subject to all the terms and provisions of this Lease, and Tenant shall pay an amount (on a per month basis) equal to one hundred fifty percent (150%) of the rental amount due during the month of expiration or termination. Tenant and Landlord agree that failure of the other party to insist upon strict observance of any of the terms or conditions hereof at any time shall not be deemed a waiver of its right to insist on strict observance thereafter.

26. Mortgages, Deeds of Trust. This Lease shall be subordinate to the lien of any deed of trust, mortgage or lien resulting from any method of financing or refinancing now or hereafter in force against the Demised Premises or the Building, and to any and all advances made under such mortgages ("collectively, "Mortgages"). The provisions of this paragraph shall be self-operative and no further instrument of subordination shall be required to evidence such subordination. Tenant covenants and agrees, however, to execute and deliver, upon demand (however not more than once in any 12 month period), such further instruments subordinating this Lease to any Mortgage, as reasonably required by Landlord or Landlord's lenders, within ten (10) days of having received written notice thereof. In addition, within ten (10) days after written request by either party, the other party shall execute, acknowledge and deliver to the requesting party or its designee, a certificate providing that the following are true, except as otherwise set forth in the certificate: that this Lease is in full force and effect and has not been modified, supplemented, or amended; that to the best of the parties actual knowledge all conditions and agreements to be performed by the requesting party have been satisfied or performed; and that all Rent and other payments due from either party have been paid as of the date set forth in the certificate.

27. Notice. Any notice herein provided to be given by Tenant to Landlord shall be deemed to be given if delivered in person to Landlord or when duly posted in United States registered or certified mail addressed to Hampton R & D Properties, LLC, 4016 Holland Boulevard, Chesapeake, Virginia 23323 Attn: Mr. Tom Atherton. Any notice herein provided from Landlord to Tenant shall be deemed to be given if delivered in person to Tenant or when duly posted in United States mail addressed to Tenant at the Demised Premises.

28. Entry by Landlord. Landlord and Landlord's agents, employees and independent contractors shall have the right to enter the Demised Premises at all reasonable times following not less than 24 hours prior written notice, to examine the same and to show them to prospective purchasers or during the last 120 days of the lease if Tenants renewal options have not been exercised, lessees of the Building, or any portion thereof, and to make such reasonable decorations, repairs, alterations, or additions as Landlord deems desirable, and Landlord and Landlord's agents, employees and independent contractors shall be allowed to take all material into and upon the Demised Premises that may be reasonably required therefor without the same constituting an eviction of Tenant in whole or in part. The rent shall abate while such decorations, repairs, alterations, improvements, or additions are being made, to the extent Tenant experiences a loss or

interruption of the use of the Demised Premises. During the 120 days prior to the expiration of this lease, Landlord may exhibit the Demised Premises to prospective tenants thereof, and place upon the Demised Premises the usual notices "FOR LEASE", which notices Tenant shall permit to remain thereon without molestation.

29. Choice of Law. This Lease shall be governed in accordance with the laws of the Commonwealth of Virginia without reference to its principles of choice of law. All disputes arising under this Lease, if brought into court, shall be brought in either the Circuit Court of the City of Hampton, Virginia or the federal courts of the Eastern District of Virginia, and the parties to this Lease voluntarily submit themselves to the jurisdiction of such courts.

30. No Oral Modifications. This Lease shall in no way be modified or amended, except as set forth in a writing signed by each of the parties hereto.

31. Entire Agreement. This Lease represents the entire agreement of the parties concerning the subject matter of this Lease. All prior negotiations, memoranda, correspondence, drafts, and communications have been reduced to the express terms of this Lease. All exhibits and attachments referenced in this Lease and/or affixed to this Lease are incorporated by reference.

32. Rules of Construction. This Lease has been prepared and drafted by counsel representing both parties. Therefore, the parties agree that this Lease shall not be subject to any presumptions or rules of construction or interpretation of property law or contract law that would favor or impair the rights of the drafting party.

33. Waiver of Jury. (DELETED)

34. Headings. The headings and captions appearing at the beginning of each paragraph of this lease are intended only for convenience of reference and are not to be considered in construing this Lease.

35. Successors and Assigns. The covenants, conditions and agreements contained in this lease shall bind and inure to the benefit of Landlord and Tenant and their respective successors and assigns. Upon conveyance of the property of which the Demised Premises is a part, Landlord shall be released of any and all its personal obligations hereunder, the same to be binding upon the purchaser of the property.

36. Broker's Commission. Landlord shall pay a 6% Broker's Commission at the execution of this Lease, and for any Renewal Term exercised by Tenant hereunder. One half (3%) of the commission shall be paid to Mid-Atlantic Commercial, and one half (3%) of the commission shall be paid to Advantis Real Estate Services. Tenant represents and warrants that it has incurred no claims for brokerage commissions or finder's fees in connection with the execution of this Lease, except as noted above, and each of the parties agrees to indemnify the other against and hold it harmless from all liabilities arising from any such claim (including, without limitation, the reasonable cost of attorney's fees in connection therewith).

37. Use and Compliance with Law. Landlord represents and warrants that the Building shall be constructed and shall remain during the term of the Lease in accordance and compliance

with all applicable federal, state and local laws, orders, regulations and ordinances including but not limited to building codes. Any noncompliance or violation of this representation and warranty shall be cured by Landlord at its sole cost and expense, the expense of which shall not be chargeable to Tenant as an operating expense of the Building. Landlord, at Landlord's sole expense, shall comply with all laws, rules, orders, ordinances, directions, regulations and requirements of federal state, county and municipal authorities now in force or which may hereafter be in force, which shall impose any duty upon the Landlord or respect to the occupation or alteration of the Demised Premises, except for compliance issues which are a direct result of Tenant's specific and unique use of the Building.

38. Force Majeur. Landlord shall not be deemed to be in default of this Lease with respect to the performance of any terms, covenants or conditions of this Lease if Landlord's failure to perform such terms, covenants or conditions is due to any strike, lockout, labor dispute, civil commotion, war-like operation, terrorist act, invasion, rebellion, governmental regulations or controls, inability to obtain materials and services, act of God, fire, or other casualty or cause beyond the reasonable control of Landlord.

39. Security Systems. Tenant shall have access to the Demised Premises twenty-four (24) hours a day, seven (7) days a week. Landlord shall furnish a proximity card reader and fifty (50) access cards in connection with this Lease.

40. Parking. Tenant shall have the right, during the Term, to use fifty (50) parking spaces located upon the Property, fifteen (15) of which shall be marked reserved for Tenant's exclusive use. Three (3) of Tenant's reserved spaces shall be located near the front door of the Demised Premises, and twelve (12) of the reserved spaces shall be located nearest to the exterior front door of the Demised Premises. In accordance with the Landlord's Rules and Regulations, Landlord reserves the right, from time to time, to designate areas in which Tenant, its employees, agents, and visitors may park.

41. Early Termination. Tenant shall have the right at any time, following the third anniversary of the Lease Commencement Date, to terminate this Lease, provided that Tenant shall give Landlord at least one hundred twenty (120) days prior written notice of termination and shall pay Landlord an early termination fee of Thirty Thousand Dollars ($30,000) payable as of the termination date. In the event Tenant moves into another property owned by Landlord, Landlord shall waive the foregoing early termination fee.

42. Landlord's Acceptance. The Landlord's obligations set forth in this Lease shall be conditioned upon Landlord's execution and acceptance of this Lease and upon Landlord's review and approval of Tenant's financial information.

IN WITNESS WHEREOF the parties have caused their duly authorized representatives to execute this Lease on behalf of their respective companies as of the day and year first above written.

LANDLORD:

HAMPTON R & D PROPERTIES, LLC

By: /s/ Thomas H. Atherton, III

Thomas H. Atherton, III
Manager

TENANT:

LUNA INNOVATIONS INCORPORATED,
a Delaware corporation

By: /s/ Garnett S. Linkous

Garnett S. Linkous
Chief Administrative Officer

EXHIBIT A

PLANS

EXHIBIT B

RULES AND REGULATIONS

(a) The entry and passages may be used for ingress and egress only.

(b) Space for admitting natural light into any public or common areas of the Building shall not be covered or obstructed by Tenant. Tenant shall be allowed to install approved window treatments inside windows within Tenant's space.

(c) All plumbing fixtures including, without limitation, all toilets, urinals, sinks and fountains, shall be used only for their intended purposes. Tenant shall dispose of no grease, oil, paper, paper towels, napkins, feminine products, or similar items in the plumbing fixtures, and Tenant shall bear all costs and expenses resulting from Tenant's misuse of such fixtures.

(d) Landlord shall provide Tenant space on any directory Landlord maintains for all tenants, subject to Landlord's right to determine the placement and design of all lettering and materials to be placed upon such sign.

(e) No sign, advertisement, notice, or the like, shall be used on the Building exterior without Landlord's permission and, if permitted by Landlord, shall be of color, size and style, and be done at Tenant's expense by such party, as Landlord may determine. If Tenant violates the foregoing, Landlord may remove the violation without liability, and may charge all reasonable costs and expenses incurred in so doing to Tenant.

(f) Tenant shall not throw or permit to be thrown anything out of windows or doors or down passages or elsewhere in the Building, or bring or keep any pets or other animals therein, or commit or make any indecent or improper act or noise, or do anything which will in any way obstruct, injure, annoy or interfere with other tenants or those having business with them, or affect any insurance rate on the Building or violate any provision of any insurance policy on the Building, or conflict with any rule or ordinance of the Board of Health, Fire Department, or any governmental authority and Tenant shall comply with all governmental laws, orders, and regulations with respect to Tenant's use or occupancy of the Demised Premises.

(g) Tenant shall not permit cleaning by any person other than the janitorial and cleaning staff hired by Landlord.

(h) Landlord will furnish Tenant with one key per 1,000 sf of the Demised Premises and each lock set. All additional keys will be at Tenant's expense. All such keys in Tenant's possession or known by Tenant to be in existence shall be delivered to Landlord at the termination of this lease. Unless as approved and accepted by the Landlord, Tenant shall not place any additional lock on any door in the building, and doors, leading to the corridors or main halls shall be kept closed at all times except as they may be used for ingress and egress, without Landlord's written permission.

(i) The Demised Premises shall not be defaced in any way. There shall be no boring or cutting for wires, and no change in electric fixtures or other appurtenances of the Demised Premises shall be made.

(j) For the general welfare of all Tenants and security of the Building, Landlord may require all persons entering and/or leaving the building on Sundays and/or holidays and on other days between the hours of 7:00 p.m. and 7:00 a.m. to register with the building's property manager identifying his destination in the Building, and the time of entry and actual or anticipated departure. Landlord may deny entry during such hours to any person who fails satisfactorily to identify himself.

(k) No bicycles or vehicles of any kind shall be brought into or kept in or about the Demised Premises or the common areas (lobby or halls) of the building, and no cooking shall be done or permitted by Tenant on the Demised Premises. Tenant shall not cause or permit any unusual or objectionable odors to be produced upon or emanate from the Demised Premises. Tenant may allow vehicles into the Work Areas/Laboratories (as defined on Exhibit A).

(l) Tenant shall not engage or pay any employee on the Demised Premises, except those actually working for Tenant on the demised premised, nor advertise for laborers giving an address at the Demised Premises. It is understood that unless specifically authorized by Agent, employees of Landlord shall not perform nor be asked to perform work other than their regularly assigned duties.

(m) Landlord will furnish electric light bulbs or fluorescent tubes in the fixtures at the time of the original letting of the Demised Premises, but Landlord shall not furnish such bulbs or tubes thereafter.

(n) Canvassing, soliciting and peddling in the Building is prohibited and Tenant shall cooperate to prevent the same.

(o) If parking spaces are provided, Landlord shall have no responsibility whatsoever to anyone whomsoever in respect thereto. All vehicles used by Tenant's employees (including officers) shall be parked only in such area as may be designated by Landlord for the purpose. Tenant shall furnish to Landlord the license number of all such vehicles. Landlord reserves the right to remove by towing or otherwise any such vehicle parked in any area not so designated and to charge the cost thereof to Tenant.

(p) Tenant shall not place a load on any floor of the Demised Premises exceeding the floor loads as described on Exhibit A. Landlord reserves the right to prescribe the weight and position of all safes and heavy equipment.

EXHIBIT C

LEASE COMMENCEMENT LETTER

October _____, 2003

Thomas H. Atherton, III, Manager
Hampton R & D Properties, LLC
4016 Holland Boulevard
Chesapeake, Virginia 23323

Re: Commencement of Lease Between Luna Innovations, Inc. ("Tenant") and Hampton R & D Properties, LLC ("Landlord")

Dear Mr. Atherton:

This letter is to confirm that Tenant has accepted its office space of approximately 9,935 square feet in the building known as 130 Research Drive, Hampton, Virginia (the "Demised Premises"), pursuant to that certain Full Service Office Lease dated _____, 2003, by and between Landlord and Tenant. The Tenant confirms that the "Lease Commencement Date", as defined in the Lease, shall be _____. Tenant further confirms that it has completed a walk-through inspection of the Demised Premises and accepts the Demised Premises as of the date of this letter, without objection of any kind to their present conditions.

Please acknowledge the Landlord's receipt and agreement with the above-referenced Lease Commencement Date, and return one originally-executed copy of this letter to me.

Very truly yours,

Luna Innovations Incorporated,
a Delaware corporation

By: /s/ Garnett S. Linkous

Garnett S. Linkous
Chief Administrating Officer

Exhibit 10.16

[LOGO]

OFFICE SERVICE AGREEMENT

This Office Service Agreement (this "Agreement") is made this 19th day of August, 2005, by and between the Center ("us" or "we") and the Client ("you") identified in the following Schedule of Terms.

Schedule of Terms

InitialTerm: 6 (months) **Start Date**: September 1, 2005 **Ending Date**: February 28, 2006

Center:	Tysons Business Center, LLC	Client:	LUNA INNOVATIONS
Phone:	703/918-4848	Phone:	540-314-3000
Fax:	703/918-4847	Fax:	
Contact:	Cynthia Aungst	Contact:	Scott Graeff
Email:	caungst@metroffice.com	Email:	graeffs@lunainnovations.com
Center:		Billing address	(if other than at Center):
Address:	8300 Greensboro Drive Suite 800 McLean, VA 22102	Address:	2851 Commerce Street Blacksburg, VA 24060
		Contact:	
		Phone:	
		Fax:	
		Email:	

Use: Business Development Office
[enter a detailed description of business or service in which client will engage in the Center]

Standard Service Fees:

Office Number	Approx. Size	Price/mo.	Total
31	210 s.f.	$ 2310.00	$ 2310.00
2	110 s.f.	$1150.00	$1150.00

Service	Quantity	@Price	Total
Phone	2	75.00	$150.00*
Fax/Modem	1	25.00	$ 25.00
T-1	2	200.00	$ 200.00*
Kitchen Services	2	20.00	$ 40.00*
Parking	2	30.00	$ 60.00*
Conference Rooms	8 hours	.00	$ .00
411 Listing	0	3.00	$ .00

Monthly Standard Service Fee:	$ 3935.00	(sum of office and service totals)
Refundable Service Deposit:	$ 3935.00	
Refundable Toll Deposit:	$ 300.00	
Office Set-up Fee:	$ 160.00	(includes 4 office keys, 3 security cards, 1 directory listing)
Telephone (3)/Fax (1)/Internet (3) Installations:	$ 750.00	(additionally includes VM Message Tree Installations/special yearly fee
Last September Complimented Contract Fee:	$(3935.00)	
Total Amount Due at Signing:	$ 5145.00	

Addenda/Other: "TBCL will compliment 2nd person in Office 31 monthly ($225 value = 1 telephone/vm, 1 internet, 1 kitchen, 1 parking). The monthly contract fee of $3935 will be complimented for the month of September, 2005.

Signatures: The Agreement between the Center and the Client consists of this Schedule of Terms, the Terms and Conditions attached hereto and the Rules and Regulations, the current version of which is attached hereto, each of which you confirm you have read and understood. By executing below, we both agree to be bound by the Agreement in all respects and to perform our respective obligations hereunder. **Important Note**: The term of the Agreement as set forth above is subject to the automatic renewal provisions of Paragraph 13 of the Terms and Conditions. Unless you provide the notice required by that provision, your obligation to pay standard service fees does not end with the end of the initial term of this Agreement.

CENTER:

By: _____

Kathlene Buchanan
President/Manager

CLIENT:

By: /s/ SCOTT GRAEFF / CFO
Name/Title

Date: 8/24/05

GUARANTOR:

[By:] _____

Print Name and, if applicable, Title

Date: _____

OFFICE SERVICE AGREEMENT
Terms and Conditions

The following Terms and Conditions are a material part of the Office Service Agreement by and between the Center and Client identified on the Summary of Terms to which this is attached.

1. **OFFICES; STANDARD SERVICE FEES**. We will provide you those serviced and furnished office(s) identified on the Schedule of Terms during the term of this Agreement, as extended from time to time. As a client of the Center, you also have the use of the common areas in the Center on a shared basis with other clients and in accordance with the policies established by the Center from time to time. You will have access to your office(s) twenty-four (24) hours a day, seven (7) days a week. We reserve the right to relocate you to equal or larger sized office(s) in the Center and if we exercise that right, the cost and expense of the relocation will be borne by us. We also reserve the right to show the assigned office(s) to prospective clients and others, as necessary. We will use reasonable efforts to minimize inconvenience to you when doing so.

2. **ADDITIONAL SERVICES**. The Center offers various services to its clients on an as requested basis for fees established by the Center. We will provide a fee schedule for available services upon your request. The fee schedule is subject to change from time to time without prior notice. Fees are billed to your account as services are provided and are payable per Paragraph 3 below. The Client is liable for all fees for services requested or authorized by Client's employees or other persons with apparent authority to act on your behalf. If any default occurs under this Agreement, we may cease to provide any or all services including telephone service without resort to legal process. The standard service fee includes cleaning, maintenance, utility and heating and air conditioning services within the Center as provided by the Building landlord during normal operating hours of the Building. If you require heating and air conditioning services outside the Building's normal operating hours, we will ask the Building landlord to provide those services and you will pay all charges in connection therewith. After hours HVAC is available at an additional fee.

3. **PAYMENTS; DEPOSITS**. Upon execution of this Agreement, you are obligated for the monthly service fee for the entire term of this Agreement. The standard service fee is payable in monthly installments in advance on the 1st of every month (the "payment due date"). Fees for additional services billed to your account during the preceding period and all applicable sales or use taxes are also due and payable on the payment due date. You agree to pay a late fee equal to 10% or $50.00 (whichever is greater) of any amount not paid by the 5th of the month. Upon execution, you must pay the first month's standard service fee, set-up fee and refundable deposits specified in the Schedule of Terms. Deposits will not be kept in a separate account from other funds of Center and no interest will be paid to you on any deposit moneys we hold. Deposits may be applied to any fees or other amounts due and unpaid at any time in our sole discretion. If so applied, we may require you to replenish the deposit to the amount originally required or to a greater amount, if we determine necessary based on your payment history. The deposit (less amounts applied to your obligations hereunder) will be refunded to you within sixty (60) days after the end of the term of this Agreement.

4. **USE**. You may only use the Center and the assigned office(s) for the conduct of the business identified in the Schedule of Terms and for no other purpose. You will observe and strictly comply with all Rules and Regulations of the Center and the Building in effect from time to time. The Center's current Rules and Regulations are attached hereto. We reserve the right to amend or supplement the Rules and Regulations at any time by informing you in writing of any such change. You are responsible for ensuring that all persons present in the Building or the Center at your invitation or request also comply with the Rules and Regulations.

5. **LIMITATION OF LIABILITY**. You acknowledge that due to the imperfect nature of verbal, written and electronic communications, neither the Center, the Building landlord nor their respective officers, directors, employees, agents or affiliates shall be responsible for damages, direct indirect or consequential, resulting in whole or in part from the failure to furnish any service, including conveying telephone messages, faxes and other communications. Your sole remedy and our sole obligation for any failure to render any service, any error or omission, delay or interruption of any service, is an adjustment to your account for the charges for such service for the period during which the failure, error, delay or interruption continues. No adjustment will be made if the failure, error, delay or interruption of service occurs while you are in default under this Agreement.

With the sole exception of the remedy set forth in the immediately preceding paragraph, Client expressly and specifically waives and agrees not to make any claim for damages, direct, indirect or consequential, including but not limited to damages for lost business or profits, arising out of any failure to furnish any service, any error or omission with respect to any service, or any delay, interruption or suspension of services for any reason. To the fullest extent permissible under applicable law, Center disclaims any and all warranties with respect to the services provided or to be provided to Client, with respect to the Facility, the Building and any property or service related thereto, whether or not specifically mentioned herein, including any warranty of merchantability or fitness for a particular purpose.

6. **LICENSE AGREEMENT**. This Agreement is not a lease and does not create any Interest in real property. This Agreement is a contractual arrangement under which the Client is granted a license to use certain areas of the Center upon payment of the fees and charges set forth herein. Center retains sole and exclusive legal possession and control of the entire Center. This Agreement and the rights and duties of both the Center and the Client are subject to the terms of the Center's lease with the Building landlord. This Agreement terminates simultaneously with the termination of Center's lease or the termination of the operation of Center for any reason. You acknowledge that you do not have any rights under the Center's lease with the Building landlord. Upon the termination of this Agreement for any reason, whether at expiration of the term or otherwise, your license to occupy the Center is automatically revoked.

7. **DAMAGES AND INSURANCE**. You are responsible for any and all damage to the assigned office(s) beyond normal wear and tear and for any damage to the Center, the Building or any personal property of others therein if such damage is caused by you, your employees, agents, contractors, invitees or guests. We reserve the right to inspect your office(s) from time to time and to make necessary repairs. If we make any repairs to correct damage for which you are responsible, you must pay for those repairs. You are responsible for insuring your personal property against all risks.

8. **WAIVER AND INDEMNITY**. You acknowledge and agree, on behalf of yourself, your employees, agents, invitees and guests, that the Center is not responsible for damage to or loss of any personal property in the Center (whether such personal property belongs to you, your employees, agents, invitees or guests or is otherwise under your control), nor for any claims for damages for personal or bodily injury or death suffered by you, your employees, agents, invitees or guests, whether caused by the act or omission of the Center or its employees or any other person or event, including our own negligence, and you hereby waive all such claims and rights of recovery against the Center, its affiliates, and their respective officers, directors, employees and agents (collectively, the "Center and its affiliates"). Personal property in your offices is understood to be in your control. You agree to indemnify, defend and hold the Center and its affiliates harmless from all claims for damage to or loss of personal property and for personal or bodily injury or death unless caused solely and directly by our gross negligence. You further agree to indemnify, defend and hold the Center and its affiliates harmless from all claims for loss or damage suffered by or claimed against the Center or its affiliates, directly or indirectly, arising, in whole or in part, from (a) your use of the Center or the conduct of your business therein, (b) any negligent act or omission of Client, its employees, contractors, agents, invitees or guests, and (c) your breach of this Agreement.

9. **DISPOSITION OF PROPERTY**. When the term of this Agreement ends, you must remove your personal property from the Center and leave the office(s) and our property in the same condition in which they were on the data you began using them, normal wear and tear excepted. We will not be responsible for any personal property left in the Center after this Agreement ends. Anything you leave will be considered abandoned and may be disposed of by us however we determine, without any liability to you whatsoever.

10. **DEFAULT**. If you fail to pay any service fees or other charges when due and that failure continues for five (5) days after we notify you in writing or if you fail to perform or observe any other term of this Agreement and that failure Is not connected within ten (10) days after we notify you in writing, you will be in default of this Agreement. If the failure in performance cannot be corrected or if you repeatedly fall to perform your obligations, or if you engage in any illegal conduct in or about the Center or the Building, you shall be in default immediately upon the occurrence of such event without any notice and without any opportunity to cure.

11. **REMEDIES**. On default, we take any one or more of the following actions, without resort to legal process and without further notice to you:

(a) Terminate this Agreement;

(b) Demand immediate payment of all unpaid fees and charges, including all standard service fees for the remainder of the term of the Agreement, including any extensions;

(c) Deny you access to the Center and the assigned office(s) and cease providing any or all services;

(d) Take possession of your personal property in the Center, in which case, we will store such property, at your expense, until taken in full or partial satisfaction of any lien or judgment we obtain; or

(e) Pursue any other remedies allowed by law.

12. **NO WAIVER**. If we accept partial performance or payment from you, it will not constitute a waiver of our rights for your default. No matter how many times we allow a default or variance in your performance, we may at any time, without notice, require strict adherence to this Agreement, prohibit future variances or pursue our remedies for existing defaults. This Agreement can only be amended in a writing signed by the Center and the Client and no conduct by the parties will change the terms of this Agreement. You acknowledge that we may pursue our remedies for your default in whatever order or manner we chose. If we elect to terminate services to you upon your default, we are not limiting in any manner any other right or remedy we may have.

13. **AUTOMATIC RENEWAL**. Upon the expiration of the Initial term, and each extension of the term, this Agreement shall automatically renew and the term shall be extended for an additional period equal to the initial term, upon the same terms and conditions contained herein except that standard service fees shall be at the then applicable rates established by the Center for your serviced office(s). If you do not want the term of this Agreement to renew, you must give us written notice of non-renewal not less than sixty (60) days prior to the scheduled end of the term (ninety (90) days if you are using three or more offices). Likewise, if we do not want the term of this Agreement to renew, we must provide you with written notice within the same time periods.

14. **RESTRICTION ON HIRING**. The Center's employees are an essential part of our ability to deliver the services and operate our business. We have carefully selected and trained our staff to ensure that you and our other clients receive the highest quality service in the industry. Our staff members are part of our investment in our business and for this and other reasons, losing an employee is a loss of value. During the term of this Agreement and for six (6) months afterwards, you agree that you will not solicit or offer employment to any of the Center's employees. If you breach that agreement or if you hire one of our employees during that period, you must compensate us for the loss and damage we will suffer as a consequence and you agree to pay us the equivalent of one year's salary for each of the employees concerned.

15. **MISCELLANEOUS**.

(a) All required notices are to be in writing and shall be hand delivered or sent by USPS registered or certified mail, postage prepaid or reputable overnight delivery service with proof of delivery, addressed to the Center or to the Client at the address set forth in the Schedule of Terms.

(b) In the event a dispute arises under this Agreement, you agree to submit the dispute to mediation. If mediation does not resolve the dispute, you agree to submit the matter to binding arbitration. The non-prevailing parry shall pay the prevailing party's attorney's fees and costs of the arbitration, all as determined by the arbitrator. Furthermore, if a court decision prevents or if we elect not to submit the dispute to arbitration, then the non-prevailing party as determined by the court shall pay the prevailing party's reasonable attorney's fees and costs. Nothing in this paragraph will prohibit the Center from seeking equitable relief including without limitation any action for removal of the Client from the Center after the license has been terminated or revoked.

(c) Where this Agreement recites a particular example of the general statement, the inclusion of the particular example does not exclude any other particular instance or circumstance or limit the applicability of the general statement. Thus, when the phrase 'including' is used in this Agreement, it means 'including but not limited to.'

(d) This Agreement is governed by the laws of the state in which the Center is located.

(e) Client may not assign this Agreement without our prior written consent, which will not be unreasonably withheld. We reserve the right to assign this Agreement and delegate our responsibilities hereunder.

(f) The Agreement, consisting of the Schedule of Terms, the Terms and Conditions and the Rules and Regulations, is the entire Agreement between Client and Center and supersedes any and all prior agreements, written or oral. **IMPORTANT NOTE**: The Rules and Regulations of the Center as in effect from time to time are a material part of the Agreement and you are bound by them and must observe and comply with them at all times. Violations of the Rules and Regulations by you or any person in the Center or the Building at your invitation or behest shall be a default under the Agreement and will constitute sufficient cause for termination of the Agreement. If we amend or supplement the Rules and Regulations, we will provide prior written notice of the change or supplement in accordance with Paragraph 15.a. above and upon delivery of such notice, you will be bound by those changes or supplements. To the extent the Building rules and regulations in effect from time to time are more restrictive than the Center's Rules and Regulations, the Building rules and regulations will be deemed paramount.

Rules and Regulations

The Rules and Regulations are intended for the safety, comfort and well-being of all clients of the Center and the tenants of the Building in which the Center is located.

1. Client recognizes that the Center is a professional environment and will maintain its assigned office(s) and dress accordingly. Entrances, hallways, stairways and elevators shall not be obstructed or encumbered by any client or used for any purpose other than ingress and egress. Nothing shall be placed or left in the common areas of the Center. The common areas of the Building are under the control of the Building owner and shall be used by clients in strict accordance with the rules and requirements of the Building owner.

2. Nothing shall be hung in any window or door in the Facility nor shall any sign, advertisement, notice or other lettering be affixed on any part of the Faculty outside of a client's office or inside any office in such a manner that the same is visible from the corridors of the Facility. Nothing shall be affixed to the walls of any office by drilling into the walls or by any other method, which damages the walls nor shall the ceiling tiles, light diffusers or air conditioning vents be removed or altered in any way.

3. Clients shall not allow noise or objectionable odors to emanate from any office or secretarial bay, nor cause or allow disturbing noise or odors in the public areas of the Facility. If Client uses an impact or dot matrix printer or paper shredder, the office door must be closed when that equipment is in use. Other than a personal computer, desktop printer or facsimile machine, Client will not bring any office equipment onto the premises without permission from the Center.

4. No bicycles, vehicles or animals, birds or pets of any kind shall be brought into the Building or the Center except working dogs assisting disabled persons nor shall any flammable, combustible, explosive, hazardous or toxic fluid, chemical or substance be brought into the Center.

5. No additional locks or bolts of any kind shall be placed upon any of the doors or windows by any client, nor shall any changes be made in existing locks or the mechanism thereof. Upon departure from the Center, all keys to offices, furniture and lavatories must be returned to the Center and in the event of the loss of any keys, the client is responsible for the cost of replacing or re-keying locks.

6. All deliveries must be coordinated through us and will take place in such manner and during such hours as the Center may require. We reserve the right to inspect all deliveries brought into the Center and to exclude any deliveries, which violate these rules and regulations or those of the Building. The Center is not liable for any damages or claims arising from deliveries accepted on behalf of client. We also reserve the right to exclude from the Center at all times any person who is not known or does not properly identify him or herself to Center staff. We may require all persons entering or leaving the Center to register. Each client is responsible for all persons who enter the Building at the request or invitation of such client or to conduct business with the client.

7. Each client, before closing and leaving its office, shall turn off its office lights and, if client is in the Center outside of the normal business hours of the Center, shall also turn off the common area lights in the Center and ensure that the suite entry doors are locked. If client uses any

conference room or other common facility in the Center after business hours, client shall restore the area to a clean and orderly condition prior the opening of business in the Center the following day. If client fails to do so, client will pay for clerical time necessary for Center staff to restore the areas to such condition.

8. Clients may not use any part of the Center for sleeping or for any illegal purpose.

9. Only the Center, its staff and the vendors designated by us may provide or perform services for clients of the Center. No client shall provide or offer to provide services to other clients of the Center, nor solicit other clients for services. The employees of the Building management are not available to perform any services for clients and shall not be requested by any client to perform any services or do any work. Contact with Building management is exclusively through the Center.

10. Clients may not use the name of the Center or the Building in any of client's advertising. During the term of the Agreement, client may use the address of the Center as its business address. Center will comply with the Postal Service regulations regarding Client's mail. Upon termination of the Agreement, client must notify all parties with whom client does business of their change of address. No client may file a change of address form with the Postal Service. All telephone, facsimile numbers and IP addresses are and remain the sole property of the Center and no numbers will be transferred to any client. For thirty (30) days after the expiration of the Agreement and client's departure from the Center, we will provide a client's new telephone number and address to incoming callers and will hold or forward mail, packages, and facsimiles at no cost to the client. Thereafter, those services remain available to clients at the then applicable fees.

11. The Center will assess a charge of $35.00 along with any applicable late fees for any check that is dishonored for any reasons. Checks are accepted in payment of fees and charges subject to collection and if a check is dishonored and returned, it will be as if the payment represented by the check had never been made. If a client has two returned checks, thereafter, payment will only be accepted by credit card, cashier's check or certified funds.

12. If we have discontinued telephone or other services due to a default and thereafter agree to restore services and waive the default, we may require, among other things, that client pay a $100.00 re-connection fee to resume telephone services.

13. Client shall escort all guests through the suite. No guests are permitted to walk freely around the suite.

14. To maintain suite security, Client shall keep all security doors closed and locked at all times. Client shall not authorize access for other parties to enter the suite beyond Center operating hours. Client shall not use any equipment owned by the Center unless authorized by Center staff. Client shall not install or repair equipment located in the Center's LAN room without written permission. An authorized representative of the Center must be present during such work.

We reserve the right to rescind, amend, alter or waive any of the Rules and Regulations at any time when, in our sole judgment, it is necessary, desirable or proper for the best interests of the Center and its clients. No rescission, amendment, alteration or waiver of any rule or regulation in favor of one client will operate in favor of any other client and we will not be responsible to any client for the non-observance or violation by any other client of any of the Rules and Regulations.

Exhibit 10.17

LEASE

BY AND BETWEEN

THE INDUSTRIAL DEVELOPMENT AUTHORITY OF DANVILLE, a

POLITICAL SUBDIVISION OF THE
COMMONWEALTH OF VIRGINIA,

AS LANDLORD

AND
LUNA INNOVATIONS INCORPORATED, a

CORPORATION EXISTING UNDER THE LAWS OF THE
STATE OF DELAWARE

AS TENANT

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LEASE

THIS LEASE ("Lease") is entered into and effective as of January 1, 2005, between the **INDUSTRIAL DEVELOPMENT AUTHORITY OF DANVILLE** a political subdivision of the Commonwealth of Virginia ("Landlord"), and **LUNA INNOVATIONS INCORPORATED**, a corporation existing under the laws of the State of Delaware (" Tenant").

RECITALS:

This Lease is made with reference to the following facts:

A. Landlord owns a certain building identified as "Old Belt Tobacco Storage No. 2" (the " Building") located in the City of Danville Virginia, more particularly described on Exhibit A and located on that certain real property owned by Landlord and more particularly described in Exhibit A hereto (the "Land").

B. Tenant shall construct certain industry specific improvements (the " Tenant Improvements") such Tenant Improvements shall be described in the Construction Agreement. All improvements to be constructed pursuant to this Lease, including the Tenant Improvements, are collectively referred to hereafter as the "Improvements." The Land, the Building and the Improvements are referred to collectively herein as the " Property" or the "Premises."

NOW THEREFORE, in consideration for the promises contained herein and other good and valuable consideration the receipt of which is herby acknowledged the parties agreed as follows:

ARTICLE 1 — AGREEMENT TO LEASE - DELIVERY OF GUARANTY

1.1 Agreement to Lease. Landlord shall lease to Tenant, and Tenant shall rent, hire and take of and from Landlord, for the Term and upon the terms, covenants and conditions set forth in this Lease, the Premises.

1.2 Commencement Date. The "Commencement Date" shall be the date Landlord delivers possession of the Premises to Tenant in the condition required hereunder. No Base Rent (as hereinafter defined) or other rent or charges of any kind or nature, other than those charges described in Sections 6.1(b) and (c) shall be payable by Tenant with respect to the Premises until the Rent Commencement Date. The " Rent Commencement Date" shall be the earlier to occur of (i) Tenant's Substantial Completion of the Tenant Improvements or (ii) six (6) months after the Commencement Date; provided, however, such six (6) month period shall be extended by one (1) day for each day Tenant's Substantial Completion of the Tenant Improvements is actually delayed beyond such six (6) month period due to force majeure. As used herein, " Substantial Completion" shall mean the date that the Tenant Improvements are complete, subject only to minor punch-list items that do not interfere with Tenant's use or occupancy of the Premises, and Tenant has received all governmental permits and approvals required for the legal occupancy of the Premises for the use permitted hereunder, including a permanent certificate of occupancy. If Landlord fails to deliver possession of the Premises in the required condition within fifteen (15) days after execution of this Lease or Tenant fails to Substantially Complete the Tenant Improvements within six (6) months after Tenant's

execution of this Lease or Tenant is unable to complete the Tenant Improvements at a cost of less than One Million Dollars ($1,000,000), then Tenant may terminate this Lease by written notice to Landlord.

1.3 Delivery Date. On the Commencement Date Landlord shall deliver possession of the Premises to Tenant in vacant, broom clean, structurally sound condition, fully serviced with all utilities, in compliance with all laws, with no defects or conditions that would restrict or impair Tenant's ability to perform the Tenant Improvements or occupy the Premises. Tenant's acceptance of the Premises shall not be deemed a waiver of Tenant's right to have defects in the Premises repaired at no cost to Tenant. Tenant shall give notice to Landlord whenever any such defect becomes reasonably apparent, and Landlord shall repair such defect as soon as practicable. All rents and fees described by this Lease other than those fees described by Sections 6.1(b) and (c) shall commence on the Rent Commencement Date.

1.4 Term. The initial term of this Lease shall begin as of the Commencement Date and shall end sixty (60) months after the Commencement Date. If the Lease is still in full force and effect, Tenant shall have the right to renew the lease for as many as two (2) new sixty (60) month renewal terms, provided written notice of the election to renew shall be delivered to Landlord not less than six (6) months prior to the expiration of the previous lease term. If said extension is duly exercised by Tenant, the Term of this Lease shall be automatically extended for an additional sixty (60) month period without requirement of any further instrument, upon all of the same terms, provisions and conditions set forth in this Lease. The initial term and any renewal terms shall be referred to collectively as the "Term" for the purposes of this Lease.

1.5 Memoranda. Landlord and Tenant each agree, upon the written request of the other, (a) to execute one or more memoranda setting forth the Commencement Date, the Term Expiration Date and the other dates referred to in this Article 1, and (b) to execute a short form memorandum of this Lease for recording purposes, which shall be in the form of Exhibit D attached hereto.

ARTICLE 2 — CONSTRUCTION OF THE BUILDING AND RELATED IMPROVEMENTS

2.1 Construction Agreement. Tenant shall complete the Tenant Improvements substantially in accordance with the terms, provisions and conditions set forth in the Construction Agreement. Landlord hereby approves of Tenant's construction of improvements as set forth in Exhibit B. Notwithstanding anything to the contrary herein, Landlord shall be solely responsible for all costs required to bring the Premises into compliance with laws, related to the presence of Hazardous Materials on or about the Premises or due to the failure of the Premises to comply with Landlord's representations in the Lease or Landlord's delivery obligations. Tenant shall be entitled to surrender the Tenant Improvements upon the termination of this Lease.

ARTICLE 3 — RENT

3.1 Determination of Fixed Rent. Beginning on the Rent Commencement Date, Tenant shall pay to Landlord one dollar each year for the initial sixty (60) month Term. Thereafter, Tenant shall have a purchase option of it's portion located at 521 & 529 Bridge Street also known as Old Belt 2 for the purchase price of Sixty Nine Thousand Five Hundred Fifty Six Dollars ($69,556) which equals Sixty Thousand Dollars ($60,000) plus three (3%) percent each year for 5. Additionally Tenant would cover all costs for this transaction.

3.2 Payment of Base Rent. Tenant shall pay Base Rent, in advance, on the first day of each calendar month beginning on the date which is the Rent Commencement Date. Landlord shall deliver to Tenant monthly an invoice on or before the first day of each month setting forth any other charges owed under the Lease. Base Rent, or any component thereof, for any period during the Term which is less than a full calendar month, as applicable, shall be a prorated portion of the Base Rent, based on the actual number of days in the month in question. Base Rent shall be paid in lawful money of the United States to Landlord at the address set forth in Section 20.4 of this Lease, or to any other person at any other place located in the United States as Landlord may designate to Tenant in writing, so long as Tenant shall be obligated to make payments only to a single person or entity. If Tenant is delinquent in any of its payment of rent under this Article, then the Landlord shall be entitled to all rights and charges as set forth in Section 13.1 of this Lease.

3.3 Lease Year. As used in this Lease, "Lease Year" means the period beginning on the Commencement Date and ending on the date twelve (12) months following the Commencement Date, and each consecutive twelve (12) month period thereafter during the Term.

ARTICLE 4 — USE

4.1 Permitted Use. Tenant may use the Premises for office, storage, research and development as well as manufacturing purposes, and for any other use permitted under applicable law. Landlord hereby represents that such uses are permitted in the Premises under applicable law.

4.2 Compliance with Laws. Following the Commencement Date, and in connection with Tenant's specific use of the Premises as opposed to general office uses, Tenant, at Tenant's sole cost and expense, promptly shall comply with all laws, statutes, permits, ordinances and governmental rules and regulations now in force or which hereafter may be in force, including, without limitation, The Americans with Disabilities Act of 1990, as amended (collectively, "Applicable Laws"), and with the requirements of the certificate of occupancy (or its equivalent) for the Premises relating to or affecting the condition, use or occupancy. Tenant shall be responsible for making alterations or improvements to Tenant's personal property or to any tenant improvements which were installed by Tenant. In addition, Tenant shall obtain all business licenses, permits and other approvals required for Tenant's operations and not specifically related to the physical structure of the Premises or the Property. Tenant shall throughout the term of this Lease promptly comply with all Applicable Laws with respect to the condition, use or occupancy of the Premises, the Building and all other Improvements.

4.3 Prohibition Against Waste. Tenant shall not cause, maintain or permit its agents, employees or contractors to do anything in or about the Premises which would constitute a nuisance. Tenant shall not commit or allow its agents, employees or contractors to commit any waste in or upon the Premises.

ARTICLE 5 — HAZARDOUS MATERIALS

5.1 Acts of Tenant. Provided Tenant complies with all applicable Environmental Laws, as defined below, Tenant may use, keep and store Hazardous Materials on the Premises. Tenant agrees that it shall comply, at its sole cost and expense, with all Environmental Laws governing the use, maintenance or storage of Hazardous Materials by Tenant on the Premises. Should any governmental authority having jurisdiction over the Premises require that a clean up or remediation plan be prepared or that a clean up or any other remediation action be undertaken because of the presence or use of, or any spills or discharges of Hazardous Materials at the Premises by Tenant, or its employees, agents or invitees, then Tenant, at Tenant's own expense, shall prepare and submit the required plans and financial assurances, and carry out the approved plans.

5.2 Landlord's Representations. Landlord represents to Tenant that, prior to the Effective Date, Landlord has delivered to Tenant copies of all environmental reports relating to the Premises and the other property which may be leased hereunder by Tenant that are in Landlord's possession or control. Landlord further represents that, (a) no Hazardous Material is present on the Premises or the soil, surface water or groundwater thereof, including in the roofing or roof patching materials, (b) no underground storage tanks are present on the Premises, and (c) no action, proceeding or claim is pending or threatened regarding the Premises concerning any Hazardous Material or pursuant to any Environmental Law.

5.3 Indemnification/Tenant. Tenant shall indemnify, defend and hold the Landlord harmless from any and all claims, judgments, damages, penalties, fines, costs, liabilities or losses which arise during or after the Term as a result of any Hazardous Materials used or stored in the Premises by Tenant, its agents, employees or invitees in violation of Environmental Laws. This indemnification of Landlord by Tenant includes, without limitation, costs, incurred in connection with any investigation of site conditions or any cleanup, remedial, removal or restoration work required by any federal, state or local governmental agency or political subdivision because of any Hazardous Material present in the soil or ground water on or under the Land, or the Premises in violation of Environmental Laws due to the release or discharge thereof by Tenant or its employees, agents or invitees, and all costs incurred to comply with Tenant's obligations under the provisions of this Article 5.

5.4 Responsibility/Landlord. Landlord shall be solely responsible for and will protect Tenant against any and all claims, judgments, damages, penalties, fines, costs, liabilities or losses as a result of any Hazardous Materials existing prior to the Commencement Date (other than any contamination caused by Tenant, its agents, employees or invitees) and any contamination caused by Landlord, its agents, employees or invitees and any Hazardous Material present at any time on or about the Premises, or the soil, air, improvements, groundwater or surface water thereof,

or the violation of any laws, orders or regulations, relating to any such Hazardous Material, except to the extent that any of the foregoing actually results from the release or emission of Hazardous Materials by Tenant or its agents, invitees or employees in violation of applicable Environmental Laws. This responsibility of Landlord includes, without limitation, costs incurred in connection with any investigation of site conditions or any cleanup, remedial, removal or restoration work required by any federal, state or local governmental agency or political subdivision because of any Hazardous Material present in the soil or ground water on or under the Land, or the Premises and all costs incurred to comply with the provisions of this Article 5.

5.5 Trash and Refuse. Tenant shall keep any trash, garbage, waste or other refuse in sanitary containers and shall regularly remove the same from the Premises. Tenant shall keep all incinerators, containers or other equipment used for the storage or disposal of such matter in a clean and sanitary condition.

5.6 Hazardous Material Defined. As used herein, the term "Hazardous Material" means any hazardous or toxic substance, material or waste which is or becomes regulated by any local or state governmental authority, or the United States Government. The term "Hazardous Material" includes, without limitation, any material or substance which is defined as a hazardous waste or hazardous substance or similar term denoting a hazard to the environment under any applicable state or federal laws, rules or regulations (" Environmental Laws") governing the use, storage or disposal of such Hazardous Materials, including any substance (a) designated as a "hazardous substance" pursuant to Section 311 of the Federal Water Pollution Control Act (33 U.S.C. §1317j); (b) defined as a "hazardous waste" pursuant to Section 1004 of the Federal Resource Conservation and Recovery Act, 42 U.S.C. §6901 et seq. (42 U.S.C. §6903); or (c) defined as a "hazardous substance" pursuant to Section 101 of the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §9601 et seq. (42 U.S.C. §9601).

5.7 Definitions. As used in this Article 5, the following terms have the following definitions:

"Agencies" means any federal, state, or local governmental authorities, agencies, or other administrative bodies with jurisdiction over Tenant or the Premises.

"Environmental Laws" means any federal, state, or local environmental, health, or safety related laws, regulations, standards, court decisions, ordinances, rules, codes, orders, decrees, directives, guidelines, permits, or permit conditions, currently existing and as amended, enacted, issued, or adopted in the future relating to Hazardous Materials that are or become applicable to Tenant or the Premises.

"Landlord's Parties" means Landlord's employees, agents, customers, visitors, invitees, licensees, contractors, designees, or subtenants.

"Tenant's Parties" means Tenant's employees, agents, customers, visitors, invitees, licensees, contractors, designees, or subtenants.

ARTICLE 6 — TAX AND INSURANCE EXPENSES

6.1 Landlord's Tax and Insurance Expenses. Tenant shall pay to Landlord as rent, in addition to the Base Rent, all of the following expenses of Landlord in connection with the Premises during each Lease Year ("Landlord's Tax and Insurance Expenses"):

(a) Following the Rent Commencement Date only, Real Property Taxes as set forth in Article 10.2 below;

(b) The costs of premium for insurance to be maintained by Landlord under Section 8.5; and

(c) The amount of all deductibles under all insurance policies of Landlord maintained under Section 8.5 which are actually expended by Landlord, provided that such deductibles do not exceed $10,000.00 per occurrence.

6.2 Payment. Tenant shall pay to Landlord Landlord's Insurance Expenses within thirty (30) days after Landlord delivers to Tenant an invoice for same, which Landlord shall deliver to Tenant not earlier than sixty (60) days prior to such time any Landlord's Insurance Expenses are due and payable. All Landlord's Tax and Insurance Expenses payable under this Lease by Tenant shall be deemed "Additional Rent". In the event of Tenant's nonpayment of Additional Rent, Landlord shall have all the same rights and remedies as Landlord has for the nonpayment of Base Rent. The term "Rental" and "Rent" as used in this Lease shall mean Base Rent and Additional Rent. Tenant shall have no obligation to reimburse Landlord for any Landlord's Tax and Insurance Expenses for which Landlord fails to deliver an invoice to Tenant within three hundred sixty-five (365) days after the date the applicable Landlord's Tax and Insurance Expenses were incurred or otherwise accrued.

6.3 Landlord's Records. Landlord shall provide Tenant with copies of bills, cancelled checks or contracts relative to the Landlord's Tax and Insurance Expenses upon request. Landlord shall maintain accurate books and records for the Landlord's Tax and Insurance Expenses in accordance with generally accepted accounting principles consistently applied. Landlord shall maintain such books and records and keep copies of the actual paid bills, cancelled checks and copies of any applicable contracts for each year for the duration of the Term, as extended, and for three (3) years thereafter. The Landlord's Tax and Insurance Expenses and the books and records of Landlord, may be audited by Tenant or Tenant's authorized representative during normal business hours, upon reasonable prior notice to Landlord. If Tenant challenges Landlord's computations of Landlord's Tax and Insurance Expenses, Tenant shall give Landlord notice stating Tenant's objections. Tenant may not withhold from its rental payments the amount of such disputed items. If Tenant's audit of the Landlord's Tax and Insurance Expenses indicates that Tenant was overcharged for Landlord's Tax and Insurance Expenses, Landlord shall promptly repay all such overpayments to Tenant. If Tenant's audit of the Landlord's Tax and Insurance Expenses indicates that Tenant was overcharged for Landlord's Tax and Insurance Expenses, by an amount which is greater than or equal to three percent (3%) of the amount which should have been paid by Tenant, Landlord shall

promptly reimburse Tenant for all of Tenant's travel expenses and audit fees incurred for the audit. If there is a change in ownership of the Premises, Landlord agrees to give complete Copies of all records affecting Landlord's Tax and Insurance Expenses to the subsequent owner.

6.4 Survival. The termination of this Lease shall not affect the obligations of Landlord and Tenant pursuant to this Section 6 which arose or accrued prior to such date of termination.

ARTICLE 7 — ALTERATIONS, MAINTENANCE AND REPAIRS

7.1 Alterations. Tenant shall not make any repairs, improvements, additions or modifications to the Premises (collectively, "Alterations"), except in accordance with the provisions of this Article 7.

7.1.1 "Major Alteration" means any Alteration which Tenant elects to make which materially alters the parking area on the Land exclusive of the Building, the exterior walls or skin of the Building, the foundation of the Building or the roof of the Building. A Major Alteration does not include improvements made by Landlord or Tenant and permitted under the Construction Agreement in connection with the original construction of the Improvements. Prior to commencing work on any Major Alteration, Tenant shall first submit to Landlord plans for the proposed Major Alteration and a written request that Landlord consent thereto, which consent shall not be unreasonably withheld or delayed. Landlord may withhold its consent to any such Alteration to the exterior of the Building structure, foundation or roof of the Building or the parking areas, if Landlord reasonably determines that such Alteration will be materially detrimental to the integrity of the structure of the Building, the fair market value of the Premises or the exterior appearance of the Property. Any failure of Landlord to deliver to Tenant Landlord's detailed written objection to any proposed Major Alteration within fifteen (15) business days of Landlord's receipt of Tenant's written request therefore shall be deemed to constitute Landlord's approval of same.

7.1.2 "Other Alteration" means any Alteration other than a Major Alteration. Tenant may make any other Alteration to the Premises without the consent of Landlord so long as the cost of such other Alteration is less than $250,000.00 and such Other Alteration will not be materially detrimental to the integrity of the structure of the Building, the fair market value of the Premises or the exterior appearance of the Property. Prior to commencing work on any Other Alteration costing $250,000.00 or more, Tenant shall first submit to Landlord plans for the proposed Other Alteration and a written request that Landlord consent thereto, which consent shall not be unreasonably withheld or delayed. Landlord may withhold its consent to any such Other Alteration to the exterior of the Building structure, foundation or roof of the Building or the parking areas, if Landlord reasonably determines that such Other Alteration will be materially detrimental to the integrity of the structure of the Building, the fair market value of the Premises or the exterior appearance of the Property.

7.1.3 Additional Requirements. With respect to any Alteration made by Tenant, Tenant shall comply with the following provisions:

(a) Construction of the Alteration shall not be commenced until ten (10) business days after Landlord has received notice from Tenant setting forth the date on which the intended construction will begin so that Landlord can post an appropriate notice of nonresponsibility.

(b) Tenant shall procure all applicable construction permits and authorizations required by law before commencement of construction of any Alterations.

(c) All Alterations shall be performed in a good and workmanlike manner and shall be completed with due diligence in accordance with all applicable Laws.

(d) During the period of any construction work by Tenant on the Premises, if requested by Landlord, Tenant shall procure, or cause Tenant's contractor to procure, at no expense to Landlord, builder's "all risk" insurance and worker's compensation insurance with an insurance company satisfying the requirements set forth in Section 8.6 below.

(e) Tenant shall not be required to provide any lien or completion bond or other form of bond or security, but Tenant hereby agrees that Tenant shall keep the Premises and the Property at all times free from any liens.

(f) Tenant shall provide Landlord with "as built" plans for any Major Alteration or Other Alteration costing in excess of $250,000.00 performed by Tenant.

7.1.4 Removal of Alterations, Restoration. With the exception of Tenant's Specialty Property (as defined below), any Alterations to the Premises shall remain on and be surrendered with the Premises and title thereto shall vest in Landlord upon expiration or termination of the Term, unless otherwise agreed by Landlord. All items of Tenant's Specialty Property are Tenant's property and shall remain Tenant's property at the expiration of the Term, unless otherwise so elected by Tenant. The term "Tenant's Specialty Property" means and includes the following: (a) all Tenant's trade fixtures and business fixtures; and (b) the following: (i) all moveable partitions which are not affixed to the Premises; (ii) any other furniture, fixtures, equipment, machinery and systems, provided that the foregoing items described in clauses (i) and (ii) above were made or installed by Tenant or paid for by Tenant and which can be removed from the Premises without material damage to the structure of the Building. Landlord shall have no lien or other interest in any item of Tenant's property, including Tenant's Specialty Property. Except for Alterations which cannot be removed without structural injury to the Premises, at any time Tenant may remove Tenant's Specialty Property or other Alterations paid for by Tenant from the Premises, provided that Tenant repairs all damage caused by such removal.

7.2 Maintenance and Repair.

7.2.1 Tenant's Repairs. Tenant, at its sole cost and expense, shall maintain and make all repairs required to keep the Premises in good condition, appearance and repair, ordinary wear and tear and casualty excepted, throughout the Term of this Lease. Tenant's repair obligations shall include, without limitation, (i) all repairs and replacements to the Building roof (including roof membrane), foundation, bearing walls, and structural components of the Building and the paved parking, loading, and driving areas; (ii) all of Tenant's personal property and signs; (iii) the plate glass and windows of the Building, (iv) the electrical, utility lines, plumbing and sewage system and facilities; (v) the floor covering, wall covering and interior fixtures of the Premises; and (vi) the heating, ventilating and air conditioning equipment (" HVAC Equipment") serving the Premises. In addition, Tenant shall perform or cause others to perform regular maintenance on the elevators, elevator shafts and the central plant of the type of maintenance covered by a standard preventative maintenance contract. As part of its obligation, Tenant shall be solely responsible for the operation, repair, and maintenance of the Improvements, including, without limitation, the following:

(a) Parking areas, loading and unloading areas, trash areas, roadways, sidewalks, walkways, stairways, parkways, driveways, landscaped areas, striping, bumpers, irrigation systems, lighting facilities, building exteriors, fences and gates;

(b) Trash disposal, janitorial and security services;

(c) The cost of premium for the insurance policies to be maintained by Tenant under Section 8.4;

(d) The cost of water, sewer, gas, electricity and other utility services;

(e) Labor, salaries and applicable costs, materials, supplies and tools, used in maintaining and/or cleaning the Improvements;

7.3 Landlord's Warranties/Obligations. Landlord represents and warrants to Tenant as follows:

7.3.1 On the Commencement Date, Landlord shall deliver the Building to Tenant in full compliance with applicable laws and regulations and otherwise in the condition set forth in Sections 1.2 and 5.2 above. Landlord shall, at its sole cost and expense, promptly upon Tenant's request, remedy any violations of such delivery conditions.

7.3.2 Landlord shall, from time to time upon request of Tenant, execute such documents and instruments as Tenant may reasonably request to assign to Tenant all right, title and interest of Landlord in and to any warranties, guarantees and other contract rights with any contractors or subcontractors or consultants who have performed, or in the future will perform, work

in connection with those portions of the Premises for which Tenant is responsible for the maintenance and repair. Landlord shall ensure that all contracts and subcontracts entered into by Landlord in connection with such Improvements shall permit the assignment of such warranties, guarantees and other rights to Tenant. If any such contracts or subcontracts are not assignable to Tenant, then, at Tenant's request, Landlord shall pursue in its own name any such warranty, guaranty or other right for the benefit of Tenant, so long as Tenant reimburses Landlord for Landlord's reasonable costs and expenses incurred in connection therewith.

7.4 Payment of Liens. During the Term, Tenant shall pay for, or cause to be paid for, all labor done or materials furnished for any work of construction, repair, maintenance or alterations done by or for Tenant in, upon or about the Premises, and shall keep and hold the Land and all improvements placed thereon free, clear and harmless of, from and against all liens arising by reason of labor done or materials furnished in connection with any construction work performed in, upon or about the Premises at the request or direction of Tenant, its employees or agents. Tenant shall indemnify, defend and hold Landlord harmless from and against all damages, costs and expenses, including attorneys' fees (collectively, " Damages") which might accrue or be incurred by reason of or on account of any such lien or claim.

7.5 Discharge of Liens. Tenant shall pay and fully discharge any such lien or claim within thirty (30) days after written notice from Landlord of the existence thereof unless within such period of Tenant has notified Landlord of Tenant's intention to contest such lien or claim, or has commenced a contest thereof, in which case Section 7.6 below shall apply.

7.6 Lien Contests. Tenant shall have the right to contest the correctness or validity of any such lien or claim subject to the indemnification provisions of Section 7.4 above.

7.7 Notice of Nonresponsibility. Landlord, at all reasonable times, shall upon reasonable notice to Tenant have, the right to go upon the Premises for the purpose of posting and keeping posted thereon such notices of nonresponsibility as Landlord deems necessary for protection of the Premises from materialmen's or mechanics' liens or other claims or liens of a similar nature.

ARTICLE 8 — EXCULPATION, INDEMNITY AND INSURANCE

8.1 Exculpation of Landlord. Landlord shall not be liable to Tenant and Tenant waives all claims against Landlord for any damage, injury, deterioration or loss to a person or property ("Damage") suffered by Tenant or Tenant's property from any cause except for any claim or Damage caused by any acts, omissions, neglect or fault of Landlord, its officers, agents, contractors, representatives or employees, and except for any claim or Damage caused by any default by Landlord under this Lease.

8.2 Exculpation of Tenant. Tenant shall not be liable to Landlord and Landlord waives all claims against Tenant for any Damage to Landlord or Landlord's property from any cause except for any claim or Damage caused by any acts, omissions, neglect or fault of Tenant, its

officers, agents, contractors, representatives or employees, and except for any claim or Damage caused by any default by Tenant under this Lease.

8.3 Mutual Indemnity. Each party shall indemnify, defend and hold the other party, its officers, directors, members, parents, affiliates, employees and representatives harmless from and against all claims or Damages caused by any willful misconduct, neglect or fault of the indemnifying party, its officers, agents, contractors, representatives and employees. Each party shall further indemnify, defend and hold the other party harmless from all claims or Damages arising from any breach or default in the performance of any obligation to be performed by the indemnifying party under the terms of this Lease, and from and against all costs, attorneys' fees, expenses and liabilities incurred as a result of or arising out of such claim or any action or proceeding brought thereon. In case any action or proceeding shall be brought against a party by reason of any claims covered by this indemnity, the indemnifying party, upon notice from the other party, shall defend the same at the indemnifying party's expense by counsel reasonably approved by party to be indemnified. The provisions of this Section shall survive the expiration or sooner termination of this Lease with respect to claims or liabilities occurring or arising prior to such expiration or termination.

8.4 Tenant's Insurance. At all times during the Term and any other period of occupancy, Tenant at its sole cost and expense, shall keep in full force and effect the following insurance which may be satisfied by coverage under one or more blanket policies covering multiple properties in which Tenant and/or any of its affiliates holds interests, directly or indirectly:

8.4.1 Worker's Compensation and Employers' Liability Insurance or provide evidence to Landlord that it has adequately self insured itself as to such matters as required by and pursuant to state law;

8.4.2 Standard form property insurance insuring against the perils of fire, extended coverage, vandalism, malicious mischief, special extended all risk coverage and sprinkler leakage, as well as boiler and machinery insurance. This insurance policy shall be upon all property owned by Tenant for which Tenant is legally liable (but not including the Tenant Improvements to be constructed pursuant to the Construction Agreement or other Alterations), and which is located in the Building including, without limitation, furniture, fittings, installations, fixtures, equipment and any other personal property, in an amount not less than the full replacement value thereof with an "agreed amount" or "stipulated value" endorsement.

8.4.3 Any combination of Commercial General Liability Insurance Policy (or an equivalent), Excess Liability Policy and/or Umbrella Liability Policy insuring Tenant against any liability arising out of the leasing, use, occupancy or maintenance of the Premises such insurance shall be in the amount of Three Million Dollars ($3,000,000) Combined Single Limit for injury to, or death of, one or more persons in an occurrence, and for damage to tangible property (including loss of use) in an occurrence. The policy shall insure the hazards of the Premises and Tenant's operations thereon, and (i) shall name Landlord and any secured parties designated by Landlord as additional insureds and (ii) shall contain a cross liability provision.

8.4.4 Tenant may insure with blanket policies of insurance the liabilities and casualties specified above in this Article 8.

8.5 Landlord's Insurance. At all times during the Term, Landlord shall keep in full force and effect the following insurance which may be satisfied by coverage under one or more blanket policies covering multiple properties in which Landlord or its affiliates hold interests, directly or indirectly:

8.5.1 Standard form property insurance insuring against the perils of fire, extended coverage, vandalism, malicious mischief, special extended all risk coverage and sprinkler leakage, as well as boiler and machinery insurance, including coverage for pressure vessels, air tanks, boilers, machinery, and pressure piping. This insurance policy shall be upon all Improvements, including the Building, in an amount not less than the full replacement value thereof with an "agreed amount" or "stipulated value" endorsement. Such policy shall name Landlord and any secured parties designated by Landlord as loss payees, as their respective interests may appear and the proceeds thereof shall be used in accordance with Article 9 below.

8.5.2 Any combination of Commercial General Liability Insurance Policy (or an equivalent), Excess Liability Policy and/or Umbrella Liability Policy insuring Landlord against any liability arising out of the leasing, use, occupancy or maintenance of the Property, such insurance shall be in the amount of not less than Three Million Dollars ($3,000,000) Combined Single Limit for injury to, or death of, one or more persons in an occurrence, and for damage to tangible property (including loss of use) in an occurrence.

8.6 Certificates of Insurance. All policies shall be written in a commercially reasonable form and shall be maintained with insurance companies holding a General Policyholder's Rate of "A-" or better, and a financial rating of "VIII" or better, as set forth in the most current issue of Best's Key Rating Guide, and, with respect to Tenant's general liability insurance, shall require thirty (30) days advance written notice to Landlord of any cancellation or modification. Tenant shall deliver to Landlord prior to the time such general liability insurance is first required to be carried by Tenant under this Lease certificates of insurance ("Certificates") evidencing the above coverage with limits not less than those specified above and showing Landlord and Landlord's lender, if such lender so requires, as additional insureds under the liability policy. Tenant, within fifteen (15) days of the expiration of such policies, shall furnish Landlord with renewals or "binders" thereof. Subject to the foregoing requirements, each party shall have the right to select the insurance provider for the insurance required to be maintained by such party.

8.7 Waiver of Subrogation. All policies of insurance required hereunder or otherwise obtained by either party shall include a clause or endorsement waiving, on behalf of the insurer, any rights of subrogation against the other party. Notwithstanding anything to the contrary herein, Landlord and Tenant each hereby waive any and all rights of recovery against the other or against the officers, directors, shareholders, partners, employees, agents and representatives of the other, on account of loss or Damage occasioned to such waiving party or its property or the property of owners under its control to the extent that such loss or Damage is caused by or results from a risk

which is actually insured against, which is required to be insured against under this Lease, or which would normally be covered by all risk property insurance, without regard to the negligence or willful misconduct of the entity so released. All of Landlord's and Tenant's repair and indemnity obligations under this Lease shall be subject to the waiver contained in this paragraph. Landlord and Tenant shall each give notice to their respective insurance carriers that the foregoing mutual wavier of subrogation is contained in this Lease.

8.8 Right to Procure Insurance. If either Tenant or Landlord fails or neglects to procure or maintain any insurance required to be carried in this Lease, pay the premiums thereof or renew the same, then in any of such events, the other party, at its option, may (but shall not be required to) obtain such insurance and pay the premium therefore only after fifteen (15) days written notice (or less notice if the policy might expire) to the party failing to maintain such required insurance. The cost thereof together with interest thereon at the rate of ten percent (10%) per annum shall become due and payable as additional rent to Landlord together with Tenant's next monthly installment of Base Rent if such failure or neglect is attributable to the Tenant, or become due and payable to Tenant if such failure is attributable to Landlord.

ARTICLE 9 — DAMAGE OR DESTRUCTION

9.1 Destruction. If, during the Term, the Improvements and or the Building are totally or partially destroyed, damaged or disfigured ("Destruction") by any cause whatsoever, whether from a risk covered by the insurance described in Article 8, from a risk not covered by such insurance, or any combination of such risks, Tenant shall promptly notify Landlord of such Damage or Destruction. Subject to the terms and conditions of this Article 9, Landlord, up to the insurance limits, shall be responsible for the repair, restoration and rehabilitation to the same condition prior to such Damage or Destruction ("Restore" or "Restoration") of any Damage to or Destruction of the Improvements; Tenant shall be responsible for the repair and Restoration of any personal property of Tenant.

9.2 Application of Insurance Proceeds. The insurance proceeds maintained by Landlord and Tenant with respect to the Improvements and the Building shall be applied to the Restoration of the Improvements.

9.2.1 If the total estimated costs of Restoration of Improvements (other than Tenant's personal property), shall exceed any amount of proceeds of insurance applicable thereto and available therefore, such excess shall be borne and paid solely by Tenant.

9.2.2 If the net proceeds of insurance applicable to the Improvements and Building exceed the total actual cost of Restoration, the balance remaining after payment of the cost of such Restoration to the Premises shall be paid to the party which maintains the insurance policy.

9.2.3 Base Rent and other charges under this Lease shall be equitably abated from the date of the occurrence of any Damage until such Damage is fully repaired or restored.

9.3 Right to Terminate. If the Premises are subject to any Destruction, then Tenant shall have the option to terminate this Lease if the Premises cannot be, or are not in fact, fully restored to their prior condition within one hundred twenty (120) days after the damage.

ARTICLE 10 — TAXES

10.1 Personal Property Taxes. Tenant shall pay prior to delinquency all taxes assessed against and levied upon trade fixtures, furnishings, equipment and all other personal property of Tenant contained in, on or about the Premises. When practicable, Tenant shall cause said trade fixtures, furnishings, equipment and all other personal property to be assessed and billed separately from the real property of Landlord. Landlord and Tenant acknowledge and agree that portions of Tenant's personal property taxes may be subject to abatements pursuant to abatement agreements by and between Tenant and various taxing authorities.

10.2 Real Property Taxes. From and after the Rent Commencement Date only, Tenant agrees to pay an amount equal to the full value of Real Property Taxes levied upon the Land and the Premises as would otherwise be due from a non-exempt owner before the later of (i) thirty (30) days following Tenant's receipt of the tax invoice, of (ii) the date such taxes would be delinquent. Landlord shall ensure that the Land will be assigned separate assessor parcel numbers and will not be assessed as part of any other real property owned by Landlord or other parties. " Real Property Taxes" means real estate taxes levied or assessed against the Premises and the Land as finally determined to be legally payable by legal proceedings after taking into account any available discount, excluding any interest or penalty for late payment. The term " Real Property Taxes" as used in this Lease shall be deemed to exclude any transfer, gift, succession, mortgage, capital stock, corporation, income or profit taxes, or Landlord's gross profit tax, or any special assessment(s) for highway, street, or traffic control improvements, for sanitary or storm sewers, for utilities, or for other off-site improvements in connection with the development of the Premises where the work in connection with such off-site improvements shall have been commenced on or before the Commencement Date, or for any income, franchise, corporate, personal property, capital levy, capital stock, gross receipts, excess profits, transfer, revenue, estate, inheritance, gift, devolution or succession tax payable by Landlord, or any other tax or assessment upon, or measured by, the rent payable by Tenant hereunder. If any tax or assessment may be paid in installments under applicable laws, only the current annual installment for such tax or assessment shall be included within the meaning of the term " Real Property Taxes." If Landlord shall actually receive a refund of real estate charges for any tax year in which Tenant has paid its proportionate share of real estate charges, Landlord shall refund Tenant's proportionate share of such refund to Tenant, and this provision shall survive termination of this Lease. Tenant shall have the right to contest Real Property Taxes so long as Tenant indemnifies Landlord from any liability as a result thereof.

ARTICLE 11 — UTILITIES

11.1 Installation. The utilities and services that Landlord is to incorporate into construction of the Premises, if any, are described in the Construction Agreement. Subject to the terms of Section 7.1 of this Lease, Tenant shall have the right to install at any time emergency power

equipment servicing the Premises and Landlord shall cooperate with Tenant's installation, use and testing thereof.

11.2 Payment. Tenant shall make arrangements for and pay for all water, gas, power, electrical current, other utilities, heat and air conditioning used by or supplied to the Premises. Nothing in the foregoing sentence shall be construed to relieve Landlord of its obligations for the construction and maintenance of utility systems to the extent such construction is required pursuant to the terms of this Lease. If the Premises should become not reasonably suitable for Tenant's use as a consequence of cessation of utilities or other services, interference with access to the Premises, legal restrictions or the presence of any Hazardous Material which does not result from the release or emission of such Hazardous Material by Tenant or its agents, employees or invitees, and in any of the foregoing cases the interference with Tenant's use of the Premises persists for seven (7) days, then Tenant shall be entitled to an equitable abatement of rent to the extent of the interference with Tenant's use of the Premises occasioned thereby. If the interference persists for more than ninety (90) days, Tenant shall have the right to terminate this Lease.

ARTICLE 12 — ASSIGNMENT AND SUBLETTING

12.1 Restrictions on Assignment. Except as provided elsewhere herein, Tenant shall neither voluntarily nor by operation of law assign, sell or otherwise transfer all or any part of Tenant's leasehold estate hereunder, without Landlord's prior written consent, which consent shall not be unreasonably withheld or delayed. Consent by Landlord to one or more assignments of this Lease shall not constitute a waiver of Landlord's right to require consent to any future assignment. Notwithstanding anything to the contrary herein, Tenant may, without Landlord's prior written consent and without constituting an assignment or sublease hereunder, sublet the Premises or assign this Lease to (a) an entity controlling, controlled by or under common control with Tenant, (b) a successor entity related to Tenant by merger, consolidation, nonbankruptcy reorganization, or government action, or (c) a purchaser of substantially all of Tenant's assets located in the Premises. A sale or transfer of Tenant's capital stock shall not be deemed an assignment, subletting or any other transfer of this Lease or the Premises.

12.2 Tenant's Notice. Except as provided in Section 12.1 above, if Tenant desires at any time to assign this Lease, and if Landlord's consent thereto is required pursuant to Section 12.1, then Tenant first shall notify Landlord of its desire to do so and shall submit in writing to Landlord (i) the name and legal composition of the proposed assignee; (ii) the nature of the proposed assignee's business to be carried on in the Premises; and (iii) such reasonable business and financial information as Landlord may reasonably request concerning the proposed assignee. With respect to an assignment, the assignee must expressly assume all prospective obligations of Tenant under this Lease accruing after the assignment. Notwithstanding the assumption of the obligations of this Lease by the assignee, no assignment, even with the consent of Landlord, shall relieve Tenant of liability under this Lease. The obligations and liability of Tenant hereunder shall continue notwithstanding the fact that Landlord may accept rent and other performance from the assignee. The acceptance of rent by Landlord from any other person shall not be deemed to be a waiver by Landlord of any provision of this Lease or to be a consent to any assignment.

12.3 Restrictions on Subletting. Tenant may sublease all or portions of the Premises from time to time with the consent of Landlord, and Landlord shall give notice to Tenant of its consent or denial within fifteen (15) business days after receipt of reasonable information regarding the proposed sublessee. Such consent shall be in the reasonable discretion of the Landlord. Any such sublease shall be subject to the terms and provisions of this Lease. Without Landlord's consent, Tenant may enter into license agreements with third party providers, to provide food or other services to Tenant's employees. No sublessee shall have a right to further sublet without Landlord's prior consent, such consent shall be in the reasonable discretion of the Landlord, and any assignment by a sublessee of the sublease shall be subject to Landlord's prior consent in the same manner as if Tenant were entering into a new sublease. No sublease, once consented to by Landlord shall be modified or terminated by Tenant without Landlord's prior consent, such consent being in the reasonable discretion of the Landlord.

12.4 Failure to Comply. Any sale, assignment, mortgage or transfer of this Lease or subletting which does not comply with the provisions of this Section 12 shall be void.

ARTICLE 13 — DEFAULTS; REMEDIES

13.1 Late Payments. If any payment or amount due by Tenant is received more than five (5) days after such amount is due, such past due amount shall bear interest from the date it was due until paid, at a rate often percent (10%).

13.2 Events of Default by Tenant. The occurrence of anyone or more of the following events shall constitute a material default of this Lease by Tenant:

13.2.1 The failure by Tenant to make any payment of rent or any other payment required to be made by Tenant hereunder, as and when due, where such failure shall continue for a period often (10) business days after a written notice thereof from Landlord to Tenant.

13.2.2 The failure by Tenant to observe or perform any of the covenants, conditions or provisions of this Lease to be observed or performed by Tenant, other than as described in Section 13.2.1 hereof, where such failure shall continue for a period of thirty (30) days after written notice thereof from Landlord to Tenant; provided further, that if the nature of Tenant's default is such that more than thirty (30) days is reasonably required for its cure, then Tenant shall not be deemed to be in default if Tenant commences such cure within said thirty (30) day period and thereafter diligently prosecutes such cure to completion.

13.2.3 The making by Tenant of any general assignment for the benefit of creditors; the filing by or against Tenant of a petition to have Tenant adjudged a bankrupt or a petition for reorganization or arrangement under any law relating to bankruptcy (unless, in the case of a petition filed against Tenant, the same is dismissed within sixty (60) days); the appointment of a trustee or receiver to take possession of substantially all of Tenant's assets located at the Premises, or of Tenant's interest in this Lease, where possession is not restored to Tenant within sixty (60) days; or the attachment, execution or other judicial seizure of substantially all of Tenant's assets located at

the Premises or of Tenant's interest in this Lease, where such seizure is not discharged within sixty (60) days.

13.2.4 Notices given pursuant to this Section 13.2 shall specify the alleged default and the applicable Lease provisions and shall demand that Tenant perform the provisions of this Lease or pay the rent that is in arrears, as the case may be, within the applicable period of time or vacate the Premises. No such notice shall be deemed a forfeiture or a termination of this Lease unless Landlord so elects in the notice.

13.3 Remedies of Landlord. Following any material default by Tenant as defined in Section 13.2 hereof which is not cured within the time set forth therein, and at any time thereafter prior to Tenant's cure, and without limiting Landlord's exercise of any right or remedy which Landlord may have in law or equity, Landlord shall have the right to: (i), terminate this Lease after giving Tenant thirty (30) days written notice of its intention to do so and in accordance with any laws governing such termination, and Tenant shall then surrender the Premises to Landlord; or (ii) enter and take possession of the Premises, in accordance with any laws governing such repossession, and remove Tenant, after having terminated the Lease; and / or (iii) declare all the rents and fees due or that shall be due under this Lease accelerated, such acceleration shall cause all such amounts to be immediately due and payable by Tenant. Landlord's exercise of any of its remedies or its receipt of Tenant's keys shall not be considered an acceptance or surrender of the Premises by Tenant. Landlord waives any right of distraint, distress for rent or Landlord's lien that may arise at law.

13.4 Landlord Defaults. If Landlord fails to perform any obligations under this Lease and such failure continues for a period of thirty (30) days following the date of Tenant's written notice to Landlord specifying such failure (or such longer period as may be reasonably necessary to cure such failure, as long as Landlord continues to exercise reasonable efforts to cure same) then in such event Tenant may, in addition to exercising any and all remedies available at law or in equity, perform such obligations on behalf of Landlord. If Landlord has not cured such default, Landlord will reimburse Tenant for all third party costs actually incurred by Tenant to cure such default, together with interest thereon at the rate of ten percent (10%) per annum. Tenant may act sooner in the event of an emergency involving imminent risk of death, personal injury or property damage as long as Tenant has first taken reasonable measures to notify Landlord, and once the emergency has come under control, permits Landlord to control any remaining corrective measures.

13.5 Remedies Cumulative: No Waiver. All rights, options and remedies of Landlord and Tenant contained in this Lease shall be construed and held to be cumulative, and no one of then shall be exclusive of the other, and each party shall have the right to pursue any one or all of such remedies or any other remedy or relief which may be provided by law or in equity (including injunctive relief), whether or not stated in this Lease. No waiver of any default of either party hereunder shall be implied from any acceptance of any rent or other payments due hereunder or any omission by the non defaulting party to take any action on account of such default if such default persists or is repeated, and no express waiver shall affect defaults other than as specified in said waiver. The consent or approval of Landlord or Tenant to or of any act by the other party

requiring such consent or approval shall not be deemed to waive or render unnecessary the consenting party's consent or approval to or of any subsequent similar acts by the other party.

ARTICLE 14 — CONDEMNATION

14.1 Definition. As used in this Article 14:

14.1.1 "Condemnation" means (a) the exercise of any governmental power, whether by legal proceedings or otherwise, by a condemnor and (b) a voluntary sale or transfer by Landlord to any condemnor, while legal proceedings for condemnation are pending.

14.1.2 "Date of Taking" means the date the condemnor has the right to possession of all or part of the Premises or any interest thereon being condemned.

14.1.3 "Award" means all compensation, sums or anything of value awarded, paid or received on a total or partial condemnation of the Land, any improvements thereon, any personal property or trade fixtures located at the Premises without regard for the person or entity entitled to recover or receive such award.

14.1.4 "Condemnor" means any public or quasi public authority having the power of condemnation.

14.2 Taking. If, at any time prior to the expiration of the Term, there is any taking of all or any part of the Premises or any interest in this Lease by Condemnation, this Lease shall terminate as to the portion of the Premises being Condemned. Tenant may recover an award for Tenant's relocation expenses, loss of goodwill, any improvements paid for or installed by Tenant, Tenant's personal property and equipment, the "bonus value" of this Lease and, except as provided below, such other costs and losses incurred by Tenant and generally compensable to Tenant under the laws of the state where the Premises is located. Such recovery shall only be made against Landlord if landlord or the City of Danville, Virginia is responsible for said taking. Landlord shall be entitled to receive, subject to the rights of any mortgagee of the Property, the compensable value of Landlord's fee interest in the Property and such other compensation generally available to Landlord under the laws of the state where the Premises is located.

14.3 Entire Taking. If the entire Premises are taken by Condemnation, this Lease shall terminate effective upon the Date of Taking.

14.4 Partial Taking. If part, but not all, of the Property shall be taken by Condemnation, this Lease shall terminate as to the part so taken and remain in effect as to the remainder not so taken. If part, but not all, of the Property is taken by Condemnation, effective as of the Date of Taking, the Base Rent then in effect shall be equitably abated in proportion to the area of the Premises and the Land subject to the taking. With respect to any partial Condemnation of the Property, if such partial Condemnation affects any Improvements, then Tenant, shall take reasonable steps to restore the Improvements to a condition as close as practical to the condition existing

immediately prior to such Condemnation. In addition, Tenant shall have the right to terminate this Lease if, as a result of the partial taking, Tenant's use of the Premises is materially impaired.

ARTICLE 15 — EXTERIOR AND SIGN REGULATION

The parties acknowledge and recognize that the Property is located within the City's Tobacco Warehouse District. Therefore Tenant agrees that it will not alter the exterior of the building in a way as to damage or sacrifice its architectural/historic integrity. Further, Tenant agrees to utilize signage that is appropriate to the building and of similar style and nature to surrounding properties. Tenant shall conform with all zoning and building regulations of the City and the State regarding and renovations of the Property.

ARTICLE 16 — WARRANTIES

16.1 Title. Landlord warrants and represents to Tenant that Landlord has full authority to enter into this Lease. Prior to the date of this Lease, Landlord shall provide Tenant with a copy of an owner's policy of title insurance recently issued to Landlord showing that Landlord owns the Land, subject only to liens and encumbrances which could have no adverse impact on the rights and benefits accruing to or anticipated to be enjoyed by Tenant hereunder. Landlord hereby represents to Tenant that the information contained in said title insurance policy is true and correct as of the date of this Lease and the recordation of a memorandum thereof (provided the memorandum is recorded within sixty (60) days after the date this Lease is executed by Landlord and Tenant).

16.2 Public and Private Approvals and Entitlements . Landlord warrants and represents that it has obtained all public and private approvals and entitlements necessary to permit the development of the Improvements.

ARTICLE 17 — SURRENDER

17.1 Surrender of Lease Not Merger. A surrender of this Lease by Tenant, a cancellation of this Lease by mutual agreement between Landlord and Tenant, or a termination of this Lease for any reason shall not automatically work a merger.

17.2 Condition of Premises. Upon the expiration or earlier termination of the Term, Tenant shall surrender possession of the Premises to Landlord in reasonably good order, condition and repair, excepting reasonable wear and tear, casualties, condemnation and any damage or repair that Landlord is required to restore or repair pursuant to this Lease. In such event, Tenant, at its expense, shall promptly remove or cause to be removed from the Premises all debris, rubbish, furniture, and other similar articles of movable personal property owned by Tenant or placed by Tenant at its expense in the Premises, and all similar articles of any other persons claiming under Tenant. In addition, Tenant may elect to remove any of Tenant's Specialty Property and other personal property or Alterations owned by Tenant or installed or placed by Tenant at its expense in the Premises. Tenant also shall repair, at its sole cost and expense, all damages which removals from or Restoration of the Premises may cause.

ARTICLE 18 — ESTOPPEL CERTIFICATE; SUBORDINATION; NONDISTURBANCE; NOTICE TO LANDLORD'S MORTGAGEE

18.1 Estoppel Certificate. The parties agree, at any time and from time to time, upon not less than twenty (20) days' prior written notice by either, to execute, acknowledge and deliver to the other, by deposit in the United States mail, a statement in writing certifying that (i) this Lease is unmodified, in full force and effect (or, if there have been modifications, that the same is in full force and effect as modified, and identifying the modification), (ii) the date to which the rent and other charges have been paid in advance, if any, (iii) whether or not there is any existing default by either party or notice thereof served by either party, (iv) and such other information as may be reasonably requested by such party, provided that such statement shall not modify any party's rights or obligations under this Lease or impose any additional liability on any party. Any such statement may be conclusively relied upon by any prospective purchaser, assignee, encumbrancer of the Premises or the Lease.

ARTICLE 19 — QUIET ENJOYMENT

19.1 Quiet Enjoyment. Subject to Landlord's rights under Article 13, Tenant shall and may peaceably and quietly have, hold and enjoy the Premises in accordance with this Lease.

ARTICLE 20 — GENERAL PROVISIONS

20.1 Severability. The invalidity, illegality or unenforceability of any provision of this Lease as determined by a court of competent jurisdiction shall in no way affect the validity, legality or enforceability of any other provision hereof.

20.2 Time. Time is of the essence in the performance of all terms, covenants, warranties and conditions of this Lease.

20.3 Captions. The article and paragraph captions hereto have been inserted solely as a matter of convenience and such captions in no way shall be deemed to define or limit the scope or intent of any provision of this Lease.

20.4 Notices. Any notice, request, approval or other communication required or permitted under this Lease shall be in writing and will be deemed to have been duly delivered upon personal delivery, or on the second business day after deposit with Federal Express or other overnight courier service, or as of the third business day after mailing by United States registered or certified mail, return receipt requested, postage prepaid, addressed to Landlord and Tenant respectively at the addresses set forth below or at such other addresses as may from time to time be designated in writing by Landlord or Tenant by notice pursuant hereto.

Landlord:

Industrial Development Authority of Danville
C/O The City Attorney's Office
P.O. Box 3300
Danville, VA 24543
(434) 799 - 5122

Tenant:

Luna Innovations Inc.
2851 Commerce Street
Blacksburg, VA 24060
Attn: Kent A Murphy

20.5 Waiver. No waiver of any provision hereof shall be deemed a waiver of any other provision hereof. Consent to or approval of any act by one of the parties hereto shall not be deemed to render unnecessary the obtaining of such party's consent to or approval of any subsequent act. The acceptance of rent hereunder by Landlord shall not be a waiver of any preceding breach by Tenant or any provision hereto, other than the failure of Tenant to pay the particular rent so accepted, regardless of Landlord's knowledge of such preceding breach at the time of acceptance of such rent.

20.6 Holding Over. If Tenant continues to use the Premises, or any part of the Premises, after the expiration of the Term, then Tenant's holdover tenancy shall be on a month-to-month basis, and shall not be construed as a tenancy at sufferance. Tenant shall pay Landlord monthly during the month-to-month holdover term a sum equal to (i) 150% of the Base Rent which was payable for the last month of the Term or any renewal term, together with (ii) any additional charges payable by Tenant under this Lease for the period of such holdover.

20.7 Cumulative Remedies. No remedy or election hereunder shall be deemed exclusive but, wherever possible, shall be cumulative with all other remedies at law or in equity.

20.8 Successors. Subject to any provision in this Lease restricting assignment, subletting or other transfers by Landlord or Tenant, each and all of the covenants, agreements, obligations conditions and provisions of this Lease shall inure to the benefit of and shall bind (as the case may be) not only the parties hereto but each and all of the heirs, executors, administrators, successors and assigns of the respective parties hereto. Whenever a reference is made herein to Landlord or Tenant, such reference shall be deemed to include the respective heirs, executors, administrators, successors and assigns of Landlord or Tenant. All of the promises, covenants, agreements, obligations, conditions and provisions contained in this Lease shall be construed to be, and as, covenants running with the Land, in the case of Landlord, and covenants running with Tenant's leasehold interest, in the case of Tenant, subject to the provisions of this Lease.

20.9 Choice of Law. This Agreement and the performance thereof shall be governed by and enforced under the laws of the Commonwealth of Virginia, and if legal action by either party is necessary for or with respect to the enforcement of any or all of the terms and conditions hereof, then exclusive venue therefore shall lie in the City of Danville, Virginia.

20.10 Attorneys' Fees. In the event either Landlord or Tenant brings any suit or other proceeding with respect to the subject matter or enforcement of this Lease or with respect to a breach of a representation or warranty hereunder, the prevailing party as determined by the court before which such suit or proceeding is commenced) shall, in addition to such other relief as may be awarded, be entitled to recover its reasonable attorneys fees.

20.11 Entry by Landlord. Landlord and Landlord's authorized representatives and agents, at their sole risk, shall have the right to enter the Premises during business hours and upon prior notice to Tenant of not less than 48 hours for the purpose of inspecting same, showing the same to prospective purchasers or lenders, and making such alterations, repairs, improvements or additions to the Premises as Landlord may be required or permitted to make hereunder. Landlord, at its sole risk, may enter the Premises without 48 hours notice in the case of an emergency, provided Landlord has first made a reasonable attempt to notify Tenant's security personnel. Notwithstanding the above, if Landlord is required to enter into areas designated by Tenant as restricted access areas, Landlord or its representative shall be escorted by a Tenant representative at all such times. Any entry by Landlord and Landlord's agents shall not impair Tenant's operations more than reasonably necessary, and shall comply with Tenant's reasonable security measures.

20.12 Tenant's Authority. Tenant is a corporation and each individual executing this Lease on behalf of said corporation is duly authorized to execute and deliver this Lease on behalf of said corporation, and this Lease is binding upon said corporation in accordance with its terms.

20.13 No Third Party Rights Conferred. Except as otherwise provided herein, nothing expressed or implied is intended, or shall be construed, to confer upon or grant to any third person any rights or remedies under or by reason of any term or condition contained in this Lease.

20.14 Integration. This Lease and the documents referred to herein and the agreements attached hereto as exhibits cover in full each and every agreement of every kind or nature whatsoever between the parties hereto concerning the Premises and all preliminary negotiations and agreements of whatsoever kind or nature are merged herein. No verbal agreement shall be held to vary the provisions hereof, any law or custom to the contrary notwithstanding.

20.15 Number; Gender. Whenever the context of this Lease requires, the masculine gender includes the feminine or neuter, and the singular number includes the plural.

20.16 Construction. Landlord and Tenant agree that each party has had its legal counsel review and approve of the form of this Lease, and each has participated in the preparation of this Lease. Each party agrees to waive any right to have the provisions of this Lease construed against any party primarily responsible for drafting same.

20.17 Consents. Unless otherwise specifically provided in this Lease, whenever consent or approval of either party is required, that party shall not unreasonably withhold such consent or approval.

20.18 Exhibits. Exhibits A through C, inclusive, are each attached to this Lease and are incorporated herein by reference. Any reference to the term "Lease" also shall be deemed to refer to any applicable Exhibit.

20.19 Modification. None of the covenants, terms or conditions of this Lease to be kept and performed by Landlord or by Tenant shall be altered, waived, modified, changed or abandoned in any manner, except by a written instrument, duly executed (and, where applicable, acknowledged) and delivered by the parties hereto.

20.20 No Partnership. Nothing in this Lease, including the agreements of Tenant contained herein, shall be construed to indicate in any way that Tenant is a partner of, or a joint venturer with, Landlord in respect of any construction required or permitted hereby or any other matter.

20.21 Waiver of Consequential Damages. Neither Landlord nor Tenant shall be liable to the other under or in connection with this Lease for any consequential, exemplary, special or punitive damages, and both Landlord and Tenant waive, to the full extent permitted by law, any claim for consequential, exemplary, special or punitive damages.

20.22 Force Majeure. After the Commencement Date, neither party shall be responsible to the other for any losses resulting from the failure to perform any terms or provisions of this Lease if the party's failure to perform is attributable to war, riot, acts of God or the elements or any other unavoidable act not within the control of the party whose performance is interfered with and which by reasonable diligence such party is unable to prevent. However, neither party shall be excused from the timely performance of its obligations under this Lease for a period of time greater than ninety (90) days on account of force majeure.

20.23 Proprietary Rights. Landlord has no right to market, advertise, promote or use any of Tenant's names, logos, images or property, in connection with the Building or otherwise, without the express written consent of Tenant. All Tenant trademarks, tradenames and logos remain the exclusive property of Tenant and/or its affiliates.

20.24 Right of Purchase. Tenant shall have the right to purchase the Premises subject to the conditions contained in section 3.1 above.

IN WITNESS WHEREOF: Landlord and Tenant have duly executed this Lease on the day and year first written above.

[Signatures on following page.]

LANDLORD:

INDUSTRIAL DEVELOPMENT
AUTHORITY OF DANVILLE,
a political subdivision of
the Commonwealth of Virginia

By: /S/ RICHARD L. TURNER
Name: **Richard L. Turner**
Title: **Chairman**

TENANT:

LUNAINNOVATIONS INC.,
a Delaware corporation

By: /S/ JOHN T. GOEHRKE
Name: **John T. Goehrke**
Title: **Chief Operating Officer**

COMMONWEALTH OF VIRGINIA §
§
CITY OF DANVILLE §

Before me Kimberly Gibson Ford on this day personally appeared Richard L. Turner known to me to be the person whose name is subscribed to the foregoing instrument and known to me to be the Chairman of Industrial Development Authority, a _____ and acknowledged to me that he executed said instrument for the purpose and consideration therein expressed, and as the act of said Lease. Given under my hand and seal of office this 18th day of October, 2005.

Notary Public

COMMONWEALTH OF VIRGINIA §
§
COUNTY OF §

Before me Melissa Blankenship on this day personally appeared John Goehrke known to me to be the person whose name is subscribed to the foregoing instrument and known to me to be the COO of Luna Innovations, a _____ and acknowledged to me that he executed said instrument for the purpose and consideration therein expressed, and as the act of said Lease. Given under my hand and seal of office this 9th day of December, 2005.

Notary Public

EXHIBIT "A"

Legal Description of the Land

Being in fact property located at 521 & 525 Bridge Street and identified as Parcel Identification Number 92-21485 in the City of Danville; further described as lot fronting 68.5 feet on Bridge Street in the City of Danville, Virginia; and being the same property as identified in the attached City of Danville-Real Estate Assessment Card.

WORK YEAR 2004

PAGE NO. 1 CARD # 01 OF 01

CITY OF DANVILLE - ASSESSMENT CARD

DATE 07/12/2004 ROUTING NO. - -

PARCEL ID 21485 DISTRICT 92 PROPERTY LOCATION 521 BRIDGE ST & 525 PARCEL NUM 95-4-8

NBHD	00001	Average
DESIRE	3	Average
TREND	02	Static
CLASS	7434	Storage Whs - Ex - Local
LUC	743	Storage Whs-Exempt-Local
ZONING	TWC	Tobacco Warehouse Comm
PROP.TYPE	4	Commercial
CI TYPE		
CI AREA	1	
TOPOGRAPHY		
ACCESS		
UTILITIES		
PARKING		
TAX STATUS		

OWNERSHIP
INDUSTRIAL DEVELOPMENT
AUTHORITY OF DANVILLE
VIRGINIA

MAILING ADDRESS
INDUSTRIAL DEVELOPMENT
AUTHORITY
P O BOX 3300
DANVILLE VA 24541

LEGAL DESCRIPTION
68.5 FT NO 4 BRIDGE ST

SURVIVORSHIP NO

MORT/HANDLING CODE

SALES HISTORY

TYPE	SOURCE	SALESDATE	BOOK	PAGE	VALIDITY	SALE PRICE
Improved/Bldg		03/25/2004	D 04	1426	02	120,000

ASSESSMENT SUMMARY

YEAR	LAND	USE	IMPROVEMENT	TOTAL
2004	13,700	13,700	34,200	47,900

APPROACH TO VALUE COST C&GFLAG

	LAND	CURRENT USE	IMPROVEMENTS	TOTALS
COST	$13,700	$0	$34,200	$47,900
INCOME	$13,700	$0	$0	$0
MARKET	$13,700	$0	$0	$13,700
OVERRIDE	$0	$0	$0	$0
OR REASON				

LAND INFORMATION

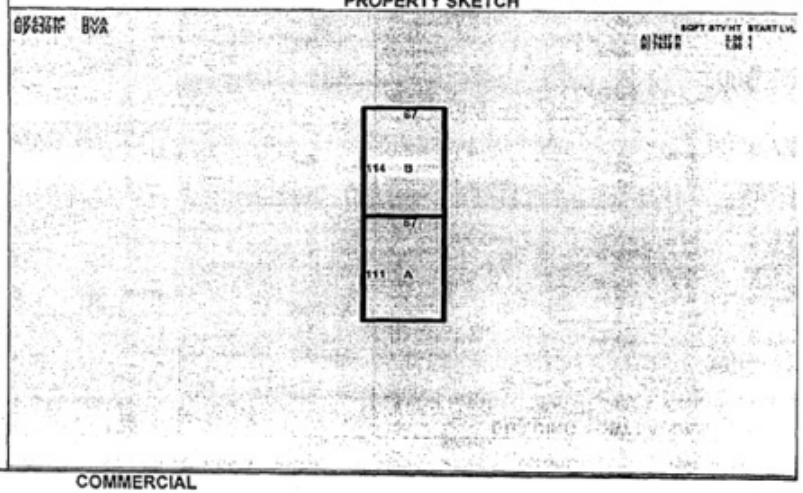
TYPE	ACT FRONT ACRES/SQFT	EFF FRONT	EFF DEPTH	UNITS	RATE	OVER RIDE	DEPTH FACTOR	ADJ RATE	BASE VALUE	LAND ADJUSTMENTS ADJUSTMENT #1 RSN % $	ADJUSTMENT #2 RSN % $	ADJUSTMENT #3 RSN % $	ADJUSTMENT #4 RSN % $	VALUE
S01	15180			0.000	1.00	Y		1.00	15,180	TOP 90 0	100 0	100 0	100 0	13,660

TOTAL ACRE 0.3480

TOTAL LAND VALUE 13,700

PROPERTY PHOTO

PROPERTY SKETCH



COMMERCIAL

EXHIBIT "B"

CONSTRUCTION AGREEMENT

(With Site Plan)

AIA DOCUMENT A111-1997

Standard Form of Agreement Between Owner and Contractor

where the basis for payment is the COST OF THE WORK PLUS A FEE with a negotiated Guaranteed Maximum Price

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is not intended for use in competitive bidding.

AIA Document A201-1997, General Conditions of the Contract for Construction, is adopted in this document by reference.

This document has been approved and endorsed by The Associated General Contractors of America.

AGREEMENT made as of the Seventh day of June in the year 2004
(In words, indicate day, month and year)

BETWEEN the Owner:
(Name, address and other information)
Luna Innovations
2851 Commerce Street
Blacksburg, VA 24060

and the Contractor:
(Name, address and other information)
John W. Daniel & Company, Inc.
223 Riverview Drive
Danville, VA 24541

The Project is:
(Name and address)
Luna Innovations
526 Bridge Street
Danville, VA 24541

The Architect is:
(Name, address and other information)
Michael J. Maurakis
223 Riverview Drive, Suite C
Danville, VA 24541

The Owner and Contractor agree as follows.

© 1997 AIA®
AIA DOCUMENT A111-1997
OWNER-CONTRACTOR AGREEMENT

The American Institute of Architects
1735 New York Avenue, N.W.
Washington, D.C. 20006-5292

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement; these form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than Modifications, appears in Article 15. If anything in the other Contract Documents is inconsistent with this Agreement, this Agreement shall govern.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 RELATIONSHIP OF THE PARTIES

The Contractor accepts the relationship of trust and confidence established by this Agreement and covenants with the Owner to cooperate with the Architect and exercise the Contractor's skill and judgment in furthering the interests of the Owner; to furnish efficient business administration and supervision; to furnish at all times an adequate supply of workers and materials; and to perform the Work in an expeditious and economical manner consistent with the Owner's interests. The Owner agrees to furnish and approve, in a timely manner, information required by the Contractor and to make payments to the Contractor in accordance with the requirements of the Contract Documents.

ARTICLE 4 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

4.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.

(Insert the date of commencement, if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)

If, prior to commencement of the Work, the Owner requires time to file mortgages, mechanic's liens and other security interests, the Owner's time requirement shall be as follows:

4.2 The Contract Time shall be measured from the date of commencement.

4.3 The Contractor shall achieve Substantial Completion of the entire Work not later than 180 days from the date of commencement, or as follows:
(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. Unless stated elsewhere in the Contract Documents, insert any requirements for earlier Substantial Completion of certain portions of the Work.)

, subject to adjustments of this Contract Time as provided in the Contract Documents.
(Insert provisions, if any, for liquidated damages relating to failure to complete on time, or for bonus payments for early completion of the Work.)

ARTICLE 5 BASIS FOR PAYMENT

5.1 CONTRACT SUM

5.1.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum is the Cost of the Work as defined in Article 7 plus the Contractor's Fee.

5.1.2 The Contractor's Fee is: 7%
(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee, and describe the method of adjustment of the Contractor's Fee for changes in the Work.)

5.2 GUARANTEED MAXIMUM PRICE

5.2.1 The sum of the Cost of the Work and the Contractor's Fee is guaranteed by the Contractor not to exceed **One Million Seventy Five Thousand**---------- Dollars ($ **1,075,000**), subject to additions and deductions by Change Order as provided in the Contract Documents. Such maximum sum is referred to in the Contract Documents as the Guaranteed Maximum Price. Costs which would cause the Guaranteed Maximum Price to be exceeded shall be paid by the Contractor without reimbursement by the Owner.
(Insert specific provisions if the Contractor is to participate in any savings.)

5.2.2 The Guaranteed Maximum Price is based on the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:
(State the numbers or other identification of accepted alternates. If decisions on other alternates are to be made by the Owner subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when the amount expires.)

5.2.3 Unit prices, if any, are as follows:

5.2.4 Allowances, if any, are as follows:
(Identify and state the amounts of any allowances, and state whether they include labor, materials, or both.)

Architectural Fee - $8,000
Point up side brick - $3,500
Cabinets - $2,400
Caulking - $500
Connect electric to owner equipment - $7,300
Design - $15,000

5.2.5 Assumptions, if any, on which the Guaranteed Maximum Price is based are as follows:

No ductwork for down draft tables
Ceiling plennum return system
No parking lot
No clearing of trees at rear
No city electrical fees
No tap fees
No abatment of hazardous material

5.2.6 To the extent that the Drawings and Specifications are anticipated to require further development by the Architect, the Contractor has provided in the Guaranteed Maximum Price for such further development consistent with the Contract Documents and reasonably inferable therefrom. Such further development does not include such things as changes in scope, systems, kinds and quality of materials, finishes or equipment, all of which, if required, shall be incorporated by Charge Order.

ARTICLE 6 CHANGES IN THE WORK

6.1 Adjustments to the Guaranteed Maximum Price on account of changes in the Work may be determined by any of the methods listed in Subparagraph 7.3.3 of AIA Document A201-1997.

6.2 In calculating adjustments to subcontracts (except those awarded with the Owner's prior consent on the basis of cost plus a fee), the terms "cost" and "fee" as used in Clause 7.3.3.3 of AIA Document A201-1997 and the terms "costs" and "a reasonable allowance for overhead and profit" as used in Subparagraph 7.3.6 of AIA Document A201-1997 shall have the meanings assigned to them in AIA Document A201-1997 and shall not be modified by Articles 5, 7 and 8 of this Agreement. Adjustments to subcontracts awarded with the Owner's prior consent on the basis of cost plus a fee shall be calculated in accordance with the terms of those subcontracts.

6.3 In calculating adjustments to the Guaranteed Maximum Price, the terms "cost" and "costs" as used in the above-referenced provisions of AIA Document A201-1997 shall mean the Cost of the Work as defined in Article 7 of this Agreement and the terms "fee" and "a reasonable allowance for overhead and profit" shall mean the Contractor's Fee as defined in Subparagraph 5.1.2 of this Agreement.

6.4 If no specific provision is made in Paragraph 5.1 for adjustment of the Contractor's Fee in the case of changes in the Work, or if the extent of such changes is such, in the aggregate, that application of the adjustment provisions of Paragraph 5.1 will cause substantial inequity to the Owner or Contractor, the Contractor's Fee shall be equitably adjusted on the basis of the Fee established for the original Work, and the Guaranteed Maximum Price shall be adjusted accordingly.

ARTICLE 7 COSTS TO BE REIMBURSED

7.1 COST OF THE WORK

The term Cost of the Work shall mean costs necessarily incurred by the Contractor in the proper performance of the Work. Such costs shall be at rates not higher than the standard paid at the place of the Project except with prior consent of the Owner. The Cost of the Work shall include only the items set forth in this Article 7.

7.2 LABOR COSTS

7.2.1 Wages of construction workers directly employed by the Contractor to perform the construction of the Work at the site or, with the Owner's approval, at off-site workshops.

7.2.2 Wages or salaries of the Contractor's supervisory and administrative personnel when stationed at the site with the Owner's approval.

(If it is intended that the wages or salaries of certain personnel stationed at the Contractor's principal or other offices shall be included in the Cost of the Work, identify in Article 14 the personnel to be included and whether for all or only part of their time, and the rates at which their time will be charged to the Work.)

7.2.3 Wages and salaries of the Contractor's supervisory or administrative personnel engaged, at factories, workshops or on the road, in expediting the production or transportation of materials or equipment required for the Work, but only for that portion of their time required for the Work.

7.2.4 Costs paid or incurred by the Contractor for taxes, insurance, contributions, assessments and benefits required by law or collective bargaining agreements and, for personnel not covered by such agreements, customary benefits such as sick leave, medical and health benefits, holidays, vacations and pensions, provided such costs are based on wages and salaries included in the Cost of the Work under Subparagraphs 7.2.1 through 7.2.3.

7.3 SUBCONTRACT COSTS

7.3.1 Payments made by the Contractor to Subcontractors in accordance with the requirements of the subcontracts.

7.4 COSTS OF MATERIALS AND EQUIPMENT INCORPORATED IN THE COMPLETED CONSTRUCTION

7.4.1 Costs, including transportation and storage, of materials and equipment incorporated or to be incorporated in the completed construction.

7.4.2 Costs of materials described in the preceding Subparagraph 7.4.1 in excess of those actually installed to allow for reasonable waste and spoilage. Unused excess materials, if any, shall become the Owner's property at the completion of the Work or, at the Owner's option, shall be sold by the Contractor. Any amounts realized from such sales shall be credited to the Owner as a deduction from the Cost of the Work.

7.5 COSTS OF OTHER MATERIALS AND EQUIPMENT, TEMPORARY FACILITIES AND RELATED ITEMS

7.5.1 Costs, including transportation and storage, installation, maintenance, dismantling and removal of materials, supplies, temporary facilities, machinery, equipment, and hand tools not customarily owned by construction workers, that are provided by the Contractor at the site and

7.6.8 Legal, mediation and arbitration costs, including attorneys' fees, other than those arising from disputes between the Owner and Contractor, reasonably incurred by the Contractor in the performance of the Work and with the Owner's prior written approval; which approval shall not be unreasonably withheld.

7.6.9 Expenses incurred in accordance with the Contractor's standard personnel policy for relocation and temporary living allowances of personnel required for the Work, if approved by the Owner.

7.7 OTHER COSTS AND EMERGENCIES

7.7.1 Other costs incurred in the performance of the Work if and to the extent approved in advance in writing by the Owner.

7.7.2 Costs due to emergencies incurred in taking action to prevent threatened damage, injury or loss in case of an emergency affecting the safety of persons and property, as provided in Paragraph 10.6 of AIA Document A201-1997.

7.7.3 Costs of repairing or correcting damaged or nonconforming Work executed by the Contractor, Subcontractors or suppliers, provided that such damaged or nonconforming Work was not caused by negligence or failure to fulfill a specific responsibility of the Contractor and only to the extent that the cost of repair or correction is not recoverable by the Contractor from insurance, sureties, Subcontractors or suppliers.

ARTICLE 8 COSTS NOT TO BE REIMBURSED

8.1 The Cost of the Work shall not include:

8.1.1 Salaries and other compensation of the Contractor's personnel stationed at the Contractor's principal office or offices other than the site office, except as specifically provided in Subparagraphs 7.2.2 and 7.2.3 or as may be provided in Article 14.

8.1.2 Expenses of the Contractor's principal office and offices other than the site office.

8.1.3 Overhead and general expenses, except as may be expressly included in Article 7.

8.1.4 The Contractor's capital expenses, including interest on the Contractor's capital employed for the Work.

8.1.5 Rental costs of machinery and equipment, except as specifically provided in Subparagraph 7.5.2.

8.1.6 Except as provided in Subparagraph 7.7.3 of this Agreement, costs due to the negligence or failure to fulfill a specific responsibility of the Contractor, Subcontractors and suppliers or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable.

8.1.7 Any cost not specifically and expressly described in Article 7.

8.1.8 Costs, other than costs included in Change Orders approved by the Owner, that would cause the Guaranteed Maximum Price to be exceeded.

ARTICLE 9 DISCOUNTS, REBATES AND REFUNDS

9.1 Cash discounts obtained on payments made by the Contractor shall accrue to the Owner if (1) before making the payment, the Contractor included them in an Application for Payment

and received payment therefor from the Owner, or (2) the Owner has deposited funds with the Contractor with which to make payments; otherwise, cash discounts shall accrue to the Contractor. Trade discounts, rebates, refunds and amounts received from sales of surplus materials and equipment shall accrue to the Owner, and the Contractor shall make provisions so that they can be secured.

9.2 Amounts that accrue to the Owner in accordance with the provisions of Paragraph 9.1 shall be credited to the Owner as a deduction from the Cost of the Work.

ARTICLE 10 SUBCONTRACTS AND OTHER AGREEMENTS

10.1 Those portions of the Work that the Contractor does not customarily perform with the Contractor's own personnel shall be performed under subcontracts or by other appropriate agreements with the Contractor. The Owner may designate specific persons or entities from whom the Contractor shall obtain bids. The Contractor shall obtain bids from Subcontractors and from suppliers of materials or equipment fabricated especially for the Work and shall deliver such bids to the Architect. The Owner shall then determine, with the advice of the Contractor and the Architect, which bids will be accepted. The Contractor shall not be required to contract with anyone to whom the Contractor has reasonable objection.

10.2 If a specific bidder among those whose bids are delivered by the Contractor to the Architect (1) is recommended to the Owner by the Contractor; (2) is qualified to perform that portion of the Work; and (3) has submitted a bid that conforms to the requirements of the Contract Documents without reservations or exceptions, but the Owner requires that another bid be accepted, then the Contractor may require that a Change Order be issued to adjust the Guaranteed Maximum Price by the difference between the bid of the person or entity recommended to the Owner by the Contractor and the amount of the subcontract or other agreement actually signed with the person or entity designated by the Owner.

10.3 Subcontracts or other agreements shall conform to the applicable payment provisions of this Agreement, and shall not be awarded on the basis of cost plus a fee without the prior consent of the Owner.

ARTICLE 11 ACCOUNTING RECORDS

The Contractor shall keep full and detailed accounts and exercise such controls as may be necessary for proper financial management under this Contract, and the accounting and control systems shall be satisfactory to the Owner. The Owner and the Owner's accountants shall be afforded access to, and shall be permitted to audit and copy, the Contractor's records, books, correspondence, instructions, drawings, receipts, subcontracts, purchase orders, vouchers, memoranda and other data relating to this Contract, and the Contractor shall preserve these for a period of three years after final payment, or for such longer period as may be required by law.

ARTICLE 12 PAYMENTS

12.1 PROGRESS PAYMENTS

12.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

12.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

12.1.3 Provided that an Application for Payment is received by the Architect not later than the 20th day of a month, the Owner shall make payment to the Contractor not later than the 10th day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner not later than 30 days after the Architect receives the Application for Payment.

12.1.4 With each Application for Payment, the Contractor shall submit payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached, and any other evidence required by the Owner or Architect to demonstrate that cash disbursements already made by the Contractor on account of the Cost of the Work equal or exceed (1) progress payments already received by the Contractor; less (2) that portion of those payments attributable to the Contractor's Fee; plus (3) payrolls for the period covered by the present Application for Payment.

12.1.5 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Guaranteed Maximum Price among the various portions of the Work, except that the Contractor's Fee shall be shown as a single separate item. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

12.1.6 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment. The percentage of completion shall be the lesser of (1) the percentage of that portion of the Work which has actually been completed; or (2) the percentage obtained by dividing (a) the expense that has actually been incurred by the Contractor on account of that portion of the Work for which the Contractor has made or intends to make actual payment prior to the next Application for Payment by (b) the share of the Guaranteed Maximum Price allocated to that portion of the Work in the schedule of values.

12.1.7 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

.1 take that portion of the Guaranteed Maximum Price properly allocable to completed Work as determined by multiplying the percentage of completion of each portion of the Work by the share of the Guaranteed Maximum Price allocated to that portion of the Work in the schedule of values. Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Subparagraph 7.3.8 of AIA Document A201-1997;

.2 add that portion of the Guaranteed Maximum Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work, or if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing;

.3 add the Contractor's Fee, less retainage of five percent (5 %). The Contractor's Fee shall be computed upon the Cost of the Work described in the two preceding Clauses at the rate stated in Subparagraph 5.1.2 or, if the Contractor's Fee is stated as a fixed sum in that Subparagraph, shall be an amount that bears the same ratio to that fixed-sum fee as the Cost of the Work in the two preceding Clauses bears to a reasonable estimate of the probable Cost of the Work upon its completion;

.4 subtract the aggregate of previous payments made by the Owner;

.5 subtract the shortfall, if any, indicated by the Contractor in the documentation required by Paragraph 12.1.4 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner's accountants in such documentation; and

.6 subtract amounts, if any, for which the Architect has withheld or nullified a Certificate for Payment as provided in Paragraph 9.5 of AIA Document A201-1997.

12.1.8 Except with the Owner's prior approval, payments to Subcontractors shall be subject to retainage of not less than **five** percent (5 %). The Owner and the Contractor shall agree upon a mutually acceptable procedure for review and approval of payments and retention for Subcontractors.

12.1.9 In taking action on the Contractor's Applications for Payment, the Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor and shall not be deemed to represent that the Architect has made a detailed examination, audit or arithmetic verification of the documentation submitted in accordance with Subparagraph 12.1.4 or other supporting data; that the Architect has made exhaustive or continuous on-site inspections or that the Architect has made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits and verifications, if required by the Owner, will be performed by the Owner's accountants acting in the sole interest of the Owner.

12.2 FINAL PAYMENT

12.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when:

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Subparagraph 12.2.2 of AIA Document A201-1997, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 a final Certificate for Payment has been issued by the Architect.

12.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

12.2.3 The Owner's accountants will review and report in writing on the Contractor's final accounting within 30 days after delivery of the final accounting to the Architect by the Contractor. Based upon such Cost of the Work as the Owner's accountants report to be substantiated by the Contractor's final accounting, and provided the other conditions of Subparagraph 12.2.1 have been met, the Architect will, within seven days after receipt of the written report of the Owner's accountants, either issue to the Owner a final Certificate for Payment with a copy to the Contractor, or notify the Contractor and Owner in writing of the Architect's reasons for withholding a certificate as provided in Subparagraph 9.5.1 of the AIA Document A201-1997. The time periods stated in this Subparagraph 12.2.3 supersede those stated in Subparagraph 9.4.1 of the AIA Document A201-1997.

12.2.4 If the Owner's accountants report the Cost of the Work as substantiated by the Contractor's final accounting to be less than claimed by the Contractor, the Contractor shall be entitled to demand arbitration of the disputed amount without a further decision of the Architect. Such demand for arbitration shall be made by the Contractor within 30 days after the Contractor's receipt of a copy of the Architect's final Certificate for Payment; failure to demand arbitration within this 30-day period shall result in the substantiated amount reported by the Owner's accountants becoming binding on the Contractor. Pending a final resolution by arbitration, the Owner shall pay the Contractor the amount certified in the Architect's final Certificate for Payment.

12.2.5 If, subsequent to final payment and at the Owner's request, the Contractor incurs costs described in Article 7 and not excluded by Article 8 to correct defective or nonconforming Work,

the Owner shall reimburse the Contractor such costs and the Contractor's Fee applicable thereto on the same basis as if such costs had been incurred prior to final payment, but not in excess of the Guaranteed Maximum Price. If the Contractor has participated in savings as provided in Paragraph 5.2, the amount of such savings shall be recalculated and appropriate credit given to the Owner in determining the net amount to be paid by the Owner to the Contractor.

ARTICLE 13 TERMINATION OR SUSPENSION

13.1 The Contract may be terminated by the Contractor, or by the Owner for convenience, as provided in Article 14 of AIA Document A201-1997. However, the amount to be paid to the Contractor under Subparagraph 14.1.3 of AIA Document A201-1997 shall not exceed the amount the Contractor would be entitled to receive under Paragraph 13.2 below, except that the Contractor's Fee shall be calculated as if the Work had been fully completed by the Contractor, including a reasonable estimate of the Cost of the Work for Work not actually completed.

13.2 The Contract may be terminated by the Owner for cause as provided in Article 14 of AIA Document A201-1997. The amount, if any, to be paid to the Contractor under Subparagraph 14.2.4 of AIA Document A201-1997 shall not cause the Guaranteed Maximum Price to be exceeded, nor shall it exceed an amount calculated as follows:

13.2.1 Take the Cost of the Work incurred by the Contractor to the date of termination;

13.2.2 Add the Contractor's Fee computed upon the Cost of the Work to the date of termination at the rate stated in Subparagraph 5.1.2 or, if the Contractor's Fee is stated as a fixed sum in that Subparagraph, an amount that bears the same ratio to that fixed-sum Fee as the Cost of the Work at the time of termination bears to a reasonable estimate of the probable Cost of the Work upon its completion; and

13.2.3 Subtract the aggregate of previous payments made by the Owner.

13.3 The Owner shall also pay the Contractor fair compensation, either by purchase or rental at the election of the Owner, for any equipment owned by the Contractor that the Owner elects to retain and that is not otherwise included in the Cost of the Work under Subparagraph 13.2.1. To the extent that the Owner elects to take legal assignment of subcontracts and purchase orders (including rental agreements), the Contractor shall, as a condition of receiving the payments referred to in this Article 13, execute and deliver all such papers and take all such steps, including the legal assignment of such subcontracts and other contractual rights of the Contractor, as the Owner may require for the purpose of fully vesting in the Owner the rights and benefits of the Contractor under such subcontracts or purchase orders.

13.4 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201-1997; in such case, the Guaranteed Maximum Price and Contract Time shall be increased as provided in Subparagraph 14.3.2 of AIA Document A201-1997 except that the term "profit" shall be understood to mean the Contractor's Fee as described in Subparagraphs 5.1.2 and Paragraph 6.4 of this Agreement.

ARTICLE 14 MISCELLANEOUS PROVISIONS

14.1 Where reference is made in this Agreement to a provision AIA Document A201-1997 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

14.2 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)

(Usury laws and requirements under the Federal Truth in Lending Act, similar state and local consumer credit laws and other regulations at the Owner's and Contractor's principal places of business, the location of the Project and elsewhere may affect the validity of this provision. Legal advice should be obtained with respect to deletions or modifications, and also regarding requirements such as written disclosures or waivers.)

14.3 The Owner's representative is:
(Name, address and other information.)

Marc Hrovatic, Director IT/Operations
Luna Innovations
2851 Commerce Street
Blacksburg, VA 24060

14.4 The Contractor's representative is:
(Name, address and other information.)

Steve Gambrell, Project Manager/Estimator
John W. Daniel & Company, Inc.
223 Riverview Drive
Danville, VA 24541

14.5 Neither the Owner's nor the Contractor's representative shall be changed without ten days' written notice to the other party.

14.6 Other provisions:

ARTICLE 15 ENUMERATION OF CONTRACT DOCUMENTS

15.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated as follows:

15.1.1 The Agreement is this executed 1997 edition of the Standard Form of Agreement Between Owner and Contractor, AIA Document A111-1997.

15.1.2 The General Conditions are the 1997 edition of the General Conditions of the Contract for Construction, AIA Document A201-1997.

15.1.3 The Supplementary and other Conditions of the Contract are those contained in the Project Manual dated , and are as follows:

Document	Title	Pages
Letter (4/20/04)	Luna - Danville, VA	5
Letter (5/04/04)	Luna Innovations	1

15.1.4 The Specifications are those contained in the Project Manual dated as in Subparagraph 15.1.3, and are as follows:
(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

Section	Title	Pages
N/A		

15.1.5 The Drawings are as follows, and are dated unless a different date is shown below:
(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

Number	Title	Date
	Sketches (Attachment A)	

15.1.6 The Addenda, if any, are as follows:

Number	Date	Pages
N/A		

Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 15.

15.1.7 Other Documents, if any, forming part of the Contract Documents are as follows:
(List here any additional documents, such as a list of alternates that are intended to form part of the Contract Documents. AIA Document A201-1997 provides that bidding requirements such as advertisement or invitation to bid, Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

ARTICLE 16 INSURANCE AND BONDS

(List required limits of liability for insurance and bonds. AIA Document A201-1997 gives other specific requirements for insurance and bonds.)

This Agreement is entered into as of the day and year first written above and is executed in at least three original copies, of which one is to be delivered to the Contractor, one to the Architect for use in the administration of the Contract, and the remainder to the Owner.

Luna Innovations:

OWNER *(Signature)*

Jeff Hammel, CFO

(Printed name and title)

John W. Daniel & Co., Inc.:

CONTRACTOR *(Signature)*

Howard J. Burnette, President

(Printed name and title)

FILE COPY

JOHN W. DANIEL & COMPANY, INC.
Contractors

April 20, 2004

MMERCIAL/
DUSTRIAL

nstruction

nstruction Management

sign - Build

novations

sidential

Mr. Marc Hrovatic
Luna Innovations
2851 Commerce Street
Blacksburg, VA 24060

RE: *Luna – Danville, VA*

Dear Mr. Hrovatic:

John W. Daniel & Company, Inc. (JWD) proposes to complete the work at the Danville, VA location, all work per your sketches and site discussions for a total sum of:

One Million Seventy Five Thousand Dollars ($1,075,000.00)

Please note the mechanical and electrical cost included for the lab is $86,318.00.

To add VAV boxes in lieu of constant volume, add $25,000.00.

Our project team looks forward to working with you to find solutions that benefit all parties. However, because of the nature of this project, the sooner we can get to work on finishing some of the unknowns, the better JWD and its team can come up with a project schedule that will meet your company's needs. JWD feels that there can be savings made to the project by doing some design changes to the following areas:

1. Basement lab
2. Exhaust system
3. Dust collection and gas storage room

Our Scope of Work is attached for your information.

The above-mentioned terms and proposal are good for thirty (30) days from the date of this letter. JWD wishes to express its sincere appreciation for the opportunity to be of service.

If you have any questions, please do not hesitate to give me a call.

Sincerely,

JOHN W. DANIEL & COMPANY, INC.

Steve Gambrell
Project Manager/Estimator

SG/sr
Attachment

limited, Class A License No.:
- 2701 002029A
: - 2778
- 0004175
- WV038912

3 Riverview Drive
nville, Virginia 24541

O. Box 1628
nville, Virginia 24543

l: 434-792-1111

fice Fax: 434-792-7372

d Fax: 434-791-8215

ww.tdanielgroup.com

Scope of Work for Luna Innovations
April 20, 2004

Division 1 – General Conditions:
- Full time supervision
- Temporary toilets and utilities
- Jobsite dumpster and clean-up
- Final clean-up
- Architectural fee allowance of $8,000

Division 2 – Site Work:
- Site demolition at rear of building
- Demolition of interior items

Division 3 – Concrete:
- Footings to be 3,000PSI reinforced
- Slabs to be air entrained at exterior dock, steps and ramp
- Slab at dust collection and gas storage

Division 4 – Masonry:
- CMU walls at dust collection and gas storage
- CMU walls at elevator shaft
- Allowance of $3,500 to point up side brick

Division 5 – Steel:
- Steel rails at rear
- Interior steps
- Rear canopy

Division 6 – Carpentry:
- Floor infill at old elevator
- Replace floors at certain areas on third floor
- Replace roof areas that are bad
- Blocking for toilet areas
- Wood base at masonry walls
- Allowance of $2,400 for cabinets
- ½" OSB on second floor

Division 7 – Waterproofing:
- Waterproofing at new elevator
- New roof over Luna side of building to include 1 ½" roof insulation, .045 mechanically fastened EPDM roof, flashing, termination bars, roof penetrations, install two (2) new skylight domes and supply fifteen (15) year total system warranty
- Allowance of $500 for caulking

Division 8 – Doors/Windows:
- Hollow metal frames, wood doors and hardware
- Card reader system will need to be discussed for us to price
- New wood windows
- New storefront at rear door openings
- New roll-up doors

JOHN W. DANIEL & CO., INC.

Division 9 – Finishes:
- 3 5/8" metal studs, drywall hung and finished
- Stair towers to be fire rated
- Acoustical tile in ceilings
- Vinyl tile in ceilings
- Re-seal and clean wood floors (third floor)
- Clean and seal masonry walls
- Paint interior

Division 10 – Specialties:
- Toilet accessories
- Toilet partitions
- Toilet signs
- Fire extinguishers

Division 14 – Conveying System:
- In ground hydraulic elevator

Division 15 – Mechanical/Plumbing:
- **Basement - Downdraft Table Room** – Served by 10 Ton gas fired rooftop unit, thermostatically controlled. Unit size based on eight downdraft tables with each discharging air directly back into the room thus reducing the air-conditioning load. Perforated ceiling diffusers will be used to help reduce air motion. No ductwork included for the downdraft tables as the final location of the filters has not been determined.
- **Basement - Lab – Alternate Price** -The Lab is one area where energy recovery can be utilized using either a unit where no cross contamination will occur (coil run-around or heat pipe) or a unit, which has a chance of cross contamination (energy wheel). With an energy recovery unit, the air-conditioning unit can be down sized and the operating costs for the system reduced. Base Bid price will have an energy recovery unit for each hood and 100% outside air from each unit going back into the Lab. This type of approach will allow either hood to be operating independent of each other and the air-conditioning unit operating independent of the hoods. Two 3,600 CFM energy recovery units, having explosion proof exhaust fans, will be used and the air returned directly to the room or air-conditioning unit; these save approximately 7 Tons of cooling and 400,000 BTUH of heat on a design day. Two 18 Ton gas fired rooftop units with be used to maintain conditions in the Lab. Perforated ceiling diffusers will be used to help reduce air motion and improve the hoods performance.
- **Basement – Lab Hood Exhaust Duct – Alternate Price - PVC ductwork has been included from each 16 foot Lab Hood up to the energy recovery units on the roof.**
- **Basement Offices/Shipping – Served with 5 Ton gas fired rooftop unit thermostatically controlled.** Standard ceiling diffusers will be used; plenum return used. Electric wall heaters used at the entrance to the Basement corridor and the Office Entrance.
- **Basement – Chiller Room** – Provide 5,000 CFM ventilation and exhaust to room, fans located on roof. Thermostat controlled.
- **Basement – Elevator Equipment Room** – ventilated as required to meet code.
- **2nd Floor** – Served with 7½ ton gas fired rooftop unit, thermostatically controlled. **Alternate Price** is provided to improve on temperature control by installing three fan powered boxes with electric reheat having thermostat control.

Division 15 – Mechanical/Plumbing – Continued:

- **3rd Floor-** Served with two 10 ton gas fired rooftop units, thermostatically controlled, one will be serving the front of the building and one serving the back area. **Alternate Price** is provided to improve on temperature control by installing nine fan powered boxes with electric reheat having thermostat control.
- All ductwork not indicated above will be fabricated and installed according to SMACNA standards.
- All thermostats shall be programmable.
- All ductwork in concealed spaces shall be insulated with 1½ inch fiberglass wrap with vapor barrier and remainder as required to meet code.
- Toilets on each floor shall be exhausted to meet code with the exhaust fan on roof.
- Gas piping shall be schedule 40 steel pipe designed for 5 PSIG. Pipe to be routed on roof.
- No A/C furnished for Future Basement Lab and Second floor open area.

PLUMBING:

- Sanitary Waste below ground to be Schedule 40 PVC DWV. Sanitary waste above ground to be Cast-Iron No-hub.
- Domestic water to be Copper Type L with ½" inch insulation.
- ½" Nitrogen and Helium lines to be Copper Type L with Silver Solder joints. Piping will be run from the Duct Collection/Gas Storage Area to (8) connections on Downdraft Tables and (2) fume hoods.
- ¾" Chilled Water lines from Chiller (chiller and accessories to be supplied by others) to (8) connections on Downdraft Tables.
- We include the following fixtures:
  - (2) Break room sinks
  - (4) Cup sinks
  - (1) Drinking Fountain
  - (1) Safety Shower/Eyewash
  - (1) Freeze proof Wall Hydrant
  - (3) Janitors Sinks
  - (10) Wall-hung Lavatories
  - (2) ADA Wall-hung Lavatories
  - (3) ADA Urinals
  - (7) Water Closets
  - (2) ADA Water Closets
  - (1) Backflow Preventor for Domestic Water
  - (1) Backflow Preventor for Make-up water.
  - (3) 40 gallon electric Water Heaters
- Restrooms for third floor have been relocated. The third floor restrooms will now be located directly above the second floor restrooms.

<u>Clarifications</u>

1. No ductwork included for Downdraft Tables.
2. Ceiling plenum return system used.

JOHN M. DANIEL & CO., INC.

Division 16 – Electrical:

- Furnish and install ninety eight 2 tube wraps, sixty seven 4 tube wraps, ninety 2 x 4 lay-ins, nine 8 ft. 2 tube strips, one 4 ft. 2 tube strip, four 175 watt metal halide wall packs, 14 exits with battery, 7 exits with 2 head emergency, sixteen 2 head emergency, six 2 tube 4' wall MTD (stairway), two 150 watt wall MTD with globe and wire ground (MTD under elevator) and four 200 watt explosion proof fixtures
- Furnish and install one 3000 amp 120/208V 3 ph 4w switchboard
- Furnish and install three 225 amp, three 400 amp 3 ph 4 w 120/208 volt panels
- Install electrical to HVAC equipment as directed by Riverview Plumbing and Heating
- Install electrical to elevator
- Install fire alarm for elevator only
- Install electrical to eight 3 ph welders
- Reconnect driveway heat
- Install 2" conduit for telephone service
- Install 180 duplex receptacles
- Install 93 telephone/data outlets (conduit turn out of walls only)
- Install electrical to 3 water heaters
- Install electrical to 3 bathroom exhaust fans
- Demolition as required
- Allowance of $7,300 included in above budget for connecting owner equipment
- Temporary included
- 3000A switchboard delivery – 7 weeks

Division 17 – Fire Protection:

- Automatic sprinkler system for building and rear canopy

Exclusions:

- City tap fees
- All work to be 5' out
- City electrical fees
- Permit fees
- Parking lot
- Clearing of trees at rear
- No abatement of hazardous materials
- No bond

JOHN W. DANIEL & COMPANY, INC.
Contractors

May 4, 2004

)MMERCIAL/
DUSTRIAL

)nstruction

)nstruction Management

)sign - Build

)novations

)sidential

nimited, Class A License No.:
\ - 2701 002029A
C - 2778
V - 00048175
N - WC39912

23 Riverview Drive
)anville, Virginia 24541

O. Box 1628
)anville, Virginia 24543

el: 434-792-1111

)ffice Fax: 434-792-7372

3d Fax: 434-791-8215

www.tdanielgroup.com

THE DANIEL GROUP INC

Mr. Marc Hrovatic, Director IT/Operations
Luna Innovations
2851 Commerce Street
Blacksburg, VA 24060

Re: *Luna Innovations*

Dear Mr. Hrovatic:

Thank you for the time you spent with us on Monday. Please accept this letter as confirmation of our conversation.

John W. Daniel & Co., Inc. is willing to proceed with the project on a cost-plus contract with a guaranteed maximum. The maximum is based on JWD's letter of April 20, 2 004 with the following clarifications at a cost of $1,075,000.00.

- Include VAV boxes
- Luna to furnish and set all its equipment
- Luna to provide hood information that will reduce equipment size by approximately half
- Add roof access
- Roof only on Luna portion of building
- Change second floor exterior door to hollow metal with small lites
- Add fire-rated shafts as needed
- Add light duty HVAC to first floor empty space, increase unit from 5 to 7 tons
- Add mop sink in rear lab
- Add condenser on roof
- All card readers by Luna
- Change gas and dust collection room to slab with fence without roof
- Parking area to be determined (no cost included)
- Add wall to separate hoods
- Relocate one pair of doors
- Omit one pair of doors
- Omit two offices shown as restrooms on third floor
- Relocate dust collection
- Minimum of three months required for first floor and six months total project

Please let us know if there are any corrections or if you have any questions.

JWD looks forward to working with you on this project.

Sincerely,

JOHN W. DANIEL & COMPANY, INC.

Robert W. Lee, III
Vice President

POLICY INFORMATION

The St Paul

THIS IS NOT A BILL.

YOUR POLICY IS DIRECTLY BILLED. IF THIS IS A POLICY CHANGE, THE ADDITIONAL OR RETURN PREMIUM WILL BE SHOWN ON FUTURE INSTALLMENT BILLINGS.

Company: ST. PAUL FIRE & MARINE INSURANCE COMPANY

INSURED

LUNA INNOVATIONS, INC.
2851 COMMERCE STREET
BLACKSBURG VA 24060

Policy Inception/Effective Date: 11/01/04
Policy Number: TT00800126
Agency Number: 4561115

Transaction Type:
ENDORSEMENT OF POLICY
Transaction number: 005
Processing Date: 06/02/05 07:21

AGENT

KEITH D PETERSON & CO INC
115 N 1ST ST STE 104
RICHMOND VA 23219

Account Number: 10084600DA

Policy Number	Description	Amount	Surtax/ Surcharge
TT00800126	SERIES 2000 ENDT - ADDITIONAL PREMIUM	$4,824.00	

THIS TRANSACTION IS FULL PAY.
A PAYMENT SCHEDULE/BILL WILL FOLLOW SHORTLY.

RECEIVED BY HSH
JUN 13 2005

ECHNOLOGY PREMIER PROPERTY PROTECTION
NAMED TROPICAL WIND STORM AND HURRICANE
COVERAGE SUMMARY

The St Paul

This Coverage Summary shows the limits and coverage options that apply to your Named Tropical Wind Storm And Hurricane Coverage.

* 6 6 0 0 2 TT00800126 5423 * M: 00 I: 000 T: 005

Named Tropical Wind Storm And Hurricane Coverage

Covered Locations – Subject to a $ Deductible.

- ☐ All Scheduled Locations
- ☐ Unscheduled Locations
- ☐ Only those locations listed below:

Loc. No. Address

- ☐ Excluded Locations

Loc. No. Address

Named Tropical Wind Storm And Hurricane Coverage

Covered Locations – Subject to a 2 % Deductible or $ 1,000. , whichever is greater.

- ☐ All Scheduled Locations
- ☐ Unscheduled Locations
- ☒ Only those locations listed below:

Loc. No. Address

SEE F0098 FOR SCHEDULE OF COVERED LOCATIONS.

- ☐ Excluded Locations

Loc. No. Address

Name of Insured LUNA INNOVATIONS, INC.
Policy Number TT00800126
Effective Date 11/01/04
Processing Date 06/02/05 07:21 005

TECHNOLOGY PREMIER PROPERTY PROTECTION
SCHEDULED LOCATIONS COVERAGE SUMMARY

The St Paul

This Coverage Summary shows your scheduled locations, covered property, and limits of coverage that apply to your Premier Property Protection.

* G 0 0 2 TT00800126 8421 * M: 00 I: 000 T: 005

Scheduled Location

Loc. No.	Address
001	2851 COMMERCE STREET, BLACKSBURG, VA 24060
002	2903 COMMERCE STREET, SUITE A & B, BLACKSBURG, VA 24060
003	705A DALE AVENUE, CHARLOTTESVILLE, VA 22903
004	24 RESEARCH DRIVE, HAMPTON, VA 23666
005	521-527 BRIDGE STREET, DANVILLE, VA 24541

Limits Of Coverage

Loc No.	Building	Business Personal Property
001-005	$1,750,000.	$1,008,000 BLANKET LIMIT

Name of Insured LUNA INNOVATIONS, INC.
Policy Number TT00800126
Effective Date 11/01/04
Processing Date 06/02/05 07:21 005

LICY CHANGE ENDORSEMENT

The St Paul

This endorsement summarizes the changes to your policy. All other terms of your policy not affected by these changes remain the same.

*M: 00 I: 000 T: 005

*6 0 0 0 2 TT00800126 5419

How Your Policy Is Changed

PROPERTY

The Following Location Has Been Added:

LOC 005 - 521-527 BRIDGE STREET
DANVILLE VA 24541

For Details, Refer To Your Technology Premier Property Protection Scheduled Locations Coverage Summary (F0098 Ed. 01-98).

Premium Change Which Is Due Now

Additional premium	$4,824.00	Returned Premium	$0.00

If issued after the date your policy begins, these spaces must be completed and our representative must sign below.

Policy issued to
LUNA INNOVATIONS, INC.

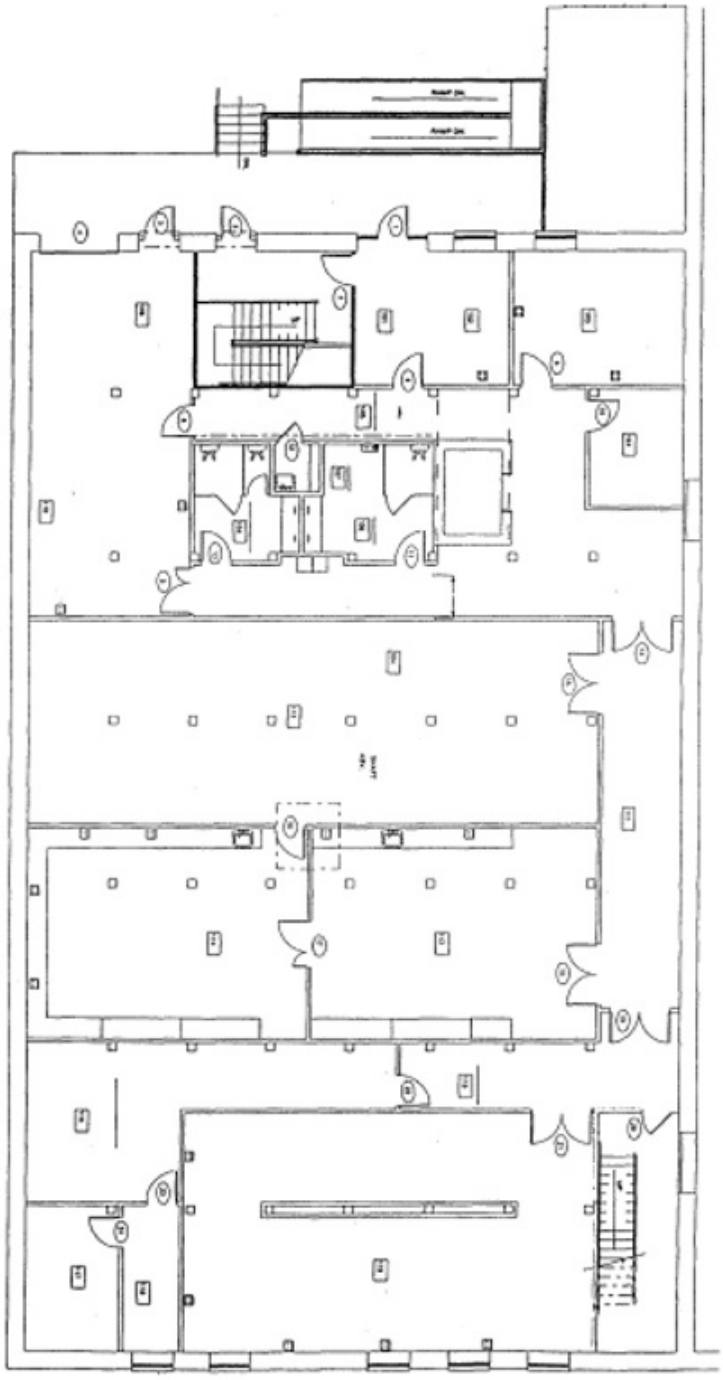
Authorized representative

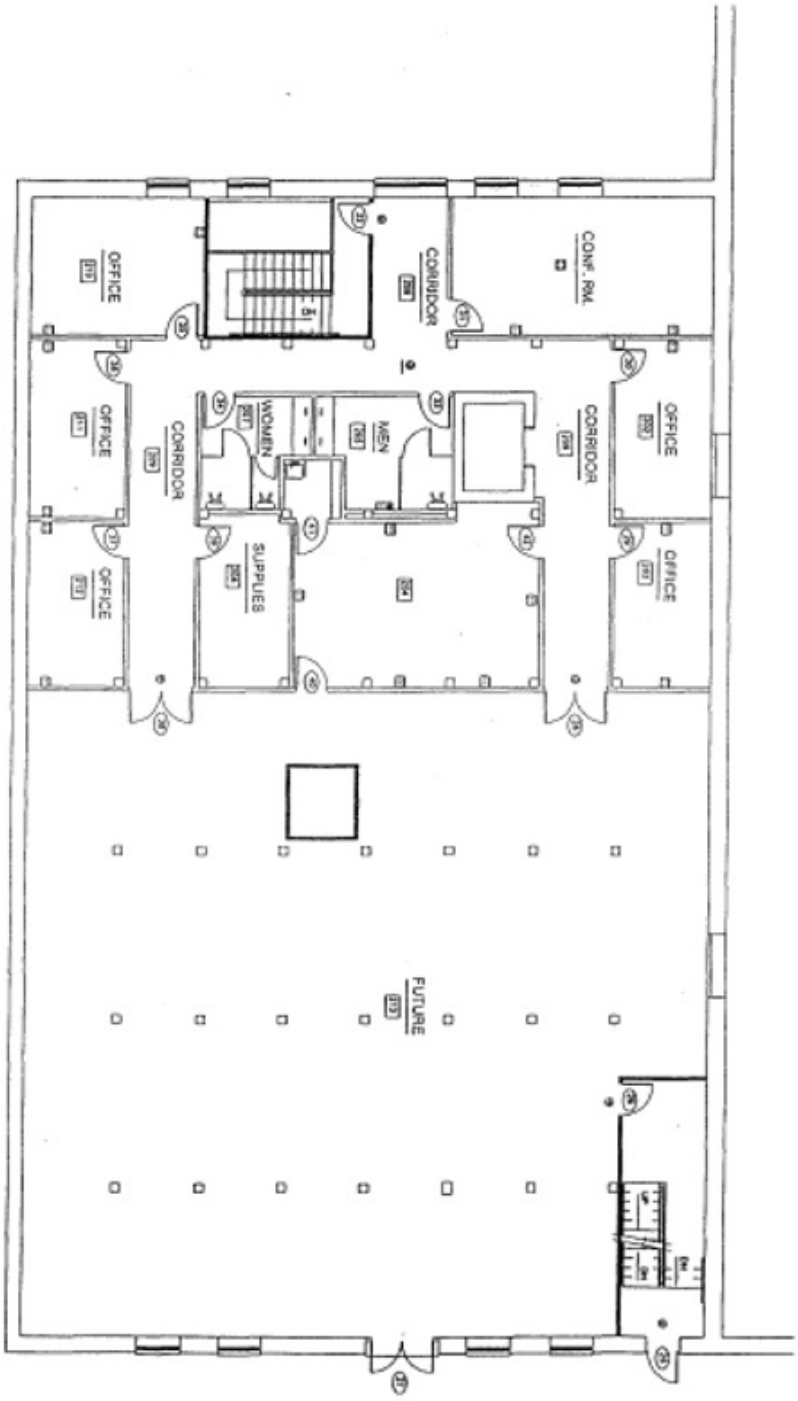
Endorsement takes effect
11/01/04

Policy Number
TT00800126

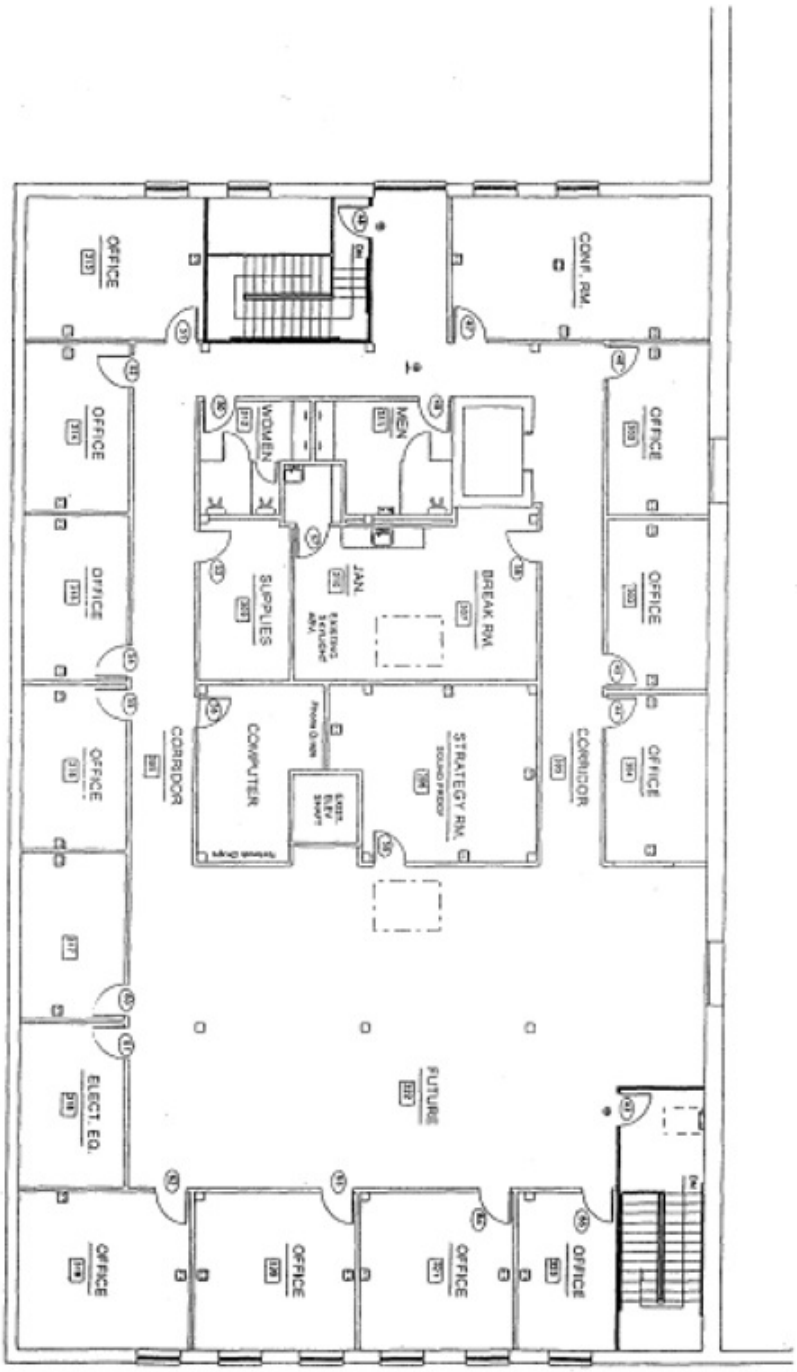
Processing Date: 06/02/05 07:21 005

First Floor





Second Floor


OFFICE
CONF. RM.
OFFICE
OFFICE
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WOMEN
MEN
JAN.
SUPPLIES
BREAK RM.
OFFICE
OFFICE
CORRIDOR
COMPUTER
STRATEGY RM.
CORRIDOR
OFFICE
OFFICE
ELECT. EQ.
FUTURE
OFFICE
OFFICE
OFFICE
OFFICE

Third Floor

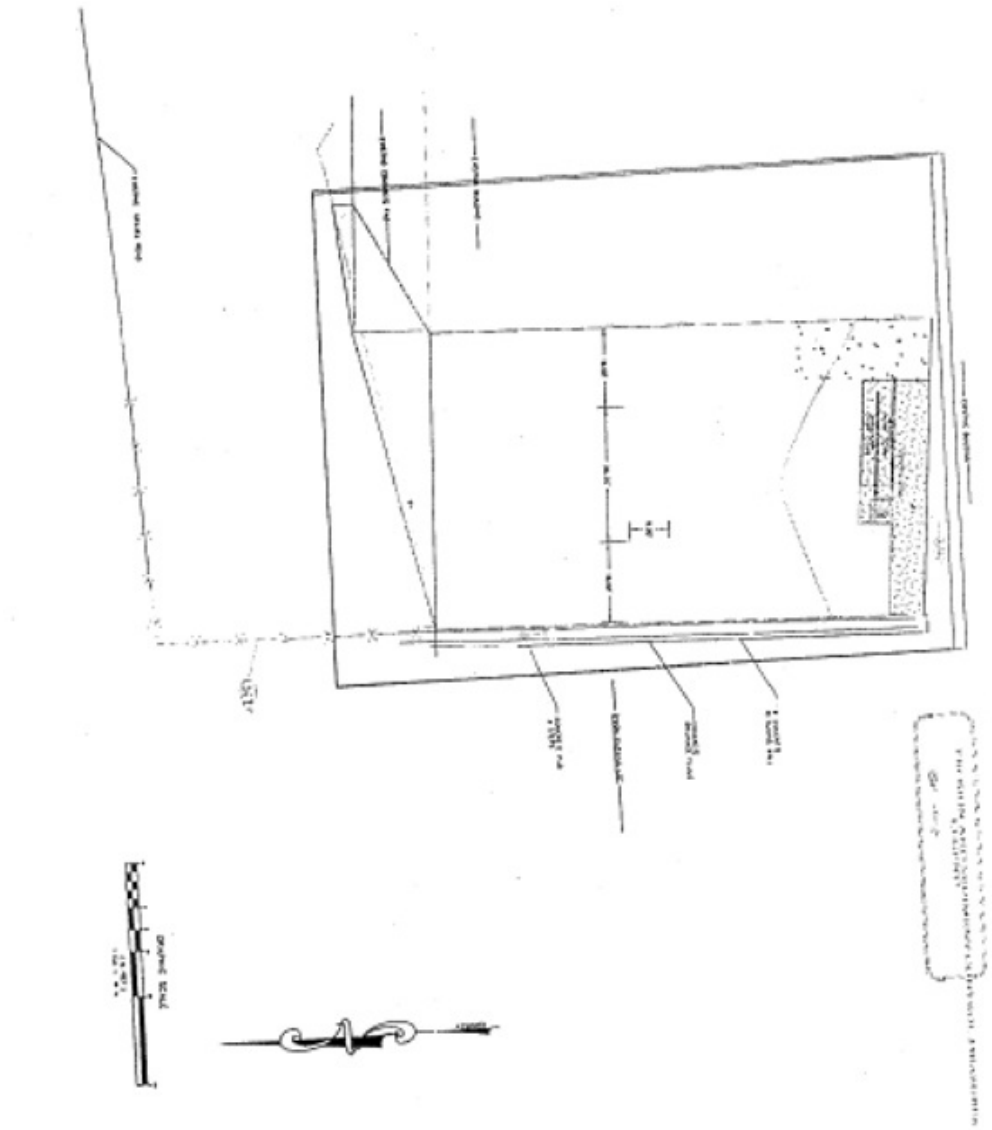


EXHIBIT "C"

SHORT FORM AND MEMORANDUM OF LEASE

THIS SHORT FORM AND MEMORANDUM OF LEASE ("Memorandum") is made by and between **LUNA INNOVATIONS INC.,** a corporation existing under the laws of the State of Delaware ("Tenant") and the **INDUSTRIAL DEVELOPMENT AUTHORITY OF DANVILLE** a political subdivision of the Commonwealth of Virginia ("Landlord").

WITNESSETH:

1. Premises. Landlord has leased to Tenant under a Lease dated as of , 2005 (the "Lease") certain premises within the City of Danville, Virginia, which premises are more particularly described on EXHIBIT "A" attached hereto and incorporated herein by reference (the "Premises"), together with all rights, privileges, easements, appurtenances, and immunities belonging to or in any way pertaining to the Premises. The parties hereby acknowledge and agree that the premises consist of the land described on EXHIBIT"A-1" (the "Land"), and the entire leasable area of the building shown on EXHIBIT"B-l"; accordingly, the premises include the Land described on EXHIBIT"A-1" and the entire building with all improvements shown and described on EXHIBIT "A".

2. Term. The Term of the Lease shall be for a period of sixty (60) months beginning on the "Commencement Date" as that term is defined in the Lease.

3. Right to Extend. Tenant shall have the right to extend the term of the Lease for two (2) terms of sixty (60) months each on the terms set forth in the Lease.

4. Right to Purchase. Tenant shall have the right to purchase the Premises from Landlord upon the expiration of the initial term of the Lease and any extension terms on the terms set forth in the Lease.

5. Right of First Refusal. Tenant shall have the right of first refusal to lease the Premises located next to the Premises as shown on EXHIBIT "C-l" on the terms set forth in the Lease.

6. Incorporation of Lease. This Memorandum is for informational purposes only and nothing contained herein shall be deemed to in any way to modify or otherwise affect any of the terms and conditions of the Lease, the terms of which are incorporated herein by reference. This instrument is merely a memorandum of the Lease and is subject to all of the terms, provisions and conditions of the Lease. In the event of any inconsistency between the terms of the Lease and this instrument, the terms of the Lease shall prevail.

7. Binding Effect. The rights and obligations set forth herein shall be binding upon and inure to the benefit of the parties hereto and their respective heirs, personal representatives, successors and assigns.

IN WITNESS WHEREOF, the parties have executed this Memorandum of Lease under seal as of the day and year first written below.

TENANT:

Witness:

LUNA INNOVATIONS INC.,
a Delaware corporation

_____

By: _____

Name: _____

Title: _____

LANDLORD:

Witness

INDUSTRIAL DEVELOPMENT
AUTHORITY OF DANVILLE,
a political subdivision of the Commonwealth of Virginia

_____

By: _____

Name: _____

Title: _____

COMMONWEALTH OF VIRGINIA §
§
CITY OF DANVILLE §

Before me _____ on this day personally appeared _____ known to me to be the person whose name is subscribed to the foregoing instrument and known to me to be the _____ of _____, a _____ and acknowledged to me that he executed said instrument for the purpose and consideration therein expressed, and as the act of said . Given under my hand and seal of office this _____ day of _____, 200__.

_____
Notary Public

(Notary Seal)

COMMONWEALTH OF VIRGINIA §
§
COUNTY OF §

Before me _____ on this day personally appeared _____ known to me to be the person whose name is subscribed to the foregoing instrument and known to me to be the _____ of _____, a _____ and acknowledged to me that he executed said instrument for the purpose and consideration therein expressed, and as the act of said _____. Given under my hand and seal of office this _____ day of _____, 200__.

_____
Notary Public

(Notary Seal)

EXHIBIT "A-1"

Legal Description of the Land

Being in fact property located at 521 & 525 Bridge Street and identified as Parcel Identification Number 92-21485 in the City of Danville; further described as lot fronting 68.5 feet on Bridge Street in the City of Danville, Virginia; and being the same property as identified in the attached City of Danville-Real Estate Assessment Card.

WORK YEAR 2004

PAGE NO. 1 CARD # 01 OF 01

CITY OF DANVILLE - ASSESSMENT CARD

DATE 07/12/2004 ROUTING NO. - -

PARCEL ID 21485 DISTRICT 92 PROPERTY LOCATION 521 BRIDGE ST & 525

PARCEL NUM 95-4-8

NBHD	00001	Average
DESIRE	3	Average
TREND	02	Static
CLASS	7434	Storage Whs - Ex - Local
LUC	743	Storage Whs-Exempt-Local
ZONING	TWC	Tobacco Warehouse Comm
PROP TYPE	4	Commercial
CI TYPE		
CI AREA	1	
TOPOGRAPHY		
ACCESS		
UTILITIES		
PARKING		
TAX STATUS		

OWNERSHIP
INDUSTRIAL DEVELOPMENT
AUTHORITY OF DANVILLE
VIRGINIA

MAILING ADDRESS
INDUSTRIAL DEVELOPMENT
AUTHORITY
P O BOX 3300
DANVILLE VA 24541

LEGAL DESCRIPTION
68.5 FT NO 4 BRIDGE ST

SURVIVORSHIP NO

MORT/HANDLING CODE

SALES HISTORY

TYPE	SOURCE	SALESDATE	BOOK	PAGE	VALIDITY	SALE PRICE
Improved/Bldg		03/25/2004	D 04	1425	02	120,000

ASSESSMENT SUMMARY

YEAR	LAND	USE	IMPROVEMENT	TOTAL
2004	13,700	13,700	34,200	47,900

APPROACH TO VALUE COST C&GFLAG

	LAND	CURRENT USE	IMPROVEMENTS	TOTALS
COST	$13,700	$0	$34,200	$47,900
INCOME	$13,700	$0	$0	$0
MARKET	$13,700	$0	$0	$13,700
OVERRIDE	$0	$0	$0	$0
O/R REASON				

LAND INFORMATION

TYPE	AGT FRONT ACRES/SQFT	EFF FRONT	EFF DEPTH	UNITS	RATE	OVER RIDE	DEPTH FACTOR	ADJ RATE	BASE VALUE	ADJUSTMENT #1 RSN	%	$	ADJUSTMENT #2 RSN	%	$	ADJUSTMENT #3 RSN	%	$	ADJUSTMENT #4 RSN	%	$	VALUE
S01	15180			0.000	1.00	Y		1.00	15,180	TOP	90	0		100	0		100	0		100	0	13,660

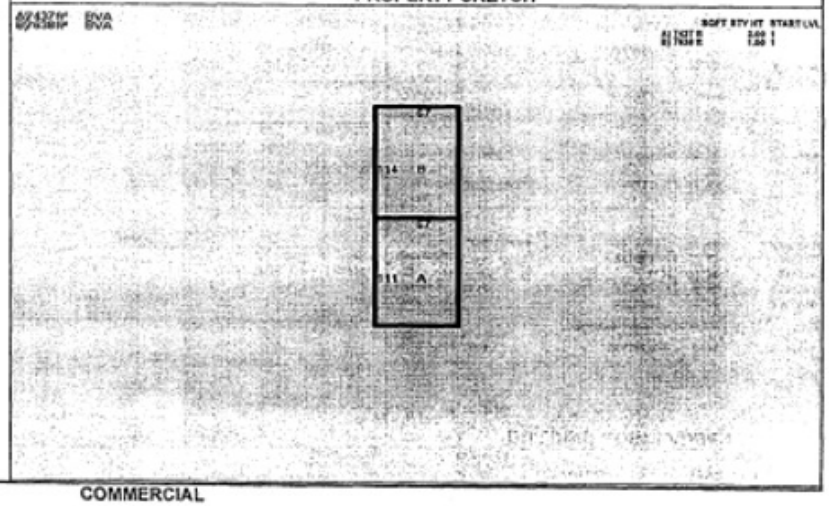
LAND ADJUSTMENTS

TOTAL ACRE 0.3480

TOTAL LAND VALUE 13,700

PROPERTY PHOTO

PROPERTY SKETCH



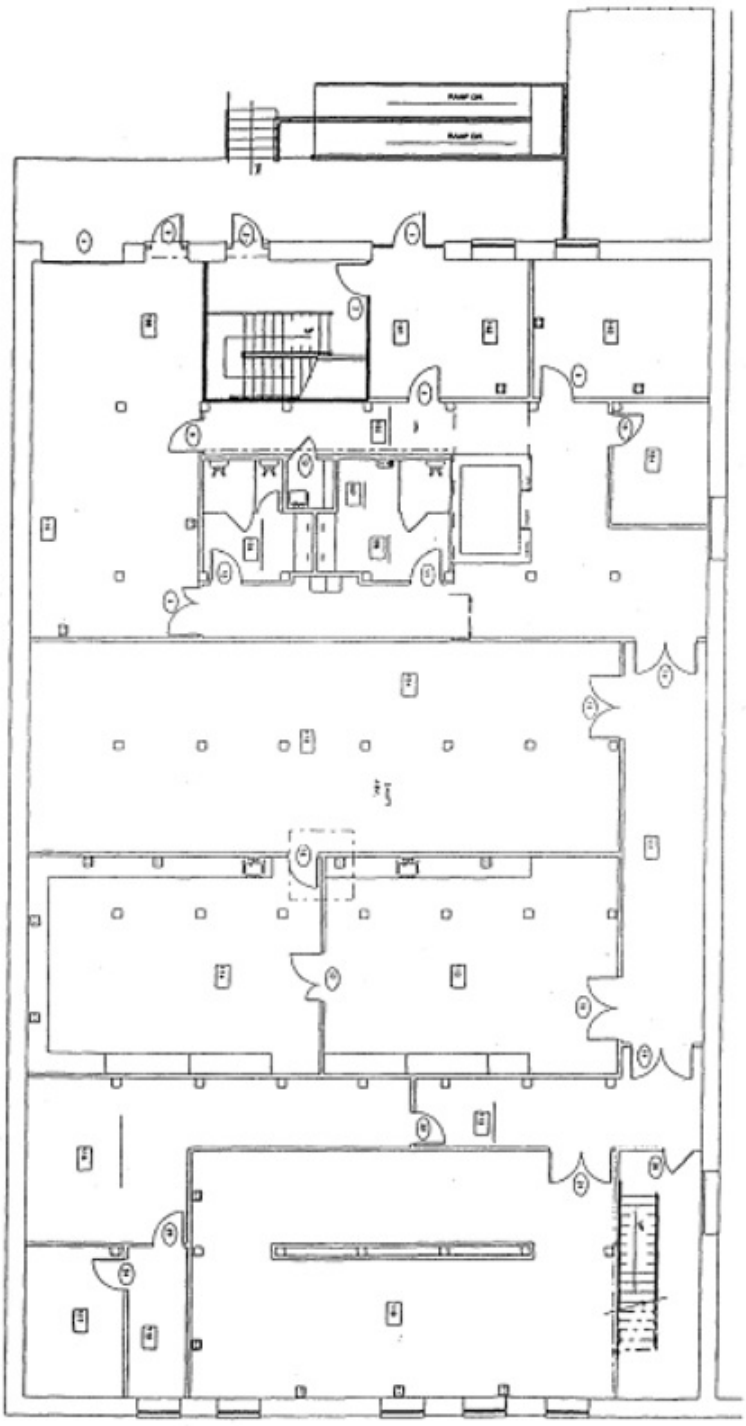
COMMERCIAL

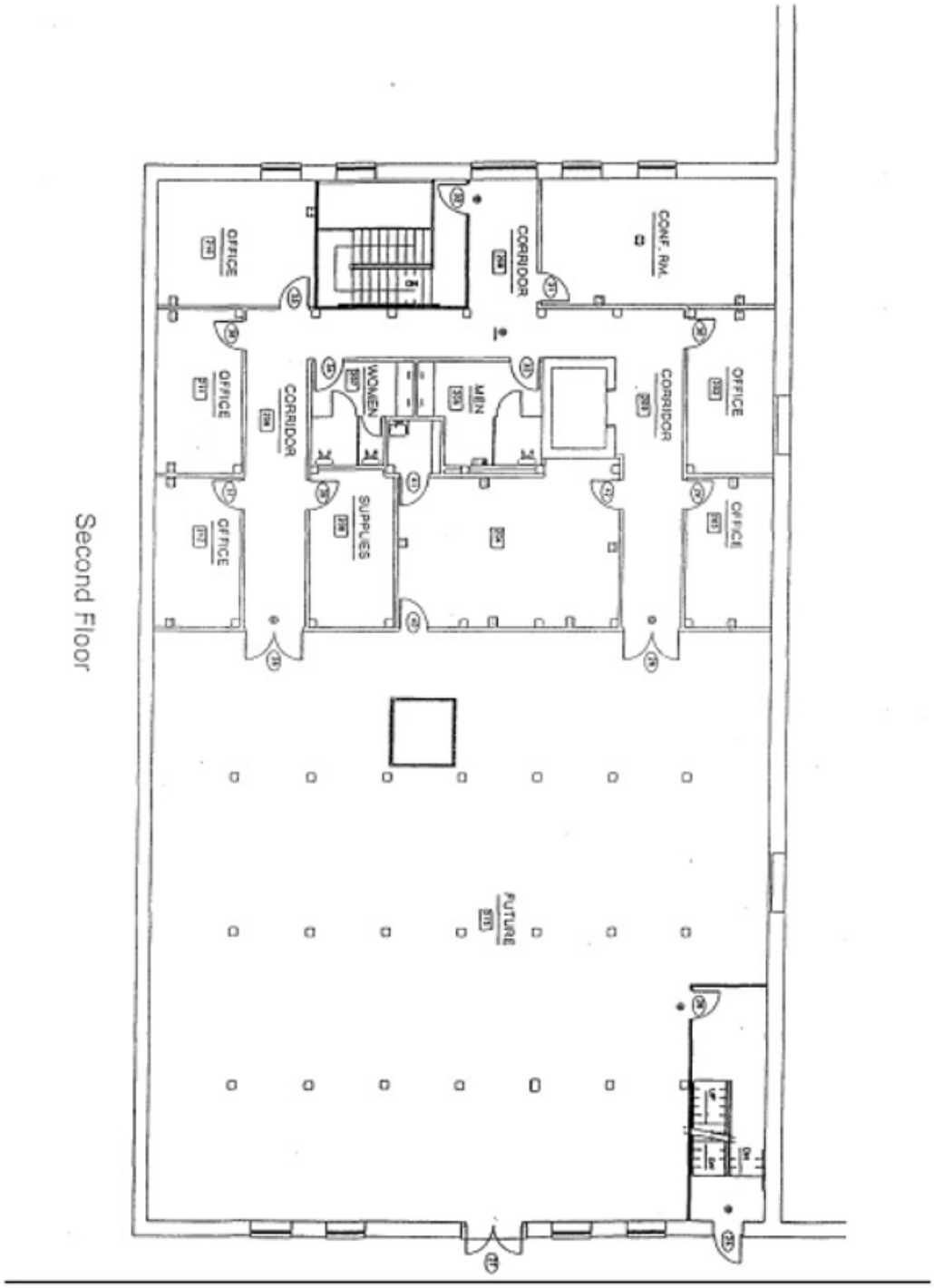
EXHIBIT "B-l"

Site Plan

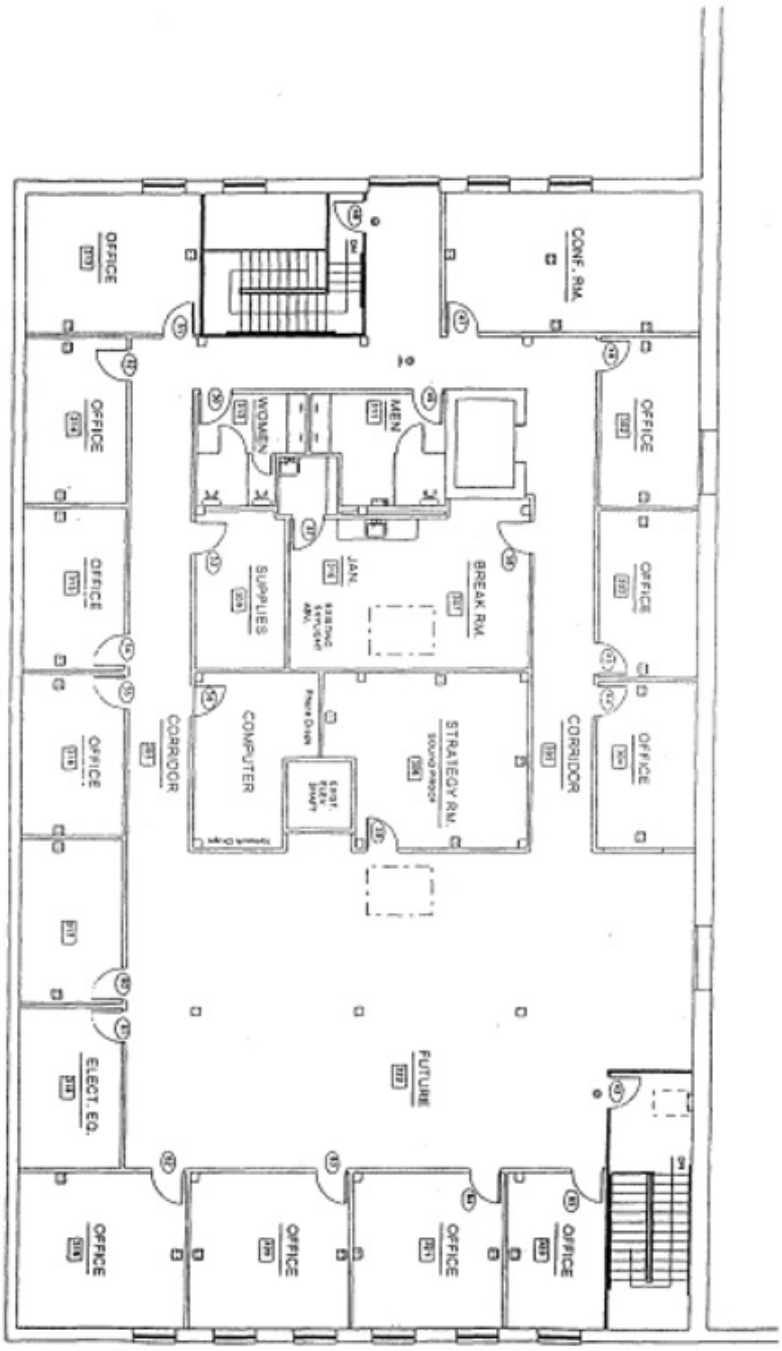
Leasable area of the building.

First Floor





Second Floor


OFFICE
CONF. RM.
OFFICE
OFFICE
WOMEN
MEN
OFFICE
OFFICE
SUPPLIES
JAN.
BREAK RM.
OFFICE
OFFICE
CORRIDOR
COMPUTER
STRATEGY RM.
CORRIDOR
OFFICE
FUTURE
ELECT. EQ.
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OFFICE
OFFICE

Third Floor

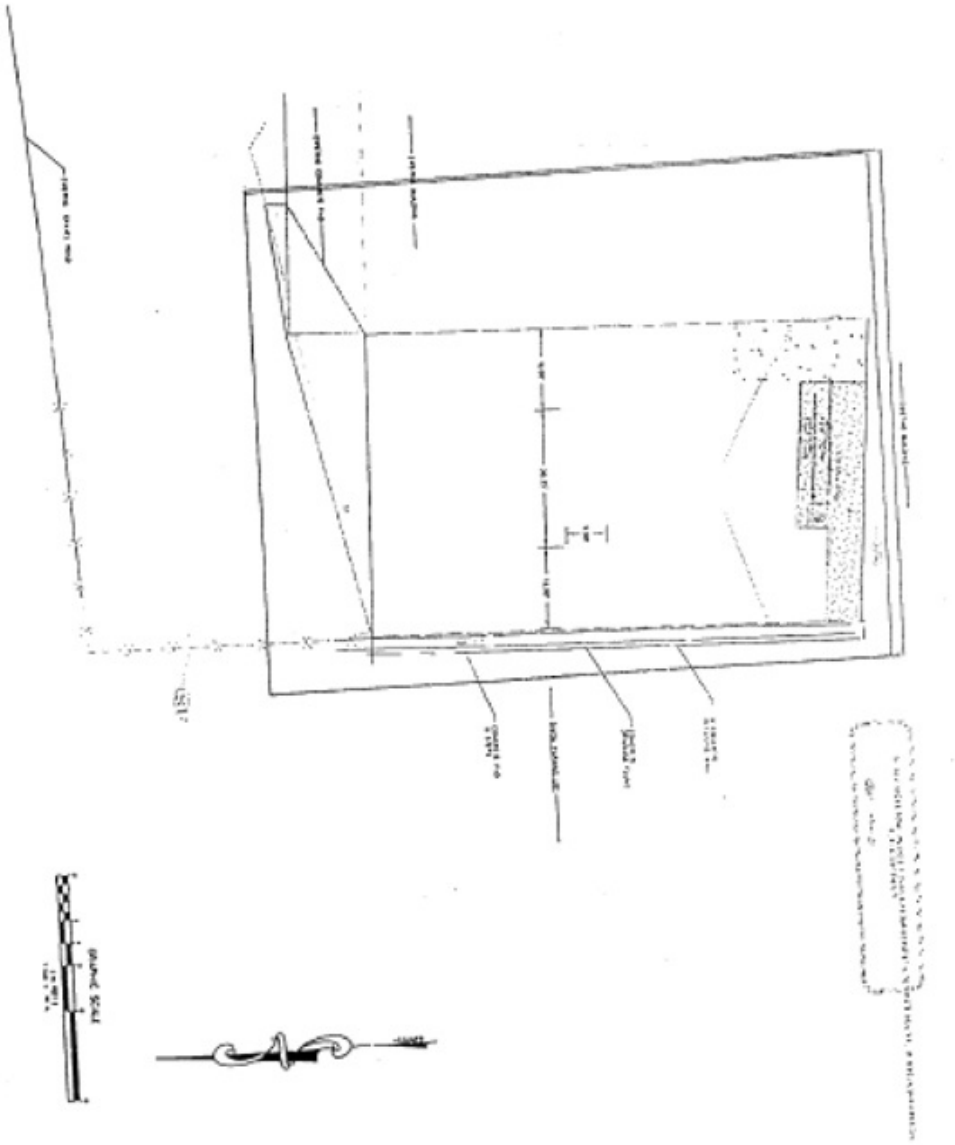


EXHIBIT "C-l"

Legal Description of the Land (First Right of Refusal)

Being in fact property located at 527 & 529 Bridge Street and identified as Parcel Identification Number 92-21487 in the City of Danville; further described as lot fronting 94.25 feet on Bridge Street in the City of Danville, Virginia; and being the same property as identified in the attached City of Danville-Real Estate Assessment Card.

WORK YEAR 2004

PAGE NO. 1 CARD # 01 OF 01

CITY OF DANVILLE - ASSESSMENT CARD

DATE 07/12/2004 ROUTING NO. - -

PARCEL ID 21487 DISTRICT 92 PROPERTY LOCATION 527 BRIDGE ST & 529

PARCEL NUM 95-4-7

NBHD	00001	Average
DESIRE	3	Average
TREND	02	Static
CLASS	7434	Storage Wha - Ex - Local
LUC	743	Storage Wha-Exempt-Local
ZONING	TWC	Tobacco Warehouse Comm
PROP.TYPE	4	Commercial
CI TYPE		
CI AREA	1	
TOPOGRAPHY		
ACCESS		
UTILITIES		
PARKING		
TAX STATUS		

OWNERSHIP
INDUSTRIAL DEVELOPMENT
AUTHORITY OF DANVILLE
VIRGINIA

MAILING ADDRESS
INDUSTRIAL DEVELOPMENT
AUTHORITY
P O BOX 3300
DANVILLE VA 24541

LEGAL DESCRIPTION
94.25 FT OLD BELT
STORAGE NO 1 BRIDGE ST

SURVIVORSHIP NO

MORT/HANDLING CODE

SALES HISTORY

TYPE	SOURCE	SALESDATE	BOOK	PAGE	VALIDITY	SALE PRICE
Improved/Bldg		03/25/2004	D 04	1426	02	120,000
Improved/Bldg			D 101	184	11	0

ASSESSMENT SUMMARY

YEAR	LAND	USE	IMPROVEMENT	TOTAL
2004	19,900	19,900	54,100	74,000

APPROACH TO VALUE COST C&GFLAG

	LAND	CURRENT USE	IMPROVEMENTS	TOTALS
COST	$19,900	$0	$54,100	$74,000
INCOME	$19,900	$0	$0	$0
MARKET	$19,900	$0	$0	$19,900
OVERRIDE	$0	$0	$0	$0
O/R REASON				

LAND INFORMATION

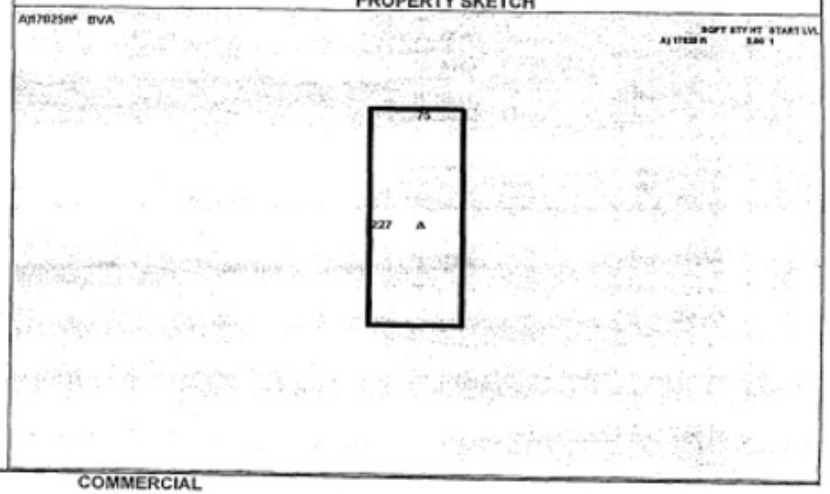
TYPE	ACT FRONT ACRES/SQFT	EFF FRONT	EFF DEPTH	UNITS	RATE	OVER	DEPTH RIDR	FACTOR	ADJ RATE	BASE VALUE	ADJUSTMENT #1 RSN	%	$	ADJUSTMENT #2 RSN	%	$	ADJUSTMENT #3 RSN	%	$	ADJUSTMENT #4 RSN	%	$	VALUE
S01	22128			0.000	1.00	Y			1.00	22,130	TOP	90	0		100	0		100	0		100	0	19,920

TOTAL ACRE 0.5080

TOTAL LAND VALUE 19,900

PROPERTY PHOTO

PROPERTY SKETCH



COMMERCIAL

Exhibit 10.18

SUBLEASE

This Sublease ("Sublease") is entered into as of the 1st day of February, 2006, by and between GRYPHON CAPITAL PARTNERS, LLC ("Sublessor"), and LUNA INNOVATIONS INCORPORATED ("Sublessee").

W I T N E S S E T H:

WHEREAS, pursuant to that certain lease ("Lease") Sublessor leased from FAISON-ROANOKE OFFICE LIMITED PARTNERSHIP, a North Carolina limited partnership, WILLIAM J. LEMON, BARBARA B. LEMON, BLUE RIDGE HIGHLANDS, INC., a Virginia corporation, SARAH L. LUDWIG, W. TUCKER LEMON AS TRUSTEE OF THE W. TUCKER LEMON 1990 LIVING TRUST, and STEPHEN W. LEMON ("Lessor") that space designated as Suite 130 in the Wachovia Tower situated at 10 South Jefferson Street, SE, Roanoke, Virginia 24011 (the "Leased Premises");

WHEREAS, Sublessee has requested Sublessor sublease a portion of the Leased Premises to Sublessee; and

WHEREAS, Sublessor has agreed to sublease a portion of the Leased Premises to Sublessee upon the terms and conditions set forth herein.

In consideration of the mutual benefits set forth herein, and for other good and valuable consideration, the parties agree as follows:

1. Subleasing Clause. Sublessor hereby subleases to Sublessee, subject to and in accordance with the terms and conditions of this Sublease, the two offices located in the back of the Leased Premises, along with the use of the conference room (the "Subleased Space").

2. Term. The "Term" of this Sublease shall be the period of one month, commencing on the date hereof and ending on February 28, 2006. The Term shall automatically renew on a month-to-month basis until such time as either Sublessor or Sublessee gives the other party at least thirty (30) days' prior written notice of its termination of this Sublease. Sublessor covenants to keep the Lease in full force and effort during the Term.

3. Rent. Sublessee covenants and agrees to pay to Sublessor during the Term rent equal to one thousand four hundred and no cents ($1,400.00) per month for the Term. All rent due under this Sublease shall be payable on or before the 5th day of each calendar month, in advance, and without demand.

4. Quiet Enjoyment. If Sublessee pays the rent herein provided, Sublessee shall, at all times during the Term of this Sublease, have the peaceable and quiet enjoyment and possession of the Subleased Space without any manner of hindrance from Sublessor or any persons lawfully claiming through Sublessor.

5. Default by Sublessee. Sublessee shall be deemed to be in default under this Sublease upon the occurrence of any one or more of the following events (an "Event of Default"):

(i) Sublessee fails to make any payment of rent or other amount required to be paid by Sublessee under this Sublease where such failure continues for ten (10) days after written notice of such failure is delivered to Sublessee from Sublessor.

(ii) Sublessee fails to perform or observe any other material covenant or condition of this Sublease where such failure continues for ten (10) days after written notice of such failure is delivered to Sublessee from Sublessor.

(iii) Sublessee is adjudicated bankrupt or makes an assignment for the benefit of creditors.

6. Remedies. Upon the occurrence of any Event of Default as described in the preceding paragraph, Sublessor may, at its option, serve notice upon Sublessee that this Sublease shall cease and expire and become void on the date specified in such notice, to be not less than twenty (20) days after the date of such notice, thereupon at the expiration of the time limit in such notice this Sublease and the Term hereof granted, as well as the right, title and interest of Sublessee hereunder, shall cease and become void. Thereupon, Sublessee shall immediately quit and surrender to Sublessor the Subleased Space.

7. Governing Law. This Sublease shall be construed, governed and enforced in accordance with the laws of the Commonwealth of Virginia, and Sublessee consents to the jurisdiction and venue of any court in Roanoke City, Virginia with respect to any dispute arising out of this Sublease.

8. Severability. If any provision of this Sublease is held to be invalid, void or unenforceable, the remaining provisions shall not be affected or impaired and such remaining provisions shall remain in full force and effect.

9. Successors. The rights, privileges and obligations of the parties to this Sublease shall be binding upon and shall inure to the benefit of the parties and their respective legal representatives, successors and assigns.

10. Notices. All notices required or permitted hereunder shall be deemed sufficiently given if hand delivered or sent by certified or registered mail addressed to Sublessor or Sublessee, as the case may be, as follows:

If to Sublessee: Luna Innovations Incorporated
Attn: Scott A. Graeff
2851 Commerce Street
Blacksburg, VA 24060

If to Sublessor: Gryphon Capital Partners, LLC
Attn: Leigh Huff
10 South Jefferson Street, SE, Suite 130
Roanoke, VA 24011

Either party may change its address by written notice to the other.

11. Entire Agreement. This Sublease, including the exhibits hereto, contains all the agreements, conditions, understandings, representations and warranties made between the parties hereto, with respect to the subject matter hereof, and supersedes all prior agreements, written or oral.

12. Counterparts and Facsimile Signatures. This Sublease may be executed in one or more counterparts and facsimile signatures shall be deemed originals for purposes of this Sublease.

[REMAINDER OF PAGE LEFT BLANK – SIGNATURE PAGE TO FOLLOW]

IN WITNESS WHEREOF, the parties have executed this Sublease as of the day and year first above written.

SUBLESSEE:

LUNA INNOVATIONS INCORPORATED

By: /s/ Scott A. Graeff
Its: CFO

SUBLESSOR:

GRYPHON CAPITAL PARTNERS, LLC

By: /s/ Leigh P. Huff Jr.
Its: Managing Director

Exhibit 10.19

LEASE

RIVERSIDE CENTER

ROANOKE, VIRGINIA

THIS LEASE is made this **30th** day of **December 2005**, by **CARILION MEDICAL CENTER** (hereinafter referred to as "Landlord") and **LUNA INNOVATIONS INCORPORATED** (hereinafter referred to as "Tenant").

WITNESSETH

In consideration of the mutual agreements hereinafter set forth, the parties hereto mutually agree as follows:

1. **Premises**. Landlord hereby leases to Tenant, and Tenant hereby leases from Landlord, for the term and upon the conditions hereinafter provided, that certain space in **Suites 300 & 400**, located on the **3rd and 4th** floors of the office building to be constructed by Landlord at Phase 1 of Building #1 - Riverside Center, Roanoke, Virginia, 24014, (hereinafter referred to as the "Building"), which space shall consist of the entire 4 th floor of the Building and the portion of the 3rd floor identified by Tenant in writing to Landlord on or before June 1, 2006, provided that the total leased space shall consist of approximately **20,000** net rentable square feet (such space being hereinafter referred to as the "Premises"). The parties agree that a floor plan showing the Premises shall be attached hereto as Exhibit A once the space has been identified by Tenant.

1A. **Tenant's Option and Right of First Refusal**. If at any time hereafter, Landlord receives from a ready, willing and able prospective tenant an acceptable bona fide offer, or makes a bona fide offer to such a prospective tenant, to lease all or a portion of the space on the third floor of the Building not leased to Tenant, Landlord shall give Tenant written notice thereof, specifying term, rent of the proposed lease, accompanied by Landlord's affidavit that such offer to lease is in good faith. Tenant shall thereupon have the prior option to lease the space at the rent rate covered by the offer, which option Tenant may exercise by giving Landlord written notice within fifteen (15) days after Tenant's receipt of Landlord's notice of the offer. Should Tenant fail to exercise the right of first refusal within the time limits set forth above or elect not to exercise said right, Landlord may lease the space to such third party and Tenant's right of first refusal for space shall terminate. Notwithstanding the foregoing, Tenant shall have the option, at any time prior to receiving notice from Landlord that Landlord has made or received a bona fide offer to lease all or a portion of the third floor of the Building not leased to Tenant, to lease all or a portion of such additional space. In the event Tenant notifies Landlord in writing of its election to lease additional space on the third floor, the additional space shall be leased by Landlord to Tenant pursuant to the terms and conditions set forth herein and the parties agree to execute an amendment to this Lease reflecting the lease of the additional space.

2. **Term and Renewal**. The term of this Lease shall be for five years and commence on the later of: (i) the **1st** day of **September 2006** or (ii) the day the Landlord delivers to Tenant of a

certificate of occupancy issued by the appropriate governmental authorities (provided the Building and Tenant's Improvements are substantially complete), permitting Tenant to take possession of the Premises. Landlord shall provide at least thirty (30) days prior notice to the Tenant of the anticipated Commencement Date and Landlord shall give Tenant access to the Premises during such thirty (30) day period. In the event the Landlord has not substantially completed the Building, including Tenant's Improvements, and delivered a certificate of occupancy to Tenant by January 1, 2007, Tenant may terminate this Lease upon written notice to Landlord.

Landlord agrees that in the event Tenant notifies Landlord in writing at least twelve (12) months prior to the end of the initial five year term that Tenant would like to renew this Lease for an additional five years, Landlord shall negotiate with Tenant in good faith for a five year extension of this Lease.

3. **Rent**. Tenant shall pay as base rent for the Premises at the rate of Twenty Four Dollars ($24.00) per square foot for the first year of the term, payable in advance, in equal monthly installments. The first monthly installment is to be made by Tenant within two business days following the Commencement Date, and the second and all subsequent monthly payments to be made on the first day of each and every calendar month during the term hereof, beginning with the second full calendar month after the Commencement Date. If the Commencement Date is a date other than the first day of a month, the rent from the Commencement Date until the first day of the following month shall be prorated at the rate of one-thirtieth (1/30 th) or one-thirty first (1/31st), as applicable, of the base monthly rental for each day and that amount plus rent for the first full calendar month shall be paid by Tenant to Landlord within two business days following the Commencement Date. Tenant shall pay rent to Landlord, or to such other party or at such other address as Landlord may designate from time to time by written notice to Tenant, without demand and without deduction, set-off or counterclaim, except as expressly set forth herein. If Landlord shall at any time or times accept said rent after it shall become due and payable, such acceptance shall not excuse delay upon subsequent occasions, or constitute, or be construed as, a waiver of any or all of Landlord's rights hereunder. As reflected in the table set forth below, rent for the third, fourth and fifth years of the term shall increase by two percent (2%) over the rent paid during the preceding lease year (numbers based on 20,000 net rentable square feet).

Year One	$40,000.00 per month	$480,000.00 annually
Year Two	$40,000.00 per month	$480,000.00 annually
Year Three	$40,800.00 per month	$489,600.00 annually
Year Four	$41,616.00 per month	$499,392.00 annually
Year Five	$42,448.32 per month	$509,379.84 annually

3A. **Rent Adjustment**. Notwithstanding the provisions of Article 3, and after taking into account the various terms of each lease, Landlord agrees that the rent paid by Tenant shall never exceed the rent paid to Landlord by any other tenant in the Building. In the event any space in the Building is leased to one or more third parties for less than Twenty Four Dollars ($24.00) per square foot, Landlord shall give immediate notice to Tenant. Tenant and Landlord shall jointly choose a MIA real estate appraiser. The two leases and all relevant information including the cost of the tenant improvements shall be submitted to the appraiser for his review. Without sharing the details of the information submitted with Tenant, the appraiser shall then be requested to evaluate

the relative financial value of the two landlord/tenant arrangement and then report back to Landlord and Tenant whether the new tenant is receiving a better financial arrangement on a square foot basis. If the appraiser determines that the new tenant is receiving a better financial arrangement he shall then inform the Landlord and Tenant what adjustment would need to be made in Tenant's rent to make the two financial arrangements equivalent. That adjustment would then be implemented and the rent for the subsequent years of Tenant's Term shall also be adjusted accordingly. Tenant acknowledges and agrees that the terms and conditions set forth in this Article 3A shall not be triggered by, or apply to, any leased space containing less than 1,000 square feet, or wherein the tenant is Carilion Health System, its subsidiaries or the Carilion Biomedical Institute, and that this Article 3A only applies to the Building and not any other buildings that may be constructed by Landlord in Riverside Center.

4. **Use of Premises**. Tenant will use and occupy the Premises following the Commencement Date solely for the conduct of Tenant's business and in accordance with the uses permitted under applicable zoning regulations. Tenant will not use or occupy the Premises for any unlawful purpose, and will comply with all present and future laws, ordinances, regulations, and orders of the United States of America, State of Virginia, and any other public authority having jurisdiction over the Premises. It is expressly understood that if any present or future law, ordinance, regulation or order requires an occupancy permit for the Premises, Tenant will obtain such permit at Tenant's own expense. Tenant will have, together with other tenants in the Building, access to and use of all common areas and facilities of the Building.

5. **Assignment and Subletting**. Tenant will not assign, transfer or encumber this Lease or the Premises without obtaining the prior written consent of Landlord, which consent shall not be unreasonably withheld or delayed, nor shall any assignment or transfer of this Lease be effectuated by operation of law or otherwise without prior written consent of the Landlord, which consent shall not be unreasonably withheld or delayed. If Tenant merges with a third party or if Tenant sells substantially all its assets Tenant may assign and/or transfer this Lease after obtaining the written consent of the Landlord, which consent shall not be unreasonably withheld or delayed. Tenant may sublet or rent the Premises or any portion thereof only with the prior written consent of the Landlord, which consent shall not be unreasonably withheld or delayed. In the event that Tenant defaults hereunder, Tenant hereby assigns to Landlord the rent due from any assignee or subtenant of Tenant and hereby authorizes each such subtenant to pay said rent directly to Landlord.

6. **Building and Improvements**. Landlord, at its sole cost and expense, shall cause the Building, of which the Premises are a part, to be constructed in accordance with the plans and specifications, including finishes, resubmitted to the Building Department of the City of Roanoke on December 28, 2005, which plans and specifications are incorporated herein by reference (the "Plans and Specifications"). Landlord warrants to Tenant that the Building shall be constructed in a good and workmanlike manner, substantially free of defects in workmanship and substantially in accordance with the Plans and Specifications; it being acknowledged by Tenant that Landlord may substitute materials of like-kind and quality without obtaining Tenant's prior written consent. Landlord shall promptly repair and replace any defects or deficiencies noted by Tenant to Landlord which arises as a result of the construction of the Building and not as a result of Tenant's use of the Premises.

Prior to the Commencement Date, Landlord shall complete construction of all requested Tenant improvements according to Tenant's plans and specifications as approved by Landlord, which approval shall be unreasonably withheld or delayed ("Tenant's Improvements"). Landlord agrees that it shall pay an amount up to **$25.00 per sq. ft.** for the construction of Tenant's Improvements. Landlord agrees to contract directly with the party constructing the Building to complete Tenant's Improvements, and Tenant shall be named as a third party beneficiary to such contract. Landlord shall inform Tenant of any cost of Tenant's Improvements that shall exceed the square foot allowance and Landlord will not begin the construction of Tenant's Improvements without Tenant's written approval. Landlord shall not make any modifications to Tenant's Improvements that would result in an additional cost in excess of the square foot allowance without the prior written consent of Tenant. In the event the cost of Tenant's Improvements exceed the square foot allowance paid by Landlord, Tenant shall reimburse Landlord the additional costs following Tenant's receipt of written notice from Landlord evidencing that the additional costs have been paid. Tenant shall be free to make, with Landlord's consent, provided such consent shall not be unreasonably withheld or delayed, additional alterations, redecorations, or improvements in and to the Premises provided all of such alterations, redecorations, additions or improvements conform to all applicable Building Codes of the City of Roanoke. If any mechanic's lien is filed against the Premises, or the real property of which the Premises are a part, for work claimed to have been done directly for, or materials claimed to have furnished directly to, Tenant, such mechanic's lien shall be discharged by Tenant within twenty (20) days thereafter, at Tenant's sole cost and expense, by the payment thereof or by filing any bond permitted by law. If Tenant shall fail to discharge any such mechanic's lien, Landlord may, at its option, discharge the same and treat the cost thereof as additional rent payable with the monthly installment of rent next becoming due; it being hereby expressly covenanted and agreed that such discharge by Landlord shall not be deemed to waive, or release, the default of Tenant in not discharging the same. It is understood and agreed that in the event Landlord shall give its written consent to Tenant's making any alterations, decorations, or improvements, such written consent shall not be deemed to be an agreement or consent by Landlord to subject Landlord's interest in the Premises, the Building or the real property upon which the Building is situated to any mechanic's liens which may be filed in respect of any such alterations, decorations, additions, or improvements made by or on behalf of Tenant. All alterations, decorations, additions or improvements, in or to the Premises or the Building made by either party shall remain upon and be surrendered with the Premises as a part thereof at the end of the term hereof without disturbance, molestation or injury; provided, however, that if Tenant is not in default in the performance of any of its obligations under this Lease, Tenant shall have the right to remove, prior to the expiration or termination of the term of this Lease, all movable furniture, furnishings, or equipment installed in the Premises at the expense of Tenant (except carpeting which Tenant has installed, which shall become property of Landlord), and if such property of Tenant is not removed by Tenant prior to the expiration or termination of this Lease the same shall become the property of Landlord and shall be surrendered with the Premises as a part thereof.

7. **Maintenance and Repair**. Tenant shall suffer no waste or injury to the Premises or the fixtures and equipment therein, and shall, at the expiration or other termination of the term of this Lease, surrender up the Premises in the same order and condition in which they are on the Commencement Date, ordinary wear and tear and damage by the elements, fire or other casualties excepted. Landlord, at its sole cost, shall diligently and as soon as practicable perform all necessary maintenance and make all repairs, service, maintenance and/or replacement necessary (including, but

not limited to, all plumbing, piping, heating and air conditioning systems, electrical and lighting facilities and equipment, wiring, fixtures, elevators, windows, door glass, plate glass, showcases, skylights and entrances) to keep the Premises in good condition and in proper working order. Landlord shall also provide and install all original and replacement fluorescent tubes and light bulbs within the Premises necessary to provide adequate lighting. Landlord shall promptly cause the removal, at no expense to Tenant, of all snow and ice from the sidewalks and parking areas serving the Leased Premises and shall maintain, at its sole cost, the landscaping, sidewalks and parking areas in good repair and condition.

8. **Signs; Furnishings**. No sign, advertisement or notice shall be inscribed, painted, affixed or displayed on any part of the inside of the Building except on the directories, the doors of offices and corridor walls, and then only in such place, number, size, color and style as is approved by Landlord, which approval shall not be unreasonably withheld or delayed, and at Tenant's cost and expense, and if such sign, advertisement or notice is nevertheless exhibited by Tenant without Landlord's consent, Landlord shall have the right to remove the same and Tenant shall be liable for any and all expenses incurred by Landlord by said removal. Tenant shall be entitled, at Tenant's expense, to construct signage on the exterior of the Building based on a prorated share of the allowable space for signage on the side of Building. Said proration shall be calculated based on the percentage of square footage of the Premises over the total net rentable square footage with in the Building. The signs shall comply with all local rules, regulations and ordinances promulgated by the local governing body where the Building is located. Landlord shall have the right to prescribe the weight and position of safes and other heavy equipment or fixtures, which shall, if considered necessary by the Landlord, stand on plank strips to distribute the weight. Any and all damage or injury to the Premises or the Building caused by moving the property of Tenant into, in or out of the Premises, or due to the same being on the Premises shall be repaired by, and at the sole cost of, Tenant. No deliveries of any matter of any description will be received into the Building or carried in the elevators except as approved by Landlord, which approval shall not be unreasonably withheld or delayed, and all deliveries shall be made only through entrances of the Building designated for this purpose. All moving of furniture, equipment and other material shall be coordinated with, and under the supervision of, Landlord who shall, however, not be responsible for any damage to or charges for moving same.

9. **Access to Premises**. Tenant shall permit Landlord, or its representatives to enter the Premises during Tenant's normal business hours provided Tenant receives at least twenty four (24) hours prior written notice (except in the case on an emergency when no such notice is necessary), without charge therefore to Landlord and without diminution of the rent payable by Tenant, to examine, inspect and protect the same, and to make such alterations and/or repairs as in the judgment of Landlord may be deemed reasonably necessary. Upon receipt of written prior notice, Tenant shall also permit Landlord or its representatives such access to Premises to exhibit the same to prospective Tenants during the last one hundred twenty (120) days of the term of this Lease.

10. **Insurance Rating**. Tenant will not conduct or permit to be conducted any activity, or place any equipment in or about the Premises, which will, in any way, increase the rate of fire insurance or other insurance on the Building, and if any increase in the rate of fire insurance or other insurance is stated by any insurance company or by the applicable Insurance Rating Bureau to be due to activity or equipment in or about the Premises, such statement shall be conclusive evidence

that the increase in such rate is due solely to such activity or equipment and, as a result thereof, Tenant shall be liable for such increase and shall reimburse Landlord therefore.

11. **Tenant's Equipment**. Tenant may not install or operate in the Premises any electrically operated equipment or other machinery, other than radios, televisions, clocks, copying machines, paper shredders, computers, fax machines, printers or other equipment and machinery used in Tenant's ordinary business without first obtaining the prior consent of Landlord, which consent shall not be reasonably withheld or delayed, provided that such consent may be conditioned upon the payment by Tenant of additional rent in compensation for such excess consumption of utilities and for the cost of additional wiring as may be occasioned by the operation of said equipment or machinery. Tenant shall not install any other equipment of any kind or nature whatsoever which will or may necessitate any changes, replacements or additions to, or in the use of, the water system, heating system, plumbing system, air-conditioning system, or electrical system of the Premises or the Building without first obtaining the prior written consent of Landlord, which consent shall not be unreasonably withheld or delayed. Business machines and mechanical equipment belonging to Tenant which cause noise or vibration that may be transmitted to the structure of the Building or to any space therein to such a degree as to be reasonably objectionable to Landlord or to any tenant in the Building shall be installed and maintained by Tenant, at Tenant's expense, on vibration eliminators or other devices sufficient to eliminate such noise and vibration.

12. **Indemnity and Liability and Casualty Insurance**. Tenant shall indemnify and hold harmless Landlord, Carilion Medical Center and its respective parents, subsidiaries, affiliates, related corporations, agents, officers, directors, and employees, from and against any and all claims, liabilities, losses and causes of action of whatever kind or nature which are suffered by or asserted against Landlord arising out of Tenant's use of the Premises, provided Tenant shall not be responsible for damages and injury caused by the negligence or wrongful act of Landlord, its employees, agents or representatives; and Tenant further agrees to defend all such claims at its own cost and expense without reimbursement from Landlord. Tenant further covenants and agrees to indemnify Landlord resulting from any action or failure to act by any and all of Tenant's employees on the Premises.

Tenant does hereby covenant and agree to obtain and keep in full force and effect insurance as set forth below and to furnish Landlord with certificates of insurance evidencing such coverage, which insurance shall name Carilion Medical Center as additional named insured and shall contain a forty-five (45) day cancellation or material change in coverage clause. To the extent reasonably available, such policies shall contain a waiver of subrogation in favor of Carilion Medical Center. Tenant agrees that the insurance coverages set out below shall be primary coverage as between Landlord and Tenant. Except as set forth herein, such insurance coverages do not limit the liability of Tenant to Landlord for any damages.

12A. **Comprehensive General Liability**. Tenant shall obtain commercial general liability insurance with minimum limits of $1,000,000 Each Occurrence, $2,000,000 General Aggregate, $2,000,000 Products & Completed Operations Aggregate, $1,000,000 Personal & Advertising Injury, $1,000,000 Fire Damage (any one fire) and $10,000 Medical Expense (any one person).

12B. **Additional Insured Endorsement** CG2010 11/85 or equivalent in favor of Carilion Medical Center and all affiliates (copy of endorsement(s) must accompany standard ACORD certificate of insurance).

It is understood and agreed that the furnishing by Tenant of such policies of insurance and the acceptance of same by Landlord is not intended to and shall not, limit, affect, or modify the obligations or responsibilities otherwise assumed or owed by Tenant.

Tenant agrees to take out and maintain at all times during the term of this Lease a policy of all risk property insurance including, but not limited to, improvements and betterments coverage, on its improvements, alterations, and other personal property placed at the Premises, whether or not placed there by Tenant.

Tenant will not engage in any activity or business which would cause Landlord's all risk property insurance to be canceled or which would result in higher premiums. Should the nature or conduct of Tenant's business in the Premises result in increased all risk property premiums for the Premises and/or the adjoining and surrounding improvements owned by Landlord, Tenant will pay Landlord during the term thereof an amount equal to such increase so long as it shall continue in effect, following Tenant's receipt of written evidence that the increase arises directly and solely from Tenant's business in the Premises.

Landlord, at its sole cost and expense, shall obtain at all times during the term of this Lease hazard insurance, in an amount equal to the replacement cost of the Building, against loss or damage by fire or other casualty. Landlord hereby indemnifies Tenant and its respective parents, subsidiaries, affiliates, related corporations, agents, officers, directors, and employees (collectively, "Tenant Affiliates") and holds Tenant and Tenant's Affiliates harmless from and against any claims, liabilities, losses and causes of action of whatever kind or nature which are suffered by or asserted against Tenant and/or Tenant's Affiliates by any person and which claims, liabilities, losses and causes of action arise out of, or in connection with or are based upon any wrongful acts, omissions, or failures of Landlord, its employees, servants or invitees under this Lease, unless due to Tenant's negligence, or wrongful acts or omissions.

13. **Services and Utilities**. It is agreed that Landlord will furnish heat and air conditioning, during the seasons of the year when heat and air conditioning are required, between the hours of 8:00 a.m. and 8:00 p.m., Monday through Saturday, government holidays excepted. It is agreed that Landlord will provide reasonably adequate electricity, water, exterior window cleaning service and Monday through Friday only (except government holidays), janitorial service after 6:00 p.m. Landlord will also provide elevator service between the hours of 8:00 a.m. and 8:00 p.m., Monday through Saturday (except government holidays), and at least one (1) elevator with code access on a twenty-four hour basis, provided, however, that Landlord shall have the right to remove elevators from service as the same shall be required for moving freight, or for servicing or maintaining the elevators and/or the Building, provided that so far as is reasonably practical, at least one elevator shall be available at all times. Landlord shall maintain the public restrooms in the Building and shall furnish, without charge therefore, all soap, paper towels, and toilet tissue necessary for the efficient use of such rooms. It is understood and agreed that Landlord shall not be liable for failure to furnish, or for delay or suspension in furnishing, any of the services (required to

be performed by Landlord) caused by breakdown, maintenance, repairs, strikes, scarcity of labor or materials, act of God or from any other cause. For purposes of this Lease, a "government holiday" shall be determined by reference to Public Law, as the same may be amended from time to time.

14. **Insolvency or Bankruptcy of Tenant**. In the event Tenant makes an assignment for the benefit of creditors, or a receiver of Tenant's assets is appointed; or Tenant files a voluntary petition in any bankruptcy or insolvency proceeding, or an involuntary petition in any bankruptcy or insolvency proceeding is filed against Tenant and the same is not discharged within sixty (60) days, or Tenant is adjudicated as bankrupt, Landlord shall have the option of terminating this Lease by sending written notice to Tenant of such termination and, upon such written notice being given by Landlord to Tenant, the term of this Lease shall, at the option of Landlord, end and Landlord shall be entitled to immediate possession of the Premises and to recover damages from Tenant in accordance with the provisions of Article 17 hereof.

15. **Limitation of Liability of Landlord**. Landlord shall not be liable to Tenant, its employees, agents, business invitees, licensees, customers, clients, family members, guests or trespassers for any damage, compensation or claim arising from the necessity of repairing any portion of the Building, the interruption in the use of the Premises, accident or damage resulting from the use or operation (by Landlord, Tenant, or any other person or persons whatsoever) of elevators, or heating, cooling, electrical or plumbing equipment or apparatus, or the termination of this Lease by reason of the destruction of the Premises, or from any fire, robbery, theft, and/or any other casualty, or from any leakage in any part or portion of the Premises, or the Building, or from water, rain or snow that may leak into, or flow from, any part of the Premises or the Building. Any goods, property or personal effects, stored or placed by Tenant in or about the Premises or Building, shall be at the risk of Tenant, and Landlord shall not in any manner be held responsible therefore.

16. **Damage to the Premises**. If the Premises shall be partially damaged by fire or other cause without the fault or neglect of Tenant, its agents, employees or invitees, Landlord shall diligently and as soon as practicable after such damage occurs (taking into account the time necessary to effectuate a satisfactory settlement with any insurance company) repair such damage at the expense of Landlord, provided, however, that if the Building is damaged by fire or other cause to such extent that the damage cannot be fully repaired within ninety (90) days from the date of such damage, Landlord upon written notice to the Tenant, in which event the rent shall be apportioned and paid to date of such damage. During the period that Tenant is deprived of the use of the damaged portion of the Premises, Tenant shall be required to pay rental covering only that part of the Premises that Tenant is able to occupy and the rent for such space shall be that portion of the total rent which the amount of square foot area remaining that can be occupied by Tenant bears to the total square foot area of the Premises. All injury or damage to the Premises or the Building caused by Tenant or its agents, employees and invitees, shall be repaired by Landlord, and any cost so incurred by Landlord not covered by insurance shall be paid by Tenant in which event such cost shall become additional rent payable with the installment of rent next becoming due under the terms of this Lease. Notwithstanding the foregoing, in the event the Premises are damaged following the second anniversary of the Commencement Date and the repair of the same shall take longer than ninety (90) days, Tenant shall have the right to terminate this Lease upon written notice to Landlord provided Tenant shall remain responsible for the payment of rent through the date of the damage.

17. **Default of Tenant and Landlord**. If Tenant shall fail to pay any monthly installment of rent as aforesaid and/or as otherwise required By Article 23 hereof (although no legal or formal demand has been made therefore), or shall violate or fail to perform any of the other conditions, covenants or agreements on its part contained in this or in any other lease of space in the Building, and such failure to pay rent or such violation or failure shall continue for a period of fifteen (15) days after Tenant's receipt of written notice from Landlord, then and in any of said events Tenant shall be deemed in default (provided in the event of a non-monetary breach, Tenant shall not be deemed in default if it has begun to cure the same within fifteen (15) days following receipt of such notice and diligently proceeds to cure the same) and this Lease shall, at the option of Landlord, cease and terminate upon at least thirty (30) days prior written notice of such election to Tenant by Landlord, and if such failure to pay rent or such violation or failure shall continue to the date set forth in such notice of termination, then this Lease shall cease and terminate without further notice to quit or of Landlord's intention to re-enter, the same being hereby waived, and Landlord may proceed to recover possession under and by virtue of the provisions of the laws of Virginia, or by such other proceedings, including re-entry and possession, as may be applicable. If Landlord elects to terminate this Lease everything herein contained on the part of Landlord to be done and performed shall cease without prejudice, however, to the right of Landlord to recover from Tenant all rental accrued up to the time of termination or recovery of possession by Landlord, whichever is later. Should this Lease be terminated before the expiration of the term of this Lease by reason of Tenant's default as herein provided, or if Tenant shall abandon or vacate the Premises before the expiration or termination of the term of this Lease, the Premises may be relet by Landlord for such rent and upon such terms as are not unreasonable under the circumstances and, if the full rental hereinabove provided shall not be realized by Landlord, Tenant shall be liable for all damages sustained by Landlord, including, without limitation, deficiency in rent, reasonable attorneys' fees, brokerage and leasing fees and expenses of placing the Premises in first class rentable condition. Any damage or loss of rental sustained by Landlord may be recovered by Landlord, at Landlord's option, at the time of the relettings, or in separate actions, from time to time, as said damage shall have been made more easily ascertainable by successive relettings, or, at Landlord's option, may be deferred until the expiration of the term of this Lease in which event the cause of action shall not be deemed to have accrued until the date of expiration of said term. The provisions contained in this paragraph shall be in addition to and shall not prevent the enforcement of any claim Landlord may have against Tenant for anticipatory breach of the unexpired term of this Lease. In the event that Tenant continues to occupy the Premises after the expiration of the term of this Lease, with the express or implied consent of Landlord, such tenancy shall be from month to month and shall not be renewal of the term of this Lease or a tenancy from year to year. All rights and remedies of Landlord under this Lease shall be cumulative and shall not be exclusive of any other rights and remedies provided to Landlord under applicable law.

If Landlord breaches any of its covenants and obligations contained in this Lease and the breach shall continue for a period of fifteen (15) days after written notice of such violation is received by Landlord from Tenant, Landlord shall be deemed to be in default (provided Landlord shall not be deemed in default if it has begun to cure the same within fifteen (15) days following receipt of notice from Tenant and diligently proceeds to cure the same). In the event of a default by Landlord related to its maintenance and repair obligations hereunder, Tenant shall have the right to cure such default on behalf of the Landlord and deduct the cost of the same from the monthly rent owed by Tenant hereunder until Tenant is reimbursed in full for the cost thereof. In the event of any

other default by Landlord under this Lease, Tenant shall have the right to seek any remedy available under applicable law.

18. **Waiver**. If under the provisions hereof Landlord shall institute proceedings and a compromise or settlement thereof shall be made, the same shall not constitute a waiver of any covenant herein contained nor of any of Landlord's rights hereunder. No waiver by Landlord of any breach of any covenant, condition or agreement herein contained shall operate as a waiver of such covenant, condition or agreement itself, or of any subsequent breach thereof. No payment by Tenant or receipt by Landlord of a lesser amount than the monthly installments of rent herein stipulated shall be deemed to be other that on account of the earliest stipulated rent or shall any endorsement or statement on any check or letter accompanying a check for payment of rent be deemed an accord and satisfaction, and Landlord may accept such check or payment without prejudice to Landlord's right to recover the balance of such rent or to pursue any other remedy provided in this Lease. No re-entry by Landlord, and no acceptance by Landlord of keys from Tenant, shall be considered an acceptance of a surrender of the Lease.

19. **Subordination**. This Lease is subject and subordinate to the lien of all and any mortgages (which term "mortgages" shall include both construction and permanent financing and shall include deeds of trust and similar security instruments) which may now or hereafter encumber or otherwise affect the real estate (including the Building) of which the Premises form a part, or Landlord's leasehold interest therein, and to all and any renewals, extensions, modifications, recastings or refinancings thereof. Notwithstanding the foregoing Landlord shall obtain from any holder of a mortgage, deed of trust or other security instrument a non-disturbance agreement from such third parties acknowledging and agreeing that Tenant's possession of the Premises will not be disturbed so long as Tenant performs its obligations hereunder. In confirmation of such subordination, Tenant shall, at Landlord's request, promptly execute any requisite or appropriate certificate or other document and if Tenant fails to execute the same within fifteen (15) days following receipt of request from Landlord, Tenant agrees that Landlord shall be authorized to execute the certificate or other document as Tenant's attorney-in-fact. Tenant agrees that in the event that any proceedings are brought for the foreclosure of any such mortgage, Tenant shall attorn to the purchaser at such foreclosure sale and recognize such purchaser as the Landlord under this Lease, and Tenant waives the provisions of any statute or rule of law, now or hereinafter in effect, which may give or purport to give Tenant any right to terminate or otherwise adversely affect this Lease and the obligations of Tenant hereunder in the event that any such foreclosure proceeding is prosecuted or completed; provided, however, that such attornment and recognition shall be conditioned upon Tenant's receiving from such purchaser, reasonable assurances that Tenant may remain in quiet and peaceable possession of the Premises for the unexpired term at the rents herein provided and that purchaser shall otherwise keep and perform all of the covenants and conditions herein contained on the part of Landlord to be kept and performed.

20. **Condemnation**. If the whole or a substantial part of the Premises shall be taken or condemned by any governmental authority for any public or quasi-public use or purpose (including sale under threat of such a taking), then the term of this Lease shall cease and terminate as of the date when title vests in such governmental authority, and the annual rental shall be abated on the date when such title vests in such governmental authority. If less than a substantial part of the Premises is taken or condemned by any governmental authority for any public or quasi-public use or

purpose, the rent shall be equitably adjusted on the date when title vests in such governmental authority and the Lease shall otherwise continue in full force and effect. Tenant shall have no claim against Landlord (or otherwise) for any portion of the amount that may be awarded as damages as a result of any governmental taking or condemnation (or sale under threat of such taking or condemnation) or for the value of any unexpired term of the Lease. For purposes of this Article 20, a substantial part of the Premises shall be considered to have been taken if more than fifty percent (50%) of the Premises are unusable by Tenant and, if the Premises are on more than one floor of the Building, then this Article shall apply as if separate leases were made in respect of the Premises on each such floor.

21. **Rules and Regulations**. Tenant, its agents and employees shall abide by and observe the rules and regulations attached hereto as Exhibit B. Tenant, its agent and employees, shall abide by and observe such other reasonable rules and regulations as may be promulgated from time to time by Landlord, with copy sent to Tenant, for the operation and maintenance of the Building, provided that the same are in conformity with common practice and usage in similar buildings and are not inconsistent with the provisions of this Lease. Nothing contained in this Lease shall be construed to impose upon Landlord any duty or obligation to enforce such rules and regulations, or the terms, conditions or covenants contained in any other Lease, as against any other Tenant, and Landlord shall not be liable to Tenant for violation of the same by other Tenant, its employees, agents, business invitees, licensees, customers, clients, family members or guests.

22. **Covenants of Landlord**. Landlord covenants that it has the right to make this Lease for the term aforesaid, and that if Tenant shall pay the rental and perform all of the covenants, terms and conditions of this Lease to be performed by Tenant, Tenant shall, during the term hereby created, freely, peaceably and quietly occupy and enjoy the full possession of the Premises without molestation or hindrance by Landlord or any party claiming through or under Landlord.

23. **Increases in Real Estate Taxes**. Beginning on January 1, 2009, and for each year thereafter, Tenant shall be responsible for paying, for the Term year, its prorata share of the increase in real estate taxes paid by Landlord over the "Base Year Amount", as defined below, within thirty (30) days following Tenant's receipt of evidence of the increase and confirmation that such amount has been paid by Landlord. Tenant's prorata share for purposes of this Article 23 shall be a fraction, the numerator of which is the net rentable square footage of the Premises and the denominator of which shall be the total net rentable square footage of all the buildings situated on the land which the Premises are located. The "Base Year Amount" shall be defined as the real estate taxes levied upon the land and Building for the first full calendar year following the Commencement Date.

24. **No Partnership**. Nothing contained in this Lease shall be deemed or construed to create a partnership or joint venture of or between Landlord and Tenant, or to create any other relationship between the parties hereto other than that of Landlord and Tenant.

25. **No Representations by Landlord**. Neither Landlord nor any agent or employee of Landlord has made any representations or promises with respect to the Premises or the Building except as herein expressly set forth, and no rights, privileges, easements or licenses are acquired by Tenant except as herein expressly set forth. The Tenant, by taking possession of the Premises, shall

accept the same "as is," and such taking of possession shall be conclusive evidence that the Premises and the Building are in good and satisfactory condition at the time of such taking of possession.

26. **Brokers**. Landlord recognizes Edwin C. Hall Associates as the broker negotiating this Lease and shall pay said broker a leasing commission therefore pursuant to a separate agreement between said broker and Landlord. Landlord and Tenant each represent and warrant one to another that except as immediately hereinabove set forth neither of them has employed any broker in carrying on the negotiations relating to this Lease. Landlord shall indemnify and hold Tenant harmless, and Tenant shall indemnify and hold Landlord harmless, from and against any claim or claims for brokerage or other commission arising from or out of any breach of the foregoing representation and warrant by the respective indemnitors.

27. **Notices**. All notices or other communications hereunder shall be in writing and shall be deemed duly given when received if delivered in person or by certified or registered mail, return receipt requested, first-class postage prepaid, (i) if to Landlord addressed at **c/o Hall Associates Inc. 213 S. Jefferson St., Suite 1007, Roanoke, VA 24011** and if to Tenant addressed at **Luna Innovations, Attn: Scott Graeff, Riverside Center, Suite 300, Roanoke, VA 24014**, unless notice of a change of address is given pursuant to the provisions of this Article.

28. **Estoppel Certificates**. Tenant agrees, at any time and from time to time, upon not less than five (5) days prior written notice by Landlord, to execute, acknowledge and deliver to Landlord a statement in writing (i) certifying that this Lease is unmodified and in full force and effect (or if there have been modifications, that the Lease is in full force and effect as modified and stating the modifications), (ii) stating the dates to which the rent and other charges hereunder have been paid by Tenant, (iii) stating whether or not to the best knowledge of Tenant, Landlord is in default in the performance of any covenant, agreement or condition contained in this Lease, and, if so, specifying each such default of which Tenant may have knowledge, and (iv) stating the address to which notices to Tenant should be sent pursuant to Article 27 hereof. Any such statement delivered pursuant hereto may be relied upon by any owner of the Building, any prospective purchaser of the Building, any mortgagee or prospective mortgagee of the Building or of Landlord's interest, or any prospective assignee of any such mortgage.

29. **Holding Over**. In the event that Tenant shall not immediately surrender the Premises on the date of expiration of the term hereof, Tenant shall, by virtue of the provisions hereof, become a Tenant by the month at the monthly rental in effect during the last month of the term of this Lease, which said monthly tenancy shall commence with the first day next after the expiration of the term of this Lease. Tenant as a monthly tenant shall be subject to all of the conditions and covenants of this Lease, including the additional rent provisions of Article 23. Tenant shall give to Landlord at least sixty (60) days' prior written notice of any intention to quit the Premises, and Tenant shall be entitled to thirty (30) days' written notice to quit the Premises, except in the event of nonpayment of rent in advance or of the breach of any other covenant by the Tenant, in which event Tenant shall not be entitled to any notice to quit, the usual notice to quit being hereby expressly waived. Notwithstanding the foregoing provisions of this Article 29, in the event that Tenant shall hold over after the expiration of the term hereby created, and if Landlord shall desire to regain possession of the Premises promptly at the expiration of the term of this Lease, then at any time prior to Landlord's acceptance of rent from Tenant as a monthly tenant hereunder, Landlord, at its option, may forthwith

re-enter and take possession of the Premises without process, or by any legal process in force in Virginia.

30. **Right of Landlord to Cure Tenant's Default**. If Tenant defaults in the making of any payment or in the doing of any act herein required to be made or done by Tenant, then Landlord may, but shall not be required to, make such payment or do such act, and the amount of the expense thereof, if made or done by Landlord, with interest thereon at the annual rate of one percent (1%) above the New York City prime rate of interest in effect at and accruing from the first day of the first calendar month following the date such payment was made by Landlord, shall be paid by Tenant to Landlord and shall constitute additional rent hereunder due and payable with the next monthly installment of rent; but the making of such payment or the doing of such act by Landlord shall not operate to cure such default or to estop Landlord from the pursuit of any remedy to which Landlord would otherwise be entitled. If Tenant fails to pay any installment of rent on or before the tenth (10^{th}) day of the calendar month when such installment becomes due and payable, Tenant shall pay to Landlord a late charge of **five percent (5%)** of the amount of such installment. Such late charge shall constitute additional rent hereunder due and payable with the next monthly installment rent.

31. **Lien on Personal Property**. Landlord shall have a lien upon all the personal property of Tenant moved into the Premises, as and for security for the rent and other Tenant obligations heretofore provided. In order to perfect and enforce said lien, Landlord may at any time after default in the payment of rent or default of other obligations, seize and take possession of any and all personal property belonging to Tenant which may be found in and upon the Premises. Should Tenant fail to redeem the property so seized, by payment of whatever sum may be due Landlord under and by virtue of the provisions of this Lease, then and in that event, Landlord shall have the right, after ten (10) days' written notice to Tenant of its intention to do so, to sell such property so seized at public or private sale and upon such terms and conditions as to Landlord may appear advantageous, and after the payment of all property charges incident to such sale, apply the proceeds thereof to the payment of any balance due on account of rent or other obligations as aforesaid. In the event there shall then remain in the hands of Landlord any balance realized from the sale of said property, as aforesaid, the same may be retained by Landlord and applied against accruing rents or paid over to or for the account of Tenant.

32. **Benefit and Burden**. The provisions of this Lease shall be binding upon, and shall inure to the benefit of, the parties hereto and, subject to the provisions of Article 5, each of their respective representatives, successors and assigns. Landlord may freely and fully assign its interest hereunder.

33. **Gender and Number**. Feminine or neuter pronouns shall be substituted for those of the masculine form, and the plural shall be substituted for the singular number, in any place or places herein which the context may require such substitution.

34. **Entire Agreement**. This Lease, together with the Exhibits attached hereto, contains and embodies the entire agreement or the parties hereto, and no representations, inducements or agreements, oral or otherwise, between the parties not contained, in this Lease and exhibits, shall be of any force or effect. This Lease may not be modified, changed or terminated in whole or in part in any manner other than by an agreement in writing duly signed by both parties hereto.

35. **Invalidity of Particular Provisions**. If any provision of this Lease or the application thereof to any person or circumstances shall to any extent be invalid or unenforceable, the remainder of this Lease, or the application of such provisions to persons or circumstances other than those as to which it is invalid or unenforceable, shall not be affected thereby, and each provision of this Lease shall be valid and be enforced to the fullest extent permitted by law.

36. **Miscellaneous Additional Provisions**.

36A. Notwithstanding anything herein to the contrary, and so long as the Tenant is current in the payment of the Rent, the parties agree that any dispute arising out of or related to this Lease shall be resolved exclusively by arbitration in Roanoke, Virginia, provided however that neither Landlord nor Tenant shall commence an arbitration proceeding unless and until such party shall first give a written notice (a "Dispute Notice") to the other party setting forth the nature of the dispute. The parties shall first attempt in good faith to resolve the dispute without resorting to arbitration. If the dispute has not been resolved by the parties within thirty (30) days after delivery of a Dispute Notice, then either party may proceed with the filing of a demand for arbitration. The arbitration shall be initiated and administered according to the Commercial Arbitration Rules of the American Arbitration Association ("AAA") in effect on the date of the Dispute Notice, and the parties agree that a single arbitrator, mutually selected by the parties, will preside over the proceeding. The arbitration will be initiated by the certified mailing of a Demand for Arbitration by one party to the other. If the parties cannot agree upon an arbitrator within thirty (30) days after a Demand for Arbitration has been made, the parties shall seek appointment of an arbitrator by the Circuit Court for the City of Roanoke. The arbitrator shall base the award on applicable law and judicial precedent and, unless both parties agree otherwise, shall include in such award the findings of fact and conclusions of law upon which the award is based. The ruling of the arbitrator shall be final and binding on the parties, and any judgment on the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. The losing party shall pay the costs of the arbitration, the legal fees and all other reasonable costs incurred by the winning party.

36B. This Lease shall be construed in accordance with the laws of the Commonwealth of Virginia.

36C. To the extent any terms and conditions set forth in the Rules and Regulations attached hereto as Exhibit C conflict with the provisions set forth in any Article of this Lease, the provisions contained in the Articles shall control.

36D. In consideration of the payment of rent, Tenant shall also be entitled to select and have the exclusive use of its prorata share of the parking spaces under the Building and such spaces shall be marked as reserved.

36E. Tenant agrees that it shall not disclose the terms and conditions of this Lease to any third party, provided Tenant may disclose the same to its accountants, attorneys and other third parties engaged by Tenant.

36F. This Lease may be executed in counterparts and facsimile signatures shall be deemed originals for purposes of this Lease.

Landlord and Tenant have each executed this Lease under seal on the day and year hereinabove written.

LANDLORD: **CARILION MEDICAL CENTER**

By _____

_____

TENANT: **LUNA INNOVATIONS INCORPORATED**

By _____

_____

EXHIBIT A

[Attach Floor Plans]

EXHIBIT B
RULES AND REGULATIONS
RIVERSIDE CENTER
ROANOKE, VIRGINIA

The following rules and regulations have been formulated for the safety and well-being of all the Tenants of the Building. Strict adherence to these rules and regulations is necessary to guarantee that each and every tenant will enjoy a safe and unannoyed occupancy in the Building. Any repeated or continuing violation of these rules and regulations by Tenant after notice from Landlord shall be sufficient cause for termination of this Lease at the option of Landlord.

The Landlord may, upon request by any Tenant, waive the compliance by such Tenant of any of the foregoing rules and regulations, provided that (i) no waiver shall be effective unless signed by Landlord or Landlord's authorized agent, (ii) any such waiver shall not relieve such Tenant from the obligation to comply with such rule or regulation in the future unless expressly consented to by Landlord, and (iii) no waiver granted to any Tenant shall relieve any other Tenant from the obligation of complying with the foregoing rules and regulations unless such other Tenant has received a similar waiver in writing from Landlord.

1. The sidewalks, entrances, passages, courts, elevators, vestibules, stairways, corridors or halls or other parts of the Building not occupied by any Tenant shall not be obstructed or encumbered by any Tenant or used for any purpose other than ingress and egress to and from the Premises and if the Premises are situated on the ground floor of the Building the Tenant thereof shall, at said Tenant's own expense, keep the sidewalks of said Premises clean and free from ice and snow. Landlord shall have the right to control and operate the public portions of the Building, and the facilities furnished for the common use of the Tenants, in such manner as Landlord deems best for the benefit of the Tenants generally. No Tenant shall permit the visit to the Premises of persons in such numbers or under such conditions as to interfere with the use and enjoyment by other Tenants of the entrances, corridors, elevators and other public portions or facilities of the Building. No smoking in building.

2. No awnings or other projections shall be attached to the outside walls of the Building without the prior written consent of the Landlord.

3. No sign, advertisement, notice or other lettering shall be exhibited, inscribed, painted or affixed by any Tenant on any part of the outside or inside of the Premises or building without the prior consent of the Landlord. In the event of the violation of the foregoing by any Tenant, Landlord may remove same without any liability, and may charge the expense incurred by such removal to the Tenant or Tenants violating this rule. Interior signs on doors and directory tablet shall be inscribed, painted or affixed for each Tenant by the Landlord at the expense of such Tenant, and shall be of a size, color and style acceptable to the Landlord.

4. No show cases or other articles shall be put in front of or affixed to any part of the exterior of the Building, nor placed in the halls, corridors or vestibules without the prior written consent of the Landlord.

5. The water and wash closets and other plumbing fixtures shall not be used for any purposes other than those for which they were constructed, and no sweepings, rubbish, rags, or other substances shall be thrown therein. All damages resulting from any misuse of the fixtures shall be borne by the Tenant who, or whose servants, employees, agents, visitors or licensees, shall have caused the same.

6. There shall be no defacing any part of the Premises or the Building. No boring, cutting or stringing of wires shall be permitted. Tenant shall not construct, maintain, use or operate within the Premises or elsewhere within or on the outside of the Building, any electrical device, wiring or apparatus in connection with a loud speaker system or other sound system.

7. No vehicles or animals, birds or pets of any kind shall be brought into or kept in or about the premises, and no cooking of food shall be done or permitted by any Tenant on said premises. No Tenant shall cause or permit any unusual or objectionable odors to be produced upon or permeate from the Premises.

8. No Tenant shall make, or permit to be made, any unseemingly or disturbing noises or disturb or interfere with occupants of this or neighboring buildings or premises of those having business with them whether by the use of any musical instrument, radio, talking machine, unmusical noise, whistling, singing, or in any other way. No Tenant shall throw anything out of the doors or windows or down the corridors or stairs.

9. Any inflammable, combustible or explosive fluid, chemical or substance kept or brought in to the building must be stored and monitored and meet all conditions and standards that are applicable.

10. Each Tenant, shall, upon the termination of this tenancy, restore to Landlord all keys of stores, offices, storage, and toilet rooms either furnished to, or otherwise procured by, such Tenant, and in the event of the loss of any keys, so furnished, such Tenant shall pay to the Landlord the cost thereof.

11. No additional locks or bolts of any kind shall be placed upon any of the doors, or windows by any Tenant, nor shall any changes be made in existing locks or the mechanism thereof. The doors leading to the corridors or main halls shall be kept closed during business hours except as they may be used for ingress or egress. Each Tenant, shall, upon the termination of this tenancy, restore to Landlord all keys of stores, offices, storage, and toilet rooms either furnished to, or otherwise procured by, such Tenant, and in the event of the loss of any keys, so furnished, such Tenant shall pay to the Landlord the cost thereof.

12. All removals, or the carrying in or out of any matter of any description must take place during the hours which the Landlord or its Agent may determine from time to time. The Landlord reserves the right to inspect all freight to be brought into the Building and to exclude from

the Building all freight which violates any of these Rules and Regulations or the Lease of which these Rules and Regulations are a part.

13. Any person employed by any Tenant to do janitorial work within the Premises must obtain Landlord's consent and such person shall, while in the Building and outside of said Premises, comply with all instructions issued by Building Management.

14. Landlord shall have the right to prohibit any advertising by any Tenant which, in Landlord's opinion, tends to impair the reputation of the Building or its desirability as a building for offices, and upon written notice from Landlord, Tenant shall refrain from or discontinue such advertising.

15. Landlord reserves the right to exclude from the Building at all times any person who is not known or does not properly identify himself to the Building Management. Each Tenant shall be responsible for all persons for whom he authorizes entry into or exit from the Building, and shall be liable to the Landlord for all acts of such persons.

16. The premises shall not be used for lodging or sleeping or for any immoral or illegal purpose.

17. No Tenant shall occupy or permit any portion of the Premises to be used or occupied as an office for the possession, storage, manufacture, or sale of narcotics, nitroglycerin, illegal drugs, fertilizer, tobacco in any form, or a barber or manicure shop, or as an employment bureau, unless said Tenant's Lease expressly grants permission to do so. No Tenant shall engage or pay any employees on the Premises, except those actually working for such Tenant on said premises, nor advertise for laborers giving an address at said premises.

18. Each Tenant, before closing and leaving the Premises at any time, shall see that all suite entry doors are closed and all lights turned off.

19. The requirements of Tenants will be attended to only upon application at the office of the Building. Employees shall not perform any work or do anything outside of the regular duties, unless under special instruction from the management of the Building.

20. Canvassing or soliciting in the Building is prohibited and each Tenant shall cooperate to prevent the same.

21. No water cooler, plumbing or electrical fixtures shall be installed by any Tenant, unless expressly authorized by Landlord.

22. There shall not be used in any space, or in the public halls of the Building, either by any Tenant or others, in the delivery or receipt of merchandise, any hand trucks, except those equipped with rubber tires and side guards.

23. Access plates to underfloor conduits shall be left exposed. Where carpet is installed, carpet shall be cut around access plates.

24. Mats, trash or other objects shall not be placed in the public corridors.

25. Landlord does not maintain suite finishes which are nonstandard; such as kitchens, bathrooms, wallpaper, special lights, etc. However, should the need for repairs arise, the Landlord will arrange for the work to be done at Tenant's expense.

Exhibit 10.20

MODIFICATION OF LEASE

THIS MODIFICATION OF LEASE ("Modification") is made and entered into this 26th day of August, 2003, by and between Virginia Tech Foundation, Inc., hereinafter called the Landlord, and Luna Technologies, Inc., hereinafter called Tenant. The terms Landlord and Tenant are intended to include the successors and assigns of the original parties and their heirs, legal representatives, successors and assigns of the respective entities.

WHEREAS, on April 18, 2001, the Landlord and Tenant entered into a Lease Agreement ("Lease Agreement") in writing for the following demised premises, situated in Montgomery County, Virginia, to wit:

> Approximately 19,396 rentable square feet, located in Research Building XVI, 2020 Kraft Drive, Suite 2000, Blacksburg, Virginia ("Demised Premises").

WHEREAS, on the March 18, 2002, Landlord and Tenant entered into an agreement to modify the Lease Agreement, to reflect the actual rentable square footage and prorate the monthly rent less the unfinished portion of space (1600 rsf);

WHEREAS, on the May 1, 2002, Landlord and Tenant entered into an agreement to modify the Lease Agreement to add 1,600 rentable square feet to the Demised Premises, making the total Demised Premises 19,417 rsf;

WHEREAS, the Basic Monthly Rent for such Demised Premises is currently $26,924.90 (the "Current Monthly Rent").

WHEREAS, the parties desire to modify the terms of the original Lease, a true and correct copy of which is attached hereto as Exhibit A;

WHEREAS, this Modification commences on August 1, 2003 ("Effective Date").

THEREFORE, IT IS MUTUALLY AGREED AS FOLLOWS:

1. (a) As of the Effective Date, the Demised Premises is hereby reduced to approximately 6310 rentable square feet located in Research Building XVI, 2020 Kraft Drive, Suite 2000, Blacksburg, VA as shown on Exhibit "A" attached to this Modification. As of the Effective Date, Tenant shall surrender the released space to Landlord ("Released Space").

(b) As of the Effective Date, the Basic Monthly Rental shall be reduced from the Current Monthly Rent to Five Thousand Eight Hundred Twenty-Three and No/100 Dollars ($5,823.00).

(c) As of August 1, 2004, the Basic Monthly Rental shall increase to Eight Thousand Seven Hundred and Two and 54/100 Dollars ($8,702.54) (the "Revised 04-05 Monthly Rent"). Commencing on August 1, 2005 and on each annual anniversary of the Effective Date during the term, Basic Monthly Rental will be adjusted annually, on the Effective Date anniversary

date, by to amount equal to the Revised 04-05 Monthly Rent times a fraction, the numerator of which will equal the Consumer Price Index published most nearly preceding the adjustment date in question, and the denominator of which will equal the Consumer Price Index published immediately preceding the August 1, 2005.

(d) Any additional expansion space requested by Tenant, if available, will be leased at the then fair market rate (currently estimated to be $16.55/yr) for comparable space in the vicinity of the Demised Premises leased on terms comparable to the Lease, as mutually agreed upon by Tenant and Landlord at the time of the expansion, with annual CPI increases in accordance with Section l(c), above.

2. As of the Effective Date, the security deposit for the Demised Premises in the amount of Twenty-Five Thousand Seven Hundred Eighty and 52/100 Dollars ($25,780.52) shall be surrendered to Landlord and be applied to the outstanding balance of that certain Promissory Note dated June 5, 2002 between the parties ("Upfit Note"), leaving the outstanding principal balance of the Upfit Note as of August 31, 2003 equal to Fifty Five Thousand Three Hundred Forty-Two & 42/100 ($55,342.42). All interest on the Upfit Note has been paid in full through August 31, 2003.

3. Landlord will have a continuing Right of First Refusal to supply any required Tenant expansion space in the Blacksburg Virginia area prior January 31, 2007 on the following terms and conditions: If Tenant requires such expansion space it shall deliver to Landlord a notice specifying the amount and type of space required and the duration of the lease it will need. Within fifteen (15) days following receipt of such notice the Landlord shall notify Tenant of the available spaces in the Virginia Tech Corporate Research Park which is reasonably likely to meet Tenant's needs. If any of the spaces offered by Landlord is, in Tenant's reasonable and good faith judgment, reasonably suitable for Tenant's needs, and is reasonably and conveniently located with respect to Demised Premises, then such space shall be added to the Demised Space subject to the Lease for a term expiring concurrently with the term for the existing Demised Premises (or such other term as the Landlord and Tenant may mutually agree upon) and the Lease shall be modified to reflect such addition and to increase the Basic Monthly Rental under the Lease by the fair market rent for such expansion space determined pursuant to Section l(d), above. If Landlord fails to offer suitable space within the time allowed of the parties are unable to agree upon the fair market rental after good faith negotiations, Tenant will be free to lease expansion space from others.

4. Tenant agrees to waive any additional advances due to it under that certain Promissory Note dated September 2002 between the parties ("Rent Note"). As of August 31, 2003, the outstanding principal balance of the Rent Note is Ninety-Six Thousand Three Hundred and Five Dollars ($96,305.00) and all interest on the Rent Note has been paid through August 31, 2003.

5. In consideration of the rent adjustments herein given, Tenant agrees to issue to Landlord a promissory note in the amount Sixty-Three Thousand Three Hundred Five and 70/100 ($63,305.70). For ease of administration, said promissory note shall be combined with the Upfit Note and the Rent Note, and a new combined promissory note (the "Combined Note"), dated August 31, 2003, shall be issued in the combined principal balance for the three promissory notes of Two Hundred Fourteen Thousand Nine Hundred Fifty-Three and 12/100 Dollars ($214,953.12). Interest shall cease to accrue on the Upfit Note and the Rent Note, and the Combined Note shall bear

interest from September 1, 2003 until paid in full at the rate of five percent (5%) per annum based on a 360 day year of twelve thirty day months. Interest shall be paid monthly in arrears on or before the last day of each calendar month. The principal balance of the Combined Note shall be all due and payable on July 31, 2005. Assuming the consent of Silicon Valley Bank and of necessary consents by Luna's Board of Directors, as provided in Section 7, below, the Combined Note shall be secured by Tenant's interest in the tangible property located in the Demised Premises as more particularly provided in that certain Security Agreement executed by Landlord and Tenant upon receipt of Silicon Valley Bank's consent ("Security Agreement"). The other terms and conditions of the Combined Note shall be substantially similar to the terms and conditions of the note attached as Exhibit B. The Landlord will use best efforts to attempt to relet the Released Space as soon as reasonably possible.

6. In consideration for Landlord agreeing to these modifications of the Lease, assuming all required consents of Luna's Board of Directors (and any relevant subcommittee thereof) are obtained, Tenant will also grant Landlord additional warrants to purchase an additional 500,000 shares of Series A preferred stock in Luna Technologies, Inc. at a purchase price and otherwise under the same terms and conditions as provided in the Warrant to Purchase Preferred Stock between the parties dated September 2002.

7. Tenant's obligations under this Modification are conditioned upon, and Tenant's management will use best efforts to secure: (i) the consent of Silicon Valley Bank (or any successor lender) to the effectiveness of the Security Agreement for the Combined Note, and (ii) the all required consents of its Board of Directors (and any relevant subcommittee's thereof) for the Security Agreement and the Warrant.

8. All other terms and conditions of the Lease attached as Exhibit A are in full force and effect.

IN WITNESS WHEREOF, this Modification is entered into by the parties hereto on the date and year first set forth above:

LANDLORD: VIRGINIA TECH FOUNDATION, INC.

By: /s/ Raymond D. Smoot, Jr. 10-29-03

Raymond D. Smoot, Jr. (date)
Chief Operating Officer and Secretary-Treasurer

TENANT: LUNA TECHNOLOGIES, INC.

By: /s/ John T. Goehrke 10-29-03

(date)

Name: John T. Goehrke

Title: President

EXHIBIT A

<Attach Lease>

VIRGINIA TECH CORPORATE RESEARCH CENTER

LEASE

FUNDAMENTAL LEASE PROVISIONS

Date:	April 18, 2001
Landlord:	Virginia Tech Foundation, Inc.
Tenant:	Luna Technologies
Lease Term:	Commencing February 1, 2002 and expiring January 31, 2007. ***The commencement date of this lease will be adjusted by lease modification to reflect the date the town issues an occupancy permit for Research Building XVI. The Tenant has the right to relocate within the Corporate Research Center at any time to a comparable facility. This lease will be terminated at that time.***
Demised Premises:	Area described in Exhibit A attached hereto, in Suite 2000, Research Building XVI, 1862 Pratt Drive, Blacksburg, VA 24060 consisting of approximately 19,396 Rentable Square Feet. Rentable Square Feet is defined as the Useable Area of the Demised Premises plus 16 percent of the Useable Area as set forth in Article 49.
Basic Rent:	Basic Rent for months 1-12 is Three Hundred Fifteen Thousand One Hundred Eighty-Five and 04/100 Dollars ($315,185.04) payable in twelve (12) equal monthly installments of Twenty-Six Thousand Two Hundred Sixty-Five and 42/100 Dollars ($26,265.42) in advance, on the first day of each calendar month of the Lease Year, during the lease term. Basic Rent is based on a rate of $16.25 per rentable square foot per year.
Address to Send Rent Payments:	Corporate Research Center c/o First National Bank 1872 Pratt Drive, Suite 1125 Blacksburg, VA 24060
Rent Escalations:	For a multi-year lease, rent will be escalated annually, on the lease anniversary date, by the change in the Consumer Price Index as set forth in Article 3.

Security Deposit:	Twenty-Six Thousand Three Hundred Eighty and 52/100 Dollars ($26,380.52) to be paid two weeks prior to occupancy. Interest will be paid to the Tenant by the Landlord annually beginning at the end of year one of the Lease, at a rate of 3 percent on the Security Deposit.
Landlord's Address:	1872 Pratt Drive, Suite 1000 Blacksburg, VA 24060
Tenant's Address:	1862 Pratt Drive, Suite 1000 Blacksburg, VA 24060
Permitted Use:	Research, development, and manufacturing of fiber optic products.

The foregoing Fundamental Lease Provisions are an integral part of this Lease, and each reference in the body of this Lease to any Fundamental Lease Provisions shall be construed to incorporate all of the items set forth above.

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LEASE AGREEMENT

THIS LEASE (the "Lease") is made as of April 13, 2001, between Virginia Tech Foundation, Inc., a Virginia corporation ("Landlord"), and Luna Technologies, (Tenant").

Landlord and Tenant hereby agree as follows:

ARTICLE 1

DEMISED PREMISES

In consideration of the obligation of Tenant to pay rent as herein provided and in consideration of the other terms, covenants and conditions hereof, Landlord hereby demises and leases to Tenant, and Tenant hereby takes from Landlord, approximately 19,396 rentable square feet of space, the Demised Premises (as more particularly described on Exhibit A, attached hereto), located in Suite 2000, Research Building XVI, 1862 Pratt Drive, Blacksburg, VA 24060 ("the Building"), to have and to hold the same for the Lease Term defined herein, unless sooner terminated pursuant to any provision herein, all upon the terms and conditions set forth in this Lease.

ARTICLE 2

TERM

A. The term of this Lease (the "Lease Term") shall commence as of February 1, 2002 (the "Lease Commencement Date") and shall expire on January 31, 2007, unless such Lease Term shall be sooner terminated or, if appropriate, extended as hereinafter provided. ***The commencement date of this lease will be adjusted by lease modification to reflect the date the town issues an occupancy permit for Research Building XVI. The Tenant has the right to relocate within the Corporate Research Center at any time to a comparable facility. This lease will be terminated at that time.***

B. The term "Rent Commencement Date" means the earlier of the date on which the Demised Premises are deemed suitable for occupancy by the project architect or the date on which Tenant takes possession of the Demised Premises. In no event shall the Rent Commencement Date be prior to the Lease Commencement Date.

C. The term "Lease Year" means a period of twelve (12) consecutive calendar months. The first Lease Year of this Lease shall begin on the Rent Commencement Date unless such date is other than the first day of a calendar month, in which event the first Lease Year shall commence on the first day of the calendar month immediately preceding the Rent Commencement Date. Each succeeding Lease Year of this Lease shall commence upon the anniversary of the beginning of the first Lease Year.

ARTICLE 3

RENT

A. Beginning with the Rent Commencement Date and continuing through the first Lease Year, Tenant shall pay to Landlord annual rent of Three Hundred Fifteen Thousand One Hundred Eighty-Five and 04/100 Dollars ($315,185.04) ("Basic Rent").

B. Basic Rent shall be adjusted for each Lease Year after the first Lease Year in an amount equal to the Basic Rent due during the previous Lease Year plus an amount representing the percentage increase, if any, in the Consumer Price Index for All Urban Consumers ("CPI-U") issued by the United States Department of Labor, Bureau of Labor Statistics (or a property adjusted substitute index if hereafter changed) for the period beginning January 1 and ending December 31 of the previous year. Until the CPI-U becomes available for such period, Landlord shall be entitled to use an estimate of the change in the CPI-U. Adjustments shall be made to reflect the actual increase when it becomes available. Failure by Landlord to notify Tenant of the amount of a scheduled increase shall not absolve Tenant's obligation to pay such increase.

C. Tenant shall pay Basic Rent in equal monthly installments of Twenty-Six Thousand Two Hundred Sixty-Five and 42/100 Dollars ($26,265.42) on the first day of each calendar month to the order of Corporate Research Center, c/o FIRST NATIONAL BANK, 1872 PRATT DRIVE, SUITE 1125, BLACKSBURG, VA 24060, or at such other place as Landlord may hereafter specify, without notice, offset, reduction or abatement, except for adjustments expressly permitted by this Lease.

D. If the Rent Commencement Date is on a day other than the first day of a calendar month, then Tenant shall pay, upon the Rent Commencement Date, the monthly rent described above. At the commencement of the second month of the term, Tenant shall pay the monthly rent described above prorated on a per diem basis with respect to the preceding fractional calendar month beginning on the Rent Commencement Date. All rental payments thereafter will be for a full calendar month and will be in the amount as specified above.

E. The obligation of Tenant to pay Basic Rent is an independent covenant, and no act or circumstance, whether constituting a breach of this Lease by Landlord or not, shall relieve Tenant of the obligation to pay Basic Rent.

F. Basic Rent due from Tenant to Landlord hereunder which is not paid within fifteen days after the same is due shall bear interest at the rate of twelve percent (12%) per annum from the due date until paid, but the payment of such interest shall not excuse or cure any default by Tenant under this Lease. Such interest is separate and cumulative and is in addition to and shall not diminish or represent a substitute for any or all of Landlord's rights or remedies under any other provision of this Lease. In addition to such interest, if the monthly rental provided herein is not paid within fifteen (15) days after the same is due, a late charge equal to five percent (5%) of the amount so overdue shall become immediately due and payable by Tenant to Landlord.

G. No payment by Tenant or receipt by Landlord of a lesser amount than that stipulated herein for rent, additional rent or any other charge shall be deemed to be other than on account of the earliest stipulated rent, additional rent or other charge then due, nor shall any endorsement or statement on a check or letter accompanying any check or payment be deemed an accord and satisfaction and Landlord may accept such check or payment without prejudice to Landlord's rights to recover the balance of such rent, additional rent or other charges or pursue any other remedy in this Lease, at law or in equity.

PART 1—OTHER TENANT RESPONSIBILITIES

ARTICLE 4

DUTY OF CARE FOR DEMISED PREMISES

A. Tenant will, at Tenant's own cost and expense, maintain the Demised Premises and all other improvements to the extent covered by this Lease in sound condition and good repair, and shall repair or replace any damage or injury done to the Demised Premises or any part thereof by Tenant or Tenant's agents, employees, invitees and visitors. If Tenant fails to make such repair or replacements promptly, or within fifteen (15) days of occurrence, to the satisfaction of Landlord, Landlord may, at its option, make such repairs or replacements, and Tenant shall reimburse Landlord for the cost thereof on demand. Tenant waives all right to make repairs at the expense of Landlord, or to deduct the cost thereof from Basic Rent. Further, Tenant agrees:

i. that it will not commit or allow any waste or damage to be committed on any portion of the Demised Premises, and shall, at the termination of this Lease by lapse of time or otherwise, return the Demised Premises to Landlord in as good condition as such Demised Premises were in on the Rent Commencement Date, ordinary wear and tear excepted, and upon termination of this Lease, Landlord shall have the right to re-enter and resume possession of the Demised Premises;

ii. that any special wiring installed for or by Tenant, including, but not limited to, cable and conduits, shall be removed at Tenant's expense within seven (7) days of the expiration of this Lease, but only if such removal is requested by Landlord;

iii. that any improvements, including, but not limited to wall coverings, floor coverings or carpet, paneling, doors and hardware or cabinetry are made to the Demised Premises at Tenant's expense or under any agreement with Tenant whereby Tenant is given an allowance or rent reduction in exchange for Landlord's agreement to install or allow to be installed lease improvements shall become the property of Landlord and shall not be removed by Tenant;

iv. that Tenant shall not lay linoleum, tile, carpet or any other floor covering without Landlord's prior written approval. The expense of repairing any damage resulting from a violation of this rule or the removal of any floor covering shall be borne by Tenant.

v. that all wallpaper or vinyl fabric materials which Tenant may install on painted walls shall be applied with a strippable adhesive. The use of non-strippable adhesives will

cause damage to the walls when materials are removed, and repairs made necessary thereby shall be made by Landlord at Tenant's expense.

vi. if Tenant requires telegraphic, telephonic, burglar alarm or similar services, it shall first obtain, and comply with, Landlord's instruction with respect to their installation.

vii. that Tenant will be responsible for any damage to the Demised Premises, including carpeting and flooring, as a result of: rust or corrosion of file cabinets, roller chairs, metal objects, or spills of any type of liquid.

viii. that Tenant shall not alter any lock or access device or install a new or additional lock or access device or any bolt on any door of the Demised Premises without the prior written consent of Landlord. If Landlord consents to such installation, Tenant shall furnish Landlord with a key for any new or additional lock.

B. Landlord shall have the right to determine and prescribe the weight and proper position of any unusually heavy equipment including safes, large files, etc., that are to be placed in the Demised Premises, and only those which Landlord believes will not damage the floors, structure and/or freight elevator, may be moved into the Demised Premises. Any damage caused by or resulting from the moving or installing of such articles in the Building or into the Demised Premises or the presence of such articles in the Demised Premises shall be paid for by Tenant, unless otherwise covered by insurance.

C. The Landlord has the following responsibilities to Tenant:

i. Janitorial: Basic janitorial service is provided 5 times per week. This includes emptying trash daily and vacuuming or sweeping 3 times per week. It also includes cleaning of glass such as on doors. Restrooms and other public areas are also cleaned 5 times per week. Minor spots on carpeting are also included. On an annual basis we clean exterior windows and carpets.

ii. Maintenance: Basic maintenance services provided include lighting, locks, problem doors, signs, tripped breakers, & HVAC repairs and maintenance.

iii. Painting: Free touch-up paint is provided but labor is charged for.

iv. Landscaping: Landlord will maintain building landscaping.

ARTICLE 5

ALTERATIONS

A. Tenant will not make or allow to be made any alterations, additions and improvements including, but not limited to, painting, in or to the Demised Premises without prior written consent of Landlord, which shall not be unreasonably withheld. Landlord may impose, as a condition to consent, such requirements as Landlord in its sole discretion may deem reasonable or

desirable, including, without limiting the generality of the foregoing, requirements as to the manner in which, the time or times at which, and the contractor by whom such work shall be done as well as requiring Tenant to provide a completion bond.

B. Any alterations, additions, or improvements made to the Demised Premises by Tenant shall be surrendered to Landlord and become the property of Landlord upon termination of this Lease. If prior to termination of this Lease, or within fifteen (15) days thereafter, Landlord so directs by written notice to Tenant, Tenant shall promptly remove any alterations, additions, or improvements, placed in or on the Demised Premises by Tenant that are designated in said notice and shall repair any damage caused by such removal and in default thereof Landlord may effect said removals and repairs at Tenant's expense. This clause shall not apply to movable non-attached fixtures of Tenant.

C. All work with respect to alterations, additions, and improvements must be done in a good and workmanlike manner and diligently prosecuted to completion.

D. Any alterations, additions and improvements shall be completed strictly in accordance with the laws and ordinances relating thereto, and with the requirements of all carriers of insurance on the Demised Premises and the Board of Underwriters, Fire Rating Bureau, or similar organization. Tenant shall obtain, at its sole cost and expense, all required licenses and permits. In performing the work of any such alterations, additions or improvements, Tenant shall have the work performed in such a manner so as not to obstruct the access to the Building of any other tenant.

E. Before commencing any work or construction in or about the Demised Premises, Tenant shall notify Landlord in writing of the expected date of commencement and completion thereof. Landlord shall have the right at any time and from time to time to post and maintain on the Demised Premises such notices as Landlord deems necessary to protect the Building, the Demised Premises and Landlord from the liens of mechanics, laborers, materialmen, suppliers or vendors.

F. Tenant has no authority to and shall not create any liens for labor or material on or against the Building, the Demised Premises or any interest therein. Tenant agrees to notify any materialman, supplier, contractor, mechanic, or laborer involved with work on the Demised Premises at Tenant's request that they must look only to Tenant or Tenant's other property interests. All materialmen, suppliers, contractors, mechanics and laborers may be put on notice of this Section by the recordation, at Landlord's option, of a memorandum of this Lease in the Clerk's Office of the Circuit Court of Montgomery County, Virginia and Tenant shall promptly execute and acknowledge such a memorandum if requested to do so by Landlord. Tenant shall require from any and all materialmen, suppliers, contractors, mechanics, laborers and subcontractors that they deliver to Tenant duly executed waivers of lien with respect to Landlord's interest prior to the commencement of any work thereon or in the Demised Premises.

G. Notwithstanding the foregoing, if by reason of any construction, alteration, repair, labor performed, or materials furnished to the Demised Premises for or on behalf of Tenant, any mechanic's or other lien shall be filed, claimed, perfected or otherwise established as provided by laws against the Building or the Demised Premises, Tenant shall discharge or remove the lien by

bonding or otherwise within fifteen (15) days after Tenant receives notice of the filing of same. Nothing contained herein shall authorize Tenant to create any liens for labor or materials on or about Landlord's interest in the Building or the Demised Premises or any portion thereof.

ARTICLE 6

NUISANCE

Tenant will conduct its business, and control its agents, employees, invitees and visitors in such a manner as not to create any nuisance, interfere with, annoy, or disturb other tenants or Landlord in the management of the Building. Tenant specifically agrees to abide by the following provisions:

A. Tenant will refer all contractors, contractor's representatives and installation technicians, rendering any service to Tenant, to Landlord for Landlord's supervision, approval, and control before performance of any contractual service. This provision shall apply to all work performed in the Demised Premises including installations of telephones, telegraph equipment, electrical devices and attachments, and installations of any nature affecting the floors, walls, woodwork, trim, windows, ceilings, equipment or any other physical portion of Demised Premises.

B. Movement in or out of the Building of furniture or office equipment, or dispatch or receipt by Tenant of any merchandise or materials which require use of elevators or stairways, or movement through the Building entrances or lobby shall be restricted to hours designated by Landlord. All such movement shall be under supervision of Landlord and in the manner agreed between Tenant and Landlord by pre-arrangement before performance. Such pre-arrangement initiated by Tenant will include determination by Landlord as to time, method, and routing of movement and as to limitations imposed for safety or other concerns which may prohibit any article, equipment or any other item from being brought into the Building. Tenant shall assume all risks as to damage to articles moved and injury to persons or public engaged or not engaged in such movement, including equipment, property and personnel of Landlord if damaged or injured as a result of acts in connection with Landlord's performance of this service for Tenant, and Landlord shall not be liable for acts of any person engaged in, or any damage or loss to any of said property or persons resulting from any act in connection with such service performed for Tenant.

C. The entries, passages, doors, elevators, elevator doors, hallways or stairways shall not be blocked or obstructed. No rubbish, litter, trash, or material of any nature shall be placed, emptied, or thrown into these areas. Such areas shall not be used at any time except for ingress or egress by Tenant, Tenant's agents, employees, invitees or visitors to or from the Demised Premises.

D. Plumbing fixtures and appliances shall be used only for the purposes for which they were constructed, and no sweepings, rubbish, rags or other unsuitable material shall be thrown or placed therein. Damage resulting to any such fixtures or appliances from misuse by Tenant shall be repaired or replaced at Tenant's sole cost and expense, and Landlord shall not be responsible therefore.

E. Tenant shall not place, install or operate in the Demised Premises or in any part of the Building, any engine or machinery, or maintain, use or keep any flammable, explosive, or hazardous material without prior written consent of Landlord.

F. Tenant will not place or suffer to be placed or maintained on any exterior door, wall or window of the Demised Premises any sign, awnings or canopy, or advertising matter or other thing of any kind, and will not place or maintain any decoration, lettering or advertising matter on the glass of any window or door of the Demised Premises without first obtaining Landlord's prior written approval and consent in each instance. Tenant further agrees to maintain any permitted sign, awnings, canopy, decoration, lettering, advertising matter or other thing in good condition at all times.

G. No sign, poster, placard, picture, name, advertisement or notice, visible from the exterior of the Demised Premises shall be inscribed, painted, affixed, installed or otherwise displayed by Tenant either on the Demised Premises or any part of the Building without prior written consent of Landlord, and Landlord shall have the right to remove any such sign, placard, picture, name, advertisement, or notice without notice to and at the expense of Tenant. If Landlord shall have given such consent to Tenant at any time, whether before or after the execution of this Lease, such consent shall in no way operate as a waiver or release of any of the provisions hereof or of this Lease, and shall be deemed to relate only to the particular sign, placard, picture, name, advertisement or notice so consented to by Landlord and shall not be construed as dispensing with the necessity of obtaining the specific written consent of Landlord with respect to any other sign, placard, picture, name, advertisement or notice. All approved signs shall be printed, painted, affixed and inscribed at the expense of Tenant by a person approved by Landlord. All approved signs must be removed by Tenant upon vacating the Demised Premises.

H. No Tenant shall use, keep or permit to be used or kept in the Demised Premises any foul or noxious gas or substance or permit or suffer such Demised Premises to be occupied or used in a manner offensive or objectionable to Landlord or interfere in any way with other tenants or those having business therein. Tenant shall not bring or permit to be kept in or about Demised Premises, animals, reptiles, or birds without the prior written consent of Landlord. Tenant shall not permit to be used in or about the Demised Premises or around the Building skateboards, roller-skates, roller-blades, or other such devices. Bicycles brought to the Building must be immediately secured in storage areas provided by Landlord.

ARTICLE 7

ENTRY FOR REPAIRS AND INSPECTION

Tenant will permit Landlord, or Landlord's officers, agents, and representatives, the right to enter into and upon all parts of the Demised Premises, at all reasonable hours to inspect same or clean or make repairs or alterations or additions as Landlord may deem necessary, and Tenant shall not be entitled to any abatement or reduction of rent by reason thereof and Landlord shall not be liable to Tenant for inconveniences to Tenant's business when effecting repairs. In the event of an

emergency, Tenant hereby grants to Landlord the right to enter the Demised Premises at any time. In addition, Tenant shall permit Landlord or Landlord's agent and any other person authorized by the same to enter the Demised Premises during the last twelve (12) months of the Lease Term for the purpose of showing the Demised Premises to prospective tenants.

ARTICLE 8

ENDORSEMENTS

Tenant shall not imply endorsement either by the Virginia Tech Corporate Research Center, Inc., ("VTCRC") or Virginia Polytechnic Institute and State University ("Virginia Tech") in any advertisement or solicitation. Specifically, Tenant agrees to include the following statements in all prospectuses or other investment solicitations:

> "The location of Luna Technologies in the Virginia Tech Corporate Research Center is not to be construed as an endorsement by the Virginia Tech Corporate Research Center, Inc., or Virginia Polytechnic Institute and State University, their affiliates, agents or employees, of Luna Technologies or Luna Technologies's activities."

Landlord reserves the right to conduct an investigation of Tenant's activities for the purpose of establishing whether Tenant is an appropriate candidate for occupancy at the Virginia Tech Corporate Research Center (the Center"), consistent with the mission of the Center. This Lease can be canceled after Landlord gives Tenant 30 days prior written notice in the event that Landlord determines that Tenant is conducting activities which are not consistent with the mission of the Center. The presence of Tenant in the Virginia Tech Corporate Research Center and any other aspect of Tenant's relationship with the Virginia Tech Corporate Research Center is not to be construed as an endorsement, either expressed or implied, of Tenant or Tenant's activities by VTCRC or Virginia Tech.

ARTICLE 9

PERMITTED USE

Tenant shall use the Demised Premises only as detailed in the Permitted Use outlined in the Fundamental Lease Provisions. Use for any other purposes shall be an act of default.

ARTICLE 10

ADDRESS

Tenant shall use the address stated in this Lease only during its tenancy at the Center. At such time that this Lease expires or is terminated. Tenant agrees to discontinue usage of the address on any printed materials.

ARTICLE 11

EQUIPMENT

Subject to the security interest granted by Tenant in favor of Landlord hereunder, Tenant shall have the right to remove Tenant's personal property from the Demised Premises at the termination of the Lease Term, and shall be permitted seven (7) days after the effective date of termination of the term or any renewal or hold-over term within which to accomplish removal, and shall be obligated to repair any damage caused by removal.

PART II—LANDLORD RESPONSIBILITIES

ARTICLE 12

QUIET POSSESSION

Landlord hereby covenants that Tenant, upon paying Basic Rent as herein provided, and performing all covenants and agreements herein contained, shall and may peacefully and quietly have, hold and enjoy the Demised Premises.

ARTICLE 13

CONDITION OF PREMISES

Tenant acknowledges that neither Landlord nor any agent of Landlord has made any representation or warranty with respect to the Demised Premises or the Building or with respect to the suitability of either the conduct of Tenant's business or profession. By taking of possession of the Demised Premises, Tenant shall conclusively establish that the Demised Premises and the Building were in satisfactory condition at such time.

ARTICLE 14

SERVICES

Provided Tenant is not in default, Landlord agrees to furnish Tenant while occupying the Demised Premises by Landlord the following services at Landlord's expense:

A. Water and sewer access at designated common areas of the Building. This specifically excludes water used in any cooling or manufacturing process.

B. Heating, ventilation, and air conditioning ("HVAC") in such quantity and of such quality as Landlord determines in its sole discretion is reasonably necessary for Tenant's comfortable use and enjoyment of the Demised Premises. HVAC shall be operable from the hours of 7:00 a.m.—6:00 p.m. on Monday —Friday and the hours of 7:00 a.m.—1:00 p.m. on Saturdays. No HVAC will be provided on Sundays, on New Year's Day, Memorial Day, Independence Day, Thanksgiving or

Christmas. At all other times, Tenant shall have the capability of pressing an override button to temporarily (two hours in most cases) obtain HVAC services. If Tenant requires constant HVAC services for cooling of equipment, Tenant shall be responsible for installing equipment to achieve this level of service at Tenant's cost.

C. Lighting and electric current for fractional horsepower equipment within the Demised Premises will be supplied by Landlord to Tenant at all times. Tenant shall not install any equipment or lights that generate undue amounts of heat or any high-power usage equipment without the prior written consent of Landlord. If Landlord has given its written consent Tenant shall advance on the first day of each month during the Term, the reasonable amount estimated by Landlord as the expense of furnishing electricity for the operation of any such heat generating or high-power usage equipment so installed and the costs (including costs of installation, operation and maintenance) of any supplementary air conditioning necessitated thereby. Further, Landlord may install and operate, at Tenant's expense, a monitoring/ metering system in the Demised Premises to measure the added demands on electricity, heating, ventilation and air conditioning system resulting from Tenant's heat generating and high-power equipment usage and after-hours service requirements.

D. Housekeeping services Landlord reasonably deems to be required.

E. Electrical lighting for public areas and special service areas of the Building in the manner and to the extent deemed by Landlord to be standard.

F. Snow and ice removal for the parking lots and sidewalks as Landlord reasonably deems to be required and achievable.

ARTICLE 15

OTHER AMENITIES AND BENEFITS

A. KEYS—As of the Rent Commencement Date, Tenant shall be entitled to two keys to any locked door in the Demised Premises and two keys to the exterior door of the Building. For each 200 square feet of space leased, Tenant is entitled to one additional key to the exterior of the Building. Additional keys needed after the commencement of the lease will cost $2.00 per key. Tenant is responsible for returning all keys to Landlord either upon termination of this Lease or at such time that Landlord should provide new door hardware. Failure to return a key will result in Tenant being financially responsible for re-keying all locks to which keys are not returned. If exterior door keys are not returned, this means that Tenant is financially responsible for re-keying all exterior doors and providing new keys to all individuals that have keys to the doors.

B. VIRGINIA TECH ID CARDS—Because of its affiliation with Virginia Tech, Landlord is currently able to offer all employees who work at the Center a Virginia Tech ID Card, otherwise known as a Hokie Passport. These ID cards enable the holder to obtain free and reduced priced services at Virginia Tech affiliated locations. Applications for these ID cards can be obtained from the Center's administrative offices. Tenant is responsible for assuring that ID cards are obtained only by employees who are physically located at the Center. Filing an application for an ID

card for a person that is not actually employed by Tenant shall result in a default under this Lease. Tenant is also responsible for making sure that ID cards are collected from employees who leave Tenant's employment. Audits will be conducted annually to assure that all individuals that have ID cards are still employed by Tenant. A $50 penalty will be assessed to Tenant for each ID card that is not returned upon an employee's termination. Landlord makes no guarantees that this benefit will be maintained throughout the term of this Lease. Virginia Tech may cancel this program at any time.

C. CONFERENCE ROOMS AND AUDIO-VISUAL EQUIPMENT—Conference rooms and assorted audio-visual equipment are available at the Center on a first-reserved, first-served basis. Reservations can be made by calling the Center's administrative offices. Reservations will only be accepted for periodic meetings that occur more frequently than monthly only one week in advance. For instance, weekly staff meetings cannot be booked in a Center conference room without calling each week to reserve the room.

D. SIGNAGE—At its own expense. Landlord will place a directory, in a prominent place in the Building, listing Tenant as an occupant of the Building. Landlord will also place one standard sign in the corridor of the Building outside one of Tenant's entrances. Landlord will also list Tenant on the outside directory sign to the extent that spaces are available on the sign. In cases where spaces are not available for every tenant, precedence will be given to tenants that rent the most space.

ARTICLE 16

TELECOMMUNICATIONS SERVICES

Landlord shall have no obligation to provide telecommunications services pursuant to this lease. Tenant may secure such services from any provider.

Tenant may contract for provision of such services by Landlord pursuant to one or more separate agreements. Non-tenant use of Landlord telecommunications infrastructure is prohibited. Tenants will not be permitted to host non-tenant corporate or personal computers in their suites effective November 1, 1998. Tenants violating this provision will be assessed damages of $1,000.00 per month for each non-Tenant owned computer that has been hosted on the Demised Premises without Landlord's authorization. Landlord offers a facility for location of non-Tenant computers desiring access to Landlord's telecommunications infrastructure. Information about this service can be obtained from Landlord.

ARTICLE 17

INABILITY TO PERFORM SERVICES

Failure to any extent to furnish, or any stoppage of, the services, amenities or benefits described above, resulting from causes beyond control of Landlord or from any cause, shall not render Landlord liable in any respect for damages to either person or property, nor be construed as an eviction of Tenant or result in an abatement of rent, nor relieve Tenant from fulfillment of any

covenant or agreement herein. If any equipment or machinery breaks down, or ceases to function properly, Landlord shall use reasonable diligence to repair such equipment or machinery promptly, but Tenant shall have no claim for rebate of Basic Rent or damages on account of any interruptions in service occasioned thereby or resulting therefrom.

PART III—TRANSFER OF OWNERSHIP RIGHTS OR CHANGE OF BUILDING STATUS

ARTICLE 18

ASSIGNMENT OR SUBLETTING

A. Tenant will not sell, mortgage, transfer, or assign this Lease, or allow the same to be assigned by operation of law or otherwise, or sublet the Demised Premises, or any part thereof, or use or permit the same to be used for any other purpose than stated in the Permitted Use Clause hereof without the prior written consent of Landlord, which such consent will not be unreasonably withheld. Written consent of Landlord to sublease the Demised Premises shall be in the form of a consent line on the appropriate sub-lease agreement.

B. If Landlord consents to an assignment or sublease of the Demised Premises:

i. the agreement between Tenant and sub-Tenant shall be on a lease form prepared by or approved by Landlord.

ii. if the sub-lease or assignment results in rental payments in excess of the monthly payments due and owing under the terms of this Lease, such excess rental payments shall be deemed to be rental payments due and owing Landlord.

C. As a further condition to Landlord's consent to any subleasing, assignment or other transfer of part or all of Tenant's interest in the Demised Premises:

i. Tenant shall be required to pay Landlord's reasonable attorney's fees and other costs incurred in connection with the review and execution of any documentation in connection therewith;

ii. any sub-Tenant of part or all of Tenant's interest in the Demised Premises shall agree that in the event Landlord gives such sub-Tenant notice that Tenant is in default under this Lease, such sub-Tenant shall thereafter make all sublease or other payments directly to Landlord, which payments will be received by Landlord without any liability whether to honor the sublease or otherwise (except to credit such payments against sums due under this Lease), and such sub-Tenant shall agree to attorn to Landlord, or its successors and assigns, at its request should this Lease be terminated for any reason. In no event shall Landlord or its successors or assigns be obligated to accept such attomment; and

iii. Landlord may require that Tenant not then be in default under this Lease in any respect. If Tenant files any type of petition in bankruptcy or has the same filed against it and

Landlord does not elect to terminate this Lease, and if the trustee or receiver appointed by the bankruptcy court attempts to assume this Lease and thereupon assign it to a third party, then Landlord shall have the right to terminate this Lease within thirty (30) days upon gaining knowledge of such attempted assumption and assignment, or upon being given written notice of same by Tenant, whichever is later.

D. Any sale, hypothecation, transfer, assignment or subletting which is not in compliance with the provisions of this Article shall be voidable by Landlord and shall, at the option of Landlord, constitute a default under this Lease. Landlord's acceptance of rent directly from any subtenant, assignee or other transferee shall not be construed as Landlord's approval or consent thereto nor Landlord's agreement to accept the attornment of any subtenant in the event of any termination of this Lease. In no event shall Landlord's consent to an assignment or subletting be construed as (i) relieving Tenant from the obligation to obtain Landlord's express written consent to any further assignment or subletting or (ii) releasing Tenant from any liability or obligation hereunder whether or not then accrued, and Tenant shall continue to be fully, jointly and severally liable hereunder.

ARTICLE 19

TRANSFER OF LANDLORD'S RIGHTS

Landlord shall have the right without Tenant's consent to transfer and assign, in whole or in part, all and every feature of its rights and obligations hereunder and in the Building and property referred to herein. Such transfers or assignments may be either to a corporation, trust company, individual or group of individuals, and howsoever made are to be in all things respected and recognized by Tenant.

ARTICLE 20

EMINENT DOMAIN AND FORCE MAJEURE

A. If all of the Demised Premises are taken or condemned either permanently or temporarily for any public or quasi-public use or purpose by any competent authority in appropriation proceedings or by any right of eminent domain or by agreement or conveyance in lieu thereof (each being hereinafter referred to as "condemnation"), this Lease shall terminate as of the day possession shall be taken by such authority, and Tenant shall pay Basic Rent and perform all of its other obligations under this Lease up to that date with a proportionate refund by Landlord of any Basic Rent as shall have been paid in advance for a period subsequent to the date of the taking.

B. If less than all of the Demised Premises is taken by condemnation, Landlord and Tenant shall each have the right to terminate this Lease upon notice in writing to the other party within ninety (90) days after possession is taken by such condemnation. If this Lease is so terminated, it shall terminate as of the day possession shall be taken by such authority, and Tenant shall pay Basic Rent and perform all of its obligations under this Lease up to that date with a proportionate refund by Landlord of any Basic Rent as may have been paid in advance for a period

subsequent to the date of the taking. If this Lease is not so terminated, ft shall terminate only with respect to the part of the Demised x Premises so taken as of the day possession shall be taken by such authority, and Tenant shall pay Basic Rent up to that day with a proportionate refund by Landlord of any Basic Rent as may have been paid for a period subsequent to the date of the taking and, thereafter, the Basic Rent shall be reduced in direct proportion to the amount of area of the Demised Premises taken.

C. If any part of the Building is taken by condemnation so as to render, in Landlord's judgment, the remainder unsuitable for use as an office building, Landlord shall have the right to terminate this Lease upon notice in writing to Tenant within one hundred twenty (120) days after possession is taken by such condemnation without regard to whether such taking includes the Demised Premises or any part thereof. If Landlord so terminates this Lease, H shall terminate as of the day possession is taken by the condemning authority, and Tenant shall pay Basic Rent, and perform all of its other obligations under this Lease up to that date with a proportionate refund by Landlord of any Basic Rent as may have been paid in advance for a period subsequent to such possession.

D. As between Landlord and Tenant, any award for paid damages for any condemnation of ail or any part of the Building, including, but not limited to, all damages as compensation for diminution in value of the leasehold, reversion and fee, and Tenant's leasehold improvements, shall belong to Landlord without any deduction therefrom for any present or future estate of Tenant, and Tenant hereby assigns to Landlord all its right, title and interest to any such award. Although all damages in the event of any condemnation belong to Landlord, whether such damages are awarded as compensation for diminution in value of the leasehold, reversion or fee of the Demised Premises, or Tenant's leasehold improvements, Tenant shall have the right to claim and recover from the condemning authority, but not from Landlord such compensation as may be separately awarded or recoverable by Tenant in Tenant's own right on account of any and all damage to Tenant's business by reason of the condemnation and for or on account of any cost or loss which Tenant might incur in removing Tenant's merchandise, furniture and fixture.

E. Landlord shall not be liable or responsible for any loss or damage to any property or person occasioned by theft, fire, act of God, public enemy, injunction, riot, strike, insurrection, war, court order, requisition or order of a government body or authority, or other matter beyond the control of Landlord or for any damage or inconvenience which may arise through repair or alteration of any part of the Building or failure to make any such repairs, or from any cause whatsoever, unless caused solely by Landlord's gross negligence.

ARTICLE 21

BINDING EFFECT

This Lease shall also inure to the benefit of the respective successors and assigns of Landlord and Tenant.

ARTICLE 22

DAMAGE OR DESTRUCTION

If the Demised Premises or the Building is damaged by any cause or means whatsoever not caused or contributed to by the negligence or fault of Tenant, its employees, agents, invitees or visitors, and if insurance proceeds have been made available therefore, and if said damage can be repaired within ninety (90) days by using standard working methods and procedures, Landlord shall within a reasonable time after the occurrence of said damage, and to the extent of the insurance proceeds available therefore, enter and make repairs and this Lease shall not be affected but shall continue in full force and effect. However, if said damage cannot be repaired within a period of ninety (90) days by using standard working methods and procedures, then this Lease shall cease and terminate as of the date of such occurrence, and Tenant shall pay rent hereunder to such date and immediately surrender the Demised Premises to Landlord, unless within a period of sixty (60) days from the date of such occurrence Landlord shall elect to keep this Lease in force and to restore the Demised Premises to substantially the condition as existed prior to the date of such occurrence by giving Tenant written notice of such election within said sixty (60) day period. If Landlord so elects to continue this Lease and restore the Demised Premises, Landlord shall within a reasonable time after the date of the notice of said election enter and make repairs, and this Lease shall not be affected, except that rents hereunder shall be reduced or abated while such repairs are being made for the period of time and in the proportion that the Demised Premises are untenantable. If, however, such damage is contributed to or results from the fault of Tenant, Tenant's employees, agents, invitees or visitors, and if Landlord does not have insurance covering such damage, such damage shall be repaired by and at the expense of Tenant under the control, direction and supervision of Landlord, and the rent shall continue without abatement or reduction. The completion of the repairs of all such damages is subject to reasonable delays resulting from survey of such damage, obtaining plans and letting contracts for repair, adjustments or insurance loss, strikes, labor difficulties, unavailability of material, or other causes beyond the control of the party obligated to make such repairs.

ARTICLE 23

[DELETED]

ARTICLE 24

SUBORDINATION

Tenant hereby subordinates this Lease and all rights of Tenant hereunder to any mortgage or mortgages, or vendor's lien or similar instruments which now are or which may from time to time be placed upon the Demised Premises covered by this Lease and such mortgage or mortgages or liens or other instruments shall be superior to and prior to this Lease. Tenant further covenants and agrees

that if the mortgagee or other lien holder acquires the Demised Premises as a purchaser at any foreclosure sale (any such mortgagee or other lien-holder or purchaser at the foreclosure sale being each hereinafter referred to as the "Purchaser at Foreclosure"), Tenant shall thereafter, but only at the option of the Purchaser at Foreclosure, as evidenced by the written notice of its election given to Tenant within a reasonable time thereafter, remain bound by novation or otherwise to the same effect as if a new and identical Lease between the Purchaser at Foreclosure, as landlord, and Tenant, as tenant, had been entered into for the remainder of the term of this Lease in effect at the institution of the foreclosure proceedings. Tenant agrees to execute any instrument or instruments which may be deemed necessary or desirable to further effect the subordination of this Lease to each such mortgage, lien or instrument or to confirm any election to continue this Lease in effect in the event of foreclosure, as above provided. Tenant hereby irrevocably appoints Landlord as its special attorney-in-fact to execute and deliver any document provided for herein for and in the name of Tenant. Such power, being coupled with an interest, is irrevocable.

PART IV—LAWS AND REGULATIONS

ARTICLE 25

LAWS AND REGULATIONS

Tenant will maintain the Demised Premises in a clean and healthful condition and comply with all laws, ordinances, orders, rules, and regulations (state, federal, municipal, and other agencies or bodies having any jurisdiction thereof) with reference to conditions or occupancy of the Demised Premises. This includes, but is not limited to, compliance with regulations set by the Occupational Safety and Health Administration (OSHA) and compliance with the Americans with Disabilities Act within the Demised Premises as it relates to barriers created by furniture and fixtures not owned by Landlord.

ARTICLE 26

USES OF DEMISED PREMISES

Tenant will not occupy or use, nor permit any portion of the Demised Premises to be occupied or used for any business or purpose which is (i) unlawful in part or in whole; (ii) deemed to be disreputable in any manner, or (iii) extra hazardous on account of fire. Tenant shall not obstruct or interfere with the rights of other tenants or occupants of the Building or injure or annoy them, or permit anything to be done which will in any way increase the rate of fire insurance or liability insurance on the building or contents, and in the event that, by reason of acts of Tenant, there is any increase in rate of such insurance on the Building or contents created by Tenant's acts or conduct of business, then Tenant hereby agrees to pay such increase. It is further agreed that:

A. business machines and mechanical equipment belonging to Tenant which cause noise or vibration that may be transmitted to the structure of the Building or any space therein to such a degree as to be objectionable to Landlord or to any tenant in the Building shall be installed and

maintained by Tenant, at Tenant's expense, on vibration eliminators or other devices sufficient to eliminate such noise and vibration.

B. Tenant shall not interfere, nor cause interference with, any satellite or transmission or reception, nor shall Tenant interfere or cause interference with, the radio frequency being used by another tenant for scientific purposes.

C. If the Tenant elects to use the CRC shared network for telecommunications, the Tenant shall comply with the terms of the Tenant Data Services Agreement.

D. Tenant shall use the Demised Premises solely for the purpose specified in the Permitted Use section of this Lease. In addition, Tenant shall conduct business in and from the Demised Premises solely under the trade name specified in the Fundamental Lease Provisions. Tenant shall, at its expense, procure any and all governmental licenses and permits, including without limitation sign permits, required for the conduct of Tenant's business on the Demised Premises and shall, at all times, comply with the requirement of each such license and permit. Landlord is not required, and does not represent or warrant that it will obtain or endeavor to obtain for Tenant (or that Tenant will be able to obtain) any license or permit.

E. Tenant acknowledges and understands that the proper tenant mix of the Building is essential to the successful operation of the Building and that the restriction against the unauthorized use of the Demised Premises is not intended to act as a restraint of trade but to protect and insure the correct tenant mix.

ARTICLE 27 BUILDING

RULES AND REGULATIONS

Tenant and Tenant's agents, employees, and invitees will comply fully with all requirements of the Building Rules and Regulations which are attached as Exhibit B and made a part hereof as though fully set out herein. Landlord shall at all times have the right to change such Rules and Regulations or to amend them in such reasonable manner as may be deemed advisable for the safety, care and cleanliness of the Demised Premises and for the preservation of good order therein, all of which Rules and Regulations, changes and amendments will be forwarded to Tenant in writing and shall be carried out and observed by Tenant.

ARTICLE 28

ENVIRONMENTAL PROVISIONS

A. Tenant represents and warrants that all materials and chemicals used in the normal course of its business are classified as Generally Regarded as Safe ("GRAS") by the Food and Drug Administration ("FDA"). Tenant represents and warrants that it will not conduct any activities on the Demised Premises or in the Building which may constitute a violation of any environmental law, statute and/or regulation. Tenant agrees not to employ or utilize the Demised Premises or the

Building for the purpose of disposing, treating, storing, handling or transporting any materials which may be deemed to constitute "Hazardous or Toxic Materials".

B. Tenant agrees to defend, indemnify and hold Landlord harmless against any and all Claims, as hereinafter defined, which Landlord may hereafter become liable for, suffer, incur or pay arising under any applicable laws and resulting from any activity, act or violation of this Article on the part of Tenant, its agents, employees, or assigns. In addition, Tenant agrees to defend, indemnify and hold Landlord harmless against any and all Claims which Landlord may hereafter be liable for, suffer, incur, or pay resulting from or arising out of any handling, storage, treatment, transportation, disposal, and/or release of GRAS, Hazardous or Toxic Materials from or on the Demised Premises or the Building.

C. The term "Claims" shall mean and include all actions, causes of action, whether common law or statutory, demands, remedies, liability, suits, judgments, expenses, personal injuries, property damages, incidental and consequential damages resulting thereby, clean up costs, civil penalties, reasonable attorneys' fees, litigation expenses, abatement costs, abatement and corrective relief, injunctive relief requiring removal and/or remedial action, all costs of removal or remedial action, and damages to natural resources.

D. The Term "Hazardous or Toxic Materials" means any materials which may be deemed hazardous or toxic including, but no limited to, (i) materials defined as "hazardous waste" under the Federal Resource Conservation and Recovery Act and similar state laws; (ii) "hazardous substances" as identified under the Federal Comprehensive Environmental Response, Compensation and Liability Act and especially in CERCLA Section 101(14) and as set forth in Title 40, Title of Federal Regulations, Part 302; (iii) those elements or compounds which are contained in the list of hazardous substances adopted by the United States Environmental Protection Agency ("EPA") and the list of toxic pollutants designated by Congress or the EPA or defined by any other federal, state or local statute, law, ordinance, code, rule, regulation, order or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, polluting, or dangerous waste substance or material, as such lists are now or any time hereafter in effect; (iv) petroleum products; and (v) such other materials, substances or waste which are otherwise dangerous, hazardous, harmful or deleterious to human, plant or animal health or well being.

E. The provisions set forth in this Article shall survive the termination of this Lease, if Tenant's transportation, storage, use or disposal of GRAS or Hazardous or Toxic Materials on the Demised Premises or Building results in (i) contamination of the soil or surface or ground water; or (ii) loss, damage or inconvenience to person(s) and/or property, then Tenant agrees to (i) notify Landlord immediately of any contamination, claim of contamination, loss or damage or inconvenience; (ii) after consultation and approval by Landlord, to dean up the contamination in full compliance with all applicable statutes, regulations and standards; and (iii) to indemnify, defend and hold harmless Landlord from and against any Claim arising from or connected with any such contamination, claim of contamination, loss, damage. Further, upon written notice from Landlord, Tenant shall immediately cease any activity that may cause any inconvenience to either Landlord or

other tenants, or their agents, employees or invitees. In the event of a conflict of the provisions of this Section E with any other provision in this Article, the provision in this Section E shall prevail.

ARTICLE 29

PERSONAL PROPERTY TAXES

With respect to Tenant's fixtures, furnishings, equipment and all other personal property located in the Demised Premises, Tenant shall pay prior to delinquency all taxes assessed against or levied thereon and when possible, shall cause the same to be assessed and billed separately from the property of Landlord, but if the same shall be assessed and taxed with the property of Landlord, Tenant shall pay to Landlord its share of such taxes within ten (10) days after Landlord's delivery to Tenant of a statement in writing setting forth the amount of such taxes applicable to Tenant's property. In addition, Tenant shall pay promptly when due all taxes imposed upon Tenant's rents, gross receipts, charges and business operations.

ARTICLE 30

REAL PROPERTY TAXES

Landlord is exempt from real property taxes imposed by the County of Montgomery and Town of Blacksburg, Virginia. Section 58.1-3203 of the Virginia code allows the appropriate local municipalities to tax the leasehold interest in property that is exempt from taxation to the owner. The tax of the leasehold interest is reduced by two percent for each year that a lease is less than 50 years in length, but the reduction is limited to 85%. In other words, for a one-year lease, taxes on the leasehold estate are equal to 15% of the taxes that would normally be assessed. By executing this Lease, Tenant acknowledges that these taxes are Tenant's responsibility.

ARTICLE 31

BUSINESS, PROFESSIONAL AND OCCUPATIONAL LICENSE

The Town of Blacksburg, Virginia has a Business, Professional and Occupational License (BPOL) tax based on the gross revenue received on an annual basis. Tenants certify that they are licensed to do business in Blacksburg, Virginia and if applicable, the Commonwealth of Virginia.

ARTICLE 32

DECLARATION OF USES AND RESTRICTIONS

Tenant agrees to abide by the Declaration of Uses and Restrictions related to Landlord's research park made by Virginia Tech Corporate Research Center, Inc. and Virginia Tech Foundation, Inc. recorded in the land records of the Circuit Court of Montgomery County, Virginia at Deed Book 823, Page 465, as the same may be amended or modified from time to time. A copy

of the current version of the Declaration can be obtained from the Center's office and is incorporated by reference into this Lease.

ARTICLE 33

PARKING AREAS

The parking area, employee parking space, driveways, entrances, and exits and all other common areas and facilities provided by Landlord for general use, in common, of Tenant, its employees and customers, shall at ad times be subject to the exclusive control and management of Landlord, and Landlord shall have the right to establish, modify, change and enforce uniform and non-discriminatory rules and regulations with respect to the parking area, employee parking area, and other common areas and facilities hereinabove mentioned, and Tenant, agrees at all times to abide by and conform to such rules and regulations.

PART V—INDEMNITY AND INSURANCE

ARTICLE 34

INDEMNITY, LIABILITY AND LOSS OR DAMAGES

By moving into the Demised Premises or taking possession thereof, Tenant accepts the Demised Premises as suitable for the purposes for which the same are leased and accepts the Building and each and every appurtenance thereof, and Tenant waives any and all defects therein. Landlord shall not be liable to Tenant or Tenant's agents, employees, guests, invitees or to any person claiming by, through or under Tenant for any injury to person, loss or damage to property, or for loss or damage to Tenant's business, caused by or through the acts or omissions of Landlord or any other person, or by any other cause whatsoever except Landlord's gross negligence or willful misconduct. Tenant shall indemnify Landlord and save Landlord harmless from all suits, actions, damages, liability and expense in connection with loss of life, bodily or personal injury or property damage arising from or out of any occurrence in, upon, at or from the Demised Premises or the occupancy or use by Tenant of the Demised Premises or any part thereof, if caused wholly or in part by any action or omission of Tenant, its agents, contractors, employees, servants, invitees, or licensees. If any action shall be commenced by or against Tenant, Tenant shall protect and hold Landlord harmless and shall pay all costs, expenses, and reasonable attorney's fees.

ARTICLE 35

INSURANCE

A. Tenant covenants and agrees that from and after the date of delivery of the Demised Premises from Landlord to Tenant, Tenant will carry and maintain, at its sole cost and expense, the following types of insurance, in the amounts specified and in the form hereinafter provided:

i. General Liability and Property Damage. Commercial General Liability Insurance covering the Demised Premises and Tenants use thereof against claims for personal injury or death and property damage occurring upon, in or about the Demised Premises, such insurance to afford protection to the limit of not less than $1,000,000 in respect of injury or death to any number of persons arising out of any one occurrence and such insurance against property to afford protection to the limit of not less than $500,000 in respect of any instance of property damage. The insurance coverage required under this Article, 35-A.i., shall, in addition, extend to any liability of Tenant arising out of the indemnities provided for in Article 4.

ii. Tenant Leasehold Improvements and Property. Insurance covering all of the items included in Tenant's leasehold improvements, heating, ventilating and air conditioning equipment, if any, trade fixtures, merchandise and personal property from time to time in, on or upon the Demised Premises, and alterations, additions or changes made by Tenant pursuant to Article 4 in an amount not less than One Hundred Percent (100%) of their full replacement cost from time to time during the Lease Term, and which insurance shall provide protection against causes of loss commonly known as "all risks" or "special form". Any policy proceeds from such insurance shall constitute trust funds in the hands of Tenant to be used solely for the repair, reconstruction and restoration or replacement of the property damaged or destroyed.

B. All policies of insurance provided for in this Article shall be issued in form acceptable to Landlord by insurance companies with a rating of not less than A- as rated in the most current available "Best Insurance Reports," and qualified to do business in the Commonwealth of Virginia. Each and every such policy:

i. shall be issued in the name of Tenant (with Landlord and any other parties in interest from time to time designated in writing named as additional insureds);

ii. shall be for the mutual and joint benefit and protection of Landlord and Tenant and any such other parties in interest;

iii. shall be delivered to Landlord and such other parties in interest within ten (10) days after delivery of possession of the Demised Premises to Tenant and thereafter within thirty (30) days prior to the expiration of each such policy and as often as any such policy shall expire or terminate, renewal or additional policies shall be procured and maintained by Tenant in like manner and to like extent;

iv. shall be written as a primary policy which does not contribute to and is not in excess of coverage which Landlord may carry; and

v. shall contain a provision that Landlord and any such other parties in interest, although named as an insured, shall nevertheless be entitled to recover under said policies for any loss occasioned to it, its servants, agents and employees by reason of the negligence of Tenant.

C. Tenant agrees that Landlord shall not be responsible for any damage to Tenant's stock in trade, furniture, equipment, contents, or other removable items situated in the Demised Premises, and Landlord shall not be required to carry insurance to cover any such items.

ARTICLE 36

WAIVER OF SUBROGATION

Tenant hereby waives all right of subrogation by any insurance company issuing policies carried by Tenant with respect to the Demised Premises, Tenant's fixtures, personal property, or leasehold improvements, or Tenant's business.

PART VI—NON-COMPLIANCE WITH LEASE

ARTICLE 37

DEFAULT

A. If (i) Tenant fails to comply with any term, provision, condition, or covenant of this Lease or any of the Rules and Regulations now or hereafter established for government of the Building; (ii) Tenant deserts or vacates the Demised Premises; (iii) any petition is filed by or against Tenant under any section or chapter of the Bankruptcy Reform Act of 1978, as amended, or under any similar law or statute of the United States or of any state thereof; (iv) Tenant becomes insolvent or makes a transfer in fraud of creditors; (v) Tenant makes an assignment for benefit of creditors; (vi) a receiver is appointed for Tenant or any of the assets of Tenant: or (vii) tenant ceases to be a going concern; then Landlord may, after ten (10) days prior written notice to cure any non-monetary default and after five (5) days prior written notice to cure any monetary default in this Lease and thereafter, Landlord shall have the option to do any one or more of the following without any notice or demand, in addition to and not in limitation of any other remedy permitted by law or by this Lease;

i. Terminate this lease, in which event Tenant shall immediately surrender the Demised Premises to Landlord and if Tenant fails so to do, Landlord may without prejudice to any other remedy which it may have for possession or arrearage in rent, enter upon and take possession of the Demised Premises and expel or remove Tenant and any other person who may be occupying such Demised Premises or any part thereof, by force if necessary, without being liable for prosecution or any claim of damages.

ii. Enter upon and take possession of the Demised Premises and expel or remove Tenant and any other person who may be occupying such Demised Premises or any part thereof, by force if necessary, without being liable for prosecution or any claim for damages therefor, and relet the Demised Premises and receive the rent therefor.

iii. Enter upon the Demised Premises, by force if necessary without being liable for prosecution or any claim for damages therefor, and do whatever Tenant is obligated to do under

the terms of this lease and Tenant agrees to reimburse Landlord on demand for any expenses which Landlord may incur in thus effecting compliance with Tenant's obligations under this Lease and Tenant further agrees that Landlord shall not be liable for any damages resulting to Tenant from such action, other than damages caused by negligence of the Landlord.

iv. Upon three (3) days written notice to Tenant, alter all locks and other security devices at the Demised Premises without terminating this Lease.

B. Exercise by Landlord of any one or more remedies hereunder granted or otherwise available shall not be deemed to be an acceptance of surrender of the Demised Premises by Tenant whether by agreement or by operation of law, it being understood that such surrender can be effected only by the written agreement of Landlord and Tenant. No alteration of locks or other security devices and no removal or other exercise of dominion by Landlord over the property of Tenant or others at the Demised Premises shall be deemed unauthorized or constitute a conversion. All claims for damages by reason of re-entry, repossession and/or alteration of locks or other security devices are hereby waived, as are all claims for damages by reason of any distress warrant, forcible detainer proceedings, sequestration proceedings or other legal process. Tenant agrees that any re-entry by Landlord may be pursuant to judgment obtained in forcible detainer proceedings or other legal proceedings or without the necessity for any legal proceedings, as Landlord may elect, and Landlord shall not be liable in trespass or otherwise.

C. If Landlord elects to terminate this Lease by reason of an event of default, then, notwithstanding, such terminations, Tenant shall be liable for and pay to Landlord, at the address specified for notice to Landlord herein, the sum of all rental and other indebtedness accrued to date of such termination (minus any amounts collected from any guarantor of this Lease) plus as damages, an amount equal to the difference between (i) the total rental hereunder for the remaining portion of this Lease term (had such term not been terminated by Landlord prior to the date of expiration stated herein), and (ii) the present value of the then fair rental value of the Demised Premises for such period.

D. If Landlord elects to repossess the Demised Premises without terminating this Lease, then Tenant shall be liable for and shall pay to Landlord, at the address specified for notice to Landlord herein, all rental and other indebtedness accrued to the date of such repossession, plus rental required to be paid by Tenant to Landlord during the remainder of the Lease Term until the date of expiration of the Lease Term as stated in herein diminished by any net sums thereafter received by Landlord through reletting the Demised Premises during said period (after deducting expenses incurred by Landlord as provided in Sub-Article 36.E. below). In no event shall Tenant be entitled to any excess of any rental obtained by reletting over and above the rental herein reserved. Actions to collect amounts due by Tenant to Landlord under this subparagraph may be brought from time to time, on one or more occasions, without the necessity of Landlord's waiting until expiration of the Lease Term.

E. In case of any event of default or breach by Tenant, Tenant shall also be liable for and shall pay to Landlord at the address specified for notice to Landlord herein in addition to any sum

provided to be paid above, brokers fees incurred by Landlord in connection with reletting the whole or any part of the Demised Premises; the costs of removing and storing Tenant's or other occupant's property; the costs of repairing, altering, remodeling or otherwise putting the Demised Premises into condition acceptable to a new tenant or tenants; and all reasonable expenses incurred by Landlord in enforcing or defending Landlord's right and/or remedies including reasonable attorney's fees.

F. In the event of termination or repossession of the Demised Premises for an event of default, Landlord shall make good faith, commercially reasonable efforts to relet or to attempt to relet the premises, or any portion thereof, or to collect rental after reletting and in the event of reletting, Landlord may relet the whole or any portion of the premises for any period to any tenant and for any use and purpose. Any sums received by Landlord as a result of any such reletting shall be credited against any damages due to Landlord because of Tenant's default, but only to the extent that such monies are paid to Landlord for the use of the premises during what would have been the Lease Term.

G. If Tenant fails to make any payment or cure any default hereunder within the time herein permitted, Landlord, without being under any obligation to do so and without thereby waiving such default, may make such payment and/or remedy such other default for the account of Tenant (and enter the premises for such purpose), and thereupon Tenant shall be obligated to, and hereby agrees to pay Landlord, upon demand, all costs, expenses and disbursements (including reasonable attorney's fees) incurred by Landlord in taking such remedial action.

H. In the event of any default by Landlord, Tenant's exclusive remedy shall be an action for damages. Tenant hereby waives the benefit of any laws granting a lien upon the property of Landlord and/or upon rent due Landlord), but prior to any such action, Tenant will give Landlord written notice specifying such default with particularity, and Landlord shall thereupon have thirty (30) days in which to cure any such default. Unless and until Landlord fails to cure any default after such notice, Tenant shall not have any remedy or cause of action by reason thereof. All obligations of Landlord hereunder will be construed as covenants, not conditions; and all such obligations will be binding upon Landlord only during the period of its possession of the premises and not thereafter. The term "Landlord" shall mean only the owner, the Demised Premises, and in the event of the transfer by such owner of its interest in the Demised Premises, such owner shall thereupon be released and discharged from all covenants and obligation of Landlord thereafter accruing, but such covenants; and obligations shall be binding during the Lease Term upon each new owner for the duration of such owner's ownership. Notwithstanding any other provision to the contrary herein, Landlord shall not have any personal liability hereunder. In the event of any breach or default by Landlord in any term or provision of this Lease, Tenant agrees to look solely to the equity or interest then owned by Landlord in the Demised Premises; however, in no event, shall any deficiency judgment or any money judgment of any kind be sought or obtained against Landlord.

I. If Landlord shall take possession of the Demised Premises pursuant to the authority herein granted, then Landlord shall have the right to keep in place and use all of the furniture, fixtures and equipment at the Demised Premises, including that which is owned by or leased to Tenant at all times prior to any foreclosure thereon by Landlord or repossession thereof by any

Landlord thereof or third party having a lien thereon. Landlord shall also have the right to remove from the Demised Premises (without the necessity of obtaining a distress warrant, writ of sequestration or other legal process) all or any portion of such furniture, fixtures, equipment and other property located thereon and to place same in storage at any Demised Premises within the county in which the Demised Premises is located; and in such event, Tenant shall be liable to Landlord for costs incurred by Landlord in connection with such removal and storage. Landlord shall also have the right to relinquish possession of all or any portion of such furniture, fixtures, equipment and other property to any person ("Claimant") claiming to be entitled to possession thereof who present to Landlord a copy of any instrument represented to Landlord by Claimant to have been executed by Tenant (or any predecessor of Tenant) granting Claimant the right under various circumstances to take possession of such furniture, fixtures, equipment or other property, without the necessity on the part of Landlord to inquire into the authenticity of said instrument or Tenant's or Tenant's predecessor's signature thereon and without the necessity of Landlord making any investigation or inquiry as to the validity of the factual or legal basis upon which Claimant purports to act. Tenant agrees to indemnify and hold Landlord harmless from all costs, expense, loss damage and liability incident to Landlord's relinquishment of possession of all or any portion of such furniture, fixtures, equipment or other property to Claimant. The rights of Landlord herein stated shall be in addition to any and all other rights that Landlord has or may hereafter have at law or in equity. Tenant stipulates and agrees that the rights herein granted Landlord are commercially reasonable.

J. No act or thing done by Landlord or its agents during the term hereof shall be deemed an acceptance of a surrender of the Demised Premises, and no agreement to accept a surrender of the Demised Premises shall be valid unless made in writing and signed by Landlord.

K. The mention in this Lease of any particular remedy shall not preclude Landlord from any other remedy Landlord might have, either in law or in equity, nor shall the waiver of or redress for any violation of any covenant or condition contained in this Lease or any of the Rules and Regulations attached hereto or hereafter adopted by Landlord, prevent a subsequent act, which would have originally constituted a violation, from having all the force and effect of an original violation.

L. The receipt by Landlord of rent with knowledge of the breach of any covenant contained in this Lease shall not be deemed a waiver of such breach.

M. The failure of Landlord to enforce any of the Rules and Regulations attached hereto, or hereafter adopted, against Tenant and/or any other tenant in the Building shall not be deemed a waiver.

N. If it becomes necessary or proper for Landlord to bring any action under this Lease or to consult with an attorney concerning, or for the enforcement of, any of Landlord's rights under this Lease, Tenant agrees in each and any such case to pay to Landlord its attorney's fees, if Tenant is found in breach of agreement.

ARTICLE 38

LIEN FOR RENT

In consideration of mutual benefits arising by virtue of this Lease, Tenant does hereby grant to Landlord a security interest in all property of Tenant now or hereinafter placed in or upon the Demised Premises (except such part of Tenant's property or merchandise which may be exchanged, replaced or sold from time to time in the ordinary course of operations or trade), and such property is hereby subjected to a lien in favor of Landlord and shall be and remain subject to such lien of Landlord for payment of all rents and other sums agreed to be paid by Tenant herein; provided that said lien shall be subordinate to any security interest in connection with purchase money financing by Tenant. Tenant agrees to execute appropriate security agreements and financing statements as may be required by law to perfect Landlord's subordinate security interest if so requested by Landlord.

ARTICLE 39

DEFAULTS BY TENANT ON THIRD PARTY

Tenant shall not default on any of its covenants under loan agreements, with any lending, mortgage or financial institution and Tenant immediately shall advise Landlord in writing if any such default by Tenant should incur.

ARTICLE 40

WAIVER OF DEFAULT

In the event Tenant should default on any of its covenants herein, Landlord may pursue remedies in accordance with Article 37. However, Landlord, at its option, may waive such event of default and this Lease will continue in full force and effect, provided, however, that Landlord's waiver is in writing and signed by Landlord.

ARTICLE 41

WAIVER OF TRIAL BY JURY

Each of Landlord and Tenant agree it shall, and it hereby does, waive trial by jury in any action, proceeding or counterclaim brought by either of the parties hereto against the other on any matter arising out of or in any way connected with this Lease, including, but not limited to, the relationship of Landlord and Tenant, and Tenant's use or occupancy of the Demised Premises. Tenant further agrees that it shall not interpose any counterclaim in a summary proceeding or in any action based on nonpayment of Basic Rent or any other payment required of Tenant hereunder.

ARTICLE 42

CROSS DEFAULTS

If Tenant, or any subsidiary or affiliate of Tenant, has other leases for other Demised Premises in the Building, any default by Tenant under such other leases shall be deemed to be default hereunder and Landlord shall be entitled to enforce all of its rights and remedies for default as provided herein.

ARTICLE 43

ABANDONMENT

If the Demised Premises are abandoned or vacated by Tenant, Landlord shall have the right, but not the obligation, to:

A. Re-let the Demised Premises for the remainder of the period covered hereby; and if the rent received through such re-leasing is not at least equal to the rent provided hereunder, Tenant shall pay and satisfy any deficiencies between the amount of rent called for under this Lease and that received through reletting and all expenses incurred by any such reletting, including but not limited to, the cost of renovating, altering and decorating for a new occupancy; and/or

B. provide for the storage of any personal property remaining in the Demised Premises without liability of any kind or nature for the cost of storage or the return of the personal property to Tenant or take title to the abandoned personal property which title shall pass to Landlord under this Lease as a Bill of Sale without additional payments or credit from Landlord to Tenant.

Notwithstanding the foregoing, during the last ninety (90) days of the term of this Lease, if Tenant removes a substantial portion of Tenant's property or Tenant has been in physical absence for ten (10) days, it shall constitute a vacation and Landlord may enter the Demised Premises for the purpose of renovating, altering and decorating the Demised Premises for occupancy at the end of the Lease Term by a new tenant without in any way affecting Tenant's obligation to pay rent and comply with all other terms and conditions of this Lease. Nothing herein shall be construed as in any way denying Landlord the right, in case of abandonment, vacation of the Demised Premises, or other breach of this Lease by Tenant, to treat the same as an entire breach, and, at Landlord's option, immediately sue for the entire breach of this Lease and any and all damages occasioned Landlord thereby.

ARTICLE 44

HOLDING OVER

In case of holding over by Tenant after expiration or termination of this Lease, Tenant will pay as liquidated damages double rent for the entire holdover period, and will pay all reasonable attorney's fees, and expenses incurred by Landlord in enforcing its rights hereunder. No holding

over by Tenant after the Lease Term, shall operate to extend this Lease for a longer period than one month; and holding over with the consent of Landlord in writing shall thereafter constitute a month to month lease. If Tenant fails to surrender the Demised Premises to Landlord on expiration of the term as required by this Article 44, Tenant shall hold Landlord harmless from all damages resulting from Tenant's failure to surrender the Demised Premises including without limitation, claims made by a succeeding tenant resulting from Tenant's failure to surrender the Demised Premises. The foregoing provisions of this Article 44 are in addition to and do not affect Landlord's right of re-entry or any other rights of Landlord hereunder or as otherwise provided by law.

ARTICLE 45

ATTORNEY'S FEES

In case Tenant defaults in the performance of any of the terms, covenants, agreements or conditions contained in this Lease, and Landlord places the enforcement of this Lease, or any part thereof, or the collection of any rent due, or to become due hereunder or recovery of the possession of the Demised Premises in the hands of an attorney or files suit upon the same, Tenant agrees to pay Landlord's attorney's fees, and payment of the same shall be secured in like manner as is herein provided, as to ail remedies which may be invoked by Landlord to secure payment of rent, if Tenant is found in breach of agreement.

ARTICLE 46

INTEREST ON PAST DUE OBLIGATIONS

Any amount due from Tenant hereunder which is not paid when due shall bear interest at the rate of twelve percent (12%) per annum from the due date until paid, unless otherwise specifically provided herein, but the payment of such interest shall not excuse or cure any default by Tenant under this Lease.

ARTICLE 47

SECURITY DEPOSIT

Not later than the Rent Commencement Date, Tenant shall deposit the sum of Twenty-Six Thousand Two Hundred Sixty-Five and 42/100 Dollars ($26,265.42) as a security deposit. Interest will be paid to the Tenant by the Landlord annually at a rate of 3 percent on the Security Deposit. Upon the occurrence of any event of default by Tenant, Landlord may, from time to time, without prejudice to any other remedy use the security deposit paid to Landlord by Tenant as herein provided to the extent necessary to make good any arrears of Basic Rent and any other damage, injury, expense or liability caused to Landlord. If any portion of said deposit is so used or applied, Tenant shall, within five (5) days after written demand therefore, deposit cash with Landlord in an amount sufficient to restore the security deposit to its original amount. Tenant shall not be entitled to interest on the security deposit. Tenant shall not grant anyone a security interest of any kind in such security deposit and no such security agreement shall be binding on Landlord. If Tenant fully and faithfully

performs every provision of this Lease to be performed by it, the security deposit, or any balance thereof remaining, shall be returned to Tenant at the expiration of the Lease Term and upon Tenant's vacation of the Premises. Such security deposit shall not be considered an advance payment of Basic Rent or a measure of Landlord's damages in case of default by Tenant. In the event Landlord should have good cause to doubt the full and faithful performance of every provision of this Lease by Tenant, Landlord shall have the right to demand that Tenant post an additional security deposit in the same amount as the original security deposit. Upon the showing by Tenant that this full and faithful performance is no longer in doubt, the additional security deposit shall be returned to Tenant.

PART VII—LEASE ADMINISTRATION AND MISCELLANEOUS ARTICLES

ARTICLE 48

APPLICATION

All prospective tenants and sub-tenants of the Virginia Tech Corporate Research Center must complete an application that identifies, among other things, the work that will be done in the Center, and gives financial details of the prospective tenant's past operations or of the principal of the company. Tenant's application is attached hereto as Exhibit A and made part of this Lease. All information contained in the application is deemed to be true and providing false information on the application shall be grounds for default under the terms of this Lease. Landlord may require Tenant to complete a new application and to provide up-to-date financial information as often as once per year.

ARTICLE 49

MEASUREMENT OF SPACE

Useable Area shall be determined by application of the most recent version of American National Standard's Institute (ANSI) standard Z65.1. The factor used to increase Useable Square Feet to Rentable Square Feet represents the common area of the Building and free use of other Corporate Research Center assets including conference rooms, audio-visual equipment, display units and recreational amenities. Because of these extra amenities, the factor used is not necessarily the same one that would be derived by use of ANSI standard Z65.1 and therefore Rentable Square Feet is not equal to the ANSI definition of Rentable Square Feet.

ARTICLE 50

LEASE EFFECTIVE UPON EXECUTION

Delivery of this Lease, duly executed by Tenant, constitutes an offer to lease the Demised Premises as herein set forth, and under no circumstances shall such delivery be deemed to create an option or reservation to lease the Demised Premises for the benefit of Tenant. This Lease shall only

become effective and binding upon execution hereof by Landlord and delivery of a signed copy to Tenant.

ARTICLE 51

AUTHORITY

The officers of Tenant executing this Lease on Tenant's behalf hereby make the following representations, in their personal and corporate capacities, upon which Landlord is relying in consenting hereto:

A. that Tenant has been duly organized, is validly existing and is in good standing in the Commonwealth of Virginia;

B. that the officers executing this Lease on Tenant's behalf have been duly authorized by all necessary corporate action to execute the same, and the upon the execution hereof, this Lease shall be the valid and binding obligation of Tenant;

C. that the financial statements supplied by Tenant to Landlord on, before, or after the date hereof are true and accurate in all respects.

ARTICLE 52

INCORPORATION OF PRIOR AGREEMENTS

This Lease contains all of the agreements of the parties hereto with respect to all matters related to this Lease, and no prior agreement or understanding, whether oral or written, pertaining to any such matter shall be effective for any purpose.

ARTICLE 53

AMENDMENTS

No provision of the Lease may be amended or added to except by and agreement in writing signed by the parties hereto or their respective successors in interest. Any written addenda to this Lease, when signed by the contracting parties shall be deemed a part of this Lease to the same full extent as if incorporated herein.

ARTICLE 54

SEVERABILITY CAUSE

If any clause or provision of this Lease is deemed illegal, invalid, or unenforceable, then and in that event, it is the intention of the parties hereto that the remainder of this Lease shall not be affected thereby, and it is also the intention of the parties to this Lease that in lieu of each clause or

provision that is illegal, invalid, or unenforceable there be added as a part of this Lease a clause or provision as similar in terms to such illegal, invalid or unenforceable clause or provision as may be possibly and be legal, valid and enforceable.

ARTICLE 55

GENDER

Throughout this Lease the masculine gender shall be deemed to include the feminine and the neuter and the singular, the plural and vice versa.

ARTICLE 56

TIME OF THE ESSENCE

Time is of the essence with respect to the performance of every provision of this Lease in which time of performance is a factor.

ARTICLE 57

BUILDING NAME

Landlord hereby reserves the right to change the name of the Building and Tenant shall have no recourse under this Lease.

ARTICLE 58

BROKERS

Tenant warrants that it has had no dealings with any real estate broker or agent in connection with the negotiation of this Lease and that Tenant knows of no other real estate broker or agent who is or might be entitled to a commission in connection with this Lease. If Tenant has dealt with any other person or real estate broker in respect of leasing or renting space in the Building, Tenant shall be solely responsible for the payment of any fee due said person or firm and Tenant shall hold Landlord free and harmless against any liability in respect thereto.

ARTICLE 59

ESTOPPEL CERTIFICATE

Tenant shall at any time and from time to time, upon not less than five (5) days prior written from Landlord, execute, acknowledge and deliver to Landlord within such five (5) day period a statement in writing certifying that this Lease is unmodified and in full force and effect (or, if modified, stating the nature of such modification and certifying that this Lease, as so modified, is in full force and effect), the dates to which Basic Rental and other charges, if any, are paid in advance

and the amount of Tenant's security deposit, if any, and acknowledging that there are not, to Tenant's knowledge, any uncured defaults, on the part of Landlord hereunder, and that there are no events or conditions then in existence which, with the passage of time or notice or both, would constitute a default on the part of Landlord hereunder, or specifying such defaults events or conditions, if any are claimed. It is expressly understood and agreed that any such statement or any other reasonable request may be relied upon by any prospective purchaser or encumbrancer of all or any portion of the Building or property on which the Building is situated. Tenant's failure to deliver such statement within such time shall, at the option of Landlord, constitute a default under this Lease and, in any event, shall be conclusive upon Tenant that this Lease is in full force and effect without modification except as may be represented by Landlord in any such certificate prepared by Landlord and delivered to Tenant for execution.

ARTICLE 60

NOTICES

Any notice required or permitted to be given hereunder by one party to the other shall be deemed to be given when deposited in the United States Mail, certified or registered, return receipt requested, or delivered by hand with a receipt, therefore, addressed to the respective party to whom notice is intended to be given at the addresses of the parties as stipulated in the Fundamental Lease Provisions.

ARTICLE 61

RECORDING OF LEASE

This Lease shall not be recorded unless agreed to by both parties hereto, but either party may record a short form of this Lease with the cost therefore to be paid for by the party requesting the recording.

ARTICLE 62

HEADINGS AND TABLE OF CONTENTS

The Table of Contents, and the section, article and paragraph headings are for the purpose of convenience of reference only and in no other way define, limit or describe the scope or intent of this Lease or in any way affect this Lease.

IN WITNESS WHEREOF this Lease is entered into by the parties hereto on the date and year first set forth above.

LANDLORD: VIRGINIA TECH FOUNDATION, INC.

By: /s/ 4-28-01
Raymond D. Smoot, Jr. (date)
Exec. VP & Sec.-Treas.

TENANT: LUNA TECHNOLOGIES, INC.

By: /S/ 3-18-01
Douglas Juanarena (date)
President/CEO

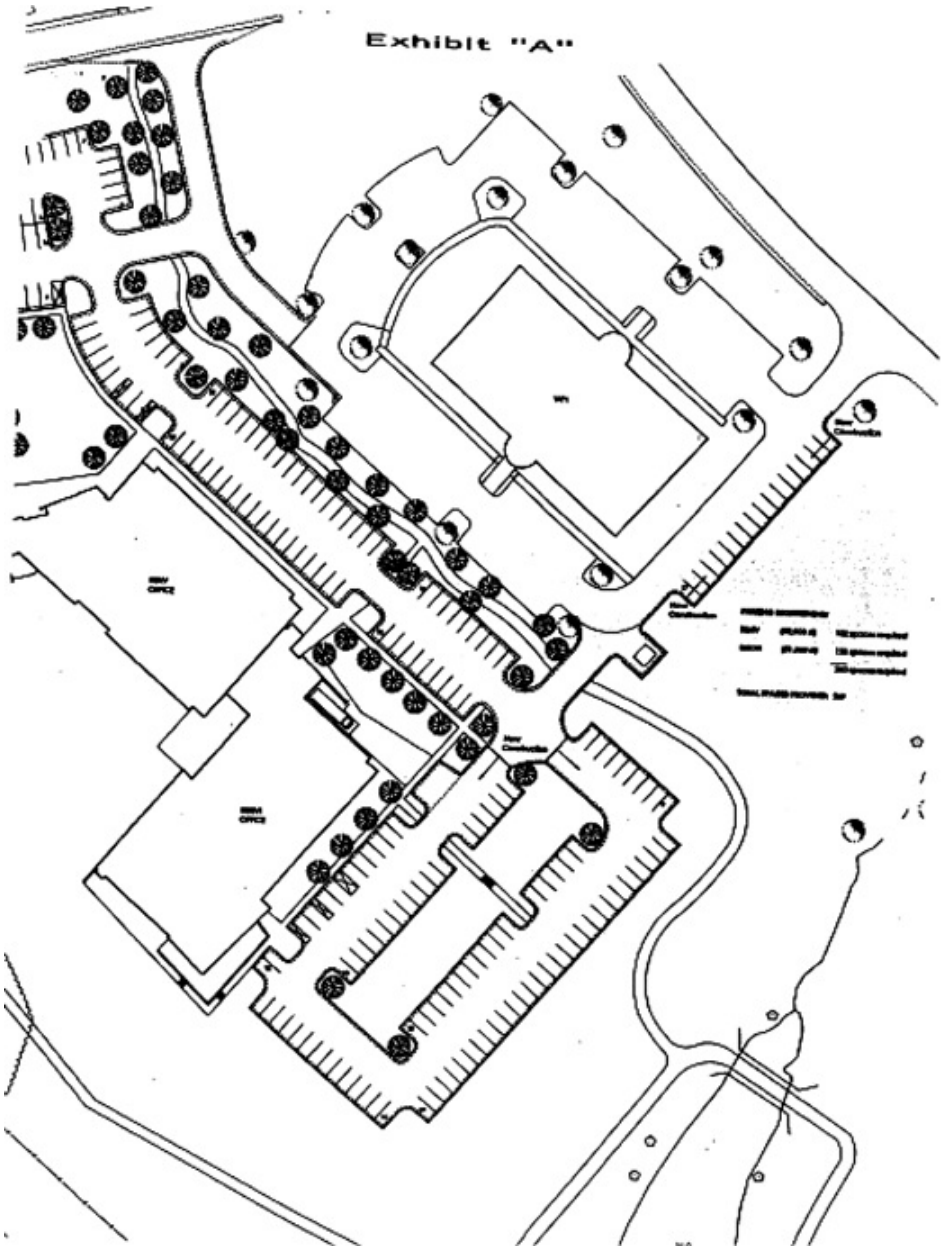
Exhibit "A"

EXHIBIT "B"—BUILDING RULES AND AGREED REGULATIONS

As Modified May 1, 1997

1. Landlord will not be responsible for lost or stolen personal property, equipment, money, or jewelry from Tenant's area or public rooms regardless of whether such loss occurs when the area is locked against entry or not.

2. Employees of Landlord shall not receive or carry messages for or to Tenant or other person, nor contract with or render free or paid services to Tenant's agents, employees, or invitees.

3. Landlord will not permit entrance to Tenant's offices by use of pass keys controlled by Landlord to any person at any time without written permission by Tenant, except employees, contractors, or service personnel directly supervised by Landlord.

4. The work of the janitor or cleaning personnel shall not be hindered by Tenant before 7:30 a.m. and such work may be done at any time when offices are vacant; the windows, doors, and fixtures may be cleaned at any time. Tenant shall provide adequate waste and rubbish receptacles, cabinets, bookcases, map cases, etc., necessary to prevent unreasonable hardship to Landlord in discharging its obligation regarding cleaning service.

5. Landlord shall have the right to prohibit the use of the name of the Building or any other publicity by Tenant, which, in Landlord's opinion tends to impair the reputation of the Building or its desirability for the executive offices of Landlord or other Tenant's and, upon written notice from Landlord, Tenant will refrain from or discontinue such publicity.

6. No curtains, draperies, blinds, shutters, shades, screens or other coverings, awnings, hangings, or decorations shall be attached to hung or placed in, or used in connection with any window or door of the Building without the prior written consent of Landlord. In any event with the prior written consent of Landlord, all such items shall be installed so as not being visible from the exterior of the Building. No articles shall be placed or kept on the windowsills so as to be visible from the exterior of the Building. No articles shall be placed against glass partitions or doors which might appear unsightly from outside Tenant's Demised Premises.

7. Each Tenant shall see that all doors of its Demised Premises are closed and securely locked and must observe strict care and caution that all its water faucets or water apparatus are entirely shut off before Tenant or its employees leave such Demised Premises, and that all utilities shall likewise be carefully shut off so as to prevent waste or damage, and for any default of carelessness Tenant shall make good ail injuries sustained by other Tenants or occupants of the Building of Landlord. On multiple-tenancy floors, all Tenants shall keep their door or doors to the Building corridors dosed at all times except for ingress and egress.

8. No Tenant shall install, maintain or operate upon the Premises any vending machine without written consent of Landlord.

9. Tenant shall give prompt notice to Landlord of any accidents to or defects in plumbing, electrical fixtures, or heating apparatus so that such accidents or defects may be attended to properly.

10. No cooking shall be done or permitted by any Tenant on its Premises (except that use by Tenant of Underwriter's laboratory approved equipment for the preparations of coffee, tea, hot chocolate, and similar beverages and convenience foods for Tenants and their employees shall be permitted, provided that such equipment and use is in accordance with applicable federal, state and city laws, codes, ordinances, rules and regulations) nor shall Premises be used for lodging or sleeping.

11. Tenant shall comply with all energy conservation, recycling, safety, fire protection and evacuation procedures and regulations established by Landlord or any governmental agency.

12. In the event Tenant must dispose of crates, boxes, etc. which will not fit into office wastepaper baskets, it will be the responsibility of Tenant to dispose of the same. In no event shall Tenant set such items in the public hallways or other areas of the Building excepting Tenant's own leased Premises, for disposal.

13. Each Tenant shall be responsible for all persons for whom it allows to enter the Building and shall be liable to Landlord for all acts of such persons.

14. No Tenant, and no employees or invitees of any Tenant shall go upon the roof of the Building, except as authorized by Landlord.

15. During the continuance of any invasion, mob, riot, public excitement or other circumstances rendering such action advisable in Landlord's opinion, Landlord reserves the right to prevent access to the Building by closing the doors, or otherwise, for the safety of Tenants and protection of the Building and property in the Building.

16. Landlord reserves the right to exclude or expel from the Building any person who, in Landlord's judgment, is intoxicated or under the influence of liquor or drugs or who is in violation of any of the rules and regulations of the Building.

17. Tenant, its officers, agents, employees, servants, patrons, customers, licensees, invitees and visitors shall not solicit business in the Building's parking facilities or Common Areas nor shall Tenant distribute any handbills or other advertising matter on or in automobiles parked in the Building's parking facilities.

18. Except with the prior written consent of Landlord, no Tenant shall sell, permit, the sale, at retail, of newspapers, magazines, periodicals, theater tickets or any other goods or merchandise in or on Premises, nor shall Tenant carry on, or permit or allow any employee or other person to carry on, the business of stenography, typewriting or any other similar business in or from any Premises for the service of accommodation of occupants of any other portion of the Building,

nor shall the Demised Premises of any Tenant be used for the storage of merchandise or for manufacturing of any kind.

19. Canvassing, soliciting, distribution of handbills, selling, renting, or any other written material, and peddling in the Building, Parking Lot or surrounding Premises of the Virginia Tech Corporate Research Center, Inc., are prohibited and each Tenant shall cooperate to prevent the same.

20. Landlord shall have the right to advertise at Landlord's expense any leases, if it so chooses, immediately upon execution of said Lease.

21. Landlord may waive any one or more of these Rules and Regulations for the benefit of any particular Tenant or Tenants, but no such waiver by Landlord shall be construed as a waiver of such Rules and Regulations in favor of any other Tenant or Tenants, nor prevent Landlord from thereafter enforcing any such Rules and Regulations against any or all Tenants of the Building.

22. Landlord shall not be responsible to any Tenant for the non-observance or violation of any of the Rules and Regulations by any other Tenant.

LEASE RIDER 1

This Rider is made part of this Lease dated April 18, 2001, by and between Virginia Tech Foundation, Inc., ("Landlord"), and Luna Technologies (Tenant").

Landlord and Tenant have entered into a lease ("the Lease") covering certain premises (the "Demised Premises") in Suite 2000, Research Building XVI, located at 1862 Pratt Drive, Blacksburg, Virginia, consisting of approximately 19,396 rentable square feet.

Whereas the Landlord and Tenant desire to modify the provisions of the Lease, they hereby agree as follows:

1. Tenant and Landlord acknowledge that RBXVI is being built for the tenant. Tenant will participate in and influence the design process to the benefit of the Tenant. Should Tenant requested and approved design changes increase the cost of the building beyond the current budget, Tenant agrees to compensate Landlord accordingly.

2. Landlord is willing to finance said overages over the term of the lease at the then prevailing corresponding T-bill rate plus one percent (1%).

LANDLORD: VIRGINIA TECH FOUNDATION, INC.

By: /S/ 4-28-01
Raymond D. Smoot, Jr. (date)
Exec. VP & Sec.-Treas.

TENANT: LUNA TECHNOLOGIES, INC.

By: /S/ 3-18-01
Douglas Juanarena (date)
President/CEO

Exhibit 10.21

GRANT AGREEMENT

THIS GRANT AGREEMENT, made as of this 25th day of March, 2004, by and between the CITY OF DANVILLE, VIRGINIA, a municipal subdivision of the Commonwealth of Virginia (hereinafter the "City") and LUNA INNOVATIONS, (hereinafter "LUNA") a corporation under the laws of the state of Delaware.

WHEREAS, LUNA has agreed to locate a nanomaterials manufacturing and research operation, within the City limits of the City of Danville, Virginia during calendar year 2004; and

WHEREAS, LUNA has proposed to make capital equipment acquisitions in the City of Danville and is planning on making estimated taxable capital expenditures in the amount of at least Six Million Four Hundred Nine Thousand Dollars $6,409,000 within the next thirty (30) months from the date of the agreement and will maintain the $6,409,000 investment for the following thirty (30) months, a total period of sixty (60) months from the date of this agreement.

WHEREAS, LUNA anticipates it will create fifty-four (54) new full time jobs at their Danville operations, at an average wage of at least thirty-nine thousand dollars ($39,000) per year – plus benefits, within the next thirty (30) months from the date of the agreement and will maintain such employment levels for following thirty (30) months, a total period of sixty (60) months from the date of this agreement; and

WHEREAS, the City has received notification of expected grants from the Governor's Opportunity Fund in the amount of **$250,000.00**, from the Tobacco Indemnification and Community Revitalization Commission, (the "Tobacco Commission") in the amount of **$400,000.00**, and is providing a Technology Enhancement grant in the amount of **$250,000.00**, for a total grant incentive of **$900,000.00** (the "Grant Funds") which the City agrees to extend to LUNA pursuant to the terms of this Grant Agreement for capital improvements to a City approved facility that will be used by LUNA as one of its operations; and

WHEREAS, the City finds that the provisions of this Grant Agreement, and the commitments of the City herein will promote the expansion of commercial growth in the City of Danville by inducing commercial and economic development within the City limits, and that such development will promote the safety, health, welfare, convenience, and prosperity of the citizens of the City of Danville.

NOW, THEREFORE, the City and LUNA agree as follows:

1. Operation: LUNA agrees to locate a nanomaterials manufacturing and research operation in calendar year 2004 to Danville and to maintain its operations in Danville for sixty (60) months from the date of the Agreement.

2. Capital Expenditures: LUNA agrees, within thirty (30) months from the date of this Agreement (September 25, 2006) to invest in (by order, purchase or relocation) new and used equipment with a taxable value of at least Five Million, One Hundred Seventy Nine Thousand Dollars ($5,179,000) and to invest One Million Two Hundred Thirty Thousand ($1,230,000) in a City IDA approved facility – for a total investment of Six Million Four Hundred Nine Thousand Dollars ($6,409,000), and to maintain such investments in its Danville facility for the following 30 months, a total of at least sixty (60) months from the date of this Agreement (March 25, 2009).

3. Job Requirements: LUNA agrees, within thirty months of this agreement (September 25, 2006) to create a total of fifty-four (54) new full time jobs at the Danville operation, at an average wage of at least $39,000 per year – plus benefits, for its Danville operations and to maintain these new jobs for the following (30) months, for a total of sixty (60) months from the date of this Grant Agreement.

4. Funds Extended to LUNA: After receipt of the grant funds from the Governor's Opportunity Fund in the amount of $250,000.00, and the Tobacco Commission grant funds in the amount of $400,000.00, the City will provide a Technology Enhancement Grant in the amount of $250,000.00. The Grant Funds will be extended to LUNA in the total amount of Nine Hundred Thousand Dollars ($900,000.00) which must be used in compliance with the grant guidelines of the Governor's Opportunity Grant Fund, (See Attached Exhibit "A") and the grant guidelines of the Tobacco Commission, (See Attached Exhibit "B"), which guidelines are incorporated herein and made a part hereof by reference as if fully set forth, for the preparation, construction and improvements made to a City approved facility for the direct benefit of LUNA, in exchange for the Grant Funds described herein and under the conditions stated in this Agreement. It is expressly understood that if all of the Grant terms are satisfied in accordance with this Agreement, then all grant funds shall be irrevocably deemed non-refundable.

5. Grant Repayment if Terms are not Satisfied:

a. The Grant will not be repayable except as provided in section 5(b.) below. If by thirty months from the date of this agreement (September 25, 2006), LUNA has met the taxable capital investment of Six Million Four Hundred Nine Thousand Dollars ($6,409,000) within the City of Danville set out above, and retained the investment for the following thirty (30) months, for a total period of sixty (60) months (through March 25, 2009) from the date of this agreement and if by thirty months from the date of this agreement (September 25, 2006) LUNA has met the job creation threshold of fifty-four (54) new full time jobs at the Danville operation, at an average wage of at least thirty-nine thousand dollars ($39,000) per year – plus benefits and LUNA maintains the aforementioned jobs at the Danville operation for the following (30) months, for a total period of sixty (60) months (through March 25, 2009) from the date of this agreement through March 25, 2009), and satisfies all other Grant terms contained in this Agreement, then the Grant Funds shall be irrevocably deemed non-refundable.

b. For purposes of repayment, the Grants are to be allocated as *50%* for the Company's capital investment commitment and *50%* for its employment commitment. Therefore, if LUNA does not meet at least ninety percent (90%) of its capital investment commitment ($5,768,100) as set forth in paragraph two (2) above by September 25, 2006 and does not meet at least ninety percent (90%) of its new job commitment (49 jobs) as set forth in paragraph three (3) above by September 25, 2006, LUNA shall repay to CITY that part of the Grant Funds that is proportional to the shortfall, as provided by the following example:

A grant of $900,000.00 is considered to be $450,000.00 for the capital investment commitment by Company and $450,000.00 for the employment commitment. If, after 30 months the capital investment of Company is at least $5,768,100.00 and the number of new jobs created by Company is at least 49, no refund is required. If, after 30 months the capital investment is only $3,204,500.00, and the new jobs created is 36, the Company shall refund to the CITY 50 percent of the fund related to capital investment; i.e., the sum of $225,000.00 and 33 percent of the fund related to job creation-i.e., the sum of $148,500.00.

6. Job Maintenance Required: If the new employment level drops below fifty-four (54) new full time jobs for any one hundred and eighty (180) consecutive days between September 25, 2006 and February 25, 2009, the Grant Funds described herein shall become repayable in accordance with paragraph 5(b).

7. Jobs Report: LUNA agrees to report to the City every six (6) months from the date of the agreement, the number of new full-time jobs and part time jobs that have been created in the City of Danville.

8. Equipment Report: LUNA agrees to report to the City every six (6) months from the date of the agreement, the taxable capital investment made in the City of Danville. LUNA also agrees to provide a certificate to the City, verifying that LUNA has invested at least Six Million Four Hundred Nine Thousand Dollars ($6,409,000) in capital expenditures within the City of Danville as soon as completed but no later than September 25, 2006.

9. Audit and Guideline Requirements: LUNA agrees to comply with the grant guidelines of the Governor's Opportunity Grant Fund, (See Attached Exhibit "A") and the grant guidelines of the Tobacco Commission, (See Attached Exhibit "B"). LUNA further agrees to cooperate with the City in meeting the audit requirements of the Governor's Opportunity Fund and the Tobacco Commission Grant by furnishing any information needed to verify the performance of the terms of this Agreement.

10. Governing Law: This Agreement and the performance hereof shall be governed by and enforced under the laws of the Commonwealth of Virginia, and if legal action by either party is necessary for or with respect to the enforcement of any or all of the terms and conditions hereof, then exclusive venue therefore shall lie in the City of Danville, Virginia.

11. Execution: This agreement is signed in duplicate, each of which shall constitute an original.

WITNESS the following signatures and seals:

CITY OF DANVILLE, VIRGINIA

By: /S/ JERRY L. GWALTNEY
Jerry L. Gwaltney
City Manager

ATTEST:

City Clerk

LUNA INNOVATIONS

By: /S/ KENT A. MURPHY
Kent A. Murphy
CEO

ATTEST:

Secretary

COMMONWEALTH OF VIRGINIA
CITY OF DANVILLE

The foregoing instrument was acknowledged before me this ____ day of _____, 2004, by Jerry L. Gwaltney, in his capacity as City Manager of the City of Danville, Virginia, on behalf of the Corporation.

Notary Public

My commission expires: _____

STATE OF _____
COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of _____, 2004, by _____, in his capacity as _____ of LUNA, on behalf of the corporation.

_____
Notary Public

My commission expires: _____

Exhibit 21.1

List of Subsidiaries of Luna Innovations Incorporated

(Name of Subsidiary)	(State of Incorporation)
Luna Technologies, Inc.	Delaware

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We have issued our report dated January 25, 2006, accompanying the consolidated financial statements of Luna Innovations, Incorporated, contained in the Registration Statement and Prospectus on form S-1. We consent to the use of the aforementioned reports in the Registration Statement and Prospectus, and to the use of our name as it appears under the caption "Experts."

/S/ Grant Thornton LLP

Vienna, Virginia
January 25, 2006

Exhibit 23.2

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the use in this Registration Statement on Form S-1 (Registration No. 333-XXXXX) of Luna Innovations Incorporated of our report dated September 22, 2005 relating to the financial statements of Luna Technologies, Inc. as of December 31, 2004 and for the year then ended appearing in the Prospectus, which is part of this Registration Statement. We also consent to the reference to us under the heading "Experts" in such Prospectus.

/S/ Brown, Edwards & Company, L.L.P.

CERTIFIED PUBLIC ACCOUNTANTS

Christiansburg, Virginia
February 8, 2006