
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Amendment No. 5
to
FORM S-1
REGISTRATION STATEMENT
Under
The Securities Act of 1933

LUNA INNOVATIONS INCORPORATED

(Exact name of Registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

8731
(Primary Standard Industrial
Classification Code Number)
10 South Jefferson Street, Suite 130
Roanoke, Virginia 24011
(540) 552-5128

54-1560050
(I.R.S. Employer
Identification Number)

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

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President, Chief Executive Officer and Chairman
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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. ☐

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.

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 MAY 19, 2006



4,000,000 Shares
Common Stock
\$ per Share

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

We are offering 4,000,000 shares of our common stock. We expect the initial public offering price to be between \$11.00 and \$13.00 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 8 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 600,000 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. We have not independently verified such data or 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 8 and the 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 technologies that can fulfill identified market needs and then take these technologies from the applied research stage through commercialization in our two areas of focus:

- **Molecular Technology Solutions.** We develop molecular technology solutions, which are substances and materials with enhanced performance characteristics obtained by harnessing chemical, physical and biological properties of novel combinations of matter. We focus on substances and materials at the molecular level, including nanomaterials, which are materials whose size can be measured in nanometers, or one billionth of a meter. Examples of our solutions in this area include flame retardants, protective coatings, and materials that can help physicians identify diseased tissues using magnetic resonance imaging, or MRI.
- **Sensing Solutions.** We develop integrated sensing solutions, which are products that combine sensors, software and hardware to measure, monitor and control chemical, physical and biological properties. We 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. 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 aggregate revenues from January 1, 2003 through March 31, 2006 were \$61.1 million, and our aggregate cost of revenues during that same period were \$40.5 million. For the year ended December 31, 2005 and the three months ended March 31, 2006, we had net losses of \$2.0 million and \$2.1 million, respectively, and we expect to incur significant additional expenses as we expand our business. We also expect significantly greater losses for the foreseeable future primarily due to increased expenditures related to our nanomaterial and medical device product development efforts and due to certain non-cash charges for compensation expense from the grant of stock options.

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. Our contract research revenues grew from \$10.4 million in 2003 to \$13.8 million in 2004 and to \$15.4 million in 2005. During this same period, our contract research costs increased from \$8.9 million in 2003 to \$11.0 million in 2004 and to \$12.6 million in 2005. In the first quarter of 2006, we generated contract research revenues of \$3.9 million while incurring contract research costs of \$2.9 million. 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 nanomaterials made from carbon, or carbon nanomaterials, that have broad potential applications. This division is developing MRI contrast agents, which are materials that can help physicians identify diseased tissues using MRI and 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.

Challenges in Executing our Growth Strategy

We face several challenges to the successful implementation of our growth strategy. In addition, our business is subject to numerous risks, which we highlight in the section entitled “Risk factors” immediately following this prospectus summary. For example, 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. In addition, the success of our business model depends on our ability to correctly identify market needs for new technologies. If we are not successful in identifying market needs or in developing new products to meet those needs, we may not be successful in growing our product revenues or transitioning our revenues mix from contract research revenues to product sales and license revenues.

We believe that sustained growth at a higher rate will place a strain on our management, as well as on our other human resources. If we are unable to attract and retain qualified personnel as we grow our operations, 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. Moreover, 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. Our competitors may be able to adapt more quickly to new or emerging technologies and changes in customer requirements. If we are unable to compete successfully against current or new competitors, our product revenues may not increase or may decline.

In addition, our commercial success will depend in part on our obtaining and maintaining intellectual property protection for our technologies as well as successfully enforcing and defending our intellectual property rights against third-party challenges. Moreover, if the commercial versions of our products that are currently under development do not incorporate our proprietary technologies, our intellectual property portfolio may not afford us a competitive advantage.

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; EDAC; APHROTROPHIN, AMANUET, SECURING SILICON and SOFTWARE and THE AMANUET ARCHITECTURE.

The Offering

Proposed Nasdaq National Market symbol	"LUNA"
Common stock offered by us	4,000,000 shares
Common stock outstanding after this offering	10,234,325 shares
Use of proceeds	We intend to use the net proceeds from this offering principally to fund further development and expansion of our products and product candidates, in particular our nanomaterial and ultrasound-related product candidates, and for general working capital purposes. We may also use such proceeds for 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 6,234,325 shares outstanding as of March 31, 2006, which includes 6,137,601 shares outstanding as of March 31, 2006 and up to 96,724 shares of common stock that will be issued to Carilion Health System in connection with certain anti-dilution provisions afforded to that stockholder upon the effectiveness of this offering, and excludes:

- 4,812,367 shares of common stock issuable upon exercise of options outstanding at a weighted-average exercise price of \$0.90 per share, which includes 2,834,129 shares of common stock issuable upon exercise of options outstanding at an exercise price of \$0.35 per share, 113,047 shares of common stock issuable upon exercise of options outstanding at an exercise price of \$0.39 per share and 1,865,191 shares of common stock issuable upon exercise of options outstanding at an exercise price of \$1.77 per share;
- 235,777 shares of common stock reserved for future issuance upon the exercise of options available for grant under our 2003 Stock Plan;
- 61,214 shares of common stock issuable upon exercise of warrants (not subject to escrow) outstanding at a weighted-average exercise price of \$3.04 per share, which includes 2,182 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of \$37.26 per share and 59,032 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of \$1.77 per share;
- 1,065,740 shares of common stock issuable upon the conversion of the principal amount outstanding under senior convertible promissory 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 511,553 shares of common stock; and
- 69,390 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 146 shares of common stock issuable upon the exercise of warrants at an exercise price of \$37.26 per share held in escrow as of that date, and which shares and warrants to purchase shares are expected to be cancelled upon the closing of this offering.

We adopted our 2006 Equity Incentive Plan in February 2006, subject to stockholder approval, which will be effective upon the completion of this offering.

Unless otherwise indicated, all information in this prospectus assumes:

- a 1-for-1.7691911 reverse 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, 2003, 2004 and 2005 from our audited consolidated financial statements. The summary consolidated balance sheet data as of March 31, 2006 and the summary consolidated statements of operations data for the three months ended March 31, 2005 and 2006 were derived from our unaudited consolidated financial statements included elsewhere in this prospectus. 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 at such date and operating results for such periods. Historical results are not necessarily indicative of the results of operations to be expected for the future periods, and interim results may not be indicative of results for the remainder of the year.

The unaudited pro forma consolidated statement 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, 2005.

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 the financial statements and the accompanying notes included elsewhere in this prospectus. These sections include, among other things, more detailed information regarding the \$169 thousand and \$409 thousand stock-based compensation charges reflected in the following table under "Operating expense" for the periods ended December 31, 2005 and March 31, 2006, respectively.

(in thousands, except share and per share data)	Years Ended December 31,			Three Months Ended March 31,	
	2003	2004	2005	2005	2006
				(unaudited)	(unaudited)
Consolidated Statements of Operations Data:					
Revenues:					
Contract research revenues	\$10,358	\$13,835	\$15,380	\$3,256	\$3,921
Product sales and license revenues	7,234	8,752	1,074	—	595
Total revenues	17,592	22,587	16,454	3,256	4,516
Cost of revenues:					
Contract research costs	8,949	10,985	12,552	2,671	2,908
Product sales and license costs	1,543	2,881	410	—	266
Total cost of revenues	10,492	13,866	12,962	2,671	3,174
Gross profit	7,100	8,721	3,492	585	1,342
Operating expense	4,856	4,190	6,004	882	3,442
Operating income (loss)	2,244	4,531	(2,512)	(297)	(2,100)
Other income (expense)(1)	(138)	(257)	2	1	6
Interest income (expense), net	(87)	(90)	(41)	(40)	5
Income (loss) before income taxes	2,019	4,184	(2,551)	(336)	(2,089)
Income tax expense (benefit)	886	128	(557)	(73)	—
Net income (loss)	\$1,133	\$4,056	\$(1,994)	\$(263)	\$(2,089)
Net income (loss) per common share:					
Basic	\$0.40	\$1.40	\$(0.53)	\$(0.09)	\$(0.34)
Diluted	\$0.39	\$1.14	\$(0.53)	\$(0.09)	\$(0.34)
Weighted-average shares:					
Basic	2,843,349	2,903,022	3,735,811	2,911,255	6,069,780
Diluted	2,905,849	3,561,788	3,735,811	2,911,255	6,069,780

(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, 2005	
	(unaudited)	
	Pro Forma Consolidated Statement of Operations Data:	
Revenues		\$18,560
Cost of revenues		13,997
Gross profit		4,563
Operating expense		7,490
Operating (loss)		(2,927)
Interest (expense), net		(53)
Miscellaneous income		2
(Loss) before income taxes		(2,978)
Income tax expense (benefit)		(557)
Net (loss)		\$(2,421)
Net (loss) per common share:		
Basic		\$(0.65)
Diluted		\$(0.65)
Weighted-average number of shares used in per share calculations:		
Basic		3,735,811
Diluted		3,735,811

The following table presents selected balance sheet data as of March 31, 2006 on an actual basis and on an as adjusted basis to give effect to the sale by us of 4,000,000 shares of our common stock in this initial public offering at an assumed price of \$12.00 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 March 31, 2006	
	Actual	As Adjusted
	(unaudited)	
Consolidated Balance Sheet Data:		
Cash and cash equivalents	\$10,099	\$53,239
Working capital	9,627	52,767
Total assets	21,369	64,509
Total current liabilities	5,684	5,684
Total debt(1)	5,406	5,406
Stockholders' equity	9,637	52,777

(1) Includes capital lease obligations.

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. 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.

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 March 31, 2006, 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 \$2.0 million and \$2.1 million for the year ended December 31, 2005 and the three months ended March 31, 2006, respectively. 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

Risk factors

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 March 31, 2006. 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, which are nanomaterials in the form of a carbon sphere with three metal atoms enclosed inside—are technologically innovative and require significant and lengthy product development efforts. These efforts include 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, could adversely affect our business.

We derive a significant portion of our revenues from contract research that we perform for third parties. Contract research accounted for approximately 61.3%, 93.5% and 86.8% of our consolidated total revenues for the years ended December 31, 2004 and 2005 and the three months ended March 31, 2006, respectively. SBIR revenues accounted for approximately 43.3%, 59.8% and 67.3% of our consolidated total revenues for the years ended December 31, 2004 and 2005 and the three months ended March 31, 2006, respectively, and 40.2% and 52.8% of our pro forma consolidated total revenues, which include the operations of Luna Technologies for the years ended December 31, 2004 and 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, for which we must comply with certain eligibility criteria. Our contract research customer base includes government agencies, academic institutions and corporations. Our customers are not obligated to extend their agreements with us. In addition, our contracts with government agencies, which accounted for approximately 86.1%, 93.3% and 87.9% of our contract research revenues for the years ended December 31, 2004 and 2005 and the three months ended March 31, 2006, respectively, provide that the U.S. government may terminate funding prior to the expiration of these contracts, 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.

We rely and will continue to rely on contracts and grants awarded under the SBIR program for a significant portion of our revenues. A finding by the Small Business Administration, or SBA, that we no longer qualify to receive SBIR funding could adversely affect our business.

We may not qualify to participate in the Small Business Administration's, or SBA's, 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

Risk factors

owned and controlled by U.S. citizens or permanent resident aliens, or by another entity that is at least 51% owned or controlled by U.S. citizens or permanent resident aliens, and we must have 500 or fewer employees. These eligibility criteria are applied as of the time of the award of a contract or grant. 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 securities 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 March 31, 2006, giving present effect to our outstanding options, approximately 76% of our equity was owned by U.S. citizens or permanent resident aliens. Upon the completion of this offering, at least approximately 57% of our equity will be owned by U.S. citizens or permanent resident aliens (and at least approximately 55% assuming exercise of the underwriters' over-allotment option).

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, and SBA may review our size status in connection with each SBIR contract or grant. As we grow our business, it is foreseeable that we will eventually exceed the SBIR eligibility limitations and we 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 products, we may be required to seek alternative sources of revenues or capital.

The SBA could determine that, as a result of Carilion Health System's equity ownership, the number of our employees exceeds the size limitation placed on SBA contract and SBIR grant recipients, and therefore we will not be eligible to receive future SBA contracts and SBIR grants.

In addition to the U.S. ownership eligibility criteria discussed above, to be eligible for SBA contracts and SBIR grants, the number of our employees including those of any entities that are considered to be affiliated with us, cannot exceed 500. As of March 31, 2006, we, including all of our divisions, had 148 full-time and 13 part-time employees. However, in determining whether we are affiliated with any other entity, the SBA analyzes whether another entity controls or has the power to control us. If the SBA determines that another entity controls or has the power to control us, it will aggregate that entity's employees (and the employees of its subsidiaries and affiliates) with our own for purposes of applying the 500 employee test.

The SBA may make an affiliation determination based on stock ownership. For example, the SBA may presume that two or more entities have the power to control a company if the entities each own, control or has the power to control, less than 50 percent of the company's stock, such minority holdings are equal or approximately equal in size, and the aggregate of the minority holdings is large as compared to any other stock holding. However, this presumption may be rebutted by showing that such control or power to control does not in fact exist. Prior to this offering, 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 such that an additional 96,724 shares are issued to Carilion Health System, Carilion Health System held 34.2% of our common stock, and Dr. Kent Murphy owned 42.3% of the voting power of our common stock, and after the offering, these ownership percentages will be approximately equal to 20.8% and 25.8%, respectively. Thus, applying the criteria stated above, the SBA could find that both Carilion Health System and Dr. Murphy own less than 50% of the stock, their percentages are roughly equal, and their respective percentages are large compared to any other stock holding. We believe that 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 interest in us. However, if the SBA were to make a determination that we are affiliated with Carilion Health System, we would exceed the size limitations as Carilion Health System has over 500 employees, and we therefore would lose eligibility for SBA contracts, public contracts, grants and other awards that are set aside for small businesses, including SBIR grants.

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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 86.1%, 93.3% and 87.9% of our contract research revenues and 52.8%, 87.2% and 76.3% of our consolidated total revenues for the years ended December 31, 2004 and 2005 and the three months ended March 31, 2006, 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 49.0% and 76.9% of our pro forma consolidated total revenues for the years ended December 31, 2004 and 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

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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

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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 nanotechnologies, or technologies involving nanomaterials, is new and the scope and breadth of patent protection is uncertain. Consequently, the patent positions of companies involved in nanotechnologies 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

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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 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

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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 March 2006, our senior management became aware that seven foreign national citizens who were working for us had access to International Traffic in Arms Regulations, or ITAR, controlled technical data. Such data may be deemed to have been exported/disclosed to certain of these individuals without the required export licenses. We do not believe that exports of ITAR-controlled technical data occurred to any other unauthorized parties. In addition, we do not believe that any disclosures to foreign nationals involved technology related to classified contracts. Following this discovery, in an effort to ensure full compliance with ITAR we submitted voluntary disclosure of these circumstances to the U.S. Department of State in April 2006. While the Department of State encourages such voluntary disclosure, we nevertheless could be subject to potential investigation and may be exposed to potential regulatory consequences ranging from a no-action letter, government oversight of facilities and export transactions, monetary penalties, and in extreme cases, debarment from government contracting, denial of export privileges and criminal sanctions.

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

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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 ultrasound 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. Although we have not previously experienced material difficulties in hiring or retaining these personnel, our growth strategy and future needs for additional experienced personnel, particularly in highly specialized areas such as nanomaterial manufacturing and innovative ultrasound technologies, may make it 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, especially in technical fields where the supply of experienced qualified candidates is limited. 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 elected 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 expect to incur significant expenditures in connection with a grant from the City of Danville, Virginia. If we fail to make certain agreed upon expenditures, we may be obligated to repay part or all of the proceeds from such grant.

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. Our obligations under this Grant Agreement require us to incur significant expenditures in order to retain such proceeds from the grant. Specifically, we agreed under the Grant Agreement to invest at least \$5.2 million in capital equipment expenditures and \$1.2 million in certain facilities by September 25, 2006 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. 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. If we fail to make these capital expenditures and create these jobs by September 25, 2006, we will be obligated to repay the City of Danville all or a portion of the \$900 thousand in funds based on a formula of the pro rata shortfall of such expenditures and jobs falling below such required levels. At this time, we do not anticipate that we will satisfy the investment and hiring targets of the grant prior to September 25, 2006, and we expect that we may have to return some or all of the grant proceeds. We currently have classified the full amount of the grant as a liability on our balance sheet in anticipation of returning the funds.

Risk factors

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

We have produced most of our products on a custom order basis rather than pursuant to large contracts that require production on a large volume basis. Accordingly, other than the commercial manufacture of products by our Luna Technologies Division, we have no experience manufacturing products in large volume. Because our experience in large scale manufacturing is limited, we may encounter unforeseen difficulties in our efforts to manufacture other products or materials in commercial quantities. For example, we may need to develop or in-license Trimetasphere™ nanomaterial purification and isolation technology, which would result in manufacturing delays or shortfalls. We may also 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. Although we do not have any sole source suppliers of materials, the highly specialized nature of our supply requirements poses risks that we may not be able to locate additional sources of the specialized components required in our business. For example, we are aware of only two manufacturers that produce the special lasers used in our optical test equipment. Moreover, none of these third-party vendors is obligated to continue to supply us with components. 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.

While we believe that none of our current products contain chemicals known by us to be hazardous or subject to environmental regulation, it is possible our current or future products, particularly carbon-based nanomaterials, may become

Risk factors

subject to environmental regulation. We intend to develop and sell carbon-based nanomaterials as well as nanotechnology-enabled products, which are products that include nanomaterials as a component to enhance those products' performance. Nanomaterials and nanotechnology-enabled products have a limited historical safety record. Because of their size or shape 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. These characteristics may also cause countries to adopt regulations in the future prohibiting or limiting the manufacture, distribution or use of nanomaterials or nanotechnology-enabled products. Such regulations may inhibit our ability to sell some end user products containing those materials and thereby harm our business or 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

Risk factors

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 \$6.93 in net tangible book value per share of common stock. This amount represents the difference between the assumed initial public offering price of \$12.00 per share, which is based on the mid-point of the range on the front cover of this prospectus, and the net tangible book value per share of common stock after the offering of \$5.07. 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 10,234,325 shares of common stock outstanding. The 4,000,000 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 6,234,325 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:

- 566 shares will be immediately eligible for sale in the public market without restriction pursuant to Rule 144(k);
- no 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;

Risk factors

- 3,998,777 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
- 2,234,982 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, 1,492,032 and 639,442 shares may be sold by Carilion Health System beginning August 4, 2006 and December 30, 2006, respectively, and 103,508 shares may be sold by three individuals beginning November 22, 2006.

Existing stockholders holding an aggregate of 5,489,872 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 March 31, 2006, 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 and 2006 Equity Incentive Plan, thus permitting the resale of such shares. As of March 31, 2006, 4,812,367 shares were subject to outstanding options, 1,505,850 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 61,214 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 1,830,028 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 2,220,054 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.

Risk factors

Our directors and management will collectively control over 52% of our outstanding common stock.

Immediately after this offering, our directors and executive officers and their affiliates will collectively control approximately 51.7% of our outstanding common stock or approximately 48.8% 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.

Risk factors

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, 2005, 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, 2005 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 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 Executive Vice President, Corporate Development. We have recently hired a Chief Accounting Officer as well as an additional senior accountant. These individuals have prior experience handling external financial reporting in a public company environment and should improve our ability to prepare timely consolidated financial statements as well to address more complex accounting matters, such as business combinations and share-based payments. We also hired an additional accounts payable and payroll accountant to improve segregation of duties and redistribute the overall workload on our accounting staff.

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. To improve the timeliness of our financial reporting, we have instituted a new detailed closing schedule to enhance overall completeness and quality of our reporting. The new schedule was first implemented in March 2006 and provides guidance on routine processes, such as procedures for handling key account reconciliations, month end cutoff procedures for accounts payable and accrued expenses as well as cutoff procedures for revenue and related receivables. The documentation will be expanded in later periods to provide detailed guidance of our entire closing process including preparation of interim and year-end consolidated financial statements and related notes. We have also taken measures to improve our cutoff and accrual procedures.

Risk factors

Specifically, we have implemented a process to improve our estimation of subcontractor expenses to ensure completeness of our direct costs and related revenue. We will continue to review this process to monitor the sufficiency of such policies and procedures.

Although we do not believe we have material weaknesses or significant deficiencies related to our policies and procedures that pertain to maintenance of records, authorizations of receipts and expenditures, or prevention or timely detection of unauthorized acquisition, use, or disposition of our assets, we have not performed specific tests to determine the effectiveness of key controls within these policies and procedures. We intend to monitor those policies and procedures in connection with the establishment of a formally documented system of internal control. We are beginning a comprehensive documentation of our internal controls processes in order to identify additional areas for improvement as well as in anticipation of our future requirements under the Sarbanes-Oxley Act of 2002. We have assigned personnel to begin the process with the expectation of completing documentation of certain key processes by the end of the second quarter of 2006.

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."

Risk factors

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 4,000,000 shares of our common stock that we are selling in this offering will be approximately \$43.1 million, based on an assumed initial public offering price of \$12.00 per share, the mid-point of the range on the front cover of this prospectus, after deducting the underwriting discount and estimated offering expenses. A \$1.00 increase (decrease) in the assumed initial public offering price of \$12.00 per share would increase (decrease) our net proceeds from this offering by approximately \$3.7 million, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions. If the underwriters' over-allotment option is exercised in full, we estimate that we will receive additional net proceeds of approximately \$6.7 million.

We intend to use the net proceeds from this offering principally to fund further development and expansion of our products and product candidates, in particular our nanomaterial and ultrasound-related product candidates, and for general working capital purposes. Specifically, in 2006 and 2007 we currently estimate spending:

- approximately \$4 million to \$6 million to develop disease-targeting MRI contrast agents and other nanomaterial applications through completion of pre-clinical trials and the filing of an Investigational New Drug application for a lead contrast agent;
- approximately \$2 million to \$3 million to complete FDA Phase I clinical trials for one lead disease-targeting MRI contrast agent including generation of preliminary efficacy data;
- approximately \$2 million to \$3 million to complete technological development of our first medical device product based on our innovative ultrasound platform technology which is necessary to commence the regulatory review and approval process; and
- an additional \$2 million to \$3 million to fund studies necessary to commence and complete the 510(k) premarketing notification review process with the FDA to allow us to market in the U.S. our first medical device product based on our innovative ultrasound platform technology.

Thereafter, we intend to use the net proceeds of this offering to continue to fund FDA clinical trials of additional, currently unidentified, MRI contrast agent and ultrasound medical device products, with the remainder being available for general working capital purposes. However, due to the uncertainties inherent in the clinical trial process and given that our product candidates have not yet entered clinical development, we are unable to estimate the total costs that will be required to complete the development of our product candidates. As a result, we cannot estimate what amount of the net proceeds will be available for general working capital purposes.

Moreover, our current estimates may change as we begin to develop and expand our product candidates, and we may decide to use our net proceeds for other product candidates or other business purposes. In addition, we may decide to fund our development efforts in part or in whole through outside sources, including licensing revenues or other sources of financing. The foregoing use of proceeds are only our current estimates, and we retain broad discretion to change the application of the proceeds from this offering.

We have not made specific plans with respect to the remaining proceeds of this offering and, therefore, cannot specify all uses for the net proceeds. Accordingly, our management will have broad discretion over the use of the net proceeds in this offering. The amounts and timing of our actual expenditures will depend upon numerous factors, including the status of our development and commercialization efforts and the amount of proceeds actually raised in this offering.

Additional purposes of this offering are to establish a public market for our common stock and to facilitate our future access to public markets, if, for example, additional funds are required to complete FDA clinical trials. We may also use a portion of the net proceeds for the acquisition of, or investment in, companies, technologies, products or assets that complement our business. We have no present understandings, commitments or agreements to enter into any acquisitions or investments. Pending these uses, we intend to invest the net proceeds of this offering in short-term, investment-grade interest-bearing securities or guaranteed obligations of the United States government.

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 March 31, 2006:

- on an actual basis;
- on an as adjusted basis to give effect to the sale by us of 4,000,000 shares of common stock at an assumed initial public offering price of \$12.00 per share, the mid-point of the range on the front cover of this prospectus, less the underwriting discount and estimated offering expenses.

	As of March 31, 2006	
	Actual	As Adjusted
	(unaudited)	
Cash and cash equivalents	\$10,099,059	\$53,239,059
Senior convertible promissory notes	5,000,000	5,000,000
Redeemable common stock, 308,216 shares issued and outstanding; no shares issued and outstanding, as adjusted(1)	504,984	—
Stockholders' equity:		
Common stock, \$0.001 par value; 54,245,588 shares authorized, 5,829,385 shares issued and outstanding, actual; 100,000,000 shares authorized, 10,234,325 shares issued and outstanding, as adjusted	5,829	10,234
Additional paid-in capital	11,807,196	55,727,100
Accumulated deficit	(2,176,282)	(2,455,607)
Total stockholders' equity and redeemable common stock	10,141,727	53,281,727
Total capitalization	\$15,141,727	\$58,281,727

- (1) Certain stockholders that have received shares of our 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 this offering.

A \$1.00 increase (decrease) in the assumed initial public offering price of \$12.00 per share would increase (decrease) each of cash and cash equivalents, additional paid-in capital, total stockholders' equity and redeemable common stock, and total capitalization by approximately \$3.7 million, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions. The as adjusted information discussed above is illustrative only and following the completion of this offering will be adjusted based on the actual initial public offering price and other terms of this offering determined at pricing.

Capitalization

The table above is based on 6,137,601 shares outstanding as of March 31, 2006 and an additional 96,724 shares of common stock to be issued to Carilion Health System in connection with certain anti-dilution provisions afforded to such stockholder upon the effectiveness of this offering, and it excludes:

- 4,812,367 shares of common stock issuable upon exercise of options outstanding at a weighted-average exercise price of \$0.90 per share, which includes 2,834,129 shares of common stock issuable upon exercise of options outstanding at an exercise price of \$0.35 per share, 113,047 shares of common stock issuable upon exercise of options outstanding at an exercise price of \$0.39 per share, and 1,865,191 shares of common stock issuable upon exercise of options outstanding at an exercise price of \$1.77 share;
- 235,777 shares of common stock reserved for future issuance upon the exercise of options available for grant under our 2003 Stock Plan;
- 61,214 shares of common stock issuable upon exercise of warrants (not subject to escrow) outstanding at a weighted-average exercise price of \$3.04 per share, which includes 2,182 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of \$37.26 per share and 59,032 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of \$1.77 per share;
- 1,065,740 shares of common stock issuable upon the conversion of the principal amount outstanding under senior convertible promissory 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 511,553 shares of common stock; and
- 69,390 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 146 shares of common stock issuable upon the exercise of warrants at an exercise price of \$37.26 per share held in escrow as of that date, and which shares and warrants to purchase shares are expected to be cancelled upon the closing of this offering.

We adopted our 2006 Equity Incentive Plan in February 2006, subject to stockholder approval, which will be effective upon the completion of this offering.

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 \$12.00 per share of our common stock, the midpoint of the range on the front cover of this prospectus, and the as adjusted net tangible book value per share of our common stock after this offering. Net tangible book value as of March 31, 2006 was \$8.7 million, or \$1.40 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 March 31, 2006, which includes shares of common stock that will be issued to Carilion Health Systems in connection with certain antidilution provisions afforded to that stockholder upon the effectiveness of this offering.

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 \$12.00 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 March 31, 2006 would have been approximately \$51.9 million. This amount represents an immediate increase in net tangible book value of \$3.67 per share to our existing stockholders and an immediate dilution in net tangible book value of \$6.93 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	\$12.00
Net tangible book value per share as of March 31, 2006	\$1.40
Increase in net tangible book value per share attributable to this offering per share to existing investors	\$3.67
As adjusted net tangible book value per share after this offering	\$5.07
Dilution per share to new investors	\$6.93

A \$1.00 increase (decrease) in the assumed initial public offering price of \$12.00 per share would increase (decrease) our net tangible book value by approximately \$3.7 million, our as adjusted net tangible book value per share after this offering by approximately \$0.36 and dilution per share to new investors by approximately \$0.64, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions.

The following table sets forth, on an as adjusted basis, as of March 31, 2006, 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 \$12.00 per share, the mid-point of the range on the front cover of this prospectus.

	Shares Purchased		Total Consideration		Average Price Per Share
	Number	Percent	Amount	Percent	
Existing stockholders	6,234,325	60.9%	\$11,463,456	19.3%	\$1.84
New investors	4,000,000	39.1	48,000,000	80.7	12.00
Total	10,234,325	100.0%	\$59,463,456	100.0%	

Dilution

The table above excludes, as of March 31, 2006:

- 4,812,367 shares of common stock issuable upon exercise of options outstanding at a weighted-average exercise price of \$0.90 per share, which includes 2,834,129 shares of common stock issuable upon exercise of options outstanding at an exercise price of \$0.35 per share, 113,047 shares of common stock issuable upon exercise of options outstanding at an exercise price of \$0.39 per share, and 1,865,191 shares of common stock issuable upon exercise of options outstanding at an exercise price of \$1.77 per share;
- 235,777 shares of common stock reserved for future issuance upon the exercise of options available for grant under our 2003 Stock Plan;
- 61,214 shares of common stock issuable upon exercise of warrants (not subject to escrow) outstanding at a weighted-average exercise price of \$3.04 per share, which includes 2,182 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of \$37.26 per share and 59,032 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of \$1.77 per share;
- 1,065,740 shares of common stock issuable upon the conversion of the principal amount outstanding under senior convertible promissory 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 511,553 shares of common stock; and
- 69,390 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 146 shares of common stock issuable upon the exercise of warrants at an exercise price of \$37.26 per share held in escrow as of that date, which shares and warrants are expected to be cancelled in connection with the closing of this offering.

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 April 27, 2006 (other than shares and warrants held in escrow), the number of shares purchased by existing stockholders would be increased by 6,686,651 shares to 12,920,976 shares, total consideration paid by them would be increased by approximately \$4,532,441 to \$15,995,897 and the average price per share paid by them would be decreased by \$0.60 per share to \$1.24 per share.

We adopted our 2006 Equity Incentive Plan in February 2006, subject to stockholder approval which will be effective upon the completion of this offering.

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 57.5% 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 4,600,000, or approximately 42.5% 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 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, 2001, 2002, 2003, 2004 and 2005 and the three months ended March 31, 2005 and 2006 and selected consolidated balance sheet data as of December 31, 2001, 2002, 2003, 2004 and 2005 and March 31, 2006. The consolidated statements of operations data for the years ended December 31, 2003, 2004 and 2005 and consolidated balance sheet data as of December 31, 2004 and 2005 were derived from our audited consolidated financial statements and notes thereto, which are included elsewhere in this prospectus. The consolidated statement of operations data for the year ended December 31, 2002 and consolidated balance sheet data as of December 31, 2003 were derived from our audited consolidated financial statements and notes thereto, which do not appear in this prospectus. The consolidated statements of operations data for the year ended December 31, 2001 and the consolidated balance sheet data as of December 31, 2001 and 2002 were derived from our unaudited consolidated financial statements, which do not appear in this prospectus. The consolidated balance sheet data as of March 31, 2006 and the consolidated statements of operations data for the three months ended March 31, 2005 and 2006 were derived from our unaudited consolidated financial statements included elsewhere in this prospectus. We have prepared the 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 at such date and operating results for such periods. Historical results are not necessarily indicative of the results of operations to be expected for the future periods, and interim results may not be indicative of results for the remainder of the year.

When you read this selected consolidated 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." These sections include, among other things, more detailed information regarding the \$169 thousand and \$409 thousand stock-based compensation charges reflected in the following table under "Operating expense" for the periods ended December 31, 2005 and March 31, 2006, respectively. Historical results are not necessarily indicative of future results.

(In thousands, except share and per share data)	Years Ended December 31,					Three Months Ended March 31,	
	2001	2002	2003	2004	2005	2005	2006
	(unaudited)					(unaudited)	(unaudited)
Consolidated Statements of Operations Data:							
Revenues:							
Contract research revenues	\$7,725	\$11,084	\$10,358	\$13,835	\$15,380	\$3,256	\$3,921
Product sales and license revenues	—	4,643	7,234	8,752	1,074	—	595
Total revenues	7,725	15,727	17,592	22,587	16,454	3,256	4,516
Cost of revenues:							
Contract research costs	4,646	9,143	8,949	10,985	12,552	2,671	2,908
Product sales and license costs	—	3,884	1,543	2,881	410	—	266
Total cost of revenues	4,646	13,027	10,492	13,866	12,962	2,671	3,174
Gross profit	3,079	2,700	7,100	8,721	3,492	585	1,342
Operating expense	4,531	4,491	4,856	4,190	6,004	882	3,442
Operating income (loss)	(1,452)	(1,791)	2,244	4,531	(2,512)	(297)	(2,100)
Other income (expense)(1)	(101)	41	(138)	(257)	2	1	6
Interest income (expense), net	(263)	(469)	(87)	(90)	(41)	(40)	5
Income (loss) before income taxes	(1,816)	(2,219)	2,019	4,184	(2,551)	(336)	(2,089)
Income tax expense (benefit)	(582)	(652)	886	128	(557)	(73)	—
Net income (loss)	\$(1,234)	\$(1,567)	\$1,133	\$4,056	\$(1,994)	\$(263)	\$(2,089)
Net income (loss) per common share:							
Basic	\$(0.41)	\$(0.54)	\$0.40	\$1.40	\$(0.53)	\$(0.09)	\$(0.34)
Diluted	\$(0.41)	\$(0.54)	\$0.39	\$1.14	\$(0.53)	\$(0.09)	\$(0.34)
Weighted-average number of shares used in per share calculations:							
Basic	3,031,509	2,878,460	2,843,349	2,903,022	3,735,811	2,911,255	6,069,780
Diluted	3,031,509	2,878,460	2,905,849	3,561,788	3,735,811	2,911,255	6,069,780

(1) Includes minority interests and excludes interest expense.

Selected consolidated financial data

(in thousands)	As of December 31,					As of March 31,
	2001	2002	2003	2004	2005	2006
	(unaudited)					(unaudited)
Consolidated Balance Sheet Data:						
Cash and cash equivalents	\$122	\$1,293	\$642	\$610	\$12,515	\$10,099
Working capital (deficit)	(1,762)	(5,325)	(3,008)	257	11,843	9,627
Total assets	1,967	6,807	5,497	7,747	24,134	21,369
Total current liabilities	3,610	9,802	7,211	4,474	6,993	5,684
Total debt(1)	0	24	286	303	5,431	5,406
Stockholders' equity (deficit)	(1,221)	(3,088)	(1,932)	2,167	10,854	9,637

(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 technologies that can fulfill large and unmet market needs and then take these technologies from the applied research stage through commercialization in our two areas of focus:

- **Molecular Technology Solutions.** We develop molecular technology solutions, which are substances and materials with enhanced performance characteristics obtained by harnessing chemical, physical and biological properties of novel combinations of matter. We focus on substances and materials at the molecular level, including nanomaterials, which are materials whose size can be measured in nanometers, or one billionth of a meter. Examples of our solutions in this area include flame retardants, protective coatings, and materials that can help physicians identify diseased tissues using magnetic resonance imaging, or MRI.
- **Sensing Solutions.** We develop integrated sensing solutions, which are products that combine sensors, software and hardware to measure, monitor and control chemical, physical and biological properties. We 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. 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 aggregate revenues from January 1, 2003 through March 31, 2006 were \$61.1 million, and our aggregate cost of revenues during that same period were \$40.5 million. However, we had net losses of \$2.0 million and \$2.1 million for the year ended December 31, 2005 and the three months ended March 31, 2006, respectively, and we expect to incur significant additional expenses as we expand our business. We also expect significantly greater losses for the foreseeable future primarily due to increased expenditures related to our nanomaterial and medical device product development efforts.

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.

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

Our annual revenues were \$17.6 million in 2003, \$22.6 million in 2004, and \$16.5 million in 2005, and \$4.5 million during the three months ended March 31, 2006. 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. Our contract research revenues grew from \$10.4 million in 2003 to \$13.8 million in 2004 and to \$15.4 million in 2005. In the first quarter of 2006, we generated contract research revenues of \$3.9 million. As of March 31, 2006, 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 \$15.7 million as of March 31, 2006.

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 sensing systems and products that make use of light-transmitting optical fibers, or fiber optics. 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. Although we have been successful in licensing certain technology we do not expect license revenues to represent a significant portion of future revenues, however, over time we do 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 funded its growth by raising venture capital, which ultimately 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. Luna Technologies continues to operate as our Luna Technologies Division.

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 for a non-refundable payment of \$990 thousand and the license arrangement was terminated.

In October 2003, IHS Energy Group, Inc. acquired rights to certain intellectual property related to our sensor technology and our equity interest in Luna i-Monitoring, Inc. Prior to and in connection with this transaction, we transferred certain non-intellectual property assets 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; \$300 thousand to Luna i-Monitoring's creditors; \$400 thousand to us in consideration for our transfer and license of intellectual property rights to IHS Energy Innovations; \$100 thousand to us in consideration for our equity interest in Luna i-Monitoring; and \$200 thousand to the other equityholders for their interests in Luna i-Monitoring. In addition, IHS Energy Group agreed to pay up to an aggregate of \$6.5 million to the other equityholders and, following payment of the first \$0.9 million of this amount, up to an aggregate of \$2.5 million to us, based on a percentage of Luna i-Monitoring's sales from December 1, 2003 through November 30, 2008. As of March 31, 2006, the other equityholders of Luna i-Monitoring have received \$82 thousand in aggregate additional consideration based on \$773 thousand in Luna i-Monitoring sales since

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

December 1, 2003. We have not received any additional consideration to date other than the \$664 thousand that was paid at the date of the sale. In addition, we will not receive any additional consideration from Luna i-Monitoring unless aggregate Luna i-Monitoring product sales exceed \$8.6 million prior to November 30, 2008, which amount would be inconsistent with historical sales to date. As a result, we do not anticipate that the amounts, if any, we may receive in the future from Luna i-Monitoring will be material to our business.

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 have agreed to cooperate to develop a fiber optic sensing system product and have agreed to contribute materials, intellectual property, personnel and other resources to the development effort. Upon successful completion of product development, Luna Energy will receive a license to certain of Luna Technologies' intellectual property and will be required beginning in 2007 and continuing through December 31, 2017 to make payments to Luna Technologies with respect to revenues derived from products sold that utilize this intellectual property. As of March 31, 2006, Luna Energy had not yet sold products that would entitle Luna Technologies to royalty payments under this joint cooperation agreement, Luna Technologies had received aggregate development milestone payments of \$305 thousand as of that date under this agreement and is entitled to receive additional development milestone payments of up to \$120 thousand in the aggregate, subject to the satisfaction of certain conditions. Luna Technologies also has the right to receive royalty payments from sales of products in the future. The license of certain of the intellectual property from Luna Technologies to Luna Energy shall be an exclusive license if Luna Energy makes certain minimum royalty payments of \$420 thousand in the aggregate between 2007 and 2017, and shall be a non-exclusive license if Luna Energy fails to make these minimum royalty payments. Either party has the right to terminate this agreement during the development term (which, unless extended by mutual agreement of the parties, will expire June 6, 2006) upon a provision of advance written notice to the other party. However, if either party terminates the agreement for convenience or failure to meet certain development milestones, the terminating party may be required to grant license rights to the non-terminating party, including, where Luna Technologies is the terminating party, certain non-exclusive and certain exclusive rights with respect to intellectual property of Luna Technologies required to complete the development effort, and where Luna Energy is the terminating party, non-exclusive commercialization rights with respect to certain intellectual property of Luna Energy. Since December 2004, we have not held an ownership interest in Luna Energy. Luna Technologies continues to operate as our Luna Technologies Division after we acquired that entity in September 2005.

In connection with becoming a public company, we have and 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 in prior periods. We began to incur some of these expenses during the nine-month period ended March 31, 2006, 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 \$2.0 million and \$2.1 million for the year ended December 31, 2005 and the three months ended March 31, 2006, respectively. 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.

As a result of our board of directors' decision to change the methodology for assessing the fair value of common stock underlying the equity awards granted subsequent to fiscal 2005, we have recorded a stock-based compensation charge for the three months ended March 31, 2006 of \$409 thousand. We also expect to record an aggregate stock-based compensation charge of \$5.8 million to be allocated over the years 2006 through 2009. For further information regarding this non-cash charge, see "—Reassessment of Fair Value."

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 as well as royalties, which currently represent an insignificant portion of our license revenues.

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 including certain non-cash charges related to expenses from option grants; 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 historically related primarily to interest we paid under our senior secured revolving credit facility. As of March 31, 2006, there was no amount outstanding on our credit facility, and we do not expect to draw on that facility in the near term. Beginning the last week of 2005, interest expense includes interest accrued on the outstanding aggregate principal of the senior convertible promissory notes issued to Carilion Health System on December 30, 2005.

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.

In the selection of our critical accounting policies, the objective is to properly reflect our financial position and results of operations for each reporting period in a consistent manner that can be understood by the reader of our financial statements. Our accounting policies and procedures are explained in note 1 of the notes to the consolidated financial statements contained elsewhere in this prospectus. We have identified the following as the most critical accounting policies which may have a significant effect on our reported financial results.

Contract Research Revenues

We recognize revenue when a contract has been executed, the contract price is fixed and determinable, delivery of services or products has occurred, and collectibility of the contract price is considered probable and can be reasonably estimated. Revenue is earned under cost reimbursable, time and materials and fixed price contracts. Direct contract costs are expensed as incurred.

Under cost reimbursable contracts, we are reimbursed for allowable costs, and paid a fixed fee. Revenues on cost reimbursable contracts are recognized as costs are incurred plus an estimate of applicable fees earned. We consider fixed fees under cost reimbursable contracts to be earned in proportion to the allowable costs incurred in performance of the contract.

Revenue on time and materials contracts are recognized based on direct labor hours expended at contract billing rates and adding other billable direct costs.

Fixed price contracts may include either a product delivery or specific service performance throughout a period. For fixed price contracts that are based on the proportionate performance method and involve a specified number of deliverables, we recognize revenue based on the proportion of the cost of the deliverables compared to the cost of the deliverables required by the contract. For fixed price contracts that provide for the development and delivery of a specific prototype or product, revenues are recognized on under the percentage of completion method in accordance with Statement of Position (SOP) 81-1 *Accounting for Performance of Construction-Type and Certain Production-Type Contract*.

Our contracts with agencies of the government are subject to periodic funding by the respective contracting agency. Funding for a contract may be provided in full at inception of the contract or ratably throughout the contract as the services are provided. In evaluating the probability of funding for purposes of assessing collectibility of the contract price, we consider our previous experiences with our customers, communications with our customers regarding funding status, and our knowledge of available funding for the contract or program. If funding is not assessed as probable, revenue recognition is deferred until realization is deemed probable.

Contract revenue recognition inherently involves estimation, including the contemplated level of effort to accomplish the tasks under the contract, the cost of the effort, and an ongoing assessment of progress toward completing the contract. From time to time, as part of the normal management processes, facts develop that require revisions to estimated total costs or revenues expected. The cumulative impact of any revisions to estimates and the full impact of anticipated losses on any type of contract are recognized in the period in which they become known.

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

The underlying bases for estimating our contract research revenues are measurable expenses such as labor, subcontractor costs and materials, the cost data of which is updated on a regular basis for purposes of preparing our cost estimates. Our research contracts generally have a period of performance of six to 18 months. Accordingly, our estimates of contract costs have historically been consistent with actual results. Revisions in these estimates between accounting periods to reflect changing facts and circumstances have not had a material impact on our operating results, and we do not expect future changes in these estimates to be material.

The allowability of certain costs under government contracts is subject to audit by the government. Certain indirect costs are charged to contracts using provisional or estimated indirect rates, which are subject to later revision based on government audits of those costs. Management is of the opinion that costs subsequently disallowed, if any, would not be significant.

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. In assessing the need for a valuation allowance against the net deferred tax asset, we consider factors such as future reversals of existing taxable temporary difference, taxable income in prior carryback years, if carryback is permitted under the tax law, tax planning strategies and future taxable income exclusive of reversing temporary differences and carryforwards. 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.

As we assess the sufficiency of future taxable income and other factors noted above in future periods, our estimate of the required valuation allowance may change, which could have a material impact on the accounting period(s) in which the change occurs.

Stock-Based Compensation

Prior to January 1, 2006, we recorded compensation expense under the intrinsic value method, pursuant to APB 25 and related interpretations, whenever the exercise price of an option grant was less than the fair market value of our common stock on the grant date. We recorded compensation expense whenever we modified the terms of an option grant or directly or indirectly repriced outstanding options. Our board of directors is responsible for determining the fair value of our common stock for the purpose of establishing exercise prices for our option grants. Our board has relied upon Market Place Transaction History as well as the assistance from independent valuation specialists for purposes of estimating the fair value of our common stock.

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 option grants were immediately vested on September 29, 2003, the date of exchange, had an exercise price of \$0.35 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 27,107 shares subject to such options exchanged under this program remain outstanding as of March 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 \$12.00 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 \$280,554 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. In March 2006, our board of directors approved a program to bonus the cash necessary to cover the exercise price and applicable withholding taxes related to these options in an effort to encourage participants to exercise such options and limit the impact of compensation charges that could be recognized in the future.

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

The fair value of common stock for options granted was estimated by the Compensation Committee of our board of directors, applying a number of commonly accepted valuation methodologies. The board of directors also considered valuations performed by an independent third-party valuation specialist.

We currently anticipate granting stock options to our officers, directors and employees subsequent to the consummation of this offering. The exercise price of the options will be equal to the price per share to the public at the time of the grant.

Effective January 1, 2006, we adopted Financial Accounting Standards No. 123R, *Share Based Payment* (SFAS No. 123R) using the modified prospective transition method. Under this transition method, our financial statements for periods prior to January 1, 2006 will not be restated. However, new awards and awards modified, repurchased or cancelled after January 1, 2006 will trigger compensation expense based on the fair value of the stock option as determined by an option pricing model. We will amortize stock-based compensation for such awards on a straight-line method over the related service period of the awards taking into account the effects of the employees' expected exercise and post-vesting employment termination behavior.

Reassessment of Fair Value

From time to time, our board of directors grants stock options to employees, directors and consultants. At the time we granted stock options, we believed that the per share exercise price of options to purchase our Class B Common Stock approximated the fair value of that stock on the grant date. However, in connection with the preparation of the financial statements for our initial public offering and solely for the purposes of accounting for employee stock-based compensation, we considered whether the equity awards granted subsequent to December 31, 2005 had a compensatory element that should be reflected in our financial statements. We noted that the fair value of the shares subject to the equity awards granted during this period, as determined by our board of directors at the time of grant and principally based upon the valuation reports, were significantly less than the valuations that our underwriters were discussing with us in connection with our preparation for this offering. We believed we should consider the discrepancies in valuation in determining whether the equity awards granted during this time had a compensatory element. As a result, we applied hindsight to reassess the fair value of our Class B Common Stock for all equity awards granted subsequent to December 31, 2005.

In assessing the fair value of the shares of Class B Common Stock underlying the equity awards granted subsequent to fiscal 2005, our board of directors used valuation methodologies it believes are consistent with the practices recommended by the AICPA Audit and Accounting Practice Aid Series *Valuation of Privately-Held-Company Equity Securities Issued as Compensation*, or the practice aid. The board reviewed the guidance set forth in the practice aid and determined that using the annual valuation reports was a reasonable starting point for assessing the value of the common stock. In making this determination, the board noted that during the review period there were no quoted market prices in active markets for the Class B Common Stock and there were no arms'-length cash transactions with unrelated parties for issuances of such securities. In these circumstances, the practice aid recommends engaging an unrelated valuation specialist for the purpose of assisting management in determining fair value of common stock. The board also noted that the annual valuation reports contained all of the required content for valuation reports outlined in the practice aid, as well as much of the additional content recommended to be included.

In light of the recommendations detailed in the practice aid, the board initially decided to give substantially more weight to the valuation reports than the underwriters' anticipated initial public offering price in assessing equity award valuations. Nonetheless, the board also determined that it should examine the underlying assumptions made in the valuation reports to determine whether these assumptions were appropriate as of the dates the equity awards were granted after taking into consideration our circumstances on each date. After much consideration, our board of directors decided that the valuations provided by the underwriters was a better indication of fair value of the Company's Class B Common Stock, and that such value should be used to measure compensation expense associated with fiscal 2006 option grants.

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Based upon this reassessment of fair value of our Class B Common Stock, we have recorded a stock-based compensation charge under the fair value method outlined in SFAS 123R using the revised fair value of our Class B Common Stock as an input in such calculation. The approximate amount of stock-based compensation based upon the reassessed fair value of Class B Common Stock underlying the stock option awards recognized for the three months ended March 31, 2006 and expected to be recognized in the period of 2006 through 2009 is \$409 thousand and \$5.8 million, respectively.

The aggregate amount of stock-based compensation expected to be recognized during the years 2006 through 2009 will be allocated as follows:

	2006	2007	2008	2009
Amortization of stock-based compensation related to stock options granted	\$1,339,000	\$1,506,000	\$1,506,000	\$1,455,000

Results of Operations

Three Months Ended March 31, 2006 Compared to Three Months Ended March 31, 2005

Revenues

Total revenues increased 38.7% to \$4.5 million for the three months ended March 31, 2006 from \$3.3 million for the three months ended March 31, 2005. The increase was due in part to increased product sales related to our Luna Technologies Division, which was not acquired until September 30, 2005 and thus was not yet reflected in the results of our consolidated operations for the first quarter of 2005. Our acquisition of Luna Technologies and the subsequent product sales by that division is a key element of our strategic transition towards increased product sales revenues. We generated approximately \$595 thousand in product sales in the first quarter of 2006 as compared with no such product sales revenues in the first quarter of 2005.

Growth in our contract research revenues also contributed to our overall revenues growth for the first quarter of 2006 as compared with the first quarter of 2005. Contract research revenues increased 20.4% to \$3.9 million for the three months ended March 31, 2006 from \$3.3 million for the same period in 2005. This increase was primarily a result of an improved success rate in obtaining research contract awards and in an increase in the size of certain awards, both of which in particular occurred in our Luna nanoWorks Division. This increase in success rate was driven in part by application of proceeds from the Carilion financing, which enabled us to devote more resources to pursuing contract awards.

Cost of Revenues

Cost of revenues increased 18.8% to \$3.2 million for the three months ended March 31, 2006 from \$2.7 million for the three months ended March 31, 2005. This increase was consistent with our overall increase in revenues. The main component of this overall increase was the inclusion of product sales costs due to the operations of our Luna Technologies Division during the first quarter of 2006; these costs were not previously a component of our operations in the first quarter of 2005. New product sales costs accounted for approximately \$266 thousand, or over half, of the overall increase in costs of revenues.

Contract research costs increased 8.9% to \$2.9 million for the three months ended March 31, 2006 from \$2.7 million in the same period in 2005. This increase was consistent with but slightly less than the increase in our contract research revenues.

Despite the inclusion of product sales costs in our cost of revenues in the first quarter of 2006, our overall gross margin improved as compared with the first quarter of 2005. Our overall gross margin during the three months ended March 31, 2006 was 29.7%, which is an increase from 18.0% during the same period in 2005. During the three months ended March 31,

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

2006, contract research activity returned a gross margin of approximately 25.8%, while product sales activity returned an even-greater gross margin of 55.3%. Our objective of seeking greater relative product sales is based on the goal of achieving higher margins to improve our overall profitability.

Operating Expense

Operating expense increased 290.5% to \$3.4 million for the three months ended March 31, 2006 from \$882 thousand for the corresponding quarter in 2005. Much of the increase in the first quarter of 2006 as compared to the same period in 2005 was due to significant indirect expenses in connection with our general restructuring towards increasing our product sales capabilities as well as in anticipation of our initial public offering and the subsequent obligations as a public company. Consistent with our strategy of building a growing portfolio of businesses and products, we were and are actively hiring additional staff, incurring professional fees and implementing various internal changes to prepare and strengthen our existing infrastructure and management resources during and after our transition to being a public company. With the completion of our financing round with Carilion Health System in December 2005, we gained the necessary resources to begin implementing many of these important changes to our business. We expect that our operating expenses will remain at these increased levels and perhaps increase further in the coming months due to our continued growth and development as well as due to the indirect costs of our initial public offering and compliance with the various reporting requirements of being a publicly-traded company.

Another significant factor in the increase in our operating expense between the first quarter of 2005 and the first quarter in 2006 was our adoption of SFAS No. 123R, which required us to record expense related to the increase in fair market value of options outstanding. We recorded share-based compensation expense of approximately \$409 thousand during the three months ended March 31, 2006, part of which is the result of adoption of this new accounting policy.

Other Income (Expense)

The increase in other income (expense) was a result of our acquisition of the remaining outstanding equity of Luna Technologies as of September 30, 2005. Subsequent to that date, the operating results of Luna Technologies was consolidated with our operating results, including during the three months ended March 31, 2006. During the three months ended March 31, 2005, our interest in the losses of Luna Technologies was reflected as investment losses, a component of other income (expense), consistent with our accounting policies.

Net interest income (expense) increased from a net expense during the three months ended March 31, 2005 to net income during the same period in 2006. Nearly all of the interest expense during the three months ended March 31, 2006 was incurred on our senior convertible promissory notes issued to Carilion Health System on December 30, 2005 that were not previously outstanding during the first quarter of 2005. These notes have an aggregate outstanding principal of approximately \$5.0 million and accrue simple interest at a rate of 6.0% per year. During the three month period ended March 31, 2006, interest expense on such notes was approximately \$75 thousand. At the same time, the proceeds from the issuance of the senior convertible promissory notes and the proceeds from the sale of our Class C Common Stock received at the beginning of the first quarter in 2006 provided a cash surplus for us. These proceeds resulted in our holding greater interest-bearing balances in the three months ended March 31, 2006 than during the same period in 2005. Finally, during the first quarter of 2006, we did not have an outstanding balance on our line of credit, which otherwise permits us to borrow up to \$2.5 million. As such, we did not incur interest expense on that line of credit in 2006 unlike in 2005, during which we had an outstanding balance throughout the quarter at an overall borrowing rate greater than that of the Carilion Health System notes. 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, 2005 Compared to Year Ended December 31, 2004

Revenues

Total revenues decreased 27.2% to \$16.5 million for the year ended December 31, 2005 from \$22.6 million for the year ended December 31, 2004. The decrease was a result of the absence of license revenues relating to our arrangement with Baker Hughes. The satisfaction of our right to receive certain milestone payouts in connection with that arrangement and the sale of our interest in Luna Energy to Baker Hughes in December 2004 represents the completion of our licensing arrangement with Baker Hughes. The decrease in license revenues was offset in part by an increase in contract revenues during the year ended December 31, 2005 as compared with the same period in 2004. During 2005, consistent with our business plan, we did not receive 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 on September 30, 2005. The acquisition of Luna Technologies was consistent with our strategy to transition our revenues mix from contract research revenues to product sales and license revenues. We generated approximately \$1.1 million in product sales in 2005, virtually all of which were derived from operations of Luna Technologies subsequent to our acquisition.

Although total revenues decreased due to the cessation of revenues from the Luna Energy joint venture in December 2004, contract research revenues increased 11.2% to \$15.4 million for the year ended December 31, 2005 from \$13.8 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 6.5% to \$13.0 million for the year ended December 31, 2005 from \$13.9 million for the year ended December 31, 2004. Consistent with our decrease in revenues, the decline was primarily driven by the lack of licensing revenues as our licensing arrangement with Baker Hughes was completed at the end of 2004.

Contract research cost of revenues increased 14.3% to \$12.6 million for the year ended December 31, 2005 from \$11.0 million in the same period in 2004. This increase was consistent with a corresponding increase in contract research revenues.

Cost of product sales and license cost decreased 85.8% to \$410 thousand for the year ended December 31, 2005 from \$2.9 million in the same period in 2004. This decrease was due to the cessation of license cost activity in 2005 with the completion of the Luna Energy joint venture in December 2004. Nearly all of the costs in this area incurred in 2005 were cost of product sales, which were driven by our increased product sales through our Luna Technologies Division beginning in the fourth quarter of 2005.

Operating Expense

Operating expense increased 43.3% to \$6.0 million for the year ended December 31, 2005 from \$4.2 million for the year ended December 31, 2004. The increase in operating expense was primarily attributable to our acquisition of Luna Technologies and the related indirect transaction and integration costs. Additionally, we incurred significant expenses in connection with our planned initial public offering that are not direct costs and are not otherwise capitalizable. These include hiring increased staff, professional fees and various other internal changes designed to supplement and enhance our existing infrastructure and human resources. The activity in 2005 is in line with our strategy of building a growing portfolio of businesses and products. We expect that our operating expenses will continue to increase in the coming months due to the indirect costs of our initial public offering and continued compliance with the various reporting requirements of being a publicly-traded company.

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Other Income (Expense)

The decrease in other expense was primarily a result of a decrease in losses from equity method investees. We disposed of our investment in Luna Energy in December 2004 and acquired Luna Technologies in September 2005. For 2004, our pro rata portion of the losses of Luna Technologies was reflected in other income (expense) because Luna Technologies was accounted for as an equity-method investment. Our share of losses in Luna Technologies from January 1, 2005 to September 30, 2005, the acquisition date, was nominal. Luna Technologies' operating results from the acquisition date through the end of the period have been included in our consolidated operating results.

Interest expense decreased from 2004 as a result of paying down the line of credit in 2003. Our line of credit permits us to borrow up to \$2.5 million. We do not anticipate a need to draw on the 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. We did not recognize substantial interest expense related to the senior convertible promissory notes issued to Carilion Health System on December 30, 2005 as such notes were only outstanding for one day during the period.

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 an increase in research contract volume in connection with the creation of our Luna nanoWorks Division. Contracts under our Luna nanoWorks Division accounted for approximately \$337 thousand of the overall increase in our contract research revenues, while growth of our existing contract research business accounted for the remaining \$3.1 million of such increase.

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

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

outpaced the percentage increase 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.

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 senior 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 December 31, 2005, we had repaid the outstanding balance on our secured revolving credit facility, 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

Recent Activity

During the three months ended March 31, 2006, we used approximately \$2.1 million of net cash from operations. This was a substantial change over the activity in the corresponding quarter of 2005. Most of this change was due to the addition of operations from the Luna Technologies Division, which was not reflected in the cash flows from operations in the first quarter of 2005, and the general increase in cash outflows that resulted from our expenditures increase to achieve a greater relative amount of product sales and our preparation to become a public company. We note that cash flows from operations excludes the effect of the non-cash share-based compensation charge we recorded during the period.

Cash used in investing activities for the three months ended March 31, 2006 related primarily to the purchase of property and equipment and legal fees associated with securing patent rights to certain technology. Our overall cash used in investing

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activities slightly declined in the first quarter of 2006 as compared with the first quarter in 2005. This was due mostly to the recent addition of our Luna Technologies Division, which was acquired in a non-cash transaction. The acquisition of Luna Technologies represented a substantial increase in our capacity that slightly reduced our need for continued investment growth in the first quarter of 2006. Upon completion of this offering, we expect an increase in net cash used in investing activities as we will have the necessary resources to begin and complete a number of longer-term investments in our growth.

Cash flows from financing activities for the three months ended March 31, 2006 were very limited. During the year ended December 31, 2005, we received proceeds of approximately \$10.0 million from two equity financing arrangements with Carilion Health System, as well as an additional \$5.0 million from the issuance of senior convertible promissory notes to Carilion Health System. These investments represented our first major round of venture financing. As a result of our increased cash position through that financing at the end of 2005, we did not need to draw additional financing from our line of credit or other sources in the first quarter in 2006 as we had previously done in the first quarter of 2005.

At March 31, 2006, total cash and cash equivalents were approximately \$10.1 million. We believe that our current cash on hand, cash available under our line of credit agreement and the proceeds we expect to generate from our initial public offering will be sufficient to fund operations for the next 12 months.

Significant Liquidity Events

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 at least \$5.2 million in capital equipment expenditures and \$1.2 million in certain facilities by September 25, 2006 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 of Danville 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. At this time, we do not anticipate that we will satisfy the investment and hiring targets of the grant prior to September 25, 2006, and we expect that we may have to return some or all of the grant proceeds. We currently have classified the full amount of the grant as a liability on our balance sheet in anticipation of returning the funds.

In August 2005, we entered into a Class C Common Stock financing agreement with Carilion Health System, or Carilion, whereby Carilion committed to providing approximately \$15.0 million in equity financing in three tranches subject to certain conditions outlined in the agreement. In connection with this transaction, Carilion purchased shares of our Class C Common Stock for an aggregate purchase price of \$7.0 million. On December 30, 2005, we reached an agreement with Carilion to terminate the August 2005 financing agreement and enter into a new Class C Common Stock financing agreement. Under the new agreement, Carilion provided \$5.0 million in exchange for five \$1.0 million senior convertible promissory notes, and \$3.0 million in exchange for shares of Class C Common Stock. The notes are convertible into Class C Common Stock at a rate of \$4.69159 per share and bear interest at 6% per annum and mature on December 30, 2009. As of March 31, 2006, we had received the full \$15.0 million in proceeds from the issuance of such notes and the sale of our Class C Common Stock pursuant to our financing agreements with Carilion Health System.

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.

In March 2006, our Luna Technologies Division executed a non-cancellable, non-reschedulable \$1.2 million purchase order for multiple shipments of tunable lasers to be delivered over an 18-month period beginning in July 2006.

Set forth below is information concerning our known contractual obligations as of December 31, 2005 that are fixed and determinable. Except for facility leases and minimum royalty payment obligations, as of December 31, 2005, 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
Long-term debt obligations*	\$6,425,335	\$—	\$225,335	\$ 6,200,000	\$—
Capital equipment and software lease	226,285	105,947	120,338	—	—
Operating facility leases	3,475,060	650,469	1,982,283	502,721	339,587
Purchase order obligation	1,230,000	1,230,000	—	—	—
Deferred Credits:					
City of Danville grant**	900,000	900,000	—	—	—
Total	\$ 12,256,680	\$2,886,416	\$2,327,956	\$6,702,721	\$ 339,587

* Long-term debt obligations consist of senior convertible promissory notes of aggregate principal amount of \$5 million and interest thereon held by Carilion Health System and a secured promissory note of aggregate principal amount of \$214,955 and interest thereon held by the Virginia Tech Foundation.

** In March 2004, we received a \$900 thousand grant from the City of Danville, Virginia to be used for the expansion of economic and commercial growth within the City. Specifically, \$450 thousand of the grant will be used to offset certain capital expenditures for leasehold improvements being made at our Danville facility, and the remaining \$450 thousand 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 thousand 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, since we have not yet met the stipulations of the grant, we have included the \$900 thousand in deferred credits in the accompanying consolidated balance sheets as of December 31, 2004 and 2005.

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 March 31, 2006, 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 technologies that can fulfill large and unmet market needs and then take these technologies from the applied research stage through commercialization in our two areas of focus:

- **Molecular Technology Solutions.** We develop molecular technology solutions, which are substances and materials with enhanced performance characteristics obtained by harnessing chemical, physical and biological properties of novel combinations of matter. We focus on substances and materials at the molecular level, including nanomaterials, which are materials whose size can be measured in nanometers, or one billionth of a meter. Examples of our solutions in this area include flame retardants, protective coatings, and materials that can help physicians identify diseased tissues using magnetic resonance imaging, or MRI.
- **Sensing Solutions.** We develop integrated sensing solutions, which are products that combine sensors, software and hardware to measure, monitor and control chemical, physical and biological properties. We 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. 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 aggregate revenues from January 1, 2003 through March 31, 2006 were \$61.1 million, and our aggregate cost of revenues during that same period were \$40.5 million. However, we had a net losses of \$2.0 million and \$2.1 million for the year ended December 31, 2005 and the three months ended March 31, 2006, respectively, and we expect to incur significant additional expenses as we expand our business. We also expect significantly greater losses for the foreseeable future primarily due to increased expenditures related to our nanomaterial and medical device product development efforts.

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. Our contract research revenues grew from \$10.4 million in 2003 to \$15.4 million in 2005, representing 48.5% total growth over that period, while our contract research costs increased from \$8.9 million in 2003 to \$12.6 million in 2005, representing a total increase of 40.3% over that period. These revenues have in general 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

Business

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 nanomaterials made from carbon, or carbon nanomaterials, that have broad potential applications. This division is developing MRI contrast agents, which are materials that can help physicians identify diseased tissues using MRI and 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. 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 March 31, 2006, we owned or had exclusive rights to use 39 issued U.S. patents and 63 additional pending U.S., international and foreign patent applications. As of March 31, 2006, approximately 90 of our 161 employees were directly engaged in research in our Contract Research Group, of whom 31 hold Ph.D.s and 34 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, nanomaterials, composites and polymers, which are materials made up of smaller, linked building blocks. 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 nanotechnology research and development. According to the National Nanotechnology Initiative, 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.

Business

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 and flame retardants—were estimated to be approximately \$9.5 billion and \$1.6 billion, respectively, according to *Chemical Week*. In 2005, the market sizes of the following advanced material subsectors—ceramics and composites—were estimated to be approximately \$2.0 billion and \$4.8 billion, respectively, according to Electronics.ca Publications and the *Market Leaders- Cook Composites and Polymers* report.

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 was expected to reach \$70.0 billion in 2005 according to the American Association for the Advancement of Science.

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—industrial sensors and electromechanical actuator systems—were estimated to be approximately \$4.2 billion and \$7.1 billion, respectively, according to *Electronic Business*.

Opportunity to Accelerate the Commercialization of Technology

Technology innovation is a key engine for growth in an increasingly global and competitive marketplace. According to the National Science Foundation, over \$312.0 billion was spent in research and development in the United States in 2004 as follows: \$93.4 billion by federal agencies, \$199.0 billion by the private sector, \$11.1 billion by academic institutions and \$8.6 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.

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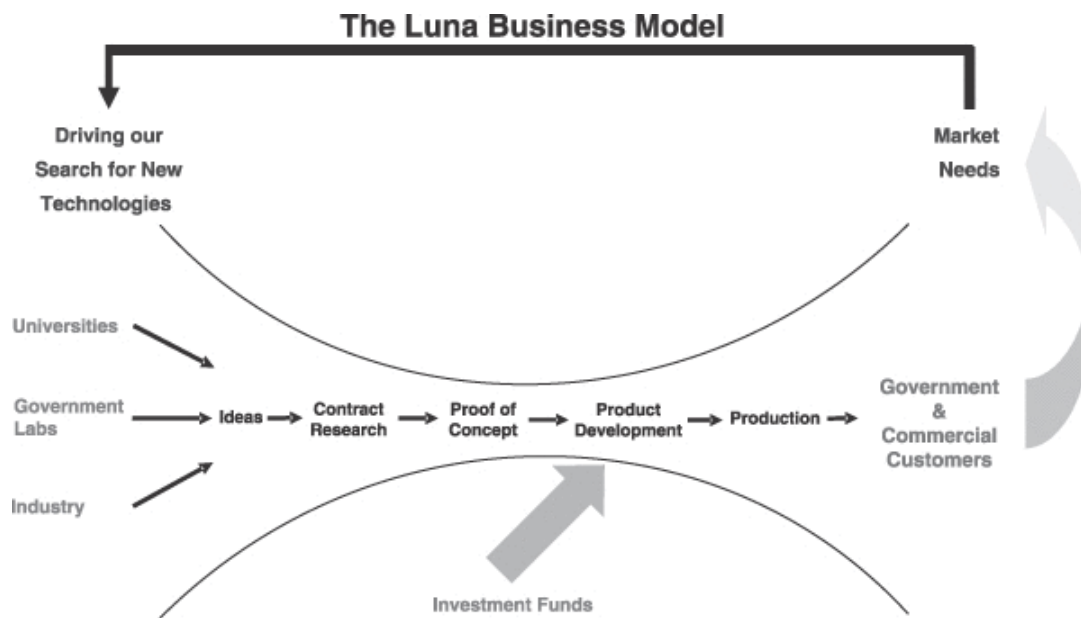
Technology innovation in areas such as molecular technology solutions and sensing solutions is particularly susceptible to these challenges because it requires expertise across a number of technical disciplines, which are often isolated from each other. We have developed a model for technology innovation 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

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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 our Luna Technologies Division is entitled to receive payments from Luna Energy 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, and therefore we no longer have any ownership interest in Luna i-Monitoring. However, we are entitled to receive payments under a Share Purchase and Asset Transfer Agreement with IHS Energy in connection with future product sales through November 2008. This agreement provides, among other things, that we are entitled to receive up to \$2.5 million in payments based on a percentage of Luna i-Monitoring's sales. We have not received any payments to date under this agreement and based on historical sales to date, we do not anticipate that the amounts, if any, we may receive in the future from Luna i-Monitoring will be material to our business.

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.

We are working or have worked with over 60 corporate, academic and government collaborators, including:

- **Universities.** The College of William and Mary, Duke University, Georgia Institute of Technology, North Dakota State University, The Ohio State University, The Pennsylvania State University, University of California, San Diego, University of Pittsburgh, University of Virginia, Washington University in St. Louis, University of Wyoming, 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.** 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 revenue 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 March 31, 2006, 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	30	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	38	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	

Business

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 March 31, 2006, our Contract Research Group team consisted of 90 people, 31 with Ph.D.s and 34 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 high historical success rate in winning bids for SBIR contracts, and we have won two National Tiddett's Awards from the Small Business Administration for outstanding SBIR performance. 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 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. We provide a description of these divisions below.

Luna Advanced Systems Division

The Luna Advanced Systems Division provides product development resources to a number of technologies and product candidates in transition from the Contract Research Group to a division within our Products Group. Although this division is currently offering some of our legacy products for commercial sale, we intend to build our capability to commercialize our existing innovative technologies. For example, to support our commercialization efforts, we have recently assembled a team of dedicated sales and marketing personnel with experience in industries related to our product candidates. 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, or ultrasonic, waves to evaluate the physical properties of materials. Application of ultrasonic technology in the medical field is commonly known as ultrasound. Our devices can determine the physical condition of an object by analyzing numerical measurements taken from ultrasonic waves that interact with the 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 thus provides information that cannot be obtained by traditional non-quantitative ultrasonic methodologies. Our quantitative ultrasonic technology has applications in medical diagnosis, non-destructive industrial testing and homeland security. All of our ultrasonic devices discussed below are currently in development stage and are not yet available for commercial sale. We have not yet submitted to the FDA any applications for clearance with respect to any of these devices.

Medical Monitoring and Diagnostic Devices

Ultrasound is an important, non-invasive tool for diagnosing disease inside the body. Roughly 700 thousand 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 ultrasound 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 ultrasound 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 will be 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 and have not yet submitted to the FDA any applications for clearance with respect to any of 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 sensors, software and hardware components to provide remote and secure asset monitoring solutions and products. These products, which are currently in development and are not yet available for commercial sale, integrate several technologies such as:

- Sensors utilizing light-transmitting optical fibers, or fiber optic sensors, that collect vital information, such as temperature, pressure, strain, movement, moisture, sound or other changes where they are deployed. We have particular experience 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.

Business

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 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 of potential applications 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 is developing 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. We recently were awarded the Nano 50 Products Award by NASA's Tech Briefs publication for our Trimetasphere™ nanomaterials.

Business

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. applications. 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, the knowledge we gain from customizing Trimetasphere™ nanomaterials for specific applications may provide us with new intellectual property covering Trimetasphere™ nanomaterials and may also provide us with new intellectual property covering carbon nanomaterials other than Trimetasphere™ nanomaterials, further expanding our inventory of potential new products.

We currently manufacture carbon nanotubes based on intellectual property we have developed and licensed. As we continue to improve this technology and identify new applications, we intend to seek additional intellectual property protections for such improvements to this technology.

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 March 31, 2006, we had invested nearly \$3.1 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 30% 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.

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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 carbon nanomaterial kits to academic, federal and private laboratories. These kits 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.** Composite structures utilizing polymers, which are materials made up of smaller, linked building blocks, have replaced many metal structures for use in military body and vehicle armor due to their greater strength and lighter weight. We are investigating new technologies to further reduce the weight and enhance the strength of these composites including enhancements to the existing carbon nanotubes that we currently manufacture.
- **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 designed for 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

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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 entered into a Joint Cooperation Agreement with Luna Energy. Under this agreement, both parties have agreed to cooperate to develop a fiber optic sensing system product and have agreed to contribute materials, intellectual property, personnel and other resources to the development effort. Upon successful completion of product development, Luna Energy will receive a license to certain of Luna Technologies' intellectual property and will be required beginning in 2007 and continuing through December 31, 2017 to make payments to Luna Technologies with respect to revenues derived from products sold that utilize this intellectual property. Although as of March 31, 2006, Luna Energy had not yet sold products that would entitle Luna Technologies to royalty payments under this joint cooperation agreement, Luna Technologies had received aggregate development milestone payments of \$305 thousand as of that date under this agreement and is entitled to receive additional development milestone payments of \$120 thousand in the aggregate, subject to the satisfaction of certain conditions. Luna Technologies also has the right to receive royalty payments from sales of products in the future. The license of certain of the intellectual property from Luna Technologies to Luna Energy shall be an exclusive license if Luna Energy makes certain minimum royalty payments of \$420 thousand in the aggregate between 2007 and 2017, and shall be a non-exclusive license if Luna Energy fails to make these minimum royalty payments. Either party has the right to terminate this agreement during the development term (which, unless extended by mutual agreement of the parties, will expire June 6, 2006) upon a provision of advance written notice to the other party. However, if either party terminates the agreement for convenience or failure to meet certain development milestones, the terminating party may be required to grant license rights to the non-terminating party, including, where Luna Technologies is the terminating party, certain non-exclusive and certain exclusive rights with respect to intellectual property of Luna Technologies required to complete the development effort, and where Luna Energy is the terminating party, non-exclusive commercialization rights with respect to certain intellectual property of Luna Energy. Since December 2004, we have not held an ownership interest in Luna Energy. Luna Technologies continues to operate as our Luna Technologies Division after we acquired that entity in September 2005.

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 March 31, 2006, we owned or had exclusive rights to use at least 39 issued U.S. patents and at least 63 additional pending U.S., international and foreign patent applications. As of March 31, 2006, we did not have any issued or granted foreign patents. In particular, as of March 31, 2006, we owned or had exclusive license to the following issued patents and applications as they relate to specific products:

- two issued U.S. patents with expiration dates ranging from December 2021 to April 2024, three pending U.S. patent applications, and two pending foreign patent applications relating to our OVA and OBR products;
- four issued U.S. patents with expiration dates ranging from August 2019 to August 2021, six pending U.S. patent applications, and 11 pending foreign patent applications relating to our carbon nanomaterials, including Trimetasphere™ nanomaterials;
- three pending U.S. patent applications and one pending foreign patent application relating to our DSS technology;
- 11 issued U.S. patents with expiration dates ranging from June 2011 to September 2022, three pending U.S. patent applications and two pending foreign patent application relating to our ultrasound technologies for medical applications;
- one issued U.S. patent expiring April 2024, two pending U.S. patent applications and three pending foreign applications relating to our ultrasonic technologies for weapons detection and non-destructive industrial testing technologies;
- five issued U.S. patents with expiration dates ranging from February 2012 to April 2020, and three pending U.S. patent applications and one pending foreign patent applications relating to our remote and secure asset monitoring technologies;
- two issued U.S. patents expiring April 1, 2024, four pending U.S. patent applications and seven pending foreign patent applications relating to our flame retardant, impact indicator coatings and multifunctional protective coatings; and
- 14 issued U.S. patents with expiration dates ranging from February 2016 to March 2024, and 12 pending U.S. and foreign patent applications relating to our various other technologies.

We own 25 of the issued U.S. patents, 22 of the U.S. patent applications and 26 of the foreign patent applications identified above. The remaining 14 issued U.S. patents, seven U.S. patent applications and eight foreign patent applications are owned by and licensed exclusively from third parties, which include educational institutions, government agencies and for-profit

companies. We consider the following exclusive license agreements to be material to our business:

- **Virginia Tech nanomaterials license.** Our Amended and Restated License Agreement with Virginia Tech Intellectual Properties, Inc., or VTIP, dated March 19, 2004, relating to Trimetasphere™ nanomaterials, which provides us with rights to one issued U.S. patent, one U.S. patent application and one foreign patent application. Under this license agreement, VTIP granted us an exclusive worldwide license, in all fields of use, under the foregoing patent rights, to make, have made, use and sell licensed products, with a reservation of rights by VTIP for educational and research purposes. We are required to diligently pursue development, manufacture and sale of licensed products, and are also required to, among other things, raise financing before March 19, 2009, make annual expenditures of \$100 thousand per year through March 2009 toward development of the licensed products, use reasonable efforts to market the licensed products and meet market demand, and distribute research samples of the licensed products. If we fail to do so, VTIP has the right to terminate the license or to change the exclusive license to a non-exclusive license. We paid up-front fees for this license agreement and are required to pay to VTIP royalties on product sales, including royalties on product sales by companies to which we have granted a sublicense. We are also required to pay VTIP \$225 thousand in the aggregate upon the achievement of certain milestones. We have made aggregate payments of \$38 thousand through March 31, 2006 under this agreement, representing payment of upfront fees, and have also spent over \$200 thousand toward development of licensed products to date as required by the license agreement. Our licensed products sold in the United States must be manufactured substantially in the United States. The license expires upon the expiration of the last licensed patent set forth in the license agreement, and our remaining milestone and minimum royalty payment obligations through that date are \$225 thousand in the aggregate. We have the right to terminate the license agreement for convenience, and VTIP has the right to terminate the agreement upon a material breach by us or our failure to make a payment. We agreed to indemnify VTIP against any claims arising out of our exercise of the license granted or any sublicense, including for products liability claims. VTIP is responsible for diligently pursuing the prosecution and maintenance of the patents at issue, and must consult with us and provide us with a reasonable opportunity to review and comment on all proposed submissions to any patent office. 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. Recoveries from any such action belong to the party bringing suit. If legal actions are brought jointly by VTIP and us where we each fully participate in such action, the recoveries are shared in jointly in proportion to the share of expense paid by each party.
- **NASA ultrasound technologies license.** Our License Agreement No. DE-384 with NASA dated October 28, 2004, relating to ultrasound technologies, which provides us with rights to 10 issued U.S. patents, two U.S. patent applications and one foreign patent application. Under this license agreement, NASA granted us a terminable, exclusive license to make, have made, use and sell licensed inventions, in the United States (including its territories and possessions) and other jurisdictions that are covered by a patent or patent application, in the field of medical applications for assessing and measuring intracranial pressure and compartment syndrome. We are required to achieve practical application, which is generally defined as a commercial application or use for which a market exists, of the licensed application before September 7, 2006, and achieve certain milestones along the way. We paid up-front fees for this license agreement and are required to pay to NASA and to the University of California, a joint owner with NASA of one of the patent applications covered by the license agreement, royalties on product sales, including minimum annual royalties from 2004 through the term of the license agreement as well as royalties on product sales by companies to which we have granted a sublicense. We have made aggregate payments of five thousand dollars through March 31, 2006 under this agreement. Our products under this license must be manufactured substantially in the United States. The license expires upon the expiration of the last licensed patent set forth in the license agreement, and our minimum annual royalty payments and fees from January 1, 2006 through that date are \$235 thousand in the aggregate. We may terminate the license agreement with advance notice or immediately upon a material breach by NASA. NASA may terminate the license upon a material breach by us or if NASA determines, among other things, that (i) we have failed to achieve or maintain practical application of the

licensed invention before September 7, 2006, (ii) we have not substantially manufactured the licensed invention in the United States, or (iii) we have failed to meet market demand, to pay royalties or to submit required reports. In addition, until September 7, 2009, NASA is permitted to unilaterally modify or revoke the license as to any licensed invention for which we have not achieved a practical application. We agreed to indemnify NASA and the University of California against claims arising out of our use of the licensed invention or our sale, use or disposition of products or processes made by use of such inventions. We have the right to enforce the licensed patents, subject to the U.S. government's right to bring suit or intervene, and any recoveries must be shared with NASA and the University of California on terms to be negotiated with them.

In addition to the exclusive license agreements described above, we consider the following non-exclusive license agreements to be material to our business because they relate to certain of our key products:

- **NASA OVA and OBR products and DSS technology licenses.** Our License Agreement with NASA No. DN-982 dated June 10, 2002, as modified on dated January 23, 2006, and our License Agreement with NASA No. DN-951 dated December 20, 2000, relating to our OVA and OBR products and DSS technology, which provide us with rights to four issued U.S. patents and two foreign patent applications. Under these license agreements, NASA granted us a terminable, non-exclusive license to make, have made, use and sell licensed inventions, in the United States (including its territories and possessions), in all fields of use. We paid up-front fees for this license agreement and are required to pay royalties on product sales, including minimum annual royalties from 2003 through the term of the license agreement as well as royalties on product sales by, and other payments we receive from, companies to which we have granted a sublicense. We have made aggregate payments of \$350 thousand through March 31, 2006 under this agreement. Our products under this license must be manufactured substantially in the United States. The license expires upon the expiration of the last licensed patent set forth in the license agreement, and our minimum annual royalty payments from January 1, 2006 through that date are \$3.5 million in the aggregate. We may terminate the license agreement with advance notice or immediately upon a material breach by NASA. NASA may terminate the license upon a material breach by us or if NASA determines, among other things, that (i) we failed to achieve or maintain practical application of the licensed invention before June 10, 2004, (ii) we have not substantially manufactured the licensed invention in the United States, or (iii) we have failed to meet market demand, to pay royalties or to submit required reports. In addition, NASA is permitted to unilaterally modify or terminate the agreement in event of a breach by us by providing notice to us and allowing us to challenge or protest its decision. We agreed to indemnify NASA against claims arising out of our use of the licensed invention or information provided by NASA, or our sale, use or disposition of products or processes made by use of such inventions or such information. We have the right to enforce the licensed patents, subject to the U.S. government's right to bring suit or intervene, and any recoveries must be shared with NASA on terms to be negotiated with them.
- **United Technologies Corporation DSS technology license.** Our Fiber Optic Patent License with United Technologies Corporation, or UTC, dated September 22, 2003, relating to DSS technology, which provides us with rights to two issued U.S. patents. Under this license agreement, UTC granted us a non-exclusive, non-transferable, worldwide license, under the foregoing patent rights, to make, have made, use and sell licensed products, without the right to grant sublicenses. We paid non-refundable up-front fees for this license agreement and are required to pay royalties on product sales. We have made aggregate payments of \$51 thousand through March 31, 2006 under this agreement. The license expires upon the expiration of the patent licensed that has the longest life unless earlier terminated. We do not have the right to terminate the license agreement without the agreement of UTC, but UTC has the right to terminate upon, among other things, a material breach by us or our failure to make a payment. We agreed to indemnify UTC against any claims relating to (i) use of the licensed patents by us, our customers, subcontractors, agents or employees, and (ii) our manufacture, use and sale of the licensed products. UTC may decide in its sole discretion whether to enforce its rights under the licensed patents or to defend any action with respect to such patents. Any such action would be under UTC's sole control and at its expense, and UTC would retain all damages and recoveries from any such action.

We may not be able to prevent third parties from obtaining rights from our licensor that are identical to ours. For example, because our licenses from NASA and UTC described above that relate to fiber Bragg grating and fiber optic strain sensing 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; EDAC; APHROTROPHIN, AMANUET, SECURING SILICON and SOFTWARE and THE AMANUET ARCHITECTURE.

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.

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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 March 31, 2006, giving present effect to our outstanding options, at least approximately 76% of our equity was owned by U.S. citizens or permanent residents. Upon the completion of this offering, at least approximately 57% of our equity will be owned by U.S. citizens or permanent residents (and at least approximately 55% 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 March 31, 2006, we, including all of our divisions, had 148 full-time and 13 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.

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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 ultrasound 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

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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 not 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 March 31, 2006, we employed 161 people, including 148 people on a full-time basis, 159 in the United States and two internationally. Of these, 33 employees hold Ph.D.s and 39 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. In the third quarter of 2006, all of our Blacksburg, Virginia, research, development and manufacturing functions will be consolidated into 32,000 square feet of newly leased space in Blacksburg.

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

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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. In 2006, we responded to additional inquiries from counsel for such former employee seeking information about the relationship between us and the subsidiary in which the employee holds stock. 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 an eleven 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., 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.

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.

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.

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Executive Officers and Directors

The following table sets forth certain information concerning our current executive officers and directors as of March 31, 2006:

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 and Executive Vice President, Corporate Development	2005
John T. Goehrke	48	Chief Operating Officer	2005
Scott A. Meller	39	President, Contract Research Group	2000
Kenneth D. Ferris	58	President, Luna Advanced Systems Division	2005
Robert P. Lenk, Ph.D.	58	President, Luna nanoWorks Division	2005
N. Leigh Anderson, Ph.D.	56	Director	2006
John C. Backus, Jr.(1)(2)	47	Director	2005
Bobbie Kilberg	61	Director	2006
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., our founder, 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 was a member of our Board of Directors from August 2005 until March 2006. In addition, he currently serves as our Executive 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

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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 Manager 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 three 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.

N. Leigh Anderson, Ph.D. has served as a member of our board of directors since March 2006. Since 2002, Dr. Anderson has served as the Chief Executive Officer of the Plasma Proteome Institute, a scientific research institute in Washington, D.C., of which he is also a founder. Dr. Anderson is currently a member of the Board of Directors and a member of the Audit Committee of Dade Behring Holdings, Inc. (DADE), a Nasdaq-traded company. Dr. Anderson also consults through Anderson Forschung Group, of which he has been a Principal since 2002. From 2001 to 2002, Dr. Anderson served as the Chief Scientific Officer and a member of the board of directors of Large Scale Biology Corporation, a biotechnology corporation that previously traded on Nasdaq under the symbol "LSBC" and ceased operations in December 2005. Dr. Anderson earned a B.A. in Physics from Yale University and a Ph.D. in Molecular Biology from Cambridge University.

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 IntelliData 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.

Bobbie Kilberg has served as a member of our board of directors since March 2006. She is the President and CEO of the Northern Virginia Technology Council, or NVTC, the largest technology council in the United States. In addition, she was appointed by President George W. Bush to serve on the President's Council of Advisors on Science and Technology, or PCAST, and also serves on the Board of Trustees/Board of Directors of George Washington University, Washington D.C. public television station WETA, the Wolf Trap Foundation for the Performing Arts, United Bank - Virginia, and the Advisory Board of George Mason University's School of IT & Engineering. Ms. Kilberg has served on the Attorney General of Virginia's Task Forces on Identity Theft and on Regulatory Reform and Economic Development. Among her prior professional positions, Ms. Kilberg served as Deputy Assistant to the President for Public Liaison and Deputy Assistant to the President for Intergovernmental Affairs for President George H.W. Bush, as Associate Counsel to President Gerald R. Ford, as Vice President and General Counsel of the Roosevelt Center for American Policy Studies, as an attorney at Arnold & Porter, and

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as a White House Fellow in the Nixon Administration. Ms. Kilberg received her law degree from Yale University, a Masters Degree in Political Science from Columbia University and a Bachelors Degree from Vassar College.

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 four 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

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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 seven. 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 2007 annual meeting of stockholders. Ms. Bobbie Kilberg and Dr. Paul Torgersen have been designated as Class II directors, whose terms will expire at the 2008 annual meeting of stockholders. Mr. John Backus, Dr. N. Leigh Anderson and Mr. Richard Roedel have been designated as Class III directors, whose terms will expire at the 2009 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 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 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

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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. Edward G. Murphy, M.D. is chairman of our compensation committee. By no later than the first anniversary of the completion of this offering, we intend to change the composition of our compensation committee to comply with the corporate governance standards of Nasdaq requiring each member of that committee to be an independent director. Subject to this change in the composition 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 Governance Committee. The nominating and 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 governance committee currently consists of John C. Backus, Jr., Edward G. Murphy, M.D., and Richard W. Roedel. John C. Backus, Jr. is chairman of our nominating and corporate governance committee. By no later than the first anniversary of the completion of this offering, we intend to change the composition of our nominating and governance committee to comply with the corporate governance standards of Nasdaq requiring each member of that committee to be an independent director. Subject to this change in the composition of our nominating and governance committee, we believe that the composition and functioning of our nominating and 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. Each non-employee director appointed to the board after the completion of this offering will receive an initial option under our 2006 Equity Incentive Plan to purchase 56,523 shares of common stock upon such appointment except for those directors who become non-employee directors by ceasing to be employee directors. Such options will vest as to 18,841 shares subject to the option on the first anniversary of the date of grant and as to 1,570 shares each month thereafter, subject to the director's continued service on each relevant vesting date. All options granted under these 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	\$213,301	\$32,120	113,046	\$6,708(1)
Scott A. Graeff(2) Chief Financial Officer and Executive Vice President, Corporate Development	2005	76,318	26,250	226,092	868(3)
Scott A. Meller President, Contract Research Group	2005	125,401	1,474	—	4,410(4)
Robert P. Lenk, Ph.D.(5) President, Luna nanoWorks Division	2005	68,993	15,566	113,046	76,491(6)
Stephen R. Wilson, Ph.D.(7) Chief Technical Officer, Luna nanoWorks Division	2005	201,123	2,362	84,785	11,085(8)
Michael F. Gunther(9) Vice President, Patents and Licensing	2005	130,216	181,503(10)	—	4,572(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, and subsequently our Executive Vice President, Corporate Development.

(3) Reflects \$868 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 \$7,000 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.

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- (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 \$4,572 in 401(k) matching contributions made by us.

Option Grants in Last Fiscal Year

In 2005, we granted options to purchase an aggregate of 2,542,995 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 536,975 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.	113,047	4.4%	\$0.39	5/20/15	\$16,000	\$36,000
Scott A. Graeff	56,524	2.2%	0.35	5/20/15	10,000	20,000
	22,610	0.8%	0.35	6/3/15	4,000	8,000
	56,524	2.2%	0.35	7/1/15	10,000	20,000
	90,437	3.5%	0.35	8/1/15	16,000	32,000
Scott A. Meller	—	—	—	—	—	—
Robert P. Lenk, Ph.D.	56,524	2.2%	0.35	5/20/15	10,000	20,000
	56,524	2.2%	1.77	10/26/15	50,000	100,000
Stephen R. Wilson, Ph.D.	84,785	3.3%	0.35	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 \$12.00 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(2)	
	Exercisable	Unexercisable	Exercisable	Unexercisable
Kent A. Murphy, Ph.D.	—	113,047(1)	\$ —	\$ 1,312,464
Scott A. Graeff	169,572	56,524	1,975,479	658,493
Scott A. Meller	235,278	36,036	2,740,965	419,808
Robert P. Lenk, Ph.D.	—	113,048	—	1,236,723
Stephen R. Wilson, Ph.D.	—	84,785	—	987,745
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.

(2) Values based on the difference between the exercise price per share and the estimated initial public offering price per share.

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 March 31, 2006, we have reserved a total of 9,715,000 shares of our common stock for issuance pursuant to the 2003 Stock Plan, of which 443,253 shares have been issued upon exercise of options granted under the 2003 Stock Plan. Also as of March 31, 2006, options to purchase 4,812,367 shares of common stock were outstanding and 235,777 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 9,715,000 shares, unless adjusted by the administrator.

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.

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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 19, 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"

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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.

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

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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 Executive Vice President, Corporate Development, Robert P. Lenk, Ph. D., President of our Luna nanoWorks Division, John T. Goehrke, 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 and preferred stock of Luna Technologies that we did not already own in exchange for 582,884 shares of our Class B Common Stock, excluding 2,035 shares of our Class B Common Stock reserved for issuance upon the exercise of warrants that were exchanged for warrants formerly issued by Luna Technologies. An additional 111,013 shares of our Class B Common Stock and warrants exercisable for 388 shares of our Class B Common Stock were held in escrow at closing pending completion of certain additional equity investments by Carilion Health System, of which 41,634 shares and warrants exercisable for 145 shares were released from escrow on December 30, 2005 upon closing of an additional \$3.0 million equity investment by Carilion Health System. The remaining 69,390 escrow shares and warrants exercisable for 146 shares are expected to be cancelled upon the closing of this offering. In addition, the stockholders receiving shares of our 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 404,139 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 former member of our board of directors and our Chief Financial Officer and Executive Vice President, Corporate Development, was formerly acting Chief Financial Officer of Luna Technologies from August 2003 until July 2005.

Because there was no public market for our shares at the time of the transaction, the number of shares of our nonvoting Class B Common Stock paid as consideration in the transaction was arrived at by negotiating a percentage of the financial ownership of our company that the Luna Technologies stockholders would receive. As a result, the parties to the transaction did not assign a specific value to the shares issued in the transaction. The number of shares and percentage were determined by arms-length negotiations with the three largest stockholders of Luna Technologies prior to the acquisition. Subsequent to this transaction, we engaged an independent third-party appraiser, who estimated the value of Luna Technologies to be approximately \$2.0 million as of September 30, 2005 and also estimated that our nonvoting Class B Common Stock was valued at \$1.63 per share on that date, or \$948,735 for the 582,884 shares that were issued at closing. The independent third-party appraiser also estimated that our nonvoting Class B Common Stock was valued at \$1.65 per share on December 30, 2005, or \$68,502 for the 41,634 shares that were released from escrow on that date.

Financing Transactions

In August 2005, Carilion Health System purchased 1,492,032 shares of our Class C Common Stock for an aggregate purchase price of \$7.0 million. 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 was negotiated at arms length by the parties. In connection with this transaction, Scott Graeff, a former member of our board of directors and our Chief Financial Officer and Executive Vice President, Corporate Development, received fully vested stock options to purchase 169,570 shares of our common stock.

In the definitive transaction documents relating to the August 2005 financing transaction, Carilion Health System agreed to purchase additional shares of our Class C Common Stock in two tranches for aggregate additional consideration of \$8.0 million upon the achievement of certain milestones relating to, among other things, our filing of Investigational New Drug applications with the FDA. However, in December 2005, we agreed with Carilion Health System to terminate these milestone requirements in connection with Carilion Health System's purchase of an additional 639,442 shares of our Class C Common Stock for an aggregate purchase price of \$3.0 million. Concurrent with the December 2005 equity investment, 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 1,065,740 shares of common stock and to convert accrued interest on the notes into up to an aggregate of 511,553 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 423,923 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. We do not have an obligation to offer either Carilion Health System or Carilion Consolidated Laboratory the opportunity to participate in any of our commercialization efforts. The purpose of providing Carilion Consolidated Laboratory with a limited right to review this technology is to allow Carilion Consolidated Laboratory the opportunity to make a first offer to license or acquire this technology, but we will not be obligated to accept such offers, if any, from Carilion Consolidated Laboratory.

Finally, in connection with these transactions, we granted certain anti-dilution protections to Carilion Health System as holders of our Class C Common Stock. These protections provide that upon an initial public offering, all outstanding shares of Class C Common Stock shall convert at a rate resulting in conversion to 22.2% of the aggregate voting rights of Class A Common Stock and 20.06% of the outstanding shares of Class B Common Stock on a fully-diluted basis, both of which classes would automatically convert to shares of our common stock. Based on our capitalization at March 31, 2006 and our expected

Certain relationships and related party transactions

capitalization upon this offering, Carilion Health System would receive up to an additional 96,724 shares of our common stock upon effectiveness of this offering.

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 its 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 March 31, 2006, 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 March 31, 2006 are deemed outstanding, but are not deemed outstanding for computing the percentage ownership of any other person. Percentage of beneficial ownership is based upon 6,234,325 shares of common stock outstanding as of March 31, 2006 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 which includes the conversion of Class C common stock such that an additional 96,724 is issued to Carilion Health Systems. 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.

Name and Address of Beneficial Owner	Beneficial Ownership Before Offering		Beneficial Ownership After Offering			
	Number of Shares	%	Excluding Exercise of Over-allotment Option		Including Exercise of Over-allotment Option	
			Number of Shares	%	Number of Shares	%
Carilion Health System (1) c/o Carilion Roanoke Memorial Hospital First Floor Roanoke, Virginia 24033	2,228,198	35.7%	2,228,198	21.8%	2,228,198	20.6%
Kent A. Murphy, Ph.D.	2,637,161	42.3%	2,637,161	25.8%	2,637,161	24.3%
Scott A. Graeff(2)	169,572	2.7%	169,572	1.7%	169,572	1.6%
Scott A. Meller(3)	235,278	3.8%	235,278	2.3%	235,278	2.2%
Robert P. Lenk, Ph.D.	—	*	—	*	—	*
N. Leigh Anderson, Ph.D.	—	*	—	*	—	*
John C. Backus, Jr.	—	*	—	*	—	*
Bobbie Kilberg	—	*	—	*	—	*
Edward G. Murphy, M.D. (1)	2,228,198	35.7%	2,228,198	21.8%	2,228,198	20.6%
Richard W. Roedel	—	*	—	*	—	*
Paul E. Torgersen, Ph.D. (4)	21,763	*	21,763	*	21,763	*
Stephen R. Wilson, Ph.D.	—	*	—	*	—	*
Michael F. Gunther	196,701	3.2%	196,701	1.9%	196,701	1.8%
All executive officers and directors as a group (11 persons)(1)(5)	5,291,972	84.9%	5,291,972	51.7%	5,291,972	48.8%

* 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 1,065,740 shares of common stock or accrued interest on the notes into up to an aggregate of 511,553 shares of common stock. Edward G. Murphy, M.D. is the President and Chief Executive Officer of Carilion Health System and shares voting and

Principal stockholders

investment power over the shares beneficially owned by Carilion Health System with Don Lorton and Rob Vaughan, the Treasurer and Assistant Treasurer of Carilion Health System, respectively. Includes 96,724 shares of common stock issuable upon the effectiveness of this offering to Carilion Health System in connection with certain anti-dilution provisions afforded to that stockholder.

- (2) Includes 169,572 shares subject to options that are immediately exercisable or exercisable within 60 days of March 31, 2006.
- (3) Includes 235,278 shares subject to options that are immediately exercisable or exercisable within 60 days of March 31, 2006.
- (4) Includes 21,763 shares subject to options that are immediately exercisable or exercisable within 60 days of March 31, 2006.
- (5) Includes 426,613 shares subject to options that are immediately exercisable or exercisable within 60 days of March 31, 2006.

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 March 31, 2006, 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 6,137,601 shares of common stock outstanding that were held of record by 44 stockholders. Based on our capitalization at March 31, 2006 and our expected capitalization upon this offering, an additional 96,724 shares of our common stock would be issued to Carilion Health System upon effectiveness of this offering in connection with certain anti-dilution provisions afforded to that stockholder. An additional 69,390 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 are expected to be cancelled prior to the completion of this offering. After giving effect to the sale of common stock offered in this offering, including the issuing of 96,724 to Carilion Health System pursuant to its anti-dilution rights available upon this offering, there will be 10,234,325 shares of common stock outstanding. As of March 31, 2006, there were outstanding options to purchase a total of 4,812,367 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. We recently adopted our 2006 Equity Incentive Plan, under which no options have been issued as of yet.

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 March 31, 2006, there were outstanding warrants (not subject to escrow) to purchase 61,214 shares of our common stock at a weighted-average exercise price of \$3.04 per share held by 30 warrantholders of record. In addition, there were

Description of capital stock

outstanding warrants to purchase 146 shares of common stock at an exercise price of \$37.26 held in escrow as of March 31, 2006, which are expected to be cancelled upon the closing of this offering. No other warrants remain outstanding or will be exercisable following the completion of this offering.

Senior Convertible Promissory Notes

As of March 31, 2006, 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 1,065,740 shares of common stock and to convert accrued interest on the notes into up to an aggregate of 511,553 shares of our common stock.

Registration Rights

After the closing of this offering, the holders of approximately 5,489,872 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 4,865,359 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 4,865,359 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 4,865,359 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 provisions of our amended and

Description of capital stock

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

Description of capital stock

- 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 10,234,325 shares of common stock outstanding after the completion of this offering (10,834,325 shares if the underwriters' over-allotment is exercised in full). Of those shares, the 4,000,000 shares of common stock sold in the offering (4,600,000 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 6,234,325 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:

- 566 shares will be immediately eligible for sale in the public market without restriction pursuant to Rule 144(k);
- no 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;
- 3,998,777 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
- 2,234,982 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, 1,492,032 and 639,442 shares may be sold by Carilion Health System beginning August 4, 2006 and December 30, 2006, respectively, and 103,508 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 102,343 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

Shares eligible for future sale

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 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 exercisable for up to 61,214 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 1,830,028 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

Shares eligible for future sale

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 2,220,054 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 5,489,872 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 or 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 Gain 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;

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

- 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

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

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 name.

Underwriters	Number of Shares
ThinkEquity Partners LLC	
WR Hambrecht + Co, LLC	
Merriman Curhan Ford & Co.	
Total	4,000,000

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 600,000 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 \$1.5 million. 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, 2004 and 2005, and for each of the three years during the period ended December 31, 2005, 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.

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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, 2004 and 2005, 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, 2005. 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, 2004 and 2005, and the consolidated results of its operations and its cash flows for each of the three years in the period ended December 31, 2005, in conformity with accounting principles generally accepted in the United States of America.

/s/ Grant Thornton LLP

Vienna, Virginia
March 21, 2006

Consolidated balance sheets

	December 31,		March 31,
	2004	2005	2006
			(unaudited)
Assets			
Current assets:			
Cash and cash equivalents	\$609,636	\$12,514,839	\$10,099,059
Accounts receivable	3,023,205	5,129,911	3,881,992
Refundable income taxes	876,802	514,797	514,797
Inventory	98,447	448,475	578,492
Other current assets	123,206	227,409	236,441
Total current assets	4,731,296	18,835,431	15,310,781
Property and equipment, net	2,045,648	2,972,287	3,033,360
Intangible assets, net	390,212	999,544	1,394,136
Deferred offering costs	—	710,018	1,015,053
Deferred tax asset	472,855	600,000	600,000
Other assets	107,459	16,550	15,514
Total assets	\$7,747,470	\$24,133,830	\$21,368,844
Liabilities and stockholders' equity			
Current liabilities:			
Line of credit	\$1,500,000	\$—	\$—
Current portion of capital lease obligation	96,177	98,820	312,437
Accounts payable	519,284	3,647,505	2,579,426
Accrued liabilities	1,742,094	1,788,162	1,727,061
Deferred tax liability	30,106	—	—
Deferred credits	586,166	1,458,393	1,064,959
Total current liabilities	4,473,827	6,992,880	5,683,883
Long-term capital lease obligation	206,390	117,134	93,234
Long-term debt obligation	—	5,214,955	5,000,000
Deferred credits	900,000	450,000	450,000
Total liabilities	5,580,217	12,774,969	11,227,117
Redeemable Class B common stock, 308,216 shares at December 31, 2005 and March 31, 2006 (Note 9)	—	504,984	504,984
Stockholders' equity:			
Common stock; 54,245,588 shares authorized for the following classes:			
Class A voting Common Stock, par value \$0.001; 2,834,814 shares, issued and outstanding at December 31, 2004 and 2005 and March 31, 2006 (Note 9)	2,835	2,835	2,835
Class B non-voting Common Stock, par value \$0.001; 76,447, 734,427 and 863,097 shares issued and outstanding at December 31, 2004 and 2005 and March 31, 2006, respectively (Note 9)	76	734	863
Class C voting Common Stock, par value \$0.001; 2,131,474 issued and outstanding at December 31, 2005 and March 31, 2006 (Note 9)	—	2,131	2,131
Additional paid-in capital	257,157	10,935,049	11,807,196
Retained earnings (deficit)	1,907,185	(86,872)	(2,176,282)
Total stockholders' equity	2,167,253	10,853,877	9,636,743
Total liabilities and stockholders' equity	\$7,747,470	\$24,133,830	\$21,368,844

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

Consolidated statements of operations

	Year Ended December 31,			Three Months Ended March 31,	
	2003	2004	2005	2005	2006
				(unaudited)	(unaudited)
Revenues:					
Contract research revenues	\$10,358,044	\$13,834,751	\$15,379,667	\$3,256,381	\$3,920,939
Product and license revenues	7,233,799	8,752,155	1,074,221	—	595,298
Total revenues	17,591,843	22,586,906	16,453,888	3,256,381	4,516,237
Cost of revenues:					
Contract research costs	8,949,378	10,985,164	12,552,122	2,671,120	2,907,835
Product and license costs	1,543,098	2,880,606	409,772	—	266,051
Total cost of revenues	10,492,476	13,865,770	12,961,894	2,671,120	3,173,886
Gross profit	7,099,367	8,721,136	3,491,994	585,261	1,342,351
Operating expense	4,856,110	4,189,629	6,003,644	881,527	3,442,008
Operating income (loss)	2,243,257	4,531,507	(2,511,650)	(296,266)	(2,099,657)
Other income (expense):					
Other income (expense)	705	117	1,592	513	6,287
Interest income (expense), net	(86,800)	(90,304)	(41,251)	(39,768)	3,960
Loss from equity method investees	(150,271)	(256,904)	—	—	—
Total other income (expense)	(236,366)	(347,091)	(39,659)	(39,255)	10,247
Income (loss) before minority interests and income taxes	2,006,891	4,184,416	(2,551,309)	(335,521)	(2,089,410)
Minority interests	11,265	—	—	—	—
Income (loss) before income taxes	2,018,156	4,184,416	(2,551,309)	(335,521)	(2,089,410)
Income tax expense (benefit)	885,882	128,234	(557,252)	(73,283)	—
Net income (loss)	\$1,132,274	\$4,056,182	\$(1,994,057)	\$(262,238)	(2,089,410)
Net income (loss) per share:					
Basic	\$0.40	\$1.40	\$(0.53)	\$(0.09)	\$(0.34)
Diluted	\$0.39	\$1.14	\$(0.53)	\$(0.09)	\$(0.34)
Weighted average shares:					
Basic (Note 9)	2,843,349	2,903,022	3,735,811	2,911,255	6,069,780
Diluted (Note 9)	2,905,849	3,561,788	3,735,811	2,911,255	6,069,780

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

Consolidated statements of changes in stockholders' equity (deficit)

	Class A Common Stock		Class B Common Stock		Class C Common Stock		Additional Paid-in Capital	Retained Earnings (Deficit)	Total
	Shares	\$	Shares	\$	Shares	\$			
Balance—December 31, 2002	2,834,814	\$2,835	—	\$ —	—	\$ —	\$190,503	\$(3,281,271)	\$(3,087,933)
Exercise of stock options	—	—	67,121	67	—	—	23,683	—	23,750
Net income	—	—	—	—	—	—	—	1,132,274	1,132,274
Balance—December 31, 2003	2,834,814	2,835	67,121	67	—	—	214,186	(2,148,997)	(1,931,909)
Exercise of stock options	—	—	9,326	9	—	—	3,291	—	3,300
Employee stock-based compensation	—	—	—	—	—	—	39,680	—	39,680
Net income	—	—	—	—	—	—	—	4,056,182	4,056,182
Balance—December 31, 2004	2,834,814	2,835	76,447	76	—	—	257,157	1,907,185	2,167,253
Exercise of stock options	—	—	238,173	238	—	—	84,037	—	84,275
Exercise of warrants	—	—	103,508	104	—	—	79	—	183
Issuance of common stock in Carilion financing transaction, net	—	—	—	—	2,131,474	2,131	9,910,337	—	9,912,468
Issuance of common stock in conjunction with Luna Technologies acquisition	—	—	316,301	316	—	—	514,513	—	514,829
Share based payment expense	—	—	—	—	—	—	168,926	—	168,926
Net loss	—	—	—	—	—	—	—	(1,994,057)	(1,994,057)
Balance—December 31, 2005	2,834,814	2,835	734,429	734	2,131,474	2,131	10,935,049	(86,872)	10,853,877
Exercise of stock options (unaudited)	—	—	128,668	129	—	—	45,387	—	45,516
Issuance of warrants and options in connection with Luna Technologies acquisition (unaudited)	—	—	—	—	—	—	418,073	—	418,073
Share-based payment expense (unaudited)	—	—	—	—	—	—	408,687	—	408,687
Net loss (unaudited)	—	—	—	—	—	—	—	(2,089,410)	(2,089,410)
Balance—March 31, 2006 (unaudited)	2,834,814	\$2,835	863,097	\$863	2,131,474	\$2,131	\$11,807,196	\$(2,176,282)	\$9,636,743

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

Consolidated statements of cash flows

	Year Ended December 31,			Three Months Ended March 31,	
	2003	2004	2005	2005	2006
				(unaudited)	(unaudited)
Cash flows from (used in) operating activities:					
Net income (loss)	\$1,132,274	\$4,056,182	\$(1,994,057)	\$(262,238)	\$(2,089,410)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:					
Depreciation and amortization	346,937	381,052	540,145	91,826	250,374
Deferred income taxes	1,192,119	957,898	(157,251)	(30,106)	—
Loss on investments in and advances to affiliates	150,271	256,904	—	—	—
Minority interests	(11,265)	—	—	—	—
Share based compensation	—	39,680	168,926	15,834	408,687
Change in assets and liabilities:					
Accounts receivable	53,057	(1,232,336)	(1,314,485)	480,359	1,247,919
Refundable income taxes	(272,873)	(603,929)	362,005	(43,177)	—
Other assets	(70,857)	21,181	(26,194)	(78,520)	(138,015)
Accounts payable and accrued expenses	(592,299)	928,611	1,911,095	(691,347)	(1,434,214)
Deferred credits	(2,041,248)	(3,323,086)	422,227	181,264	(393,434)
Net cash from (used in) operating activities	(113,884)	1,482,157	(87,589)	(336,105)	(2,148,093)
Cash flows from (used) in investing activities:					
Acquisition of property and equipment	(158,016)	(1,376,402)	(877,144)	(233,382)	(211,668)
Intangible property costs	(156,906)	(192,101)	(430,847)	(93,999)	(76,297)
Net cash from acquisition of Luna Technologies	—	—	33,676	—	—
Investments in and advances to affiliates	(180,000)	(378,000)	—	—	—
Capitalized software development costs	—	—	(122,642)	—	—
Net cash used in investing activities	(494,922)	(1,946,503)	(1,396,957)	(327,381)	(287,965)
Cash flows from (used in) financing activities:					
Net (payments) borrowings on line of credit	(2,331)	500,000	(1,500,000)	180,000	—
Payments on capital lease obligation	(63,871)	(71,495)	(107,177)	(5,459)	(25,238)
Proceeds from convertible debt	—	—	5,000,000	—	—
Proceeds from the issuance of common stock, net	—	—	9,912,468	—	—
Proceeds from the exercise of options and warrants	23,750	3,300	84,458	—	45,516
Net cash from (used in) financing activities	(42,452)	431,805	13,389,749	174,541	20,278
Net change in cash	(651,258)	(32,541)	11,905,203	(488,945)	(2,415,780)
Cash—beginning of period	1,293,435	642,177	609,636	609,636	12,514,839
Cash—end of period	\$642,177	\$609,636	\$12,514,839	\$120,691	\$10,099,059
Supplemental disclosure of cash flow information					
Cash paid for interest	\$87,494	\$95,967	\$108,211	\$22,126	\$13,403
Cash paid for income taxes	444,043	30,000	—	—	—
Property and equipment financed by capital leases	\$380,354	\$319,768	\$11,700	\$11,700	—

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

Notes to consolidated financial statements

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 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 March 31, 2006 and for the three months ended March 31, 2005 and 2006 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 audited 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 March 31, 2006 and results of operations and cash flows for the three months ended March 31, 2005 and 2006. The results of the operations for the three months ended March 31, 2006 are not necessarily indicative of the results that may be expected for the year ending December 31, 2006.

Basis of Presentation and Consolidation

Our consolidated financial statements are prepared in accordance with US GAAP and include our accounts, our wholly owned subsidiaries and other entities in which we have a controlling financial interest. We consolidate all entities in which we own more than 50% of the outstanding voting stock unless we do not control the entity. In accordance with Financial Accounting Standards Board Interpretation No. 46 revised, *Consolidation of Variable Interest Entities*, (FIN 46R), we also consolidate any variable interest entities for which we are deemed to be the primary beneficiary.

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 or loss includes our share of the net earnings or losses of the investees. Our share of losses in the investees is limited to our investment and advances unless we have guaranteed certain obligations of the investee or are otherwise committed to provide financial support to such investee.

In those cases where the our investment is less than 20% and significant influence does not exist, such investments are carried at cost

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 U.S. Federal government agencies, educational institutions and commercial organizations. We recognize revenues under research contracts when a contract has been executed, the contract price is fixed and determinable, delivery of services or products has occurred and collectibility of the contract price is considered probable. Revenues are earned under cost reimbursable, time and materials and fixed price contracts. Direct contract costs are expensed as incurred.

Under cost reimbursable contracts, we are reimbursed for allowable costs and paid a fixed fee. Revenues on cost reimbursable contracts are recognized as costs are incurred plus a portion of the fee earned. Revenues on time and materials contracts are recognized based on direct labor hours expended at contract billing rates plus other billable direct costs.

Revenue for fixed price research contracts that involve the delivery of services and a prototype model are recognized under the percentage of completion method in accordance with Statement of Position (SOP) 81-1, *Accounting for Performance of Construction-Type and Certain Production-Type Contracts*. Fixed price arrangements that involve the delivery of research reports are recognized under the proportional performance method based upon the ratio of costs incurred to total estimated cost as this method more accurately measures performance under these arrangements. Losses on contracts, if any, are recognized in the period in which they become known.

For the years ended December 31, 2003, 2004 and 2005 and the three months ended March 31, 2006, contract research revenues from agencies of the U.S. government accounted for approximately 51%, 51%, 70% and 76% respectively, of total revenues for the same period. See Note 15 for additional details concerning our relationship with major customers.

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 also 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 objective reliable evidence of fair value, if available. For those arrangements in which evidence 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. (BHI) accounted for 37% and 35% total revenues for the years ended December 31, 2003 and 2004. As discussed in Note 5 our arrangement with BHI ended in 2004.

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, 2003, 2004 and 2005 and March 31, 2006, 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

Goodwill and Intangible Assets

Intangible assets consist of goodwill and patents related to certain intellectual property that we have developed or acquired. Goodwill represents the excess of the cost of an acquired entity over the net amounts assigned to tangible and intangible assets acquired and liabilities assumed. Intangible assets are carried at cost and are amortized over a period of five years. The Company applies the provisions of Statement of Financial Accounting Standards No. 142 *Goodwill and Other Intangible Assets*, which requires allocating goodwill to each reporting unit and testing for impairment using a two-step approach. The Company will perform a goodwill impairment test annually or whenever an event has occurred that would more likely than not reduce the fair value of a reporting unit below its carrying amounts.

Research and Development

Research and development costs not related to contract performance are expensed as incurred. For the years ended December 31, 2003, 2004 and 2005, non-contract related research and development costs were not significant. The Company expensed \$120,901 of non-contract related research and development in the three months ended March 31, 2006.

Capitalized Software Costs

The Company capitalized costs of \$122,642 for the year ended December 31, 2005 and \$4,229 for the three months ended March 31, 2006 related to new software products. Costs related to the development of new software products

and significant enhancements to existing software products are expensed as incurred until technological feasibility has been established and are amortized over three years. There were no capitalized costs during the years ended December 31, 2004 and 2003.

Valuation of Long-Lived Assets

We account for long-lived assets in accordance with the provisions of Statement of Financial Accounting Standards (SFAS) No. 144, *Accounting for the Impairment or Disposal of Long-Lived Assets*. SFAS No. 144 requires that long-lived assets and certain identifiable intangibles be reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets is measured by comparing the carrying amount of an asset to future undiscounted net 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 the amount by which the carrying amount of the assets exceeds their fair value. Assets to be disposed of by sale are reflected at the lower of their carrying amount or fair value less cost to sell.

Inventory

Inventory consists of finished goods and parts valued at the lower of cost (determined on the first-in, first-out basis) or market. We provide reserves for estimated obsolescence or unmarketable inventory equal to the difference between the cost of the inventory and the estimated market value based upon assumptions about future demand and market conditions.

Net Income (Loss) Per Share

We compute net income (loss) per share in accordance with 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. Diluted per share data would also include the potential common share equivalents relating to convertible securities by application of the if-converted method.

As discussed in Note 9, in connection with our proposed initial public offering the Company will effect a 1.7691911:1 reverse stock split. The following information presents the proforma effect of such split on basic and diluted net income (loss) per share.

	December 31,			March 31,	
	2003	2004	2005	2005	2006
				(unaudited)	(unaudited)
Net income (loss)	\$1,132,274	\$4,056,182	(\$1,994,057)	(\$262,238)	(\$2,089,410)
Weighted average shares—basic	2,843,349	2,903,022	3,735,811	2,911,255	6,069,780
Dilutive effect of common stock equivalents:					
Shares issued upon assumed exercise of stock options and warrants	62,500	658,766	—	—	—
Weighted average shares—diluted	2,905,849	3,561,788	3,735,811	2,911,255	6,069,780
Net income (loss) per share—basic	\$0.40	\$1.40	\$(0.53)	\$(0.09)	\$(0.34)
Net income (loss) per share—diluted	\$0.39	\$1.14	\$(0.53)	\$(0.09)	\$(0.34)

The effect of 2,508,548 and 4,056,465 common stock equivalents are ignored for the year ended December 31, 2005 and the three months ended March 31, 2006, as they are antidilutive to earnings per share. In addition, the conversion of the \$5.0 million in senior convertible promissory notes would have been antidilutive. The effect of 19,892,454 common stock equivalents are ignored for the year ended December 31, 2003, 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. Effective January 1, 2006, we adopted Financial Accounting Standards No. 123R, *Share Based Payment* (SFAS No. 123R) using the modified prospective transition method. Under this transition method, our financial statements for periods prior to January 1, 2006 have not been restated. However, new awards and awards modified, repurchased or cancelled after January 1, 2006 trigger compensation expense based on the fair value of the stock option as determined by the Black-Scholes option pricing model. We amortize stock-based compensation for such awards on a straight-line method over the related service period of the awards taking into account the effects of the employees' expected exercise and post-vesting employment termination behavior.

The adoption of SFAS No. 123(R) increased the net loss by approximately \$169 thousand for the three months ended March 31, 2006, as compared to what our net loss would have been if we had continued to account for share-based compensation under APB No. 25, *Accounting For Stock Issued to Employees*.

For the periods prior to 2006, we accounted 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 complied 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 equal to an amount that reflects the change in the fair value of the underlying security.

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,		
	2003	2004	2005
Net income (loss):			
As reported	\$1,132,274	\$4,056,182	(\$1,994,057)
Add - stock based employee compensation expense in reported net income (loss), net of related tax effects	—	39,680	133,901
Deduct - total stock based employee compensation (expense) benefit determined under Black-Scholes method for all awards, net of related tax effects	629,508	(114,553)	(386,108)
Pro forma net income (loss)	\$1,761,782	\$3,981,309	(2,246,264)
Basic net income (loss) per common share:			
As reported	\$0.40	\$1.40	(\$0.53)
Pro forma	\$0.62	\$1.37	(\$0.60)
Diluted net income (loss) per common share:			
As reported	\$0.39	\$1.14	(\$0.53)
Pro forma	\$0.61	\$1.12	(\$0.60)

The \$629,508 benefit in 2003 resulted from 285,665 unvested options being forfeited during the period.

The fair value of each option granted is estimated as of the grant date using the Black-Scholes option pricing model with the following assumptions:

	2003	2004	2005	2006
Risk-free interest rate range	3.52%	3.87%	3.9-4.6%	4.55%
Expected life of option-years	7	7	4.5-7	7
Expected stock price volatility	66%	63%	64%	64%
Expected dividend yield	—	—	—	—

The risk-free interest rate is based on US Treasury interest rates, the terms of which are consistent with the expected life of the stock options. Expected volatility is based upon an average volatility of comparable public companies. The expected life and estimated post employment termination behavior is based upon historical experience of homogeneous groups within our company.

During the quarter ended March 31, 2006 we granted 981,946 options to purchase shares of our common stock. We recognized \$408,687 in share-based payment expense, and will recognize \$5,954,604 over the remaining requisite service period.

Advertising

We charge the cost of advertising to expense 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 November 2004, the FASB issued SFAS No. 151, *Inventory Costs*, which is an amendment of ARB No. 43 *Inventory Pricing*, to clarify the accounting for abnormal amounts of idle facility expense, freight, handling costs and wasted material (spoilage). This statement is effective for inventory costs incurred during fiscal year beginning after June 15, 2005. We do not believe that the effect of SFAS No. 151 will have a significant effect on our consolidated financial statements.

In May 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 adoption 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,		March 31,
	2004	2005	2006
			(unaudited)
Billed	\$1,755,600	\$3,359,045	\$2,909,521
Unbilled	1,199,843	1,757,263	947,454
Other	67,762	13,603	25,017
	<u>\$3,023,205</u>	<u>\$5,129,911</u>	<u>\$3,881,992</u>

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 uncompleted contracts amounts to \$420,652, \$744,056 and \$372,622 for the periods ended December 31, 2004, 2005 and March 31, 2006, 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,		March 31,
	2004	2005	2006
			(unaudited)
Equipment	\$1,368,855	\$2,799,703	\$2,950,980
Furniture and fixtures	127,421	189,285	189,285
Software	521,590	791,440	795,739
Leasehold improvements	1,380,634	1,896,278	1,952,371
	<u>3,398,500</u>	<u>5,676,706</u>	<u>5,888,375</u>
Less—accumulated depreciation	<u>(1,352,852)</u>	<u>(2,704,419)</u>	<u>(2,855,015)</u>
	<u>\$2,045,648</u>	<u>\$2,972,287</u>	<u>\$3,033,360</u>

Depreciation for the periods ended December 31, 2003, 2004 and 2005 and March 31, 2006, was approximately \$330,000, \$353,000, \$380,000 and \$151,000, respectively.

4. Intangible Assets

The following is a summary of intangible assets:

	December 31,		March 31,
	2004	2005	2006
			(unaudited)
Goodwill	\$—	\$—	\$418,074
Patent costs	439,498	1,205,621	1,281,918
Accumulated amortization	<u>(49,286)</u>	<u>(206,077)</u>	<u>(305,856)</u>
	<u>\$390,212</u>	<u>\$999,544</u>	<u>\$1,394,136</u>

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Amortization for the periods ended December 31, 2003, 2004 and 2005 and March 31, 2006, was approximately \$17,000, \$28,000, \$160,000 and \$100,000, respectively. No impairment loss was recognized for the period ending March 31, 2006.

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

Year Ended December 31,

2006	\$314,346
2007	245,225
2008	212,310
2009	144,058
2010	83,605
Thereafter	—
	<hr/>
	\$999,544

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 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%. As our Chief Executive Officer and certain members of management maintained representation at the board level, allowing us to exercise significant influence over the operations of Luna Technologies. We accounted for our interest under the equity method during 2003 and 2004 and for the nine month period ended September 30, 2005.

Our share of losses in Luna Technologies for the years ended December 31, 2003, 2004, and for the nine months ended September 30, 2005 were \$150,271, \$58,904 and \$0, respectively. We also recognized \$32,000, \$3,000 and \$13,500 in revenues from Luna Technologies for various administrative and consulting services in these periods.

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Following is a summary of financial position and results of operations of Luna Technologies as of and for the years ended December 31, 2003 and 2004 and for the period from January 1 through September 29, 2005.

	December 31,		September 29,
	2003	2004	2005
Current assets	\$1,079,665	\$1,567,988	\$1,343,341
Non-current assets	597,191	309,676	457,664
Total assets	1,676,856	1,877,664	1,801,005
Current liabilities	632,200	406,321	553,176
Non-current liabilities	265,115	214,953	214,953
Total liabilities	897,315	621,274	768,129
Stockholders' equity and redeemable preferred stock	779,541	1,256,390	1,032,876
Total liabilities and stockholders' equity	\$1,676,856	\$1,877,664	\$1,801,005
Revenues	\$1,428,965	\$1,775,082	2,204,196
Gross profit	434,348	958,011	1,129,842
Net loss	(2,372,027)	(959,632)	(390,239)

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 582,884 of Class B common stock valued at \$1.63 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 109,365 shares of Class B common stock were placed in escrow and are issuable upon achievement of certain conditions as defined in the agreement. On December 30, 2005, 41,634 shares of Class B common stock valued at approximately \$68,000 were released from escrow. Additionally, we exchanged 2,035 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 \$1,101,000.

Luna Technologies produces test and measurement equipment which monitor the integrity of fiber optic network components and subassemblies. The acquisition of Luna Technologies will enable us to expand our sale of fiber optic testing equipment beyond the telecommunications industry into avionics, defense and academic research laboratories.

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 results of operations for Luna Technologies have been included in the accompanying statement of operations from the acquisition date, September 30, 2005, through December 31, 2005.

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

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

The following unaudited pro forma combined condensed statements of operations set forth the consolidated results of our operations for the years ended December 31, 2004 and December 31, 2005 as if the above described acquisition of Luna Technologies had occurred at the beginning of each period presented. This unaudited pro forma information does not purport to be indicative of the actual results that would actually have occurred if the combination had been in effect for the years ended December 31, 2004 and December 31, 2005.

	Years Ended	
	December 31, 2004	December 31, 2005
Revenue	\$24,315,810	\$18,642,213
Net income	\$ 3,082,354	\$ (2,421,464)
Diluted earnings per share	\$0.87	\$ (0.65)

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 Staff Accounting Bulletin No. 104 *Revenue Recognition* 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. These rights included, but were not limited to, approval over the adoption or amendment of annual and period operating and capital budgets, approval over any single material expenditure by Luna Energy in excess of \$10,000, approval over any action by Luna Energy to cease the operations of Luna Energy or to change its business focus, and approval over the election or re-election of officers 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. Such amount was recognized as revenue at that date as we had no further obligation to Luna Energy or BHI.

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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, 2003 and 2004 were \$628,050 and 176,802, respectively.

6. Accrued Liabilities

Accrued liabilities consist of the following at:

	December 31,		March 31,
	2004	2005	2006
			(unaudited)
Accrued compensation and related liabilities	\$594,856	\$646,657	\$633,593
Accrued professional fees	179,621	448,634	570,834
Accrued severance and bonuses	508,946	401,095	258,161
Accrued settlement costs	165,335	—	—
Accrued Royalty	—	120,000	21,257
Deferred Rent	81,324	72,048	69,486
Accrued interest	—	—	74,795
Other	212,012	99,728	98,935
	<u>\$1,742,094</u>	<u>\$1,788,162</u>	<u>\$1,727,061</u>

7. Debt 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 (5.0% at December 31, 2004). The line of credit is collateralized by a blanket interest in our assets and is subject to certain financial covenants.

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 (7.25% at December 31, 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 December 31, 2004. There were no outstanding borrowings for the periods ended December 31, 2005 and March 31, 2006. At December 31, 2005, we were not in compliance with the minimum interest coverage covenant of our working capital facility. We requested and received a waiver from FNB.

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.

Virginia Tech Foundation Note

In connection with the Luna Technologies acquisition discussed in Note 5, the Company assumed a promissory note due to the Virginia Tech Foundation for \$214,955. The principal amount is due on January 31, 2007. Interest is payable

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monthly and accrues at 5.0% per annum. The note is collateralized by a blanket interest in the assets of Luna Technologies.

The following table presents a summary of debt at December 31, 2004 and 2005 and March 31, 2006.

	December 31		March 31
	2004	2005	2006
			(unaudited)
Line of credit	\$1,500,000	—	—
Carilion Health Systems financing (see note 14)	—	\$ 5,000,000	\$ 5,000,000
Virginia Tech Foundation	—	214,955	214,955
	1,500,000	5,214,955	5,214,955
Less: current payable	(1,500,000)	—	(214,955)
	\$—	\$5,214,955	\$ 5,000,000

Future maturities of long-term debt as of December 31, 2005 are as follows:

	Amount
Year ending December 31,	
2006	\$—
2007	214,955
2008	—
2009	5,000,000
Total debt	\$5,214,955

8. Income Taxes

Deferred tax assets and liabilities consist of the following components:

	December 31,	
	2004	2005
Research and development credits	\$623,181	\$1,325,105
Net operating loss carryforwards	19,064	800,565
Deferred revenues	370,498	—
Accrued liabilities	151,675	132,759
Stock-based compensation	76,943	141,067
Depreciation and amortization	(126,260)	(128,804)
Change in tax return accounting method - current (liability)	(30,106)	—
	1,084,995	2,270,692
Valuation allowance	(642,246)	(1,670,692)
Net deferred tax asset	\$442,749	600,000

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

	December 31,		
	2003	2004	2005
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 and carryforwards	(10.2%)	(0.6%)	22.9%
Change in valuation allowance	3.9%	(19.5%)	(42.4%)
Capital loss deduction	—	(18.3%)	—
Permanent differences and other	3.7%	3.5%	3.4%
Income tax expense (benefit)	35.3%	3.0%	21.8%

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

	December 31,		
	2003	2004	2005
Current:			
Federal	\$(397,722)	\$(746,343)	\$—
State	91,485	(83,321)	—
Deferred Federal	1,068,139	852,276	(523,817)
Deferred State	123,980	105,622	(33,435)
Income tax expense (benefit)	\$885,882	\$128,234	(557,252)

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. We have net operating loss carryforward available at December 31, 2005 of approximately \$3.0 million that expire at varying dates through 2025. We have recorded a refundable income tax receivable, of approximately \$400 thousand, representing net operating losses that we plan to carry back to recover income taxes previously paid. This results in remaining net operating loss carryforwards that we anticipate using in the future of approximately \$800 thousand. The Company also has R&D tax credits of approximately \$1.3 million which expire at varying dates through 2025.

A tax benefit of \$600,000 was recorded at December 31, 2005 and March 31, 2006, based upon management's assessment that more likely than not the benefit will be realized in future periods.

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.

Reverse Stock split

Upon effectiveness of our initial public offering, we will effect a 1.7691911:1 reverse stock split of our common stock. All applicable share and per share amounts in the financial statements give proforma effect to such split.

Redeemable Class B 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 310,253 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 Class B Common Stock on our December 31, 2005 consolidated balance sheet.

Warrants

Warrants to purchase 103,508 shares of our Class B Common Stock for \$0.001 per share were exercised in November 2005.

In February 2006, we issued 57,542 warrants for Class B Common Stock at an exercise price of \$1.77 per share to former Luna Technologies shareholders to prevent dilution by a concurrent stock option grant. The warrants were valued using a Black-Scholes option pricing model with the following assumptions: risk-free rate of 4.55%, expected volatility of 64%, and an expected life of 10 years, which equaled the contractual term. The aggregate fair value of the warrant was \$418,074, and this amount has been recorded as additional purchase price for the Luna Technologies acquisition.

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 on a one-for-one basis.

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 5,757,420 and 4,024,446 were available for future grant as of December 31, 2004 and 2005, respectively.

On February 4, 2006, our Board of Directors increased the number of shares reserved under the 2003 Plan to 9,715,000. A total of 4,888,690 are available for future grant as of March 31, 2006.

In August 2003, our Board of Directors authorized an option exchange program expiring on September 19, 2003 whereby option holders of Class A Common Stock issued under the 1999 plan 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 \$0.35 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

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172,525 options were exchanged in connection with this transaction, of which 39,596 and 27,107 were outstanding at December 31, 2005 and March 31, 2006, respectively.

There was no non-cash stock option expense related to employee and director awards for the year ended December 31, 2003. Total non-cash stock option expense for the years ended December 31, 2004 and 2005 and the three months ended March 31, 2006 was \$39,680, \$133,901 and \$408,687, respectively.

The following table sets forth the activity of our stock options to purchase class A and class B common stock and gives proforma effect to the reverse stock split discussed in Note 9.

	Class A Common Stock		Class B Common Stock	
	Number of Options	Exercise Price	Number of Options	Exercise Price
Balance at December 31, 2002	27,171,852	\$0.16		
Cancelled pursuant to the exchange offer	(28,307,794)	0.16		\$0.35
Issued pursuant to the exchange offer	—		207,736	0.35
Forfeited	—		(208,660)	0.35
Exercised	—		(67,121)	0.35
Granted	1,135,942	0.16	2,325,645	0.35
Balance at December 31, 2003	—		2,257,600	
Forfeited	—		(149,827)	0.35
Exercised	—		(9,326)	0.35
Granted	—		144,134	0.35
Balance at December 31, 2004	—		2,242,581	
Forfeited	—		(603,687)	0.35
Exercised	—		(238,173)	0.35
Granted	—		2,574,834	0.35 – 1.77
Balance at December 31, 2005	—		3,975,555	
Forfeited (unaudited)	—		(16,501)	0.35
Exercised (unaudited)	—		(128,633)	0.35
Granted (unaudited)	—		981,946	1.77
Balance at March 31, 2006 (unaudited)	—		4,812,367	

As noted above, on September 22, 2003, the Company forward split its Class A common stock on a 58-to-1 basis. This stock split occurred chronologically after the exchange offer was made to exchange options to purchase shares of Class A common stock for options to purchase Class B common stock on a one-for-one basis (pre-split). As shown in the above table, the Company cancelled 28,307,794 shares of Class A common stock (863,481 shares prior to the stock splits noted above) in exchange for the option to purchase 207,454 shares of Class B common stock. Options representing the right to purchase 280,612 shares of Class A common stock held by certain founding stockholders were not exchanged and were cancelled without any compensation to the holder.

On the date of the exchange, the pre-split exercise price of the Class A common stock was \$5.22 (post-split exercise price at \$0.16 per share). Management determined that prior to the exchange offer, since the options to purchase

Luna Innovations Incorporated

Class A common stock exceeded its market value that it was in the best interest to effectuate the exchange offer, and offer the Class A option holders the right to receive a similar number of options to purchase Class B common shares at the new market price.

	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
Year ended December 31, 2003	\$0.35	2,257,600	9.7	\$0.35	1,179,359	\$0.35
Year ended December 31, 2004	\$0.35	2,242,581	8.8	0.35	1,594,885	0.35
Year ended December 31, 2005	\$0.35-\$1.77	3,975,555	8.9	0.67	1,519,397	0.35
Three months ended March 31, 2006	\$0.35-\$1.77	4,812,367	8.9	0.90	1,505,850	0.35

Weighted average grant date fair value for December 31, 2003, 2004, and 2005 was \$0.23, \$0.23 and \$0.39, 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 \$406,000, \$560,000 and \$600,000 for the years ended December 31, 2003, 2004 and 2005, respectively.

Minimum future rentals, as of December 31, 2005, under the aforementioned operating leases for each of the next five periods ending are:

2006	\$650,469
2007	771,191
2008	683,330
2009	527,762
2010	502,721
Thereafter	339,587
	<u>\$3,475,060</u>

New 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

Luna Innovations Incorporated

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. As of December 31, 2005, we had not received a certificate of occupancy.

Obligation Under Capital Leases

We are obligated under capital leases covering certain equipment and software that expire at various dates during the next four years. Minimum lease payments as of December 31, 2005 were as follows:

2006	\$105,947
2007	91,635
2008	24,060
2009	4,643
	<u>226,285</u>
Less—amount representing interest	10,331
	<u>215,954</u>
Present value of net minimum obligation	215,954
Less—current obligation	98,820
	<u>117,134</u>
Long-term obligation	\$117,134

The gross amount of property and equipment and related accumulated amortization recorded under capital leases were as follows at December 31:

	2004	2005
Equipment	\$292,580	\$458,035
Software	164,085	514,121
	<u>456,665</u>	<u>972,156</u>
Less—accumulated amortization	(92,528)	(363,040)
	<u>\$364,137</u>	<u>\$609,116</u>

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 upon satisfaction of the conditions described below.

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, since we have not yet met the stipulations of the grant, we have included the \$900 thousand in deferred revenue and other credits in the accompanying consolidated balance sheets as of December 31, 2004 and 2005.

Purchase Order

In March 2006, our Luna Technologies Division executed a non-cancellable, non-reschedulable \$1.2 million purchase order for multiple shipments of tunable lasers to be delivered over an 18-month period beginning in July 2006.

Royalty Agreement

We have licensed certain third-party technology from a vendor that provides for minimum royalties aggregating \$3.5 million payable over the remaining patent terms of the underlying technology.

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 \$165 thousand, \$156 thousand and \$213 thousand to the plan for the years ended December 31, 2003, 2004 and 2005, respectively, and approximately \$53 thousand and \$60 thousand for the three months ended March 31, 2005 and 2006.

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 assets or operations from inception through the date of the sale of IHS Energy Group, Inc., but did hold the rights to intellectual property. We recorded the payment of \$700,000 upon the sale of Luna i-Monitoring and intellectual property in accordance with SAB 104 since we had no further obligations to IHS Energy Group, Inc.

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 \$1.0 million. 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 \$1.0 million 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 in the December 31, 2004 and 2005 balance sheets.

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. In 2006, we responded to additional inquiries from counsel for such former employee seeking information about the relationship between us and the subsidiary in which the employee holds stock. 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 Transactions

In August 2005, we entered into a Class C Common Stock Financing Agreement with Carilion Health System (Carilion) whereby Carilion committed to providing approximately \$15.0 million in equity financing in three tranches subject to certain conditions outlined in the agreement. Carilion purchased 1,492,032 shares of our Class C Common Stock (the first tranche) for an aggregate purchase price of \$7.0 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 \$5.0 million in exchange for five \$1.0 million convertible promissory notes, and \$3.0 million in exchange for 639,442 shares of Class C Common Stock, subject to certain conditions.

The notes are convertible into Class C Common Stock at a fixed rate of \$4.69159 per share. 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.

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 and the conversion of such debt can be satisfied with unregistered shares of Class C Common Stock.

15. Relationship With Major Customers

During the years ended December 31, 2003, 2004 and 2005 and the three months ended March 31, 2006, approximately 51%, 51%, 70% and 76%, respectively, of our consolidated revenues were attributable to prime contracts with the U.S. government. In addition, during the years ended December 31, 2003, 2004 and 2005, two of our non-government customers accounted for approximately 37%, 35% and 14% of our consolidated revenues, respectively, although these customers are not expected to be an ongoing source of revenues of that amount in the future. Our revenues from these major customers are as follows:

	Year ended December 31,			Three Months Ended March 31,	
	2003	2004	2005	2005	2006
U.S. Government	\$8,969,004	\$11,509,964	\$11,471,447	\$2,263,869	\$3,444,636
Non-Government Customer	6,428,571	7,918,571	2,245,762	576,543	—

Luna Technologies, Inc.

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. 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

Christiansburg, Virginia
September 22, 2005

Balance sheets

	December 31, 2004	September 29, 2005
		(unaudited)
Assets		
Current assets:		
Cash and cash equivalents	\$624,552	\$109,541
Receivables, net of allowance for doubtful accounts of \$552 and \$2,052 at December 31, 2004 and September 29, 2005, respectively	680,591	707,688
Due from related party	9,268	7,533
Inventories, net	212,722	422,241
Other current assets	40,855	53,625
Total current assets	1,567,988	1,300,628
Property and equipment, net	300,947	286,565
Other assets	8,729	4,804
Total Assets	\$1,877,664	\$1,591,997
Liabilities and stockholders' equity (deficit)		
Current liabilities:		
Accounts payable	\$74,978	\$279,215
Accrued liabilities	331,343	267,462
Total current liabilities	406,321	546,677
Long term debt payable, net of current portion	214,953	214,953
Total liabilities	621,274	761,630
Redeemable Convertible Series B Preferred Stock, \$0.001 par value per share; 64,600,000 shares authorized; 52,600,255 shares issued and outstanding at December 31, 2004 and September 29, 2005	3,200,565	3,373,165
Redeemable Convertible Series A and Series A-1 Preferred Stock, \$0.001 par value per share; 26,000,000 shares authorized; 12,798,685 shares issued and outstanding at December 31, 2004 and September 29, 2005	11,960,763	12,511,681
Stockholders' equity:		
Common stock, \$0.001 par value; 160,000,000 shares authorized at December 31, 2004 and September 29, 2005; 5,923,844 shares issued and outstanding at December 31, 2004 and September 29, 2005	5,924	5,924
Retained earnings (deficit)	(13,910,862)	(15,060,403)
Total stockholders' equity	(13,904,938)	(15,054,479)
Total liabilities and stockholders' equity	\$1,877,664	\$1,591,997

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

Statements of operations

		Period Ended	
		September 30,	September 29,
	Year ended December 31, 2004	2004	2005
		(unaudited)	(unaudited)
Revenues	\$1,775,082	\$1,049,299	\$2,122,196
Cost of revenues	817,071	517,152	1,035,082
Gross profit	958,011	532,147	1,087,114
Operating expenses	1,884,606	1,416,386	1,500,933
Loss from operations	(926,595)	(884,239)	(413,819)
Other income (expense):			
Interest expense	(30,730)	(26,079)	(12,202)
Loss on disposal of fixed assets	(2,813)	(1,327)	—
Miscellaneous income (expense)	506	—	—
Total other income (expense)	(33,037)	(27,406)	(12,202)
Net loss	\$(959,632)	\$(911,645)	\$(426,021)

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

Statements of changes in stockholders' equity (deficit)

	Shares	Common Stock	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)	—	—	(426,021)	(426,021)
Accretion of Preferred Stock (unaudited)	—	—	(723,520)	(723,520)
Balance—September 29, 2005 (unaudited)	5,923,844	\$ 5,924	\$(15,060,403)	\$(15,054,479)

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

Statements of cash flows

	Year Ended December 31, 2004	For the Period From January 1 through September 30, 2004	For the Period From January 1 through September 29, 2005
		(unaudited)	(unaudited)
Cash flows from (used in) operating activities:			
Net loss	\$(959,632)	\$(911,645)	\$(426,021)
Adjustments to reconcile to net loss to net cash used in operating activities:			
Depreciation and amortization	252,933	171,826	111,751
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)	(56,784)
Due from related party	18,998	—	1,735
Inventories	106,270	52,626	(209,519)
Note receivable	51,484	25,743	28,187
Prepaid expenses and other current assets	24,804	15,388	(12,770)
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)	(67,742)
Deferred revenues	(79,671)	—	—
Net cash flows used in operating activities	(990,505)	(890,625)	(421,566)
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	(515,011)
Cash and cash equivalents:			
Beginning	379,555	379,555	624,552
Ending	\$624,552	\$726,118	\$109,541
Supplemental disclosure of cash flow information			
Interest paid	\$30,730	\$26,079	\$12,202
Schedule of non-cash investing and financing activities			
Accretion of preferred stock and related dividends	\$962,277	\$717,531	\$723,520
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 September 29, 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

Our audited financial statements have been prepared in accordance with accounting principles generally accepted in the United States (US GAAP). Our unaudited financial statements have been prepared in accordance with US GAAP 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 period from January 1 through September 29, 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. The unaudited financial statements as of and for the nine months ended September 29, 2005 do not include the effects of the acquisition of the Company by Luna Innovations, which is discussed in Note 16.

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 29, 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 September 29, 2005 was \$252,933, \$171,826 and \$111,751, 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 29, 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 September 29, 2005, applying the value-based method under SFAS 123 to all outstanding and unvested options would have not have a material 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 as discussed in Note 16.

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 September 29, 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.

3. Inventories

Inventories consist of the following at:

	December 31, 2004	September 29, 2005
Finished goods	\$30,000	\$39,272
Raw materials	76,494	384,473
Work-in-process	116,228	10,198
	222,722	433,943
Obsolescence reserve	(10,000)	(11,702)
	\$212,722	\$422,241

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
	<u>\$214,953</u>

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
	<u>\$—</u>

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)
	<u>\$—</u>

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
	<u>\$217,565</u>

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 for the period from January 1 through September 30, 2004 and for the period from January 1 through September 29, 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 \$70,189 for the nine months ended September 29, 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. The unaudited financial statements do not reflect the effects of the acquisition.

* * * * *

Introduction to unaudited pro forma consolidated financial statement

The unaudited pro forma consolidated statement of operations for the year ended December 31, 2005 gives effect to our acquisition of all outstanding shares of Luna Technologies, Inc. ("Luna Technologies") as if it had occurred on January 1, 2005, combining the consolidated statement of operations of Luna Innovations Incorporated for the year ended December 31, 2005 and the unaudited statement of operations of Luna Technologies for the period from January 1 through September 29, 2005.

The unaudited pro forma consolidated balance sheet as of December 31, 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 our consolidated balance sheet as of December 31, 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 statement of operations is 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 statement of operations does 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 statement of operations should be read in conjunction with: (i) our audited consolidated financial statements included in this prospectus and (ii) the audited and unaudited financial statements of Luna Technologies included in this prospectus.

Unaudited pro forma consolidated statement of operations

	Luna Innovations (Year Ended December 31, 2005)	Luna Technologies (For the Period From January 1 through September 29, 2005)	Pro forma adjustments	Pro forma consolidated (Year Ended December 31, 2005)
		(unaudited)	(unaudited)	(unaudited)
Revenues	\$16,453,888	\$2,122,196	\$(15,871)	\$18,560,213
Cost of revenues	12,961,894	1,035,082	—	13,996,976
Gross profit	3,491,994	1,087,114	(15,871)	4,563,237
Operating expense	6,003,644	1,500,933	(14,485)	7,490,092
Operating income (loss)	(2,511,650)	(413,819)	(1,386)	(2,926,855)
Other income (expense)				
Interest income (expense), net	(41,251)	(12,202)	—	(53,453)
Miscellaneous (expense)	1,592	—	—	1,592
Total other (expense)	(39,659)	(12,202)	—	(51,861)
Income (loss) before income taxes	(2,551,309)	(426,021)	(1,386)	(2,978,716)
Income tax expense (benefit)	(557,252)	—	—	(557,252)
Net income (loss)	\$(1,994,057)	\$(426,021)	\$(1,386)	\$(2,421,464)
Net income (loss) per share:				
Basic	\$(0.53)			\$(0.65)
Diluted	\$(0.53)			\$(0.65)
Weighted average shares outstanding:				
Basic	3,735,811			3,735,811
Diluted	3,735,811			3,735,811

The accompanying notes are an integral part of this unaudited pro forma consolidated financial statement.

Notes to unaudited pro forma consolidated financial statement

1. Basis of Presentation

Our unaudited pro forma consolidated financial statement has been prepared using the purchase method of accounting. The unaudited pro forma combined statement of operations for the year ended December 31, 2005 illustrates the effect of the merger of Luna Technologies, Inc. as if it had occurred on January 1, 2005, and includes the historical statement of operations for Luna Technologies for the period from January 1 through September 29, 2005, combined with our audited consolidated statement of operations for the year ended December 31, 2005.

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



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	\$ 6,398.60
NASD filing fee	6,250.00
Nasdaq National Market listing fee	50,000
Blue Sky fees and expenses	20,000
Printing and engraving expenses	200,000
Legal fees and expenses	750,000
Accounting fees and expenses	350,000
Transfer agent and registrar fees	15,000
Miscellaneous	102,351.40
Total	\$ 1,500,000

* 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 1-for-1.7691911 reverse stock split:

1. From September 22, 2003 through the date hereof, we have granted options to purchase 6,294,776 shares of our Class B Common Stock at a weighted average exercise price of \$0.83 share, which included 4,248,784 shares of Class B Common Stock issuable upon exercise of options outstanding at an exercise price of \$0.35 per share, 113,046 shares of Class B Common Stock issuable upon exercise of options outstanding at an exercise price of \$0.39 per share, 1,865,118 shares of Class B Common Stock issuable upon exercise of options outstanding at an exercise price of \$1.77 per share and 53,698 shares of Class B Common Stock issuable upon exercise of options outstanding at an exercise price of \$7.07 per share. As of March 31, 2006, 443,253 of these options had been exercised at a price of \$0.20 per share.
2. In May 2003, we issued warrants to purchase 103,508 shares of our Class B Common Stock at a price of \$0.002 per share. Those warrants were exercised on November 22, 2005.
3. In August 2005, we issued and sold to an accredited investor 1,492,032 shares of our Class C Common Stock at a price of \$4.69 per share.
4. In September 2005, we issued 693,897 shares of our Class B Common Stock (of which 111,036 shares were held in escrow as of the date of issuance) and warrants for 2,425 shares of our Class B Common Stock exercisable at \$37.26 per share to accredited investors (of which 389 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 1,490 shares of Class B Common Stock exercisable at \$1.77 per share in connection with this transaction.

Information not required in prospectus

5. In December 2005, we issued and sold to an accredited investor 639,442 shares of our Class C Common Stock at a price of \$4.69 per share. In connection with the transaction we issued to the same accredited investor a series of senior convertible promissory notes convertible into 1,065,740 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 511,553 shares of common stock.
6. In February 2006, we issued warrants to purchase 57,542 shares of our Class B Common Stock at an exercise price of \$1.77 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 Amendment No. 5 to the Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Roanoke, Commonwealth of Virginia, on the nineteenth day of May, 2006.

Luna Innovations Incorporated

By: /s/ KENT A. MURPHY
Kent A. Murphy, Ph.D.
President, Chief Executive Officer and Chairman

Pursuant to the requirements of the Securities Act of 1933, this Amendment No. 5 to the Registration Statement has been signed by the following persons in the capacities and on the dates indicated:

Signature	Title	Date
<u>/S/ KENT A. MURPHY</u> Kent A. Murphy, Ph.D.	President, Chief Executive Officer (Principal Executive Officer) and Chairman	May 19, 2006
<u>/S/ SCOTT A. GRAEFF</u> Scott A. Graeff	Chief Financial Officer (Principal Financial and Accounting Officer) and Executive Vice President, Corporate Development	May 19, 2006
<u>*</u> N. Leigh Anderson, Ph.D.	Director	May 19, 2006
<u>*</u> John C. Backus, Jr.	Director	May 19, 2006
<u>*</u> Barbara (Bobbie) Kilberg	Director	May 19, 2006

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<div><div>*</div><div>_____</div><div>Edward G. Murphy, M.D.</div></div>	Director	May 19, 2006
<div><div>*</div><div>_____</div><div>Richard W. Roedel</div></div>	Director	May 19, 2006
<div><div>*</div><div>_____</div><div>Paul E. Torgersen, Ph.D.</div></div>	Director	May 19, 2006
<div><div>*By: /s/ KENT A. MURPHY</div><div>_____</div><div>Kent A. Murphy</div><div>Attorney-in-fact</div></div>		

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
3.5	Form of Amended and Restated Certificate of Incorporation to be filed prior to effectiveness of registration statement
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	Form of 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	Amended Loan Agreement, dated as of May 12, 2006, 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
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**	Industrial Lease Agreement, dated March 21, 2006, by and between Luna Innovations Incorporated and the Industrial Development Authority of Montgomery County, Virginia (3150 State Street, Blacksburg, Virginia)
10.28**	Form of Stock Sale Restriction Letter Agreement
10.29**	Form of Employee Management Stock Sale Restriction Letter Agreement
10.30**	Joint Cooperation Agreement, dated June 6, 2005, by and between Luna Energy LLC and Luna Technologies, Inc.
10.31**	Class C Common Stock and Note Purchase Agreement, dated December 30, 2005, by and between Luna Innovations Incorporated and Carilion Health System.
10.32**	Member Interest Purchase Agreement, dated December 17, 2004, by and between Luna Innovations Incorporated and Baker Hughes Oilfield Operations, Inc.
10.33**	Share Purchase and Asset Transfer Agreement, dated October 1, 2003, by and among IHS Energy Group, Inc., IHS Energy Innovations, Inc. and certain selling stockholders.
10.34	First Amendment to Industrial Lease Agreement, dated May 11, 2006, by and between Luna Innovations Incorporated and the Industrial Development Authority of Montgomery County, Virginia (3150 State Street, Blacksburg, Virginia)
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 II-4)

** Previously filed.

† Confidential treatment has been requested for certain provisions of this Exhibit pursuant to Rule 406 promulgated under the Securities Act.

LUNA INNOVATIONS INCORPORATED

[4,000,000] Shares
Common Stock
(\$0.001 par value)

Underwriting Agreement

New York, New York
May [], 2006

ThinkEquity Partners LLC
W.R. Hambrecht + Co., LLC
Merriman Curhan Ford & Co.
As Representatives of the several Underwriters,
c/o ThinkEquity Partners LLC
31 West 52nd Street, 17th Floor
New York, New York 10019

Ladies and Gentlemen:

Luna Innovations Incorporated, a corporation organized under the laws of the State of Delaware (the “Company”), proposes to sell to the several underwriters named in Schedule I hereto (the “Underwriters”), for whom you (the “Representatives”) are acting as representatives, [4,000,000] shares of Common Stock, \$0.001 par value per share (“Common Stock”), of the Company (said shares to be issued and sold by the Company being hereinafter called the “Firm Shares”). The Company also proposes to grant to the Underwriters an option (the “Over-Allotment Option”) to purchase up to [600,000] additional shares of Common Stock to cover over-allotments (the “Option Shares”; the Option Shares, together with the Firm Shares, being hereinafter called the “Securities”) on the terms set forth in Section 3. To the extent there are no additional Underwriters listed on Schedule I other than you, the term Representatives as used herein shall mean you, as Underwriters, and the terms Representatives and Underwriters shall mean either the singular or plural as the context requires. The use of the neuter in this Agreement shall include the feminine and masculine wherever appropriate. Certain terms used herein are defined in Section 19 hereof.

1. Representations and Warranties.

The Company represents, warrants and agrees as follows:

(a) The Company has prepared and filed with the Commission a registration statement (file number 333-131764) on Form S-1, including a related preliminary prospectus, for registration under the Act of the offering and sale of the Securities. Such Registration Statement, including any amendments thereto filed prior to the Execution Time, has become effective. The Company may have filed one or more amendments thereto, including a related preliminary prospectus, each of which has

previously been furnished to you. The Company will file with the Commission a final prospectus in accordance with Rule 424(b). As filed, such final prospectus shall conform in all material respects with the applicable requirements of the Act and the rules thereunder, on the Effective Date and at the Execution Time, and, except to the extent the Representatives shall agree in writing to a modification, shall be in all material respects in the form furnished to you prior to the Execution Time or, to the extent not completed at the Execution Time, shall contain only such specific additional information and other changes (beyond that contained in the latest Preliminary Prospectus) as the Company has advised you, prior to the Execution Time, will be included or made therein.

(b) On the Effective Date, the Registration Statement did, and when the Prospectus is first filed in accordance with Rule 424(b) and on the Closing Date (as defined herein) and on any date on which Option Shares are purchased, if such date is not the Closing Date (a "settlement date"), the Prospectus (and any supplements thereto) will, conform in all material respects with the applicable requirements of the Act and the rules thereunder; on the Effective Date and at the Execution Time, the Registration Statement did not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements therein not misleading; and on the date of any filing pursuant to Rule 424(b) and on the Closing Date and any settlement date, the Prospectus (together with any supplement thereto) will not, include any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; provided, however, that the Company makes no representations or warranties as to the information contained in or omitted from the Registration Statement or the Prospectus (or any supplement thereto), in reliance upon and in conformity with information furnished in writing to the Company by or on behalf of any Underwriter through the Representatives specifically for inclusion in the Registration Statement or the Prospectus (or any supplement thereto), it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 8 hereof.

(c) The Disclosure Package as of the Effective Date and at the Execution Time does not contain any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The preceding sentence does not apply to statements in or omissions from the Disclosure Package based upon and in conformity with written information furnished to the Company by any Underwriter through the Representatives specifically for use therein, it being understood and agreed that the only such information furnished by or on behalf of any Underwriter consists of the information described as such in Section 8 hereof.

(d) (i) At the time of filing the Registration Statement and (ii) as of the Execution Time (with such date being used as the determination date for purposes of this clause (ii)), the Company was not and is not an Ineligible Issuer (as defined in Rule 405 of the Act), without taking account of any determination by the Commission pursuant to Rule 405 that it is not necessary that the Company be considered an Ineligible Issuer.

(e) Each Issuer Free Writing Prospectus, when considered together with the Disclosure Package as of the Effective Date and at the Execution Time, did not contain 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, in the light of the circumstances under which they were made, not misleading, except that the price of the Securities and disclosures directly relating thereto will be included on the cover page of the Prospectus. The foregoing sentence does not apply to statements in or omissions from any Issuer Free Writing Prospectus based upon and in conformity with written information furnished to the Company by any Underwriter through the Representatives specifically for use therein, it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 8 hereof.

(f) Each of the Company and its subsidiaries has been duly organized and is validly existing as a corporation or limited liability company (as applicable) in good standing under the laws of the jurisdiction in which it is chartered or organized with full corporate or limited liability company (as applicable) power and authority to own or lease, as the case may be, and to operate its properties and conduct its business as described in the Disclosure Package and the Prospectus, and is duly qualified to do business as a foreign corporation or limited liability company (as applicable) and is in good standing under the laws of each jurisdiction which requires such qualification, except where the failure to be so qualified or in good standing could not reasonably be expected, individually or in the aggregate, to have a material adverse effect on the condition (financial or otherwise), prospects, earnings, business or properties of the Company and its subsidiaries, taken as a whole, whether or not arising from transactions in the ordinary course of business (a "Material Adverse Effect"), except as set forth in or contemplated in the Disclosure Package and the Prospectus (exclusive of any supplement thereto).

(g) All the outstanding shares of capital stock or other equity interests of each subsidiary of the Company have been duly authorized and validly issued and are fully paid and nonassessable, and, except as otherwise set forth in the Disclosure Package and the Prospectus, all outstanding shares of capital stock or other equity interests of the subsidiaries of the Company are owned by the Company either directly or through its wholly owned subsidiaries free and clear of any security interests, claims, liens or encumbrances.

(h) The entities listed on Annex A attached hereto are the only subsidiaries of the Company as defined by Rule 1-02 of Regulation S-X (the "Subsidiaries").

(i) The Company's authorized equity capitalization is as set forth in the Disclosure Package and the Prospectus; the capital stock of the Company conforms in all material respects to the description thereof contained in the Disclosure Package and the Prospectus; the outstanding shares of Common Stock have been duly and validly authorized and issued and are fully paid and nonassessable; the Securities being issued and sold hereunder by the Company have been duly and validly authorized, and, when issued and delivered to and paid for by the Underwriters pursuant to this Agreement, will be fully paid and nonassessable; the Securities are duly listed, and admitted and authorized for

trading, subject to official notice of issuance on the Nasdaq National Market; the certificates for the Securities have been duly approved and adopted by the Company and are in valid and sufficient form and comply with the requirements of the Nasdaq National Market; the holders of outstanding shares of capital stock of the Company are not entitled to preemptive or other rights to subscribe for the Securities; and, except as set forth in the Disclosure Package and the Prospectus, no options, warrants or other rights to purchase, agreements or other obligations to issue, or rights to convert any obligations into or exchange any securities for, shares of capital stock of or ownership interests in the Company are outstanding.

(j) There is no contract or other document that is required to be described in the Prospectus or filed as an exhibit to the Registration Statement under the Act or rules and regulations thereunder that has not been described in the Prospectus or filed as an exhibit to the Registration Statement.

(k) This Agreement has been duly authorized, executed and delivered by the Company.

(l) The Company is not and, after giving effect to the offering and sale of the Securities and the application of the proceeds thereof as described in the Disclosure Package and the Prospectus, will not be an "investment company" as defined in the Investment Company Act of 1940, as amended.

(m) No consent, approval, authorization, filing with or order of any court or Governmental Authority is required in connection with the transactions contemplated herein, except for the registration of the Securities under the Act and such consents, approvals, authorizations, registrations, or qualifications as may be required under the Exchange Act, by the National Association of Securities Dealers, Inc., and such as may be required under the blue sky laws of any jurisdiction in connection with the purchase and distribution of the Securities by the Underwriters in the manner contemplated herein and in the Disclosure Package and the Prospectus.

(n) Neither the issue and sale of the Securities nor the consummation of any other of the transactions herein contemplated nor the fulfillment of the terms hereof will (i) conflict with or result in a violation of the charter or by-laws of the Company or any of its subsidiaries or (ii) conflict with, result in material breach or violation of, or imposition of any lien, charge or encumbrance upon any property or assets of the Company or any of its subsidiaries pursuant to, (A) the terms of any indenture, contract, lease, mortgage, deed of trust, note agreement, loan agreement or other agreement, obligation, condition, covenant or instrument to which the Company or any of its subsidiaries is a party or bound or to which its or their property is subject, or (B) any statute, law, rule, regulation, judgment, order or decree of any court, regulatory body, administrative agency, Governmental Authority, arbitrator or other authority having jurisdiction over the Company or any of its subsidiaries or any of its or their properties.

(o) No holders of securities of the Company have rights to the registration of such securities under the Registration Statement except as set forth in the Disclosure Package and Prospectus.

(p) The consolidated historical financial statements and schedules of the Company and its consolidated subsidiaries included in the Disclosure Package, the Prospectus and the Registration Statement present fairly in all material respects the consolidated financial condition, results of operations and cash flows of the Company and its subsidiaries as of the dates and for the periods indicated and have been prepared in conformity with U.S. generally accepted accounting principles applied on a consistent basis throughout the periods involved (except as otherwise noted therein). The selected financial data set forth under the caption "Selected consolidated financial data" in the Disclosure Package, the Prospectus and the Registration Statement present the information set forth therein on a basis consistent with that of the audited financial statements contained in the Registration Statement. The pro forma financial statements included in the Disclosure Package, the Prospectus and the Registration Statement include assumptions that provide a reasonable basis for presenting the significant effects directly attributable to the transactions and events described therein, the related pro forma adjustments give appropriate effect to those assumptions, and the pro forma adjustments reflect the proper application of those adjustments to the historical financial statement amounts in the pro forma financial statements included in the Disclosure Package, the Prospectus and the Registration Statement. The pro forma financial statements included in the Disclosure Package, the Prospectus and the Registration Statement comply as to form with the applicable accounting requirements of Regulation S-X under the Act and the pro forma adjustments have been properly applied to the historical amounts in the compilation of those statements.

(q) Except as set forth in or contemplated in the Disclosure Package and the Prospectus, there are no actions, suits or proceedings by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any of its subsidiaries or its or their property is pending or, to the best knowledge of the Company, threatened that (i) could reasonably be expected to have a material adverse effect on the performance of this Agreement or the consummation of any of the transactions contemplated hereby or (ii) could, singly or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(r) The Company and each of its subsidiaries have good and marketable title in fee simple to all real property and good and valid title to all personal property owned by them, in each case free and clear of all liens, encumbrances and defects, except such as are described in the most recent Prospectus or such as do not materially affect the value of such property and do not materially interfere with the use made and proposed to be made of such property by the Company and its subsidiaries; and all assets held under lease by the Company and its subsidiaries are held by them under valid, subsisting and enforceable leases, with such exceptions as are not material and do not interfere with the use made and proposed to be made of such property and buildings by the Company and its subsidiaries.

(s) Neither the Company nor any subsidiary (i) is in violation or default of any provision of its charter or bylaws, (ii) is in default in any material respect of the terms of any indenture, contract, lease, mortgage, deed of trust, note agreement, loan agreement or other agreement, obligation, condition, covenant or instrument to which it is a party or bound or to which its property is subject, or (iii) is in violation in any material respect of any statute, law, rule, regulation, judgment, order or decree of any court, regulatory body, administrative agency, governmental body, arbitrator or other authority having jurisdiction over the Company or such subsidiary or any of its properties, as applicable.

(t) Grant Thornton LLP, who has certified certain financial statements of the Company and its consolidated subsidiaries and delivered its report with respect to the audited consolidated financial statements and schedules included in the Disclosure Package and the Prospectus, is an independent registered public accounting firm with respect to the Company within the meaning of the Act within the meaning of Rule 3600T of the Public Company Accounting Oversight Board and there has not been any disagreement (within the meaning of National Policy Statement No. 31) with the present or any former accountants of the Company. Brown, Edwards & Company LLP, at the time they were Luna Technologies, Inc.'s accountants, was an independent registered public accounting firm under applicable law.

(u) There are no transfer taxes or other similar fees or charges under U.S. federal law or the laws of any state, or any political subdivision thereof, required to be paid in connection with the execution and delivery of this Agreement or the issuance by the Company or sale by the Company of the Securities.

(v) Each of the Company and its subsidiaries has filed all Tax Returns that are required to be filed or has requested extensions thereof (except in any case in which the failure so to file would not have a Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus (exclusive of any supplement thereto)) and has paid all Taxes required to be paid by it and any other assessment, fine or penalty levied against it, to the extent that any of the foregoing is due and payable, except for any such assessment, fine or penalty that is currently being contested in good faith or as would not have a Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus (exclusive of any supplement thereto).

(w) No labor problem or dispute with the employees of the Company or any of its subsidiaries exists or, to the knowledge of the Company, is threatened or imminent, and the Company is not aware of any existing or imminent labor disturbance by the employees of any of its or its subsidiaries' principal suppliers, contractors or customers, that could have a Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus (exclusive of any supplement thereto).

(x) The Company and each of its subsidiaries are insured by insurers of recognized financial responsibility against such losses and risks and in such amounts as are prudent and customary in the businesses in which they are engaged; all policies of

insurance and fidelity or surety bonds insuring the Company or any of its subsidiaries or their respective businesses, assets, employees, officers and directors are in full force and effect; the Company and its subsidiaries are in compliance with the terms of such policies and instruments in all material respects; and there are no claims by the Company or any of its subsidiaries under any such policy or instrument as to which any insurance company is denying liability or defending under a reservation of rights clause; neither the Company nor any such subsidiary has been refused any insurance coverage sought or applied for; and neither the Company nor any such subsidiary has any reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business at a cost that would not have a Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus (exclusive of any supplement thereto).

(y) No subsidiary of the Company is currently prohibited, directly or indirectly, from paying any dividends to the Company, from making any other distribution on such subsidiary's capital stock, from repaying to the Company any loans or advances to such subsidiary from the Company or from transferring any of such subsidiary's property or assets to the Company or any other subsidiary of the Company, except as described in or contemplated by the Disclosure Package and the Prospectus (exclusive of any supplement thereto).

(z) The Company and its subsidiaries possess all licenses, certificates, permits and other authorizations issued by the appropriate federal, state or foreign regulatory authorities necessary to conduct their respective businesses, except for any which the failure to possess could not reasonably be expected to have a Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus (exclusive of any supplement thereto); and neither the Company nor any such subsidiary has received any notice of proceedings relating to the revocation or modification of any such certificate, authorization or permit which, singly or in the aggregate, if the subject of an unfavorable decision, ruling or finding, would have a Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus (exclusive of any supplement thereto).

(aa) The Company and each of its subsidiaries maintain a system of internal accounting controls sufficient to provide reasonable assurance that (i) transactions are executed in accordance with management's general or specific authorizations; (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with U.S. generally accepted accounting principles and to maintain asset accountability; (iii) access to assets is permitted only in accordance with management's general or specific authorization; and (iv) the reported accountability for assets is compared with the existing assets at reasonable intervals.

(bb) The Company has not taken, directly or indirectly, any action designed to or that would constitute or that might reasonably be expected to cause or result in, under the Exchange Act or otherwise, stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Securities.

(cc) The Company and its subsidiaries are (i) in compliance with any and all applicable foreign, federal, state and local laws and regulations relating to the protection of human health and safety, the environment or hazardous or toxic substances or wastes, pollutants or contaminants (“Environmental Laws”) except where such lack of compliance would not result in a Material Adverse Effect, (ii) have received and are in compliance with all permits, licenses or other approvals required of them under applicable Environmental Laws to conduct their respective businesses except where such lack of compliance would not result in a Material Adverse Effect and (iii) have not received notice of any actual or potential liability under any environmental law, except where such non-compliance with Environmental Laws, failure to receive required permits, licenses or other approvals, or liability would not, individually or in the aggregate, have a Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus (exclusive of any supplement thereto). Except as set forth in the Disclosure Package and the Prospectus, neither the Company nor any of the subsidiaries has been named as a “potentially responsible party” under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended.

(dd) The Company is in compliance in all material respects with all presently applicable provisions of the Employee Retirement Income Security Act of 1974, as amended, including the regulations and published interpretations thereunder (“ERISA”); no “reportable event” (as defined in ERISA) has occurred with respect to any “pension plan” (as defined in ERISA) for which the Company would have any liability; the Company has not incurred and could not reasonably be expected to incur liability under (i) Title IV of ERISA with respect to termination of, or withdrawal from, any “pension plan” or (ii) Sections 412 or 4971 of the Internal Revenue Code of 1986, as amended, including the regulations and published interpretations thereunder (the “Code”); each “pension plan” for which the Company would have any liability that is intended to be qualified under Section 401(a) of the Code is so qualified and nothing has occurred, whether by action or by failure to act, which would cause the loss of such qualification; and neither the Company nor any of its subsidiaries maintains or is required to contribute to a “welfare plan” (as defined in Section 3(l) of ERISA) which provides retiree or other post-employment welfare benefits or insurance coverage (other than “continuation coverage” (as defined in Section 602 of ERISA)).

(ee) The Company is in compliance in all material respects with all presently effective provisions of the Sarbanes Oxley Act of 2002 and the rules and regulations promulgated in connection therewith (the “Sarbanes Oxley Act”), including Section 402 related to loans.

(ff) Neither the Company nor any of its subsidiaries nor, to the knowledge of the Company, any director, officer, agent, employee or affiliate of the Company or any of its subsidiaries is aware of or has taken any action, directly or indirectly, that would result in a violation by such persons of the FCPA, including, without limitation, making use of the mails or any means or instrumentality of interstate commerce corruptly in furtherance of an offer, payment, promise to pay or authorization of the payment of any money, or other property, gift, promise to give, or authorization of the giving of anything of value to any “foreign official” (as such term is defined in the FCPA)

or any non-U.S. political party or official thereof or any candidate for non-U.S. political office, in contravention of the FCPA and the Company, its subsidiaries and, to the knowledge of the Company, its affiliates have conducted their businesses in compliance with the FCPA and have instituted and maintain policies and procedures designed to ensure, and which are reasonably expected to continue to ensure, continued compliance therewith.

“FCPA” means Foreign Corrupt Practices Act of 1977, as amended, and the rules and regulations thereunder.

(gg) The operations of the Company and its subsidiaries are and have been conducted at all times in compliance in all material respects with applicable financial recordkeeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, the money laundering statutes of all jurisdictions, the rules and regulations thereunder and any related or similar rules, regulations or guidelines, issued, administered or enforced by any Governmental Authority (collectively, the “Money Laundering Laws”) and no action, suit or proceeding by or before any court or Governmental Authority or any arbitrator involving the Company or any of its subsidiaries with respect to the Money Laundering Laws is pending or, to the best knowledge of the Company, threatened in each case, as would not be reasonably expected to have a Material Adverse Effect.

(hh) Neither the Company nor any of its subsidiaries nor, to the knowledge of the Company, any director, officer, agent, employee or affiliate of the Company or any of its subsidiaries is currently subject to any U.S. sanctions administered by the Office of Foreign Assets Control of the U.S. Treasury Department (“OFAC”); and the Company will not directly or indirectly use the proceeds of the offering, or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partner or other person or entity, for the purpose of financing the activities of any person currently subject to any U.S. sanctions administered by OFAC.

(ii) The Company and its subsidiaries own, possess, license or have other rights to use, on reasonable terms, all patents, patent applications, trade and service marks, trade and service mark registrations, trade names, copyrights, licenses, inventions, trade secrets, technology, know-how and other intellectual property (collectively, the “Intellectual Property”) necessary for the conduct of the Company’s business as now conducted as described in the Disclosure Package and the Prospectus. Except as set forth in the Disclosure Package and the Prospectus, (i) there is no material infringement by third parties of any such Intellectual Property; (ii) there is no pending or, to the Company’s knowledge, threatened action, suit, proceeding or claim by others challenging the Company’s rights in or to any such Intellectual Property; (iii) there is no pending or, to the Company’s knowledge, threatened action, suit, proceeding or claim by others challenging the validity or scope of any such Intellectual Property; and (iv) there is no pending or, to the Company’s knowledge, threatened action, suit, proceeding or claim by others that the Company infringes or otherwise violates any patent, trademark, copyright, trade secret or other proprietary rights of others.

(jj) Neither the Company nor any of its subsidiaries nor any of its or their properties or assets has any immunity from the jurisdiction of any court or from any legal process (whether through service or notice, attachment prior to judgment, attachment in aid of execution or otherwise) under the laws of New York.

(kk) Neither the Company nor any of its subsidiaries is a party to any contract, agreement or understanding with any person that would give rise to a valid claim against the Company or the Underwriters for a brokerage commission, finder's fee or like payment in connection with the offering and sale of the Securities other than this Agreement.

Any certificate signed by any officer of the Company and delivered to the Representatives or counsel for the Underwriters in connection with the offering of the Securities shall be deemed a representation and warranty by the Company, as to matters covered thereby, to each Underwriter.

2. Purchase and Sale.

(a) Subject to the terms and conditions and in reliance upon the representations and warranties herein set forth, the Company agrees to sell to each Underwriter, and each Underwriter agrees, severally and not jointly, to purchase from the Company, at a purchase price of \$[] per share, the amount of the Firm Shares set forth opposite such Underwriter's name in Schedule I hereto.

(b) Subject to the terms and conditions and in reliance upon the representations and warranties herein set forth, the Company hereby grants an option to the several Underwriters to purchase, severally and not jointly, up to [600,000] Option Shares at the same purchase price per share as the Underwriters shall pay for the Firm Shares. Said option may be exercised only to cover over-allotments in the sale of the Firm Shares by the Underwriters. Said option may be exercised in whole or in part at any time on or before the 30th day after the date of the Prospectus upon written or telegraphic notice by the Representatives to the Company setting forth the number of shares of the Option Shares as to which the several Underwriters are exercising the option and the settlement date. The number of Option Shares to be purchased by each Underwriter shall be the same percentage of the total number of shares of the Option Shares to be purchased by the several Underwriters as such Underwriter is purchasing of the Firm Shares, subject to such adjustments as you in your absolute discretion shall make to eliminate any fractional shares.

The Company shall not be obligated to deliver any of the Securities on the date required for delivery under Section 3 except upon payment for all Securities to be purchased on such delivery date as provided herein.

3. Delivery and Payment. Delivery of and payment for the Firm Shares and the Option Shares (if the option provided for in Section 2(b) hereof shall have been exercised on or before the fourth Business Day following the date of this Agreement) shall be made at 10:00 a.m., New York City time, on [], 2006, or at such time on such later date not more than four Business Days after the foregoing date as the Representatives shall

designate, which date and time may be postponed by agreement between the Representatives and the Company or as provided in Section 9 hereof (such date and time of delivery and payment for the Securities being herein called the "Closing Date"). Delivery of the Securities shall be made to the Representatives for the respective accounts of the several Underwriters against payment by the several Underwriters through the Representatives of the purchase price thereof to or upon the order of the Company by wire transfer payable in same-day funds to an account specified in writing by the Company. Delivery of the Firm Shares and the Option Shares shall be made through the facilities of The Depository Trust Company unless the Representatives shall otherwise instruct.

If the option provided for in Section 2(b) hereof is exercised after the fourth Business Day following the date of this Agreement, the Company will deliver (at the expense of the Company) to the Representatives, at 31 West 52nd Street, 17th Floor, New York, New York 10019, on the date specified by the Representatives (which shall be within three Business Days after exercise of said option), certificates for the Option Shares in such names and denominations as the Representatives shall have requested for the respective accounts of the several Underwriters, against payment by the several Underwriters through the Representatives of the purchase price thereof to or upon the order of the Company. If settlement for the Option Shares occurs after the Closing Date, the Company will deliver to the Representatives on the settlement date for the Option Shares, and the obligation of the Underwriters to purchase the Option Shares shall be conditioned upon receipt of, supplemental opinions, certificates and letters confirming as of such date the opinions, certificates and letters delivered on the Closing Date pursuant to Section 6 hereof.

4. Offering by Underwriters. It is understood that the several Underwriters propose to offer the Securities for sale to the public upon the terms and conditions as set forth in the Prospectus.

5. Agreements.

(i) The Company agrees with the several Underwriters that:

(a) Prior to the termination of the offering of the Securities, the Company will not file any amendment of the Registration Statement or supplement to the Prospectus or any Rule 462(b) Registration Statement unless the Company has furnished you a copy for your review prior to filing and will not file any such proposed amendment or supplement to which you reasonably object. The Company will cause the Prospectus, properly completed, and any supplement thereto to be filed in a form approved by the Representatives with the Commission pursuant to the applicable paragraph of Rule 424(b) within the time period prescribed and will provide evidence satisfactory to the Representatives of such timely filing. The Company will promptly advise the Representatives (1) when the Prospectus, and any supplement thereto, shall have been filed (if required) with the Commission pursuant to Rule 424(b) or when any Rule 462(b) Registration Statement shall have been filed with the Commission, (2) when, prior to termination of the offering of the Securities, any amendment to the Registration Statement shall have been filed or become effective, (3) of any request by the Commission or its staff for any amendment of the Registration Statement, or any Rule 462(b) Registration

Statement, or for any supplement to the Prospectus or for any additional information, (4) of the issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement or of any notice objecting to its use or the institution or threatening of any proceeding for that purpose and (5) of the receipt by the Company of any notification with respect to the suspension of the qualification of the Securities for sale in any jurisdiction or the institution or threatening of any proceeding for such purpose. The Company will use its best efforts to prevent the issuance of any such stop order or the occurrence of any such suspension or objection and, upon such issuance, occurrence or objection, to obtain as soon as possible the withdrawal thereof of such stop order or relief from such occurrence or objection, including, if necessary, by filing an amendment to the Registration Statement or a new registration statement and using its best efforts to have such amendment or new registration statement declared effective as soon as practicable.

(b) If, at any time, prior to the filing of the Prospectus pursuant to Rule 424(b), any event occurs as a result of which the Disclosure Package would include any untrue statement of a material fact or omit to state any material fact necessary to make the statements therein in the light of the circumstances under which they were made at such time not misleading, the Company will: (1) notify promptly the Representatives so that any use of the Disclosure Package may cease until it is amended or supplemented; (2) amend or supplement the Disclosure Package to correct such statement or omission; and (3) supply any amendment or supplement to you in such quantities as you may reasonably request.

(c) If, at any time when a prospectus relating to the Securities is required to be delivered under the Act (including in circumstances where such requirements may be satisfied pursuant to Rule 172 of the Act), any event occurs as a result of which the Prospectus as then supplemented would include any untrue statement of a material fact or omit to state any material fact necessary to make the statements therein in the light of the circumstances under which they were made at such time not misleading, or if it shall be necessary to amend the Registration Statement or supplement the Prospectus to comply with the Act or the rules thereunder, the Company promptly will (1) notify the Representatives of any such event, (2) prepare and file with the Commission, subject to the second sentence of paragraph (i)(a) of this Section 5, an amendment or supplement which will correct such statement or omission or effect such compliance and (3) supply any supplemented Prospectus to you in such quantities as you may reasonably request.

(d) As soon as practicable, the Company will make generally available to its security holders and to the Representatives an earnings statement or statements of the Company and its subsidiaries which will satisfy the provisions of Section 11(a) of the Act and Rule 158 under the Act.

(e) The Company will furnish to the Representatives and counsel for the Underwriters signed copies of the Registration Statement (including exhibits thereto) and to each other Underwriter a copy of the Registration Statement (without exhibits thereto) and, so long as delivery of a prospectus by an Underwriter or dealer may be required by the Act (including the circumstances where such requirement may be satisfied pursuant to Rule 172), as many copies of each Preliminary Prospectus, the Prospectus and each Issuer Free Writing Prospectus and any supplement thereto as the Representatives may reasonably request.

(f) The Company will arrange, if necessary, for the qualification of the Securities for sale under the laws of such jurisdictions as the Representatives may designate and will maintain such qualifications in effect so long as required for the distribution of the Securities; provided that in no event shall the Company be obligated to qualify to do business in any jurisdiction where it is not now so qualified or to take any action that would subject it to service of process in suits, other than those arising out of the offering or sale of the Securities, in any jurisdiction where it is not now so subject.

(g) The Company will not, without the prior written consent of ThinkEquity Partners LLC, offer, sell, contract to sell, pledge, or otherwise dispose of, (or enter into any transaction which is designed to, or might reasonably be expected to, result in the disposition of (whether by actual disposition or effective economic disposition due to cash settlement or otherwise) by the Company or any affiliate of the Company or any person in privity with the Company or any affiliate of the Company) directly or indirectly, including the filing (or participation in the filing) of a registration statement with the Commission (other than a registration statement on Form S-8) in respect of, or establish or increase a put equivalent position or liquidate or decrease a call equivalent position within the meaning of Section 16 of the Exchange Act, with respect to any other shares of Common Stock or any securities convertible into, or exercisable, or exchangeable for, shares of Common Stock; or publicly announce an intention to effect any such transaction, for a period of 180 days after the date of this Agreement, provided, however, that the Company may issue and sell Common Stock pursuant to any employee stock option plan (and may issue options thereunder), stock ownership plan or dividend reinvestment plan of the Company in effect at the Execution Time and the Company may issue Common Stock issuable upon the conversion of securities or the exercise of warrants outstanding at the Execution Time. If (1) during the last 17 days of the 180-day restricted 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 180-day restricted period the Company announces that it will release earnings results during the 16-day period beginning on the last day of the 180-day period, then the foregoing restrictions shall continue to apply until the expiration of the 18-day period beginning on the issuance of the earnings release or the occurrence of the material news or material event.

(h) The Company will comply with all applicable securities and other applicable laws, rules and regulations, including, without limitation, the Sarbanes Oxley Act, the Money Laundering Laws and the FCPA and use its best efforts to cause the Company's directors and officers, in their capacities as such, to comply with such laws, rules and regulations, including, without limitation, the provisions of the Sarbanes Oxley Act, the Money Laundering Laws and the FCPA.

(i) The Company will not take, directly or indirectly, any action designed to or that would constitute or that might reasonably be expected to cause or result in, under the Exchange Act or otherwise, stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Securities.

(j) The Company will not issue any press release or public announcement between the date hereof and the Closing Date without first providing prior notice to the Representatives.

(k) The Company agrees to pay the costs and expenses relating to the following matters: (i) the preparation, printing or reproduction and filing with the Commission of the Registration Statement (including financial statements and exhibits thereto), each Preliminary Prospectus, the Prospectus and each Issuer Free Writing Prospectus, and each amendment or supplement to any of them; (ii) the printing (or reproduction) and delivery (including postage, air freight charges and charges for counting and packaging) of such copies of the Registration Statement, each Preliminary Prospectus, the Prospectus, each Issuer Free Writing Prospectus and all amendments or supplements to any of them, as may, in each case, be reasonably requested for use in connection with the offering and sale of the Securities; (iii) the preparation, printing, authentication, issuance and delivery of certificates for the Securities, including any stamp or transfer taxes in connection with the original issuance and sale of the Securities; (iv) the printing (or reproduction) and delivery of this Agreement, any blue sky memorandum and all other agreements or documents printed (or reproduced) and delivered in connection with the offering of the Securities; (v) the registration of the Securities under the Exchange Act and the quotation of the Securities on the Nasdaq National Market; (vi) any registration or qualification of the Securities for offer and sale under the securities or blue sky laws of the several states (including filing fees and the reasonable fees and expenses of counsel for the Underwriters relating to such registration and qualification); (vii) any filings required to be made with the National Association of Securities Dealers, Inc. (including filing fees and the reasonable fees and expenses of counsel for the Underwriters relating to such filings); (viii) the costs and expenses of the Company relating to investor presentations on any "road show" undertaken in connection with the marketing of the offering of the securities, including, without limitation, expenses associated with the production of road show slides and graphics, fees and expenses of any consultants engaged in connection with the road show presentations with the prior approval of the Company, lodging expenses of the officers of the Company and any such consultants, and 50% of the cost of any aircraft chartered in connection with the road show, but specifically excluding the lodging expenses of the representatives of the Underwriters; (ix) the fees and expenses of the Company's accountants and the fees and expenses of counsel (including local and special counsel) for the Company; and (x) all other costs and expenses incident to the performance by the Company of its obligations hereunder; provided that, except as provided in this Section 5 and in Section 7, the Underwriters shall pay their own costs and expenses, including the costs and expenses of their counsel, any transfer taxes on the securities which they may sell and the expenses of advertising any offering of the securities made by the Underwriters.

(l) The Company will use the net proceeds from the sale of the Securities in the manner described in the Prospectus.

(m) The Company agrees that, unless it has obtained or will obtain the prior written consent of the Representatives (such consent to not be unreasonably withheld), and each Underwriter, severally and not jointly, agrees with the Company that, unless it has obtained or will obtain, as the case may be, the prior written consent of the

Company (such consent to not be unreasonably withheld), it has not made and will not make any offer relating to the Securities that would constitute an Issuer Free Writing Prospectus or that would otherwise constitute a “free writing prospectus” (as defined in Rule 405) required to be filed by the Company or such Underwriter with the Commission or retained by the Company under Rule 433; provided that the prior written consent of the parties hereto shall be deemed to have been given in respect of the Free Writing Prospectuses identified in Schedule II hereto and any electronic road show. Any such free writing prospectus consented to by the Representatives or the Company is hereinafter referred to as a “Permitted Free Writing Prospectus.” The Company agrees that (x) it has treated and will treat, as the case may be, each Permitted Free Writing Prospectus as an Issuer Free Writing Prospectus and (y) it has complied and will comply, as the case may be, with the requirements of Rules 164 and 433 applicable to any Permitted Free Writing Prospectus, including in respect of timely filing with the Commission, legending and record keeping.

(ii) Each Underwriter severally agrees that such Underwriter shall not include any “issuer information” (as defined in Rule 433) in any “free writing prospectus” (as defined in Rule 405) used or referred to by such Underwriter without the prior consent of the Company (any such issuer information with respect to whose use the Company has given its consent, “Permitted Issuer Information”); *provided* that (i) no such consent shall be required with respect to any such issuer information contained in any document filed by the Company with the Commission prior to the use of such free writing prospectus and (ii) “issuer information,” as used in this Section 5(ii), shall not be deemed to include information prepared by or on behalf of such Underwriter on the basis of or derived from issuer information.

6. Conditions to the Obligations of the Underwriters. The obligations of the Underwriters to purchase the Firm Shares and the Option Shares, as the case may be, shall be subject to the accuracy of the representations and warranties on the part of the Company contained herein as of the Execution Time, the Closing Date and any settlement date pursuant to Section 3 hereof, to the accuracy of the statements of the Company made in any certificates pursuant to the provisions hereof, to the performance by the Company of its obligations hereunder and to the following additional conditions:

(a) The Prospectus and any supplement thereto, have been filed in the manner and within the time period required by Rule 424(b); and no stop order suspending the effectiveness of the Registration Statement or any notice objecting to its use shall have been issued and no proceedings for that purpose shall have been instituted or threatened.

(b) The Company shall have requested and caused Wilson Sonsini Goodrich & Rosati, P.C., counsel for the Company, to have furnished to the Representatives their opinion, dated the Closing Date and addressed to the Representatives and their counsel, in the form set forth in Exhibit B.

(c) The Company shall have requested and caused Nixon & Vanderhye P.C., intellectual property counsel for the Company, to have furnished to the Representatives their opinion, dated the Closing Date and addressed to the Representatives and their counsel, in the form set forth in Exhibit C.

(d) The Company shall have requested and caused Buchanan Ingersoll P.C., intellectual property counsel for the Company, to have furnished to the Representatives their opinion, dated the Closing Date and addressed to the Representatives and their counsel, in the form set forth in Exhibit D.

(e) The Company shall have requested and caused Patton Boggs LLP, special counsel for the Company with respect to certain government contracts matters, to have furnished to the Representatives their opinion, dated the Closing Date and addressed to the Representatives and their counsel, in the form set forth in Exhibit E.

(f) The Representatives shall have received from DLA Piper Rudnick Gray Cary US LLP, counsel for the Underwriters, such opinion or opinions, dated the Closing Date and addressed to the Representatives, with respect to the issuance and sale of the Securities, the Registration Statement, the Disclosure Package, the Prospectus (together with any supplement thereto), and other related matters as the Representatives may reasonably require, and the Company shall have furnished to such counsel such documents as they reasonably request for the purpose of enabling them to pass upon such matters.

(g) The Company shall have furnished to the Representatives certificates dated the Closing Date, signed by appropriate officers of the Company, addressed to the Underwriters and their counsel, with respect to the charter and by-laws of the Company, all resolutions of the board of directors of the Company and other corporate action relating to this Agreement and to the authorization, issue and sale of the Securities, the incumbency and specimen signatures of signing officers and with respect to such other matters as the Underwriters may reasonably request.

(h) The Company shall have furnished to the Representatives a certificate of the Company, signed by the principal executive officer and principal financial officer of the Company, dated the Closing Date, to the effect that the signers of such certificate have carefully examined the Registration Statement, the Prospectus, the Disclosure Package and any amendment or supplement thereto, as well as each electronic roadshow used to offer the securities, and this Agreement and that:

(i) the representations and warranties of the Company in this Agreement are true and correct on and as of the Closing Date with the same effect as if made on the Closing Date and the Company has complied with all the agreements and satisfied all the conditions on its part to be performed or satisfied at or prior to the Closing Date;

(ii) no stop order suspending the effectiveness of the Registration Statement or any notice objecting to its use has been issued and no proceedings for that purpose have been instituted or, to the Company's knowledge, threatened;

(iii) since the date of the most recent financial statements included in the Prospectus (exclusive of any supplement thereto), there has been no material adverse effect on the condition (financial or otherwise), prospects, earnings, business or properties of the Company and its

subsidiaries, taken as a whole, whether or not arising from transactions in the ordinary course of business, except as set forth in or contemplated in the Disclosure Package and the Prospectus (exclusive of any supplement thereto); and

(iv) such other matters as the Underwriters may reasonably request.

(i) The Company shall have requested and caused Grant Thornton LLP to have furnished to the Representatives letters, at the Execution Time and at the Closing Date, dated respectively as of the Execution Time and as of the Closing Date, in form and substance reasonably satisfactory to the Representatives, a customary "comfort letter" with respect to the financial statements and certain financial information of the Company and its subsidiaries contained in the Registration Statement, the Statutory Prospectus and the Prospectus and confirming that they are an independent registered public accounting firm within the meaning of the Act and the applicable rules and regulations adopted by the Commission.

(j) The Company shall have requested and caused Brown Edwards & Company, L.L.P., former accountants to Luna Technologies, Inc. which have audited the financial statements of Luna Technologies, Inc. for the year ended December 31, 2004 and reviewed the financial statements for the nine months ended September 29, 2005, to have furnished to the Representatives letters, at the Execution Time and at the Closing Date, dated respectively as of the Execution Time and as of the Closing Date, in form and substance reasonably satisfactory to the Representatives, a customary "comfort letter" with respect to the financial statements and certain financial information of Luna Technologies, Inc. and confirming that they are an independent registered public accounting firm within the meaning of the Act and the applicable rules and regulations adopted by the Commission.

(k) Subsequent to the Execution Time or, if earlier, the dates as of which information is given in the Registration Statement (exclusive of any amendment thereof) and the Prospectus (exclusive of any supplement thereto), there shall not have been (i) any loss or interference with the Company's business from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor dispute or court or governmental action, order or decree, otherwise than as set forth or contemplated in the most recent Prospectus or (ii) any change in the capital stock or long-term debt of the Company or any of its subsidiaries or any change, or any development involving a prospective change, in or affecting the general affairs, management, financial position, stockholders' equity or results of operations of the Company and its subsidiaries, taken as a whole, otherwise than as set forth or contemplated in the Prospectus, the effect of which, in any such case described in clause (i) or (ii), is, in the judgment of the Representatives, so material and adverse as to make it impracticable or inadvisable to proceed with the public offering or the delivery of the Securities being delivered on such date of delivery on the terms and in the manner contemplated in the Prospectus.

(l) Prior to the Closing Date, the Company shall have furnished to the Representatives such further information, certificates and documents as the Representatives may reasonably request.

(m) Subsequent to the Execution Time, there shall not have been any decrease in the rating of any of the Company's debt securities by any "nationally recognized statistical rating organization" (as defined for purposes of Rule 436(g) under the Act) or any notice given of any intended or potential decrease in any such rating or of a possible change in any such rating that does not indicate the direction of the possible change.

(n) The Securities shall have been included for quotation on the Nasdaq National Market and satisfactory evidence of such actions shall have been provided to the Representatives.

(o) At or prior to the Execution Time, the Company shall have furnished to the Representatives a letter substantially in the form of Exhibit A hereto from each officer, director, stockholder and optionholder of the Company addressed to the Representatives.

(p) The Representatives shall have received on the Closing Date such other certificates, statutory declarations, agreements or materials, in form and substance reasonably satisfactory to the Representatives and their counsel, as the Representatives and their counsel may reasonably request.

If any of the conditions specified in this Section 6 shall not have been fulfilled when and as provided in this Agreement, or if any of the opinions and certificates mentioned above or elsewhere in this Agreement shall not be reasonably satisfactory in form and substance to the Representatives and counsel for the Underwriters, this Agreement and all obligations of the Underwriters hereunder may be canceled at, or at any time prior to, the Closing Date by the Representatives. Notice of such cancellation shall be given to the Company in writing or by telephone or facsimile confirmed in writing.

The documents required to be delivered by this Section 6 shall be delivered at the office of DLA Piper Rudnick Gray Cary US LLP, counsel for the Underwriters, at 1251 Avenue of the Americas, New York, New York 10020, Attention: Marjorie Sybul Adams, on the Closing Date.

7. Reimbursement of Underwriters' Expenses. If the sale of the Securities provided for herein is not consummated because any condition to the obligations of the Underwriters set forth in Section 6 hereof is not satisfied or because of any refusal, inability or failure on the part of the Company to perform any agreement herein or comply with any provision hereof other than by reason of a default by any of the Underwriters, the Company will reimburse the Underwriters severally through ThinkEquity Partners LLC on demand for all reasonable out-of-pocket expenses (including reasonable fees and disbursements of counsel) that shall have been incurred by them in connection with the proposed purchase and sale of the Securities. If this Agreement is terminated by reason of the default of one or more of the Underwriters as set forth in Section 9 hereof, the Company shall not be obligated to reimburse any defaulting Underwriter on account of those expenses.

8. Indemnification and Contribution.

(a) The Company agrees to indemnify and hold harmless each Underwriter, the directors, officers, employees and agents of each Underwriter and each person who controls any Underwriter within the meaning of either the Act or the Exchange Act from and against any and all losses, claims, damages or liabilities, joint or several, or any action in respect thereof, to which they or any of them may become subject under the Act, the Exchange Act or any other Federal or state statutory law or regulation, at common law or otherwise, insofar as such losses, claims, damages or liabilities (or actions in respect thereof) arise out of or are based upon any untrue statement or alleged untrue statement of a material fact contained in the registration statement for the registration of the Securities as originally filed or in any amendment thereof, or in any Preliminary Prospectus, the Prospectus or any Issuer Free Writing Prospectus, or in any amendment thereof or supplement thereto, or in any Permitted Issuer Information used or referred to in any "free writing prospectus" (as defined in Rule 405) used or referred to by any Underwriter, or any "road show" (as defined in Rule 433) not constituting an Issuer Free Writing Prospectus (a "Non-Prospectus Road Show"), or arise out of or are based upon the 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 agrees to reimburse each such indemnified party, as incurred, for any reasonable legal or other expenses incurred by them in connection with investigating or defending any such loss, claim, damage, liability or action as such expenses are incurred; provided, however, that the Company will not be liable in any such case to the extent that any such loss, claim, damage or liability arises out of or is based upon any such untrue statement or alleged untrue statement or omission or alleged omission made therein in reliance upon and in conformity with written information furnished to the Company by or on behalf of any Underwriter through the Representatives specifically for inclusion therein. This indemnity agreement will be in addition to any liability which the Company may otherwise have.

(b) Each Underwriter severally and not jointly agrees to indemnify and hold harmless the Company, each of its directors, each of its officers who signs the Registration Statement, and each person who controls the Company within the meaning of either the Act or the Exchange Act, to the same extent as the foregoing indemnity to each Underwriter, from and against any loss, claim, damage or liability, joint or several, or any action in respect thereof, to which the Company or any such director, officer or controlling person may become subject, under the Act, the Exchange Act or any other Federal or state statutory law or regulation, at common law or otherwise, insofar as such losses, claims, damages, liabilities (or actions in respect thereof) arise out of or are based upon, (i) any untrue statement or alleged untrue statement of a material fact contained in the registration statement for the registration of the Securities as originally filed or in any amendment thereof, or in any Preliminary Prospectus, the Prospectus, any Issuer Free Writing Prospectus or in any amendment thereof or supplement thereto or in any Permitted Issuer Information or any Non-Prospectus Road Show, or (ii) the omission or alleged omission to state therein, a material fact required to be stated therein or necessary to make the

statements therein not misleading, but in each case only to the extent that the untrue statement or alleged untrue statement or omission or alleged omission was made in reliance upon and in conformity with written information concerning such Underwriter furnished to the Company through the Representatives by or on behalf of that Underwriter specifically for inclusion therein, and shall reimburse the Company and any such director, officer or controlling person for any legal or other expenses reasonably incurred by the Company or any such director, officer or controlling person in connection with investigating or defending or preparing to defend against any such loss, claim, damage, liability or action as such expenses are incurred. This indemnity agreement will be in addition to any liability which any Underwriter may otherwise have. The Company acknowledges that the statements set forth in the last paragraph of the cover page regarding delivery of the Securities and, under the heading "Underwriting," (i) the list of Underwriters and their respective participation in the sale of the Securities, (ii) the sentences related to concessions and reallowances and (iii) the paragraph related to stabilization, syndicate covering transactions and penalty bids in any Preliminary Prospectus, the Prospectus and any Issuer Free Writing Prospectus constitute the only information furnished in writing by or on behalf of the several Underwriters for inclusion in any Preliminary Prospectus, the Prospectus and any Issuer Free Writing Prospectus.

(c) Promptly after receipt by an indemnified party under this Section 8 of notice of the commencement of any action, such indemnified party will, if a claim in respect thereof is to be made against the indemnifying party under this Section 8, notify the indemnifying party in writing of the commencement thereof; but the failure so to notify the indemnifying party (i) will not relieve it from liability under paragraph (a) or (b) above unless and to the extent it did not otherwise learn of such action and such failure results in the forfeiture by the indemnifying party of substantial rights and defenses and (ii) will not, in any event, relieve the indemnifying party from any obligations to any indemnified party other than the indemnification obligation provided in paragraph (a) or (b) above. The indemnifying party shall be entitled to appoint counsel of the indemnifying party's choice at the indemnifying party's expense to represent the indemnified party in any action for which indemnification is sought (in which case the indemnifying party shall not thereafter be responsible for the fees and expenses of any separate counsel retained by the indemnified party or parties except as set forth below); provided, however, that such counsel shall be reasonably satisfactory to the indemnified party. Notwithstanding the indemnifying party's election to appoint counsel to represent the indemnified party in an action, the indemnified party shall have the right to employ separate counsel (including local counsel), and the indemnifying party shall bear the reasonable fees, costs and expenses of such separate counsel if (i) the use of counsel chosen by the indemnifying party to represent the indemnified party would present such counsel with a conflict of interest, (ii) the actual or potential defendants in, or targets of, any such action include both the indemnified party and the indemnifying party and the indemnified party shall have reasonably concluded that there may be legal defenses available to it and/or other indemnified parties which are different from or additional to those available to the indemnifying party, (iii) the indemnifying party shall not have employed counsel satisfactory to the indemnified party to represent the indemnified party within a reasonable time after notice of the institution of such action or (iv) the indemnifying party shall authorize the indemnified party to employ separate counsel at the expense of the

indemnifying party. An indemnifying party will not, without the prior written consent of the indemnified parties (which such consent shall not be unreasonably withheld), settle or compromise or consent to the entry of any judgment with respect to any pending or threatened claim, action, suit or proceeding in respect of which indemnification or contribution may be sought hereunder (whether or not the indemnified parties are actual or potential parties to such claim or action) unless such settlement, compromise or consent includes an unconditional release of each indemnified party from all liability arising out of such claim, action, suit or proceeding.

(d) In the event that the indemnity provided in paragraph (a) or (b) of this Section 8 is unavailable to or insufficient to hold harmless an indemnified party for any reason, the Company and the Underwriters severally agree to contribute to the aggregate losses, claims, damages and liabilities (including legal or other expenses reasonably incurred in connection with investigating or defending same) (collectively "Losses") to which the Company and one or more of the Underwriters may be subject in such proportion as is appropriate to reflect the relative benefits received by the Company on the one hand and by the Underwriters on the other from the offering of the Securities; provided, however, that in no case shall any Underwriter (except as may be provided in any agreement among underwriters relating to the offering of the Securities) be responsible for any amount in excess of the underwriting discount or commission applicable to the Securities purchased by such Underwriter hereunder. If the allocation provided by the immediately preceding sentence is unavailable for any reason, the Company and the Underwriters severally shall contribute in such proportion as is appropriate to reflect not only such relative benefits but also the relative fault of the Company, on the one hand and of the Underwriters on the other in connection with the statements or omissions which resulted in such Losses as well as any other relevant equitable considerations. Benefits received by the Company shall be deemed to be equal to the total net proceeds from the offering (before deducting expenses) received by it, and benefits received by the Underwriters shall be deemed to be equal to the total underwriting discounts and commissions, in each case as set forth on the cover page of the Prospectus. Relative fault shall be determined by reference to, among other things, whether any untrue or any alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information provided by the Company on the one hand or the Underwriters on the other, the intent of the parties and their relative knowledge, access to information and opportunity to correct or prevent such untrue statement or omission. The Company and the Underwriters agree that it would not be just and equitable if contribution were determined by pro rata allocation or any other method of allocation which does not take account of the equitable considerations referred to above. Notwithstanding the provisions of this paragraph (d), no person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. For purposes of this Section 8, each person who controls an Underwriter within the meaning of either the Act or the Exchange Act and each director, officer, employee and agent of an Underwriter shall have the same rights to contribution as such Underwriter, and each person who controls the Company within the meaning of either the Act or the Exchange Act, each officer of the Company who shall have signed the Registration Statement and each director of the Company shall have the same rights to contribution as the Company, subject in each case to the applicable terms and conditions of this paragraph (d).

9. Default by an Underwriter. If any one or more Underwriters shall fail to purchase and pay for any of the Securities agreed to be purchased by such Underwriter or Underwriters hereunder and such failure to purchase shall constitute a default in the performance of its or their obligations under this Agreement, the remaining Underwriters shall be obligated severally to take up and pay for (in the respective proportions which the amount of Securities set forth opposite their names in Schedule I hereto bears to the aggregate amount of Securities set forth opposite the names of all the remaining Underwriters) the Securities which the defaulting Underwriter or Underwriters agreed but failed to purchase; provided, however, that in the event that the aggregate amount of Securities which the defaulting Underwriter or Underwriters agreed but failed to purchase shall exceed 10% of the aggregate amount of Securities set forth in Schedule I hereto, the remaining Underwriters shall have the right to purchase all, but shall not be under any obligation to purchase, any of the Securities, and if such nondefaulting Underwriters do not purchase all the Securities, this Agreement will terminate without liability to any nondefaulting Underwriter or the Company. In the event of a default by any Underwriter as set forth in this Section 9, the Closing Date shall be postponed for such period, not exceeding five Business Days, as the Representatives shall determine in order that the required changes in the Registration Statement and the Prospectus or in any other documents or arrangements may be effected. Nothing contained in this Agreement shall relieve any defaulting Underwriter of its liability, if any, to the Company and any nondefaulting Underwriter for damages occasioned by its default hereunder.

10. Termination. This Agreement shall be subject to termination by the Representatives, by notice given to the Company prior to delivery of and payment for the Securities, if at any time prior to such time (i) trading in the Company's Common Stock shall have been suspended by the Commission or the Nasdaq National Market or trading in securities generally on the New York Stock Exchange, the Nasdaq National Market shall have been suspended or limited or minimum prices shall have been established on such Exchange or the Nasdaq National Market, (ii) a banking moratorium shall have been declared either by Federal or New York State authorities or (iii) there shall have occurred any outbreak or escalation of hostilities, declaration by the United States of a national emergency or war, or other calamity or crisis the effect of which on financial markets is such as to make it, in the sole judgment of the Representatives, impractical or inadvisable to proceed with the offering or delivery of the Securities as contemplated by the Preliminary Prospectus or the Prospectus (exclusive of any supplement thereto).

11. Representations and Indemnities to Survive. The respective agreements, representations, warranties, indemnities and other statements of the Company or its officers and of the Underwriters set forth in or made pursuant to this Agreement will remain in full force and effect, regardless of any investigation made by or on behalf of any Underwriter or the Company or any of the officers, directors, employees, agents or controlling persons referred to in Section 8 hereof, and will survive delivery of and payment for the Securities. The provisions of Sections 7 and 8 hereof shall survive the termination or cancellation of this Agreement.

12. Notices. All communications hereunder will be in writing and effective only on receipt, and, if sent to the Representatives, will be mailed, delivered or telefaxed to the ThinkEquity Partners LLC General Counsel (fax no.: (415) 772-9017) and confirmed to ThinkEquity Partners LLC, at 600 Montgomery Street, 8th Floor, San Francisco, California 94111, Attention: General Counsel; or, if sent to the Company, will be mailed, delivered or telefaxed to Luna Innovations Incorporated, 10 South Jefferson Street, Suite 130, Roanoke, Virginia 24011, Attention: General Counsel (fax no.: (540) 951-0760).

13. Successors. This Agreement will inure to the benefit of and be binding upon the parties hereto and their respective successors and the officers, directors, employees, agents and controlling persons referred to in Section 8 hereof, and no other person will have any right or obligation hereunder.

14. Fiduciary Duty. The Company hereby acknowledges that (i) the Underwriters have been retained solely as underwriters of the offering of the Securities and not as advisors to, or agents of, the Company or any other person and (ii) its engagement of the Underwriters in connection with the offering of the Securities is as an independent contractor and not in any other capacity, including as a fiduciary. Furthermore, each of the Company and the Underwriters agrees that it is solely responsible for making its own independent judgments with respect to the offering of the Securities. In addition, the Company agrees that it will not claim that the Underwriters or any of them, owe a fiduciary or similar duty to the Company in connection with the transactions contemplated by this Underwriting Agreement or the process leading thereto.

15. Integration. This Agreement supersedes all prior agreements and understandings (whether written or oral) between the Company and the Underwriters, or any of them, with respect to the subject matter hereof.

16. Applicable Law. This Agreement will be governed by and construed in accordance with the laws of the State of New York applicable to contracts made and to be performed within the State of New York.

17. Counterparts. This Agreement may be signed in one or more counterparts, each of which shall constitute an original and all of which together shall constitute one and the same agreement.

18. Headings. The section headings used herein are for convenience only and shall not affect the construction hereof.

19. Definitions. The terms which follow, when used in this Agreement, shall have the meanings indicated.

“Act” shall mean the Securities Act of 1933, as amended, and the rules and regulations of the Commission promulgated thereunder.

“Business Day” shall mean any day other than a Saturday, a Sunday or a legal holiday or a day on which banking institutions or trust companies are authorized or obligated by law to close in New York, New York.

“Commission” shall mean the Securities and Exchange Commission.

“Disclosure Package” shall mean (i) the Statutory Prospectus, (ii) each Issuer Free Writing Prospectuses, if any, filed or used by the Company on or before the Effective Date and identified in Schedule II hereto (other than a roadshow that is an Issuer Free Writing Prospectus but is not required to be filed under Rule 433 under the rules and regulations under the Act), (iii) the information contained on Schedule III hereto, and (iv) any other Free Writing Prospectus that the parties hereto shall hereafter expressly agree in writing to treat as part of the Disclosure Package.

“Effective Date” shall mean each date and time that the Registration Statement, any post-effective amendment or amendments thereto and any Rule 462(b) Registration Statement became or become effective.

“Exchange Act” shall mean the Securities Exchange Act of 1934, as amended, and the rules and regulations of the Commission promulgated thereunder.

“Execution Time” shall mean the date and time that this Agreement is executed and delivered by the parties hereto.

“Laws” means applicable securities laws and all other statutes, regulations, statutory rules, orders, by-laws, codes, ordinances, decrees, the terms and conditions of any grant of approval, permission, authority or license, or any judgment, order, decision, ruling, award, policy or guideline, of any Governmental Authority, and the term “applicable” with respect to such Laws and in the context that refers to one or more persons, means that such Laws apply to such person or persons or its or their business, undertaking, property or securities and emanate from a Governmental Authority, having jurisdiction over the person or persons or its or their business, undertaking, property or securities.

“Free Writing Prospectus” shall mean a free writing prospectus, as defined in Rule 405.

“Issuer Free Writing Prospectus” shall mean an issuer free writing prospectus, as defined in Rule 433.

“Preliminary Prospectus” shall mean any preliminary prospectus referred to in paragraph 1(i)(a) above and any preliminary prospectus included in the Registration Statement at the Effective Date that omits Rule 430A Information.

“Prospectus” shall mean the prospectus relating to the Securities that is first filed pursuant to Rule 424(b) after the Execution Time or, if no filing pursuant to Rule 424(b) is required, shall mean the form of final prospectus relating to the Securities included in the Registration Statement at the Effective Date.

“Registration Statement” shall mean the registration statement referred to in paragraph 1(a) above, including exhibits and financial statements and any prospectus supplement relating to the Securities that is filed with the Commission pursuant to Rule 424(b)

and deemed part of such registration statement pursuant to Rule 430B, as amended at the Effective Date and, in the event any post-effective amendment thereto or any Rule 462(b) Registration Statement becomes effective prior to the Closing Date, shall also mean such registration statement as so amended or such Rule 462(b) Registration Statement, as the case may be.

“Rule 158”, “Rule 163”, “Rule 164”, “Rule 172”, “Rule 405”, “Rule 415”, “Rule 424”, “Rule 430B”, “Rule 462” and “Rule 433” refer to such rules under the Act.

“Rule 430A Information” shall mean information with respect to the Securities and the offering thereof permitted to be omitted from the Registration Statement when it becomes effective pursuant to Rule 430A.

“Rule 462(b) Registration Statement” shall mean a registration statement and any amendments thereto filed pursuant to Rule 462(b) relating to the offering covered by the registration statement referred to in paragraph 1(a) hereof.

“Statutory Prospectus” shall mean the preliminary prospectus relating to the Securities that is included in the Registration Statement immediately prior to the Execution Time, including any document that is incorporated by reference therein.

“Taxes” includes all forms of taxation (including, without limitation, any net income or gains, minimum, gross income, gross receipts, sales, use, ad valorem, value-added, transfer, franchise, profits, license, withholding, payroll, employment, excise, severance, stamp, capital stock, occupation, property, custom, environmental or windfall tax or duty), together with interest, penalties and additions imposed with respect to the foregoing, imposed by any local, municipal, state, Federal or other government, governmental entity or political subdivision, whether of the United States or other country or political unit.

“Tax Return” means all returns, declarations, statements, reports, schedules, forms and information returns, whether original or amended, relating to Taxes.

[Remainder of page intentionally left blank.]

If the foregoing is in accordance with your understanding of our agreement, please sign and return to us the enclosed duplicate hereof, whereupon this letter and your acceptance shall represent a binding agreement between the Company, and the several Underwriters.

Very truly yours,

LUNA INNOVATIONS INCORPORATED

By:

Name:

Title:

The foregoing Agreement is hereby
confirmed and accepted as of the
date first above written.

ThinkEquity Partners LLC
WR Hambrecht + Co.
Merriman Curhan Ford & Co.

By: ThinkEquity Partners LLC

By: _____
Name:
Title:

For themselves and the other several
Underwriters named in Schedule I to
the foregoing Agreement.

SCHEDULE I

<u>Underwriters</u>	<u>Number of Firm Shares to be Purchased</u>
ThinkEquity Partners LLC	
WR Hambrecht + Co.	
Merriman Curhan Ford & Co	
TOTAL	<u>[4,000,000]</u>

SCHEDULE II

ISSUER FREE WRITING PROSPECTUSES

[None]

SCHEDULE III

Price Per Share: [\$_____]

Offering Size: [4,000,000] shares or [4,600,000] shares if the Underwriters exercise their over-allotment option in full

Closing Date: [_____], 2006

Significant Subsidiaries

Luna Technologies, Inc.

LOCK-UP LETTER AGREEMENT

THINKEQUITY PARTNERS LLC
W.R. HAMBRECHT + Co., LLC
MERRIMAN CURHAN FORD & Co.

As Representatives of the several
Underwriters
c/o ThinkEquity Partners LLC
31 West 52nd Street, 17th Floor
New York, New York 10019

Ladies and Gentlemen:

The undersigned understands that you and certain other firms (the “**Underwriters**”) propose to enter into an Underwriting Agreement (the “**Underwriting Agreement**”) providing for the purchase by the Underwriters of shares (the “**Shares**”) of common stock, par value \$.001 per share (the “**Common Stock**”), of Luna Innovations Incorporated, a Delaware corporation (the “**Company**”), and that the Underwriters propose to reoffer the Shares to the public (the “**Offering**”).

In consideration of the execution of the Underwriting Agreement by the Underwriters, and for other good and valuable consideration, the undersigned hereby irrevocably agrees that, without the prior written consent of ThinkEquity Partners LLC, on behalf of the Underwriters, the undersigned will not, directly or indirectly, (1) offer for sale, sell, pledge, or otherwise dispose of (or enter into any transaction or device that is designed to, or could be expected to, result in the disposition by any person at any time in the future of) any shares of Common Stock (including, without limitation, shares of Common Stock that may be deemed to be beneficially owned by the undersigned in accordance with the rules and regulations of the Securities and Exchange Commission and shares of Common Stock that may be issued upon exercise of any option or warrant) or securities convertible into or exchangeable for Common Stock (other than the Shares in the Offering), or (2) enter into any swap or other derivatives transaction that transfers to another, in whole or in part, any of the economic benefits or risks of ownership of shares of Common Stock, whether any such transaction described in clause (1) or (2) above is to be settled by delivery of Common Stock or other securities, in cash or otherwise, for a period of 180 days after the date of the final prospectus relating to the Offering (such 180-day period, the “**Lock-Up Period**”). In addition, the undersigned agrees that without the prior written consent of ThinkEquity Partners LLC, on behalf of the Underwriters, it will not, during the Lock-Up Period, make any demand for or exercise any right with respect to, the registration of any shares of Common Stock or any security convertible into or exercisable or exchangeable for Common Stock.

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 by this Lock-Up Letter Agreement 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 ThinkEquity Partners LLC waive, in writing, such extension. The undersigned hereby further agrees that, prior to engaging in any transaction or taking any other action that is subject to the terms of this Lock-Up Letter Agreement during the period from the date of this Lock-Up Letter Agreement to and including the 34th 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.

In furtherance of the foregoing, the Company and its transfer agent are hereby authorized to decline to make any transfer of securities if such transfer would constitute a violation or breach of this Lock-Up Letter Agreement. In addition, the undersigned agrees that, without the prior written consent of ThinkEquity Partners LLC, it will not, during the Lock-Up Period, make any demand for or exercise any right with respect to the registration of any shares of Common Stock or any security convertible into or exercisable or exchangeable for Common Stock.

It is understood that, if the Company notifies the Underwriters that it does not intend to proceed with the Offering, if the Underwriting Agreement does not become effective, or if the Underwriting Agreement (other than the provisions thereof which survive termination) shall terminate or be terminated prior to payment for and delivery of the Shares, the undersigned will be released from its obligations under this Lock-Up Letter Agreement.

The undersigned understands that the Company and the Underwriters will proceed with the Offering in reliance on this Lock-Up Letter Agreement.

Whether or not the Offering actually occurs depends on a number of factors, including market conditions. Any Offering will only be made pursuant to an Underwriting Agreement, the terms of which are subject to negotiation between the Company and the Underwriters.

[Signature page follows]

The undersigned hereby represents and warrants that the undersigned has full power and authority to enter into this Lock-Up Letter Agreement and that, upon request, the undersigned will execute any additional documents necessary in connection with the enforcement hereof. Any obligations of the undersigned shall be binding upon the heirs, personal representatives, successors and assigns of the undersigned.

Very truly yours,

By: _____
Name: _____
Title: _____

Dated: _____

WILSON SONSINI GOODRICH & ROSATI FORM OF OPINION

1. The Company and each Subsidiary has been duly incorporated and is validly existing as a corporation in good standing under the laws of the jurisdiction in which it is chartered or organized, with full corporate power and authority to own or lease, as the case may be, and to operate its properties and conduct its business as described in the Disclosure Package and the Prospectus, to execute and deliver the Underwriting Agreement and to perform its obligations thereunder, including, without limitation, to issue, sell and deliver the Securities as contemplated by the Underwriting Agreement. The Company is duly qualified to do business as a foreign corporation and is in good standing under the laws of each jurisdiction listed on Schedule A;
2. All the outstanding shares of capital stock of each Subsidiary have been duly and validly authorized and issued and are fully paid and nonassessable, and, except as otherwise set forth in the Disclosure Package and the Prospectus, all outstanding shares of capital stock of the Subsidiaries are owned by the Company either directly or through wholly owned subsidiaries free and clear of any perfected security interest, and, to the knowledge of such counsel, after due inquiry, any other security interest, claim, lien or encumbrance, and there are no options, warrants or other rights to purchase, agreements or other obligations to issue, or rights to convert any obligations into or exchange any securities for, shares of capital stock of or ownership interests in any Subsidiary.
3. The Company has an authorized, issued and outstanding capitalization as set forth in the Prospectus, and all of the issued and outstanding shares of capital stock of the Company have been duly authorized and validly issued, are fully paid and non-assessable, and conform in all material respects to the description of thereof set forth in the Prospectus under the caption "Description of Capital Stock";
4. The Securities have been duly and validly authorized and, when issued and delivered against payment therefor in accordance with the Underwriting Agreement, will be duly and validly issued, fully paid and non-assessable;
5. Except as described in the Prospectus and for any such preemptive or contractual rights that have been waived, there are no preemptive or other rights to subscribe for or to purchase, nor any restriction upon the voting or transfer of, the Securities pursuant to the Company's charter or by-laws or similar contractual rights or restrictions under any of the agreements filed as exhibits to the Registration Statement.
6. The Underwriting Agreement has been duly authorized, executed and delivered by the Company.

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7. The execution and delivery by the Company of the Underwriting Agreement and its issuance and sale of the Securities pursuant to the Underwriting Agreement do not and the performance by the Company of its obligations under the Underwriting Agreement will not:
(a) require any consent, approval, license or exemption by, order or authorization of, or filing, recording or registration by the Company with, any court or governmental authority, except such as have been made or obtained under the Securities Act, and except as may be required under the securities or Blue Sky laws of any foreign jurisdiction or of any state or other jurisdiction of the United States, as to which we express no opinion, (b) violate the charter or by-laws of the Company, the Delaware General Corporation Law or any statute, rule or regulation, or any court order, judgment or decree known to us, or (c) conflict with, result in a breach of, or constitute a default under, any of the agreements filed as exhibits to the Registration Statement.
 8. Except as described in the Prospectus, none of the agreements filed as exhibits to the Registration Statement grant any person the right to require the Company to file a registration statement under the Securities Act with respect to any securities of the Company owned or to be owned by such person or to require the Company to include such securities in the securities registered pursuant to the Registration Statement.
 9. To the knowledge of such counsel, there is no pending or threatened action, suit or proceeding by or before any court or Governmental Authority or any arbitrator involving the Company or any of its Subsidiaries or its or their property that is required to be described in the Disclosure Package or the Prospectus that is not so described, and there are no contracts or other documents that are required to be described in the Disclosure Package or the Prospectus, or to be filed as exhibits to the Registration Statement, that are not described or filed as required.
 10. The statements contained in the Disclosure Package and the Prospectus under the captions “Business – Intellectual Property – Virginia Tech nonomaterials license, NASA ultrasound technology license, NASA OVA and OBR products and DSS technology licenses and United Technologies Corporation DSS technology license,” “Description of capital stock,” and “U.S. federal income and estate tax consequences to non-U.S. holders” and (ii) the Registration Statement in items 14 and 15, in each case, insofar as such statements summarize legal matters, agreements, documents or proceedings discussed therein, at the time the Registration Statement became effective, as of the date of the Execution Time and as of the Closing Date, are accurate and fairly summarize such legal matters, agreements, documents or proceedings;
 11. The Registration Statement has become effective under the Act; any required filing of the Prospectus, and any supplements thereto, pursuant to Rule 424(b) has been made in the manner and within the time period required by Rule 424(b); to the knowledge of such counsel, no stop order suspending the effectiveness of the Registration Statement or any notice objecting to its use has been issued, no proceedings for that purpose have been instituted or threatened and the

Registration Statement and the Prospectus (other than the financial statements and other financial and statistical information contained therein, as to which such counsel need express no opinion) comply as to form in all material respects with the applicable requirements of the Act and the rules thereunder;

12. The Company is not and, after giving effect to the offering and sale of the Securities and the application of the proceeds thereof as described in the Prospectus, will not be, an “investment company” as defined in the Investment Company Act of 1940, as amended;
13. Any required filing of each Issuer Free Writing Prospectus pursuant to Rule 433 under the Act has been made within the time period required by Rule 433(d) under the Act.

Such counsel shall also state that, in the course of acting as the Company’s counsel in connection with the preparation of the Registration Statement, Disclosure Package and the Prospectus, such counsel has participated in conferences and telephone conversations with officers and other representatives of the Company, the independent registered public accounting firm for the Company and representatives of and counsel for the Underwriters, during which conferences and conversations the contents of the Registration Statement, the Disclosure Package and the Prospectus, and related matters were discussed.

Such counsel shall state that based upon such participation and discussions, no facts came to its attention that caused it to believe that (1) the Registration Statement, at the time it became effective, contained an untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary to make the statements therein not misleading (other than financial, accounting and statistical data, as to which such counsel need express no view), or (2) the Disclosure Package, together with the price to the public and the number of Firm Shares and the number of Option Shares on the cover page of the Prospectus, when taken together as a whole, as of the Execution Time or as of the Closing Date contained or contains an untrue statement of a material fact or omitted or omits to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading (other than financial, accounting and statistical data as to which such counsel need express no view), or (3) the Prospectus, as of its date or as of the Closing Date, contained or contains an untrue statement of a material fact or omitted or omits to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading (other than financial, accounting and statistical data as to which such counsel need express no view).

NIXON & VANDERHYE FORM OPINION

BUCHANAN INGERSOLL FORM OPINION

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, February 8, 2006, April 4, 2006 and May 19, 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

**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, February 8, 2006 and April 4, 2006.

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

1. 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**”).

2. 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.

3. 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.

4. Upon the automatic conversion of all outstanding shares of the Class Common Stock in accordance with the provisions of Article V, Section 4(c) of this Certificate of Incorporation (the “**Certificate**”), the Corporation shall immediately thereafter be authorized to issue two classes of stock, to be designated, respectively, “Common Stock” and “Preferred Stock.” The total number of shares which the Corporation shall have authority to issue is 105,000,000 shares, consisting of 100,000,000 shares of Common Stock, par value \$0.001 per share, and 5,000,000 shares of Preferred Stock, par value \$0.001 per share. The Board of Directors is authorized, subject to any limitations prescribed by law, to provide for the issuance of shares of Preferred Stock in series, and to establish from time to time the number of shares to be included in each such series, and to fix the designation, powers, preferences, and rights of the shares of each such series and any qualifications, limitations or restrictions thereof.

5. Immediately upon the filing of this Amended and Restated Certificate of Incorporation (the “Effective Time”), (i) each 1.7691911 shares of the Corporation’s Class A Common Stock issued and outstanding at the Effective Time shall be exchanged and combined, automatically and without further action, into one (1) share of the Corporation’s Class A Common Stock, par value \$0.001 per share; (ii) each 1.7691911 shares of the Corporation’s Class B Common Stock issued and outstanding at the Effective Time shall be exchanged and combined, automatically and without further action, into one (1) share of the Corporation’s Class B Common Stock, par value \$0.001 per share; and (iii) each 1.7691911 shares of the Corporation’s Class C Common Stock issued and outstanding at the Effective Time shall be exchanged and combined, automatically and without further action, into one (1) share of the Corporation’s Class C Common Stock, par value \$0.001 per share (the “Reverse Stock Split”). No fractional shares resulting from the Reverse Stock Split shall be issued in connection with the Reverse Stock Split, and any fractional shares otherwise issuable to a holder of record of shares of the Corporation’s Class A Common Stock, Class B Common Stock or Class C Common Stock as of the Effective Time shall instead be rounded up to the nearest whole share.

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 of Directors, 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 subsection 4(b) of this Article V, 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 and immediately following the Reverse Stock Split 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 and immediately following the Reverse Stock Split 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 Effective Time 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 and immediately following the Reverse Stock Split entitle the holders of Class C Common Stock to convert all issued and outstanding shares of Class C Common Stock and any accrued and unpaid dividends thereon into (A) 809,843 shares of Class A Common Stock plus (B) 1,418,355 shares of Class B Common Stock. 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.

(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**”), all issued and outstanding shares of Class C Common Stock and any accrued and unpaid dividends thereon shall automatically be converted into fully-paid, non-assessable shares of (A) Class A Common Stock and Class B Common Stock at the then effective applicable

Class C Conversion Rate in the amounts set forth in Section 4(b) of this Article V, 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 after the Effective Time (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 after the Effective Time (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.

(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 after the Effective Time (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 after the Effective Time (by reclassification or otherwise, but excluding for purposes of clarity the Reverse Stock Split) 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.

(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 after the Effective Time (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 after the Effective Time (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.

(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 after the Effective Time, whether by capital reorganization, reclassification or otherwise (other than a subdivision or combination of shares provided for above, and for the purposes of clarity the Reverse Stock Split), 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.

(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 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.

9. Special Meetings. Effective upon the closing of a firm commitment underwritten public offering of Common Stock of the Corporation, special meetings of stockholders of the Corporation may be called only by the Chairman of the Board of Directors, the Chief Executive Officer of the Corporation, or the Board of Directors acting pursuant to a resolution adopted by a majority of the Board of Directors and any power of stockholders to call a special meeting is specifically denied. Only such business shall be considered at a special meeting of stockholders as shall have been stated in the notice for such meeting.

10. Advance Notice Provisions. Effective upon the closing of a firm commitment underwritten public offering of Common Stock of the Corporation, advance notice of stockholder nominations for the election of directors and of business to be brought by stockholders before any meeting of the stockholders of the Corporation shall be given in the manner provided in the Bylaws 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

1. The number of directors which constitute the Board of Directors of the Corporation shall be as designated or provided for in the Bylaws of the Corporation.

2. The provisions of this paragraph shall be 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 to elect additional directors under specified circumstances. The Board of Directors shall be divided into three classes, the members of each class to serve for a term of three years; provided that the directors shall be elected as follows: at the first annual meeting of the stockholders held following the closing of a firm commitment underwritten public offering of Common Stock of the Corporation, the directors in the first class shall be elected for a term of three years, at the second annual meeting following such date, the directors in the second class shall be elected for a term of three years, and at the third annual meeting following such date, the directors in the third class shall be elected for a term of three years. The Board of Directors by resolution shall nominate the directors to be elected for each class. At subsequent annual meetings of stockholders, a number of directors shall be elected equal to the number of directors with terms expiring at that annual meeting. Directors elected at each such subsequent annual meeting shall be elected for a term expiring with the annual meeting of stockholders three years thereafter.

3. The provisions of this paragraph shall be 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. Any director may be removed from office by the stockholders of the Corporation only for cause. Unless the Board of Directors otherwise determines, newly created directorships resulting from any increase in the authorized number of directors or any vacancies in the Board resulting from death, resignation, retirement, disqualification, removal from office or other cause shall, unless otherwise provided by law or by resolution of the Board of Directors, 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 until such director's successor is elected and qualified. No reduction in the authorized number of directors shall have the effect of removing any director before such director's term of office expires.

4. The election of directors need not be by written ballot unless the Bylaws of the Corporation shall so provide.

ARTICLE IX

Effective upon the closing of a firm commitment underwritten public offering of Common Stock of the Corporation, the Board of Directors is expressly empowered to adopt, amend or repeal any of the Bylaws of the Corporation. Any adoption, amendment or repeal of the Bylaws of the Corporation by the Board of Directors shall require the approval of a majority of the Board of Directors. The stockholders shall also have power to adopt, amend or repeal the Bylaws of the Corporation; provided, however, that, in addition to any vote of the holders of any class or series of stock of the Corporation required by law or by this Certificate, the affirmative vote of the holders of at least 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, shall be required to adopt, amend or repeal all or any portion of Article II, Section 3.2, Section 3.3, Section 3.4, Section 3.14, Article VI or Article IX of the Bylaws of the Corporation.

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.

ARTICLE XI

Effective upon the closing of a firm commitment underwritten public offering of Common Stock of the Corporation, the Corporation reserves the right to amend or repeal any provision contained in this Certificate in the manner prescribed by the laws of the State of Delaware and all rights conferred upon stockholders are granted subject to this reservation; provided, however, that, notwithstanding any other provision of this Certificate, or any provision of law that might otherwise permit a lesser vote or no vote, but in addition to any vote of the holders of any class or series of the stock of this Corporation required by law or by this Certificate, the affirmative vote of the holders of at least 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, shall be required to amend or repeal this Article XI, Section 9 of Article V, Section 10 of Article V, Article VII, Article VIII, Article IX or Article X.

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 day of .

LUNA INNOVATIONS INCORPORATED

By: _____

Kent A. Murphy
President and Chief Executive Officer

LU

LUNA
INNOVATIONS

INCORPORATED UNDER THE LAWS OF THE STATE OF DELAWARE

CUSIP 550351 10 0

This Certifies that

is the owner of

SHARES OF THE COMMON STOCK OF
LUNA INNOVATIONS INCORPORATED

Hereinafter called the "Corporation", transferable only on the books of the Corporation by the holder hereof in person, or by duly authorized attorney, upon the surrender of this Certificate properly endorsed.

The amount of Common Stock is set forth on the books of the Corporation. The par value of the shares of said Stock is set forth in the Certificate of Incorporation and the amendments thereto, which are hereby expressly incorporated by reference.

IN WITNESS WHEREOF, the Corporation has caused this Certificate to be signed by its duly authorized officers, and its seal to be hereunto affixed.

Dated: _____

SEAL
LUNA INNOVATIONS INCORPORATED
DELAWARE

AMERICAN STOCK TRANSFER & TRUST COMPANY
COUNTERSIGNED AND REGISTERED:
(New York, NY)
TRANSFER AGENT AND REGISTRAR

BY: _____

AUTHORIZED SIGNATURE

PRESIDENT AND CHIEF EXECUTIVE OFFICER

CORPORATE SECRETARY

A-5.1411-

The following abbreviations, when used in the inscription on the face of this certificate, shall be construed as though they were written out in full according to applicable laws or regulations:

TEN COM — as tenants in common UNIF GIFTMIN ACT— _____ Custodian _____
(Cust) (Minor)

TEN ENT — as tenants by the
entireties under Uniform Gifts to Minors

JT TEN — as joint tenants with
right of survivorship Act _____
and not as tenants in (State)
common

UNIF TRANS MIN ACT— _____ Custodian _____
(Cust) (Minor)

under Uniform Transfers to Minors

Act _____
(State)

Additional abbreviations may also be used though not in the above list.

For value received, _____ hereby sell, assign and transfer unto

PLEASE INSERT SOCIAL SECURITY OR OTHER
IDENTIFYING NUMBER OF ASSIGNEE

PLEASE PRINT OR TYPEWRITE NAME AND ADDRESS INCLUDING POSTAL ZIP CODE OF ASSIGNEE.

_____ Shares
of the common stock represented by this Certificate, and do hereby irrevocably constitute and appoint _____

as Attorney, to transfer the said shares on the books of the within named Corporation, with full power of substitution.

Dated _____

X _____

X _____

NOTICE: THE SIGNATURE(S) TO THIS ASSIGNMENT MUST CORRESPOND WITH THE NAME(S) AS
WRITTEN UPON THE face OF THE CERTIFICATE IN EVERY PARTICULAR, WITHOUT ALTERATION
OR ENLARGEMENT OR ANY CHANGE WHATEVER.

Signature(s) Guaranteed

By _____

THE SIGNATURE(S) SHOULD BE GUARANTEED BY AN ELIGIBLE GUARANTOR INSTITUTION (BANKS, STOCKBROKERS, SAVINGS
AND LOAN ASSOCIATIONS AND CREDIT UNIONS WITH MEMBERSHIP IN AN APPROVED SIGNATURE GUARANTEE MEDALLION
PROGRAM), PURSUANT TO S.E.C. RULE 17Ad-15.

**KEEP THIS CERTIFICATE IN A SAFE PLACE. IF IT IS LOST, STOLEN, MUTILATED OR DESTROYED, THE CORPORATION WILL
REQUIRE A BOND OF INDEMNITY AS A CONDITION TO THE ISSUANCE OF A REPLACEMENT CERTIFICATE.**

, 2006

Luna Innovations Incorporated
10 South Jefferson Street, Suite 130
Roanoke, Virginia 24011

Re: Registration Statement on Form S-1

Ladies and Gentlemen:

We are acting as counsel to Luna Innovations Incorporated, a Delaware corporation (the "Company"), in connection with the registration of 4,600,000 shares of the Company's Common Stock, par value \$0.001 per share, including 600,000 shares subject to an over-allotment option (collectively, the "Shares"), pursuant to a Registration Statement on Form S-1 (Registration No. 333-131764), as amended (the "Registration Statement"), filed with the Securities and Exchange Commission under the Securities Act of 1933, as amended. The Shares are to be sold to the underwriters for resale to the public as described in the Registration Statement and pursuant to the underwriting agreement referred to in the Registration Statement.

As counsel for the Company, we have examined originals or copies, certified or otherwise identified to our satisfaction, of such documents, corporate records, certificates of public officials and other instruments as we have deemed necessary for the purposes of rendering this opinion. In our examination, we have assumed the genuineness of all signatures, the authenticity of all documents submitted to us as originals and the conformity with the originals of all documents submitted to us as copies.

Based upon the foregoing, we are of the opinion that the Shares to be registered for sale by the Company have been duly authorized by the Company, and the Shares to be registered for sale by the Company, when issued, delivered and paid for in accordance with the terms of the underwriting agreement referred to in the Registration Statement and in accordance with the resolutions adopted by the Board of Directors of the Company, will be, validly issued, fully paid and nonassessable.

We consent to the use of this opinion as an exhibit to the Registration Statement, and we consent to the reference of our name under the caption "Legal Matters" in the Prospectus forming a part of the Registration Statement.

Very truly yours,

WILSON SONSINI GOODRICH & ROSATI
Professional Corporation

LOAN AGREEMENT

This LOAN AGREEMENT, amended as of May 12, 2006, 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 and issue Standby Letters of Credit.

AMOUNT OF LOAN:

Up to \$2,500,000.00, with up to \$1,000,000 available for the issuance of Letters of Credit.

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 11/30/06. 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 or Letters of Credit are issued under the Line of Credit, 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 or maintain Letters of Credit 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 plus Amount of Letters of Credit issued
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.

Borrower affirms that this agreement does not create an event of default with respect to any existing or arising agreement between Borrower and Class C Common Stock holder Carilion Health System.

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 12th day of May, 2005.

First National Bank

By: /s/ Karen W. Turner
Karen W. Turner, SVP

Luna Innovations, Inc.

By: /s/ Scott Graeff
Scott Graeff, CFO

CONFIDENTIAL TREATMENT REQUESTED: Certain portions of this document have been omitted pursuant to a request for confidential treatment and, where applicable, have been marked with an asterisk (“[****]”) to denote where omissions have been made. The confidential material has been filed separately with the Securities and Exchange Commission.

LICENSE AGREEMENT
UNITED STATES OF AMERICA
AND
LUNA INNOVATIONS, INCORPORATED
NONEXCLUSIVE LICENSE AGREEMENT DN-982

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LICENSE AGREEMENT

PREAMBLE

This License Agreement ("Agreement") is entered into between the National Aeronautics and Space Administration (NASA), an agency of the United States Government, hereinafter referred to as LICENSOR, having its headquarters at Washington, D.C., and Luna Innovations, Inc., a corporation of the Commonwealth of Virginia, having its principal place of business at 2851 Commerce Street SE, Blacksburg, Virginia 26040, hereinafter referred to as LICENSEE, as of the date of execution of the last PARTY hereto.

WITNESSETH:

WHEREAS, under the authority of 35 U.S.C. § 200 *et seq.*, the U.S. Department of Commerce has issued Patent Licensing Regulations (37 CFR Part 404) specifying the terms and conditions upon which licenses may be granted for inventions assigned to LICENSOR; and

WHEREAS, LICENSOR is the assignee of U.S. Patent No. 5,798,521 for an invention entitled "Apparatus And Method For Measuring Strain In Bragg Gratings," which issued on August 25, 1998; and, U.S. Patent Application No. 09/535,659 for an invention entitled "Distributed Rayleigh Scatter Fiber Optic Strain Sensor", which was filed on March 24, 2000; and U.S. Patent Application No 09/535,661 for an invention entitled "Edge Triggered Apparatus And Method For Measuring Strain In Bragg Gratings", which was filed on March 24, 2000; and U.S. Patent Application 09/648,529 for an invention entitled "High Precision Solid State Wavelength Monitor", which was filed on August 22, 2000;

WHEREAS, LICENSEE, in consideration of the grant of a license under U.S. Patent No. 5,798,521 and U.S. Patent Application Nos. 09/535,659, 09/535,661, and 09/648,529, will pay royalties, make all necessary capital investments, and achieve PRACTICAL APPLICATION of the inventions; and,

WHEREAS, LICENSOR has determined that the granting of a license to LICENSEE under U.S. Patent No. 5,798,521 and U.S. Patent Application Nos. 09/535,659, 09/535,661, and 09/648,529 will provide the necessary incentive for LICENSEE to achieve the desired early PRACTICAL APPLICATION of the invention and the granting of such license to LICENSEE will therefore be in the public interest;

NOW, THEREFORE, in accordance with said Patent Licensing Regulations, and in consideration of the foregoing and of the terms hereinafter contained in this Agreement, the LICENSOR and LICENSEE agree as set forth below:

ARTICLE I

Definitions

“ACCOUNTING PERIOD” shall mean the period for which minimum and running royalties are calculated. For this Agreement, the period is every twelve (12) months beginning on January 1st and ending on December 31st of each calendar year. The first ACCOUNTING PERIOD for this Agreement commences on the LICENSE COMMENCEMENT DATE and ends on December 31, 2002. The last ACCOUNTING PERIOD for this Agreement shall end on the LICENSE EXPIRATION DATE.

“BREACH” shall mean (a) a violation or nonperformance by a PARTY of a MATERIAL term, condition, covenant or warranty herein, or (b) a misrepresentation made hereunder or (c) a misrepresentation by LICENSEE to induce LICENSOR to enter into this Agreement (also see “MATERIAL”).

“BREACHING PARTY” shall mean the PARTY in BREACH, as used in Article XVII.

“GROSS SALES” shall mean either the total amount invoiced by or for LICENSEE and its SUBLICENSEE(S), and, in the event that some or all of the amount invoiced by LICENSEE and/or its SUBLICENSEE(S) is in the form of non-monetary remuneration, then the equivalent dollar value sum of such remuneration, for all disposals, (sales, uses, including uses by LICENSEE and/or its SUBLICENSEES, leases, transfers, etc.) of ROYALTY-BASE PRODUCTS and ROYALTY-BASE SERVICES for consideration determined in, or as if in, an arm’s length transaction.

“INSOLVENT” shall mean that LICENSEE has either ceased to pay its debts (which may include failure to pay royalty payments under this Agreement) in the ordinary course of business or cannot pay its debts as they fall due or is insolvent within the meaning of the Federal Bankruptcy Code (11 U.S.C. § 101 (31)).

“LICENSE COMMENCEMENT DATE” shall mean the date that the last PARTY has executed this Agreement.

“LICENSE EXPIRATION DATE” shall mean the last day that this Agreement is in effect.

“LICENSE TERM” shall mean the period of time starting with the LICENSE COMMENCEMENT DATE and ending with the LICENSE EXPIRATION DATE.

“LICENSED AREA” shall mean the United States, its territories and possessions.

“LICENSED FIELD” shall mean all fields of use.

“LICENSED INVENTION(S)” shall mean the invention(s) defined by the claims of any LICENSED PATENT(S) or the invention(s) described in any LICENSED PATENT APPLICATION(S) before maturing into any LICENSED PATENT(S).

“LICENSED PATENT(S)” shall mean United States Patent No. 5,798,521 and any patents maturing from any LICENSED PATENT APPLICATION, and shall include any corresponding: reissue patents and modifications of said LICENSED PATENT(S) by means of certificates of correction or reexamination certificates.

“LICENSED PATENT APPLICATION(S),” shall mean U.S. Patent Application Serial Nos. 09/535,659, 09/535,661, and 09/648,529, and shall include any corresponding: continuation or divisional patent applications derived, directly or indirectly, from such patent applications, but specifically excluding any continuation or divisional patent application containing new matter.

“MATERIAL,” with respect to a particular matter (e.g., a BREACH), shall mean that the matter is shown to effect adversely (a) the rights and benefits of the other PARTY under this Agreement; or (b) the ability of the other PARTY to perform its obligations hereunder; and, in either case, to such a degree that a reasonable person in the management of his or her own affairs would be more likely than not to decline to enter into this Agreement in view of the matter in question.

“NET SALES” shall mean GROSS SALES, less allowances for returns and less (to the extent separately stated, and not charged to the customer or others, on the invoices): (1) regular trade and quantity discounts; (2) insurance and shipping charges from the point of origin; (3) duties, tariffs, and other customs charges; and (4) sales, use, and similar taxes. In the case of a sale or other disposition of ROYALTY-BASE PRODUCTS and/or ROYALTY-BASE SERVICES which are transferred to a purchaser who does not deal at arm’s length, or transferred or otherwise disposed of for other than monetary consideration (including allocations to LICENSEE’S own beneficial use), NET SALES shall be calculated in accordance with Sub-Article 7.7 of this Agreement.

“NONBREACHING PARTY” shall mean the PARTY not in BREACH, as used in Article XVII.

“PARTY” shall mean a party to this Agreement.

“PERSON” shall mean a natural person; a corporation (for profit or not-for-profit); an association; a partnership (general or limited); a joint venture; a trust; a government or political department, subdivision, or agency; or any other entity.

“PRACTICAL APPLICATION” shall mean, with respect to the LICENSED INVENTION(S), to reduce it to practice and to commercialize it, i.e., to manufacture it in the case of a composition or product, to practice it in the case of a process or method, or to operate it in the case of a machine or system; and, in each case, under such conditions as to establish: (i) that a market for the LICENSED INVENTION(S) has been created, and to the extent practicable, that a market has been created in the United States; (ii) that it is being utilized; (iii) that its benefits are, to the extent permitted by law or Government regulations, available to the public on reasonable terms; and (iv) that market demand, at least in the United States, shall be reasonably met.

“ROYALTY-BASE PRODUCTS” shall include: (i) the components of an item sold, used, leased, transferred, or otherwise disposed of by LICENSEE or its SUBLICENSEE(S) that are covered by, included within, or made by the LICENSED INVENTION(S); and (ii) other

components of the item not covered by or within the LICENSED INVENTION(S) that LICENSEE or its SUBLICENSEE(S) would not have sold, used, leased, transferred, or otherwise disposed of but for the sale, use, lease, transfer, or other disposition of the LICENSED INVENTION(S).

“ROYALTY-BASE SERVICES” shall include any services sold, used, leased, rented, transferred, or otherwise disposed of by LICENSEE or its SUBLICENSEE(S) or agents which use, employ, or are implemented by the practice of the LICENSED INVENTION(S) and for which consideration is due or received by LICENSEE.

“SUBLICENSEE” shall mean any PERSON who has the right, granted by LICENSEE, to make, have made, use, offer to sell, sell, transfer, or dispose of the LICENSED INVENTION(S).

“THIRD PARTIES” shall mean PERSONS other than the LICENSOR and the LICENSEE.

ARTICLE II

License Grant

2.1 LICENSOR hereby grants to LICENSEE a terminable, royalty-bearing, nonexclusive license to practice, i.e., to make, have made, use, offer to sell, sell, transfer, or dispose of, the LICENSED INVENTION(S) as limited to the LICENSED AREA and as may be limited to a LICENSED FIELD OR EMBODIMENT(S), as defined in ARTICLE I.

2.2 LICENSOR, upon request, will use reasonable efforts to grant LICENSEE, in accordance with 37 CFR 404, a license to practice any inventions assigned to LICENSOR, without which license or licenses, the practice of the LICENSED INVENTION(S) would result in infringement. The grant of said license or licenses shall be limited, however, to the extent necessary to practice the LICENSED INVENTION(S). There will be no such grant where said inventions are licensed exclusively.

2.3 Notwithstanding anything to the contrary in this Agreement, LICENSEE shall take the license granted in this ARTICLE II subject to any outstanding licenses or other rights in THIRD PARTIES under agreements executed by LICENSOR prior to the LICENSE COMMENCEMENT DATE.

2.4 LICENSOR retains a nontransferable, irrevocable, paid-up license for any Federal agency to practice and/or have practiced the LICENSED INVENTION(S), and/or any other inventions as provided in Section 2.2, throughout the world by or on behalf of the Government of the United States and/or on behalf of any foreign government pursuant to any existing or future treaty or agreement with the United States.

ARTICLE III

Sublicenses

3.1 Upon written approval by LICENSOR, LICENSEE may grant a written, royalty-bearing sublicense under the license granted in ARTICLE II provided that it submits to LICENSOR a written request, in advance, for permission to grant the sublicense, including with said request a copy of the proposed sublicense. The proposed sublicense shall refer to and be generally consistent with this Agreement and shall include the rights reserved by LICENSOR under Section 2.4. The proposed sublicense shall include the condition that the sublicense shall automatically terminate upon the revocation or termination of this Agreement.

3.2 LICENSEE shall furnish LICENSOR with a copy of the sublicense, consistent with the proposed sublicense approved by LICENSOR and executed by both LICENSEE and its SUBLICENSEE, within fifteen (15) days after the grant of the sublicense by LICENSEE.

3.3 LICENSEE shall submit to LICENSOR, for advance approval, any proposed modification of a sublicense. LICENSEE shall also submit to LICENSOR a copy of the sublicense modification (either as an addendum or a new sublicense), consistent with the proposed sublicense modification and executed by both LICENSEE and its SUBLICENSEE, within fifteen (15) days after the effective date of the sublicense modification.

3.4 The granting of a sublicense by LICENSEE shall not operate to relieve LICENSEE from any of its obligations under this Agreement.

3.5 LICENSEE shall be responsible for and remit royalties based upon its SUBLICENSEE(S)' activities as if said activities were its own.

ARTICLE IV

Term of License

4.1 Unless either PARTY terminates this Agreement in accordance with Article XVIII at an earlier date, the license granted in ARTICLE II shall have a LICENSE TERM that is equal to the unexpired term of the last patent of the LICENSED PATENT(S) to be in effect. Except as may be expressly provided otherwise herein or agreed to in writing by LICENSOR, the license shall expire automatically at the end of the LICENSE TERM without notice to LICENSEE.

ARTICLE V

Practical Application

5.1 LICENSEE shall achieve PRACTICAL APPLICATION of the LICENSED INVENTION(S) within [****] months of the LICENSE COMMENCEMENT DATE and in accordance with the schedule set forth in the APPENDIX to this Agreement and incorporated into this Agreement. LICENSEE shall notify LICENSOR within thirty (30) days of achieving PRACTICAL APPLICATION that PRACTICAL APPLICATION has been achieved. LICENSEE shall also provide evidence to verify the achievement.

5.2 LICENSEE, once PRACTICAL APPLICATION of the LICENSED INVENTION(S) is achieved, shall thereafter maintain it throughout the LICENSE TERM.

ARTICLE VI

United States Manufacture

6.1 In achieving PRACTICAL APPLICATION of the LICENSED INVENTION(S), LICENSEE agrees that any products embodying the LICENSED INVENTION(S) or produced through the use of the LICENSED INVENTION(S) shall be reduced to practice and manufactured substantially in the United States, in accordance with 35 U.S.C. 209(b).

6.2 LICENSEE shall make a bona fide attempt to use or sell the LICENSED INVENTION(S) in the United States.

6.3 LICENSEE shall promptly report to LICENSOR its discontinuance of making the benefits of the LICENSED INVENTION(S) available to the public.

6.4 Failure to comply with the terms of this ARTICLE shall be cause for unilateral modification or termination by LICENSOR of this Agreement in accordance with ARTICLE XVIII.

ARTICLE VII

Royalty and Payment

7.1 In consideration of the license granted in ARTICLE II, LICENSEE shall remit to LICENSOR a nonrefundable license fee in the amount of [****] dollars (\$[****]) upon the execution of this Agreement by LICENSEE. This license fee shall be remitted to LICENSOR within thirty (30) days after the LICENSE COMMENCEMENT DATE.

7.2 LICENSEE agrees to pay LICENSOR a nonrefundable, repeatable license fee in the amount of [****] dollars (\$[****]) upon each issuance of a patent maturing from the LICENSED PATENT APPLICATION(S). This nonrefundable, repeatable license fee shall not exceed a total of [****] dollars (\$[****]). LICENSEE shall remit each [****] dollar (\$[****]) payment within thirty (30) days after notice of the issuance of such patent is delivered.

7.3 LICENSEE agrees to pay LICENSOR a running royalty, based upon the NET SALES of ROYALTY-BASE PRODUCTS and ROYALTY-BASE SERVICES, in accordance with the following schedule for each ACCOUNTING PERIOD:

For NET SALES up to and including [****] dollars (\$[****]), [****] Percent ([****]%) of NET SALES; or

For NET SALES up to and including [****] dollars (\$[****]), [****] Dollars (\$[****]) plus [****] Percent ([****]%) of NET SALES exceeding [****] dollars (\$[****]); or

For NET SALES exceeding [****] Dollars (\$[****]), [****] Dollars (\$[****]) plus [****] Percent ([****]%) of NET SALES exceeding [****] Dollars (\$[****]).

7.4 LICENSEE shall pay LICENSOR a minimum annual royalty according to the following payment schedule:

End of year 2003:	[****] Dollars (\$[****])
End of year 2004:	[****] Dollars (\$[****])
End of year 2005:	[****] Dollars (\$[****])

Starting with the beginning of year 2006 and continuing thereafter throughout the LICENSE TERM, LICENSEE agrees to pay LICENSOR a minimum guaranteed royalty of [****] Dollars (\$[****]) for each ACCOUNTING PERIOD.

7.5 For any particular ACCOUNTING PERIOD, the running royalties specified in Section 7.3 shall be credited against the minimum royalty specified in Section 7.4.

7.6 LICENSEE shall pay LICENSOR the running royalty of Section 7.3 above for NET SALES of ROYALTY-BASE PRODUCTS and ROYALTY-BASE SERVICES of any and all SUBLICENSEES as if said activities were its own. In addition to the running royalties of Section 7.3, LICENSEE shall pay LICENSOR [****] PERCENT ([****]%) of any consideration received from a SUBLICENSEE, including but not limited to sublicense issue fees, in exchange for the initial grant of a sublicense by LICENSEE for the LICENSED INVENTION. In the event LICENSEE shall receive non-monetary consideration, including but not limited to equity in a SUBLICENSEE, in exchange for granting a sublicense, then LICENSOR and LICENSEE shall negotiate, in good faith, the present market value of such consideration at the time of execution of such sublicense and the terms of payment of any amount due to LICENSOR with respect to such valued amount.

7.7 LICENSEE agrees that in the event any ROYALTY-BASE PRODUCTS OR ROYALTY-BASE SERVICES shall be sold, transferred, or disposed of to a THIRD PARTY for purposes of resale in a transaction that does not represent an arm's length transaction, then the royalties to be paid under this Agreement for the ROYALTY-BASE PRODUCTS or ROYALTY-BASE SERVICES shall be based upon the NET SALES of the ROYALTY-BASE PRODUCTS or ROYALTY-BASE SERVICES by such THIRD PARTY, rather than upon the NET SALES of the LICENSEE. Examples of transactions that do not reflect an arm's length transaction includes sales, transfers or disposals (1) to any type of organization or individual who owns a controlling interest in LICENSEE by stock ownership or otherwise; (2) to any type of organization in which LICENSEE shall own, directly or indirectly, a controlling interest by stock ownership or otherwise; or (3) to any type of organization with which, or individual with whom, LICENSEE, its stockholders, or associated companies shall have any agreement, understanding, or arrangement (such as, among other things, an option to purchase stock, an arrangement involving a division of profits, or special rebates or allowances) without which agreement, understanding, or arrangement, prices paid by such organization or individual for the ROYALTY-BASE PRODUCTS and/or ROYALTY-BASE SERVICES would be higher than the NET SALES reported by LICENSEE, or if such agreement, understanding, or arrangement results in extending to such organization or individual lower prices for ROYALTY-BASE PRODUCTS and/or ROYALTY-BASE SERVICES than those charged to outside concerns buying similar merchandise in similar amounts and under similar conditions.

7.8 Under this Agreement, ROYALTY-BASE PRODUCTS and ROYALTY-BASE SERVICES will be considered sold when invoiced, when shipped, or upon receipt of payment, whichever occurs first.

7.9 Minimum royalties, running royalties, and the royalties required under Section 7.6 shall be paid within thirty (30) days of the end of each ACCOUNTING PERIOD. Royalties shall be paid by check, denominated in United States dollars, and made payable to the National Aeronautics and Space Administration. The check shall be mailed to LICENSOR at the address set forth in ARTICLE XV of this Agreement concurrently with the report required in ARTICLE VIII of this Agreement. LICENSOR'S acceptance of any royalty payment does not eliminate LICENSOR'S right to contest the accuracy of such payment in the future.

7.10 LICENSOR shall assess interest, penalties, and administrative costs in accordance with the Federal Claims Collections Standards on all payments due LICENSOR which are not timely paid by LICENSEE. In addition to these charges, LICENSOR is authorized to charge to LICENSEE the costs of collection and any associated reasonable attorney fees.

ARTICLE VIII

Reports

8.1 LICENSEE shall submit to LICENSOR written reports within thirty (30) days of the end of every ACCOUNTING PERIOD whether or not royalties are due. Each report shall be submitted concurrently with the royalties required by ARTICLE VII. To ensure that any proprietary information submitted by LICENSEE is protected to the fullest extent of the law, LICENSEE should mark with a proprietary notice, any portions of the report that is considered proprietary to LICENSEE.

8.2 Each report shall include the following information:

(a) With reference to the schedule set forth in the Appendix to this Agreement, a narrative description of the steps being taken to reduce the LICENSED INVENTION(S) to practice.

(b) With reference to the schedule set forth in the Appendix to this Agreement, a narrative description of the steps being taken to create a market demand for the LICENSED INVENTION(S), to commercialize the LICENSED INVENTION(S), and to meet market demand for the LICENSED INVENTION(S).

(c) A narrative description of the ROYAL-BASE PRODUCTS and ROYALTY-BASE SERVICES currently being offered for sale by LICENSEE and its SUBLICENSEES. Copies of current sales brochures, promotional materials, and price lists shall be included with this description.

(d) A list of the geographic locations at which the LICENSED INVENTION(S) are being manufactured.

(e) The number and type of ROYALTY-BASE PRODUCTS and ROYALTY-BASE SERVICES sold or disposed of by LICENSEE and its SUBLICENSEES.

(f) The number and type of ROYALTY-BASE PRODUCTS and ROYALTY-BASE SERVICES sold or disposed of by each reseller of ROYALTY-BASE PRODUCTS and ROYALTY-BASE SERVICES under Section 7.7.

(g) LICENSEE'S GROSS SALES.

(h) GROSS SALES for each SUBLICENSEE (if any).

(i) GROSS SALES for each reseller under Section 7.7.

(j) LICENSEE'S NET SALES.

(k) NET SALES for each SUBLICENSEE (if any).

(l) NET SALES for each reseller under Section 7.7.

(m) The amount of royalties due LICENSOR.

8.3 Each report shall include a certification by an officer of LICENSEE that the LICENSEE is complying with the terms and conditions of this Agreement and that the responses to each part of Section 8.2 are accurate and complete.

8.4 LICENSEE shall, on an annual basis, submit to LICENSOR an audited balance sheet and an audited income statement. Internal audits are permissible, but LICENSOR reserves the right to require an independent audit and additionally reserves the right to approve of the auditor.

8.5 A final report shall be submitted to LICENSOR by LICENSEE within thirty (30) days after the termination of this Agreement.

ARTICLE IX

Audit Rights

9.1 LICENSEE shall keep full, true, and accurate records for the purpose of LICENSOR verifying LICENSEE'S reports to LICENSOR under ARTICLE VIII, verifying LICENSEE'S royalty payments to LICENSOR under ARTICLE VII, and for determining LICENSEE'S activities in general under the Agreement. These records shall include, but are not limited to, ledgers and journals of account, customer orders, invoices, shipping documents, inventory records, computer records, purchase orders, and tax records. These records, as a whole, shall include information which will allow, at a minimum, identification of suppliers, customers, items sold or otherwise transferred, and/or services rendered, as well as whether the LICENSEE is operating within the scope of its license.

9.2 The records described in Section 9.1 shall be available for audit by LICENSOR, or by an authorized representative of LICENSOR, at all reasonable times for the LICENSE TERM and for three (3) calendar years thereafter. In addition, LICENSEE shall permit inspection by LICENSOR, or by an authorized representative of LICENSOR, of LICENSEE'S assembly facilities and of LICENSEE'S inventory of ROYALTY-BASE PRODUCTS, including parts, works-in-progress, and finished goods, during any audit by LICENSOR.

9.3 If LICENSOR, as a result of an audit, discovers an underpayment of royalties, which exceeds \$ [****], then LICENSEE shall reimburse LICENSOR for the cost of the audit, including all related costs of performing the audit (e.g., travel, food, lodging, cost of professional services, etc.), in addition to any penalties assessed pursuant to Section 7.10.

ARTICLE X

Marking

10.1 LICENSEE and all SUBLICENSEE(S) shall mark all ROYALTY-BASE PRODUCTS, or products incorporating ROYALTY-BASE PRODUCTS or ROYALTY-BASE SERVICES, in accordance with the statutes of the United States relating to the marking of patented articles (see 35 U.S.C. § 287). Such marking shall be accomplished by fixing on the article or when, from the character of the article, this cannot be done, by fixing to it, or to the package wherein one or more of the articles is contained, a label including the notation "Licensed from the National Aeronautics and Space Administration under U.S. Patent No. 5,798,521 and (insert other appropriate patent numbers)." Such marking shall also be included into all literature and/or advertising materials describing the LICENSED INVENTION(S).

ARTICLE XI

Use of the NASA Name

11.1 Except as required by Section 10.1, LICENSEE may use the name of LICENSOR, or the acronym "NASA", only in truthful statements concerning its relationship with LICENSOR. The letters 'NASA' may be used in such truthful statements only if they are:

- (a) used in their normal typed or printed form;
- (b) the same size, color, and intensity as the rest of the words in a sentence;
- (c) not used in their stylized version as they appear in the NASA logotype or NASA insignia; and
- (d) not used to indicate that NASA endorses the LICENSEE'S products, processes, etc.

11.2 Uses of the letters 'NASA', other than those required by Section 10.1 or specified in Section 11.1, shall require the express written approval of LICENSOR. Approval by LICENSOR

shall be based on applicable law (i.e., 42 U.S.C. §§ 2459b, 2472(a), and 2473(c)(1); and 14 CFR § 1221.100 *et seq.*) and NASA policy governing the use of the letters 'NASA' and the words 'National Aeronautics and Space Administration' and shall not be unreasonably withheld.

11.3 LICENSEE agrees to make copies of its marketing literature available to LICENSOR so that LICENSOR can determine that such use is in accordance with the terms of this ARTICLE.

ARTICLE XII

Disclaimer of Warranties

12.1 ALL REPRESENTATIONS AND WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXCLUDED HEREUNDER.

12.2 In particular, nothing in this Agreement shall be construed as:

- (a) A warranty or representation by LICENSOR as to the validity or scope of any LICENSED PATENT; or
- (b) A warranty or representation that anything made, used, sold, or otherwise disposed of under any license granted in this Agreement is or will be free from infringement of any type, including patent infringement, copyright infringement, and trademark infringement; or
- (c) A requirement that LICENSOR shall file any patent application, secure any patent, or maintain any patent in force, other than the LICENSED PATENT; or
- (d) An obligation to bring or prosecute actions or suits against THIRD PARTIES for infringement; or
- (e) An obligation to furnish any manufacturing or technical information; or, if any such information is supplied, a warranty or representation that such information is accurate; or
- (f) Conferring a right to use in advertising, publicity or otherwise the name of any inventor of the LICENSED INVENTION(S) or the NASA name, seal, insignia, logotype or any other adaptation without the prior written consent of LICENSOR (except as otherwise provided in ARTICLE XI); or
- (g) Precluding the export from the United States of ROYALTY-BASE PRODUCTS on which royalties shall have been paid as provided in ARTICLE VII, provided that the item can be exported under the export control laws of the United States; or
- (h) Granting by implication, estoppel, or otherwise, any licenses or other rights under any other patent of LICENSOR or any other PERSON in the United States or any foreign country; or

(i) Granting by implication, estoppel, or otherwise, any licenses or rights under patents or patent applications of LICENSOR other than the LICENSED INVENTION(S), regardless of whether such other patents or patent applications are dominant, subordinate, or an improvement to the invention or inventions as claimed, of the LICENSED PATENT(S) or LICENSED PATENT APPLICATION(S), nor to other applications that did not claim the invention.

(j) Conferring upon any PERSON (1) any immunity from or defenses under the antitrust laws, (2) any immunity from a charge of patent misuse, or (3) any immunity from the operation of Federal, State, or other law.

ARTICLE XIII

Risk Allocation and Indemnification

13.1 LICENSOR makes no representation, extends no warranties of any kind, either express or implied, and assumes no responsibility with respect to use, sales, or other disposition by LICENSEE or its vendees or other transferees of products incorporating or made by the use of (1) the LICENSED INVENTION(S) or (2) information, if any, furnished under this Agreement.

13.2 LICENSEE shall indemnify LICENSOR, its officers and employees, and hold them harmless against all liabilities, demands, damages, expenses, or losses including, but not limited to, attorney's fees, court costs, and the like, arising (1) out of the use by LICENSEE or its transferees of the LICENSED INVENTION(S) or information furnished under this Agreement, or (2) out of any sale, use, or other disposition by LICENSEE or its transferees of products, processes, or compositions, made by use of such inventions or information.

13.3 It shall be the sole responsibility of the LICENSEE to ensure that any and all embodiments of the LICENSED INVENTION(S) are safe under all circumstances.

13.4 Independent of, severable from, and to be enforced independently of any other enforceable or unenforceable provision of this Agreement, other than as provided in Sections 13.1 and 13.2, or other than for infringement of one PARTY'S intellectual property rights by another PARTY, (including any engagement in licensable activities by licenses beyond the scope of the license provided by this Agreement), neither PARTY will be liable to the other PARTY (nor to any THIRD PARTY claiming rights derived from the other PARTY'S rights) for incidental, consequential, special, punitive, or exemplary damages of any kind, including lost profits, loss of business, or other economic damage, and further including injury to property, as a result of breach of any warranty or other term of this Agreement, regardless of whether the PARTY liable or allegedly liable was advised, had reason to know, or in fact knew of the possibility thereof.

ARTICLE XIV

Patent Validity

14.1 If, in any proceeding in which the validity, infringement, or priority of invention of any claim of the LICENSED PATENT to LICENSEE is in issue, a judgement or decree is entered

which becomes final (below referred to as a “final judgement”), the construction placed upon any such claim by such final judgement shall thereafter be followed, not only as to such claim but as to all claims to which such construction applies, with respect to subsequently occurring acts. If such final judgement holds any claim invalid, LICENSEE shall be relieved prospectively (1) from including in its reports ROYALTY-BASE PRODUCTS and ROYALTY-BASE SERVICES sold or otherwise disposed of covered only by such claim or any broader claim to which such final judgement is applicable, and (2) from the performance of those other acts which may be required by this Agreement only because of any such claim. However, if there are two or more conflicting final judgements with respect to the same claim based on the same grounds or where the same issues were raised, the decision of the higher tribunal shall be followed, but if the tribunals be of equal dignity, then the decision more favorable to the claim shall be followed. In the event of conflicting irrevocable judgments of the Supreme Court of the United States, the latest shall control.

14.2 In the event evidentiary material comes to the attention of the LICENSEE after the LICENSEE’S execution of this Agreement which, in the judgement of the LICENSEE, bears on the validity or scope of any LICENSED PATENT, the LICENSOR will in good faith discuss with the LICENSEE whether such evidentiary material so affects the validity or scope of the LICENSED PATENT to which it is asserted to apply that the terms of the Agreement in respect to such LICENSED PATENT should be modified.

14.3 The LICENSEE, after the LICENSE COMMENCEMENT DATE, may assert the invalidity of any claim in any LICENSED PATENT, if coupled with or followed by:

(a) Withholding, or notice of intention to withhold, or denial of obligation to pay, royalties otherwise payable under this Agreement in respect to the LICENSEE’S operations under such claim; or

(b) Initiation or participation in a suit challenging or denying the validity of such claim in reference to LICENSEE’S operations under this Agreement, that may, at the option of the LICENSOR, be conclusively presumed to constitute LICENSEE’S termination, as of the earliest provable date of such withholding, notice, denial, initiation, or participation, of its Agreement including its obligation for payment of royalties due from the date of the termination.

ARTICLE XV

Points of Contact

15.1 The following individuals are designated as the points of contact for their respective PARTY. These points of contact are the principal representatives of the PARTIES involved in the performance of this Agreement.

LICENSOR

NASA Langley Research Center
Patent Counsel Office
Mail Stop 212, 3 Langley Blvd.
Bldg. 1229, Room 14
Hampton, Virginia 23681-2199

Telephone No.: 757-864-9260
Facsimile No.: 757-864-9190

LICENSEE

Luna Innovations, Inc.
Kent A. Murphy, President
2851 Commerce Street SE
Blacksburg, VA 24060

Telephone No.: 540-552-5128
Facsimile No.: 540-951-0760

ARTICLE XVI

Notices

16.1 Notices hereunder will be delivered and effective as follows:

(a) Every notice required or contemplated by this Agreement to be given either PARTY may be delivered in person or may be sent by courier, express mail, telex, telegraph or postage prepaid certified or registered mail (or its equivalent under the laws of the country where mailed), addressed to the PARTY for whom it is intended, at the address specified in ARTICLE XV. Either PARTY may change its address for notice by giving notice to the other PARTY of the change.

(b) Any written notice will be effective no earlier than the date delivered.

(c) Unless otherwise provided in this Agreement, notice by courier, or by express, certified, or registered mail, will be deemed delivered on the date it is officially recorded as delivered by return receipt or the equivalent, and in the absence of such record as to delivery, it will be rebuttably presumed to have been delivered on the fifth business day after it was deposited, first-class postage prepaid, in the mails.

(d) Notice by telex or telegraph will be deemed delivered at the time it is recorded by the carrier in the ordinary course of business as having been delivered, but in any event no later than one business day after dispatch.

(e) Notice delivered in person or not given in writing will be deemed delivered only if acknowledged in writing by a duly authorized officer of the PARTY to whom it was given.

(f) As used in this Article, a reference to a particular date means the date itself, if a business day, otherwise the first business day after the date.

ARTICLE XVII

Dispute or Breach

17.1 All disputes concerning the interpretation or application of this Agreement shall be discussed mutually between the PARTIES. Any disputes which are not disposed of by mutual Agreement shall be decided by the NASA Associate General Counsel (Intellectual Property), or designee, who shall reduce the decision to writing and mail or otherwise deliver a copy of such

decision to LICENSEE. LICENSEE shall have thirty (30) days after delivery of such copy of the decision to rebut such decision in accordance with the procedures set forth in Article 18.8.

17.2 In the event of a BREACH of any provision of this Agreement, the NONBREACHING PARTY shall give the BREACHING PARTY notice describing the BREACH and stating that the BREACHING PARTY has thirty (30) days after delivery of the notice of the BREACH to cure the BREACH or show cause why the Agreement should not be terminated in accordance with Article 18.8.

17.3 If a provision of this Agreement sets forth a cure period for the BREACH in question other than thirty (30) days, then that provision shall take precedence over the cure period set forth in Article 17.2.

17.4 No cure period is required, except as may be otherwise provided in this Agreement, if:

(a) this Agreement sets forth specific deadline dates for the obligation allegedly breached; or

(b) this Agreement otherwise states that no cure period is required in connection with the termination in question.

17.5 The BREACHING PARTY will be deemed to have cured such BREACH if within the cure period it takes steps reasonably adequate to alleviate any damage to the NONBREACHING PARTY resulting from the BREACH and to prevent a similar future BREACH.

ARTICLE XVIII

Termination or Modification

18.1 The PARTIES may terminate or modify this Agreement by mutual consent upon such terms as they may agree in writing.

18.2 Either PARTY may terminate this Agreement by failing to extend the LICENSE TERM, if an extension is provided for in Section 4.1.

18.3 Either PARTY may terminate this Agreement upon the discovery by one PARTY of any intentional MATERIAL false statement or misrepresentation made or submitted by the other PARTY which BREACHES any obligation under the terms of this Agreement or upon the discovery by one PARTY that the other PARTY has committed a MATERIAL BREACH of a provision of the Agreement.

18.4 LICENSEE may prospectively terminate this Agreement upon ninety (90) days written notice to LICENSOR.

18.5 This Agreement may be terminated by LICENSOR if:

- (a) LICENSOR determines that LICENSEE has failed or will fail to achieve or maintain PRACTICAL APPLICATION of the LICENSED INVENTION(S) as provided by ARTICLE V.
- (b) LICENSOR determines that LICENSEE has failed or will fail either to reduce to practice or to substantially manufacture the LICENSED INVENTION(S) in the United States as provided by Section 6.1
- (c) LICENSOR determines that LICENSEE has failed or will fail to meet market demand for the LICENSED INVENTION(S).
- (d) LICENSEE fails to pay royalties or submit reports as provided by ARTICLES VII and VIII.
- (e) LICENSOR determines that such action is necessary to meet the requirements for public use specified by Federal regulations issued after the date of the license and such requirements are not reasonably satisfied by LICENSEE.
- (f) LICENSEE commits a MATERIAL BREACH of a covenant contained in this Agreement.

18.6 LICENSOR may terminate this Agreement if LICENSEE becomes "INSOLVENT." LICENSEE must notify LICENSOR within thirty (30) days after becoming INSOLVENT. LICENSEE'S failure to conform to this requirement shall be deemed a MATERIAL, incurable BREACH.

18.7 LICENSEE must promptly inform LICENSOR of its intention to file a voluntary petition in bankruptcy or of another's communicated intention to file an involuntary petition in bankruptcy. LICENSOR may terminate this Agreement upon receiving notice of intention to file. LICENSEE's filing without conforming to this requirement shall be deemed a MATERIAL, pre-petition incurable BREACH.

18.8 Before LICENSOR unilaterally modifies or terminates this Agreement for any cause, LICENSOR will deliver to LICENSEE and all SUBLICENSEES of record a written notice stating LICENSOR'S intention to modify or terminate the Agreement and the reasons therefor. LICENSEE will be allowed thirty (30) days after such notice to remedy any BREACH of the Agreement or show cause why the Agreement should not be unilaterally modified or terminated. A response to a notice of modification or termination, or to a copy of a dispute decision as rendered in accordance with Article 17.1, should be addressed to the General Counsel, National Aeronautics and Space Administration, Washington, DC 20546. The General Counsel will render a determination, based on the LICENSEE'S response, within a reasonable time. Absent any response from LICENSEE to the notice regarding the modification, termination and/or dispute decision, the decision by the Associate General Counsel (Intellectual Property) will be final, or as applicable, the Agreement will be unilaterally modified or will terminate, effective thirty-one (31) days from the delivery of the notice of the modification, the termination or the dispute decision, with no right to appeal under Section 18.9.

18.9 LICENSEE may appeal in writing to the NASA Administrator, any determination rendered by the General Counsel in accordance with Section 18.8, within thirty (30) days of notice of such determination. The notice of appeal and all supporting documentation should be addressed to the Administrator, National Aeronautics and Space Administration, Washington, DC 20546. LICENSEE shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. The decision on the appeal shall be made by the NASA Administrator or designee, which shall be the final agency decision from which there will be no further right of administrative appeal. Nothing in this Article shall be interpreted as precluding actions at law.

18.10 If no action is taken under Section 18.9, then the determination to modify or terminate this Agreement shall become final within thirty-one (31) days after delivery of the determination rendered by the General Counsel in accordance with Section 18.8.

18.11 All royalties and reports due up to and including the date of termination of this Agreement are due within thirty (30) days of the date of termination.

18.12 The word "termination" and cognate words, such as "term" and "terminate", used in this ARTICLE XVIII are to be read, except where the contrary is specifically indicated, as omitting from their effect the following rights and obligations, all of which survive any termination to the degree necessary to permit their complete fulfillment or discharge:

- (a) LICENSEE'S obligation to supply a final report as specified in Section 8.5 or ARTICLE VIII of this Agreement.
- (b) LICENSOR'S right to receive or recover and LICENSEE'S obligation to pay royalties accrued or accruable for payment at the time of any termination.
- (c) LICENSEE'S obligation to maintain records and LICENSOR'S right to conduct a final audit in accordance with ARTICLE IX of this Agreement.
- (d) Any cause of action or claim of LICENSOR accrued or to accrue, because of any BREACH or default by LICENSEE.
- (e) Licenses, releases, and agreements of nonassertion running in favor of customers or transferees of LICENSEE in respect to products sold or transferred by LICENSEE before any termination and on which royalties shall have been paid as provided in ARTICLE VII of this Agreement.

ARTICLE XIX

Assignment

19.1 Upon written approval by LICENSOR, LICENSEE may assign this Agreement provided that LICENSEE submits to LICENSOR, in advance, a written request for permission to grant the assignment, information that NASA considers necessary to evaluate the proposed assignment, and a copy of the proposed assignment. If LICENSOR approves the assignment as

being consistent with the U.S. Government's interests, the PARTIES and the assignee will be required to execute a novation Agreement. At a minimum, the novation Agreement will provide that LICENSEE waives all rights under the license, the assignee assumes all obligations under the Agreement and that LICENSOR recognizes the assignee as the successor in interest to the Agreement.

ARTICLE XX

Governing Law

20.1 This Agreement will be interpreted and enforced in accordance with United States federal law.

ARTICLE XXI

Independent Entities

21.1 The Parties are separate and independent entities. Except as may be expressly and unambiguously provided in this Agreement, no partnership or joint venture is intended to be created by this Agreement, nor any principal-agent or employer-employee relationship.

21.2 Except to the extent expressly provided in this Agreement, neither PARTY has, and neither PARTY shall attempt to assert, the authority to make commitments for or to bind the other PARTY to any obligation.

ARTICLE XXII

Effect of Partial Invalidity

22.1 If any one of more of the provisions of this Agreement should be ruled wholly or partly invalid or unenforceable by a court or other government body of competent jurisdiction, and as long as the fundamental objectives of the Agreement can be carried out, then:

(a) the validity and enforceability of all provisions of this Agreement not ruled to be invalid or unenforceable will be unaffected;

(b) the provision(s) held wholly or partly invalid or unenforceable will be deemed to be amended, and the court or other government body is authorized to reform the provision(s), to the minimum extent necessary to render them valid and enforceable in conformity with the PARTIES' intent as manifested herein; and

(c) if the ruling, and/or the controlling principle of law or equity leading to the ruling, is subsequently overruled, modified, or amended by legislative, judicial, or administrative action, then the provision(s) in question, as originally set forth in this Agreement, will be deemed to be valid and enforceable to the maximum extent permitted by the new controlling principle of law or equity.

ARTICLE XXIII

Nonwaiver

23.1 The failure of either PARTY at any time to require performance by the other PARTY of any provisions of this Agreement shall in no way affect the right of such PARTY to require future performance of that provision. Any waiver by either PARTY of any BREACH of any provision of this Agreement shall not be construed as a waiver of any continuing or succeeding BREACH of such provision, a waiver of the provision itself, or a waiver of any right under this Agreement.

ARTICLE XXIV

Entire Agreement

24.1 Except as may be expressly provided otherwise herein, this Agreement constitutes the entire Agreement between the PARTIES concerning the subject matter thereof. No prior or contemporaneous representations, inducements, promises, or Agreements, oral or otherwise, between the PARTIES with reference thereto will be of any force or effect. This Agreement may only be modified by written Agreement of the PARTIES.

ARTICLE XXV

Article Headings

25.1 The ARTICLE headings contained in this Agreement are for reference purposes only and shall not in any way control the meaning or interpretation of this Agreement.

ARTICLE XXVI

Counterparts

26.1 This Agreement may be executed in separate counterparts, each of which so executed and delivered shall constitute an original, but all such counterparts shall together constitute one and the same instrument. Any such counterpart may comprise one or more duplicates or duplicate signature pages, any of which may be executed by less than all of the PARTIES, provided that each PARTY executes at least one such duplicate or duplicate signature page. The PARTIES stipulate that a photostatic copy of an executed original will be admissible in evidence for all purposes in any proceeding as between the PARTIES.

ARTICLE XXVII

Acceptance

27.1 In witness whereof, each PARTY has caused this Agreement to be executed by its duly authorized representatives:

LICENSOR:

National Aeronautics and
Space Administration

By: /s/ Paul G. Pastorek

Paul G. Pastorek
NASA General Counsel

Date: June 10, 2002

LICENSEE:

Luna Innovations, Inc.

~ /s/ Kent A. Murphy

Kent A. Murphy
President

Date: May 14, 2002

APPENDIX

Luna Innovations Commercialization Plan Milestones

Task Item	TaskCompletion Date
1. [****]	[****]
2. [****]	[****]
3. [****]	[****]
4. [****]	[****]
5. [****]	[****]

Modification No. 1

NASA and Luna Innovations, Inc. entered into Nonexclusive License Agreement No. DN-982 on June 10, 2002. By this Agreement, NASA and Luna Innovations, Inc. modify License Agreement DN-982 as follows:

- 1) Article V – Practical Application, Section 5.2, is replaced by:

5.2 LICENSEE, once PRACTICAL APPLICATION of the LICENSED INVENTION(S) is achieved, shall thereafter maintain it throughout the LICENSE TERM, and shall achieve the milestones provided in the APPENDIX to this Agreement.

- 2) Article VII – Royalty and Payment, Section 7.3, is replaced by:

7.3 LICENSEE agrees to pay LICENSOR a running royalty of [****] Percent ([****]%) of the NET SALES of ROYALTY-BASE PRODUCTS and ROYALTY-BASE SERVICES.

- 3) Article VII – Royalty and Payment, Section 7.4, is replaced by:

7.4 LICENSEE shall pay LICENSOR a minimum annual royalty according to the following payment schedule:

End of year 2003: [****] Dollars (\$[****])

End of year 2004: [****] Dollars (\$[****])

End of year 2005: [****] Dollars (\$[****])

End of year 2006: [****] Dollars (\$[****])

End of year 2007: [****] Dollars (\$[****])

End of year 2008: [****] Dollars (\$[****])

End of year 2009: [****] Dollars (\$[****])

Starting with the beginning of year 2010 and continuing thereafter throughout the LICENSE TERM, LICENSEE agrees to pay LICENSOR a minimum guaranteed royalty of [****] Dollars (\$[****]) for each ACCOUNTING PERIOD.

4) Appendix is replaced by:

APPENDIX

Luna Innovations Commercialization Plan Milestones

Task Item	Task Completion Date
1. [****]	[****]
2. [****]	[****]
3. [****]	[****]
4. [****]	[****]
5. [****]	[****]
6. [****]	[****]
7. [****]	[****]
8. [****]	[****]

5) All other terms and conditions of Nonexclusive License Agreement No. DN-982 are hereby ratified and confirmed as remaining in full force and effect.

In witness thereof, each party has caused this Agreement to be executed by its duly authorized representative.

National Aeronautics and Space Administration

Luna Innovations, Inc.

By: /s/ Michael C. Wholley

By: /s/ Kent A. Murphy

Michael C. Wholley
General Counsel

Kent A. Murphy
President

Date: January 23, 2006

Date: December 19, 2005

CONFIDENTIAL TREATMENT REQUESTED: Certain portions of this document have been omitted pursuant to a request for confidential treatment and, where applicable, have been marked with an asterisk (“[****]”) to denote where omissions have been made. The confidential material has been filed separately with the Securities and Exchange Commission.

LICENSE AGREEMENT

UNITED STATES OF AMERICA

LUNA TECHNOLOGIES, INC.

NONEXCLUSIVE LICENSE AGREEMENT NO. DN-951

LICENSE EFFECTIVE DATE: 12/20/00

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LICENSE AGREEMENT

PREAMBLE

This License Agreement ("Agreement") is entered into between the National Aeronautics and Space Administration (NASA), an agency of the United States, hereinafter referred to as LICENSOR, having its headquarters in Washington, D.C., and Luna Technologies, Inc., a corporation of the State of Delaware, having its principal place of business at P.O. Box 11704, Blacksburg, VA, 24062, hereinafter referred to as LICENSEE, as of the date of execution of the last PARTY hereto.

WITNESSETH:

WHEREAS, under the authority of 35 U.S.C. § 200 *et seq.*, the U.S. Department of Commerce has issued Patent Licensing Regulations (37 CFR § Part 404) specifying the terms and conditions upon which licenses may be granted for inventions assigned to LICENSOR; and

WHEREAS, LICENSOR is the assignee of U.S. Patent Application No. 09/606,120 for an invention entitled "Single Laser Sweep Full S-Parameter Characterization of Fiber Bragg Gratings," which was filed on June 15, 2000; and of U.S. Patent Application No. 09/648,529 for an invention entitled "High Precision Solid State Wavelength Monitor," which was filed on August 22, 2000.

WHEREAS, LICENSEE, in consideration of the grant of a license under U.S. Patent Application No. 09/606,120, and U.S. Patent Application No. 09/648,529, will pay royalties, make all necessary capital investments, and achieve PRACTICAL APPLICATION of the inventions; and,

WHEREAS, LICENSOR has determined that the granting of a license to LICENSEE under U.S. Patent Application No. 09/606,120, and U.S. Patent Application No. 09/648,529, will provide the necessary incentive for LICENSEE to achieve the desired early PRACTICAL APPLICATION of the inventions and the granting of such license to LICENSEE will therefore be in the public interest;

NOW, THEREFORE, in accordance with said Patent Licensing Regulations, and in consideration of the foregoing and of the terms hereinafter contained in this Agreement, the LICENSOR and LICENSEE agree as set forth below:

ARTICLE I

Definitions

"**ACCOUNTING PERIOD**" shall mean the period for which royalties are calculated. For this Agreement, the period is every twelve (12) months beginning on January 1st and ending on December 31st of each calendar year. The first ACCOUNTING PERIOD for this Agreement commences on the LICENSE COMMENCEMENT DATE and ends on December 31, 2001.

“BREACH” shall mean (a) a violation or nonperformance by a PARTY of a MATERIAL term, condition, covenant or warranty herein, or (b) a misrepresentation made hereunder or in the inducement by LICENSEE to LICENSOR to enter into this Agreement (also see “MATERIAL”).

“BREACHING PARTY” shall mean the PARTY in BREACH, as used in ARTICLE XIX.

“GROSS SALES” shall mean the total amount invoiced by or for LICENSEE, and equivalent dollar value sum of all disposals i.e., (sales, uses, including uses by LICENSEE, leases, transfers, etc.) of ROYALTY-BASE PRODUCTS and ROYALTY-BASE SERVICES for monetary consideration determined in, or as if in, an arm’s length transaction.

“INSOLVENT” shall mean that LICENSEE has ceased to pay its debts (which may include failure to pay royalty payments under this Agreement) in the ordinary course of business or cannot pay its debts as they fall due or is insolvent within the meaning of the Federal Bankruptcy Code (11 U.S.C. § 101 (31)).

“LICENSE COMMENCEMENT DATE” shall mean the date that the last PARTY has executed this Agreement.

“LICENSE EXPIRATION DATE” shall mean the date the first LICENSED PATENT(S) expires, or the date of abandonment of the last to be abandoned of any LICENSED PATENT APPLICATION(S), whichever is later, unless this Agreement is revoked or terminated in accordance with other provisions of this Agreement.

“LICENSE TERM” shall mean the period of time starting with the LICENSE COMMENCEMENT DATE and ending with the LICENSE EXPIRATION DATE.

“LICENSED AREA” shall mean the world.

“LICENSED FIELD” shall mean optical components, instrument, or systems for telecommunications, computers, or measurement.

“LICENSED INVENTION(S)” shall mean the invention(s) defined by the claims of the LICENSED PATENT(S) and as may be further limited by ARTICLE II.

“LICENSED PATENT(S)” shall mean all patents that issue from the LICENSED PATENT APPLICATION(S), and shall include any corresponding: reissue patents; modifications of said LICENSED PATENTS by means of certificates of correction or reexamination certificates; and any National or Regional Patent(s).

“LICENSED PATENT APPLICATION(S)” shall mean U.S. Patent Application No. 09/606,120 and/or U.S. Patent Application No. 09/648,529; any national or regional Patent Application(s) that rely on PCT Patent Application Numbers PCT/USOO/23588 and PCT/USOO/27454, and shall include any corresponding: continuation or divisional patent applications derived therefrom.

“MATERIAL,” with respect to a particular matter (e.g., a BREACH), shall mean that the matter is shown to effect adversely (a) the rights and benefits of the other PARTY under this Agreement; or (b) the ability of the other PARTY to perform its obligations hereunder; and, in either case, to such a degree that a reasonable person in the management of his or her own affairs would be more likely than not to decline to enter into this Agreement in view of the matter in question.

“NET SALES” shall mean GROSS SALES, less allowances for returns and less (to the extent separately stated, and not charged to the customer or others, on the invoices): (1) regular trade and quantity discounts; (2) insurance and shipping charges from the point of origin; (3) duties, tariffs, and other customs charges; and (4) sales, use, and similar taxes. In the case of a sale or other disposition of ROYALTY-BASE PRODUCTS which are transferred to a purchaser who does not deal at arm’s length, or transferred or otherwise disposed of for other than monetary consideration (including allocations to LICENSEE’s own beneficial use), NET SALES shall be calculated in accordance with Section 7.5 of this Agreement.

“NONBREACHING PARTY” shall mean the PARTY not in BREACH, as used in ARTICLE XIX.

“PARTY” shall mean a party to this Agreement.

“PERSON” shall mean a natural person; a corporation (for profit or not-for-profit); an association; a partnership (general or limited); a joint venture; a trust; a government or political department, subdivision, or agency; or any other entity.

“PRACTICAL APPLICATION” shall mean, with respect to the LICENSED INVENTION(S), to reduce it to practice and to commercialize it, i.e., to manufacture it in the case of a composition or product, to practice it in the case of a process or method, or to operate it in the case of a machine or system; and, in each case, under such conditions as to establish: (1) that a market for the LICENSED INVENTION(S) has been created, and to the extent practicable, that a market has been created in the United States; (2) that it is being utilized; (3) that its benefits are, to the extent permitted by law or Government regulations, available to the public on reasonable terms; and (4) that market demand, at least in the United States, shall be reasonably met.

“ROYALTY-BASE PRODUCTS” shall include: (1) the components of an item sold, used, leased, transferred, or otherwise disposed of by LICENSEE that are covered by or included within the LICENSED INVENTION(S); and (2) other components of the item not covered by or within the LICENSED INVENTION(S) that LICENSEE would not have sold, used, leased, transferred, or otherwise disposed of but for the sale, use, lease, transfer, or other disposition of the LICENSED INVENTION(S).

“ROYALTY-BASE SERVICES” shall include any services sold, used, leased, transferred, or otherwise disposed of by LICENSEE or its agents that use or employ the LICENSED INVENTION(S). Such ROYALTY-BASE SERVICES shall not include any services of the LICENSEE directly related to the initial installation and setup, including training or software installation, or to the repair of a ROYALTY-BASE PRODUCT purchased by a THIRD PARTY.

“THIRD PARTIES” shall mean PERSONS other than the LICENSOR and the LICENSEE.

ARTICLE II

License Grant

2.1 LICENSOR hereby grants to LICENSEE a terminable, royalty-bearing, nonexclusive license to practice, i.e., to make, have made, use, sell, offer for sale, import, transfer, or dispose of, the LICENSED INVENTION(S) as limited to the LICENSED AREA and the LICENSED FIELD, as defined in ARTICLE I.

2.2 LICENSOR, upon request, agrees to grant LICENSEE a license to practice any inventions assigned to LICENSOR, without which license or licenses, the practice of the LICENSED INVENTION(S) would result in infringement. The grant of said license or licenses shall be limited, however, to the extent necessary to practice the LICENSED INVENTION(S). There will be no such grant where said inventions are licensed exclusively.

2.3 Notwithstanding anything to the contrary in this Agreement, LICENSEE shall take the license granted in this ARTICLE II subject to any outstanding licenses or other rights in THIRD PARTIES under Agreements executed by LICENSOR prior to the LICENSE COMMENCEMENT DATE.

2.3 LICENSOR reserves an irrevocable, royalty-free right to practice and have practiced the LICENSED INVENTION(S), and any other inventions as provided in Section 2.2, throughout the world by or on behalf of the Government of the United States and on behalf of any foreign government pursuant to any existing or future treaty or Agreement with the United States.

2.5 NASA intends to file timely National or Regional Patent Applications corresponding to PCT Application Numbers PCT/USOO/23588, entitled “Single Laser Sweep Full S-Parameter Characterization of Fiber Bragg Gratings” and PCT/USOO/27454, entitled “High Precision Solid State Wavelength Monitor” after being timely notified in writing of the selected countries designated by the LICENSEE. To conserve costs, NASA also intends to file such applications directly through foreign associates. LICENSEE agrees to pay timely the foreign associate, upon receipt of billing, the official fees (including maintenance fees) and the foreign associate’s fees for assisting in prosecution of the National or Regional Patent Application.

ARTICLE III

Sublicenses

3.1 LICENSEE shall not have the right to grant sublicenses.

ARTICLE IV

Term of License

4.1 The license granted in ARTICLE II will be in effect for the LICENSE TERM. Except as may be expressly provided otherwise herein or agreed to in writing by LICENSOR, the license shall expire automatically at the end of the LICENSE TERM without notice to LICENSEE. In the event the LICENSE TERM will expire before the expiration of the LICENSED PATENT(S), LICENSEE may request extension of the LICENSE TERM before the expiration of the LICENSE TERM.

ARTICLE V

Practical Application

5.1 LICENSEE shall achieve PRACTICAL APPLICATION of the LICENSED INVENTION(S) within [****] months of the LICENSE COMMENCEMENT DATE.

5.2 LICENSEE, once PRACTICAL APPLICATION of the LICENSED INVENTION(S) is achieved, shall thereafter maintain it throughout the LICENSE TERM.

ARTICLE VI

United States Manufacture

6.1 LICENSEE shall both reduce the LICENSED INVENTION(S) to practice and substantially manufacture the LICENSED INVENTION(S) in the United States.

6.2 LICENSEE shall make a bona fide attempt to use or sell the LICENSED INVENTION(S) in the United States.

6.3 LICENSEE shall promptly report to LICENSOR its discontinuance of making the benefits of the LICENSED INVENTION(S) available to the public.

6.4 Failure to comply with the terms of this ARTICLE shall be cause for unilateral modification or termination of this Agreement in accordance with ARTICLE XX.

ARTICLE VII

Royalty and Payment

7.1 In consideration of the license granted in ARTICLE II, LICENSEE shall remit to LICENSOR a nonrefundable license fee in the amount of [****] DOLLARS (\$[****]) upon the execution of this Agreement by LICENSEE.

7.2 LICENSEE agrees to pay LICENSOR a running royalty of [****] PERCENT ([****]%) of the NET SALES of ROYALTY-BASE PRODUCTS and ROYALTY-BASE SERVICES. The running royalty shall be remitted to LICENSOR annually, within THIRTY (30) days of the end of each ACCOUNTING PERIOD.

7.3 LICENSEE agrees to pay LICENSOR the following annual minimum guaranteed royalties according to the following payment schedule:

End Of the second ACCOUNTING PERIOD: [****] DOLLARS (\$[****])

End of the third ACCOUNTING PERIOD: [****] DOLLARS (\$[****])

End of the fourth ACCOUNTING PERIOD: [****] DOLLARS (\$[****])

End of the fifth and each subsequent ACCOUNTING PERIOD: [****] DOLLARS (\$[****])

The minimum royalty shall be remitted within THIRTY (30) days of the end of each ACCOUNTING PERIOD.

7.4 The minimum royalty specified in Section 7.3 shall not be due for any particular ACCOUNTING PERIOD if the running royalties specified in Section 7.2 are equal or greater than the minimum royalty.

7.5 To ensure that LICENSOR receives all royalty payments due under this Agreement, LICENSEE agrees that in the event any ROYALTY-BASE PRODUCTS shall be sold, transferred, or disposed of for purposes of resale (a) to any type of organization or individual who owns a controlling interest in LICENSEE by stock ownership or otherwise, (b) to any type of organization in which LICENSEE shall own, directly or indirectly, a controlling interest by stock ownership or otherwise, or (c) to any type of organization with which, or individual with whom, LICENSEE, its stockholders, or associated companies shall have any agreement, understanding, or arrangement (such as, among other things, an option to purchase stock, an arrangement involving a division of profits, or special rebates or allowances) without which agreement, understanding, or arrangement, prices paid by such organization or individual for the ROYALTY-BASE PRODUCTS would be higher than the NET SALES reported by LICENSEE, or if such agreement, understanding, or arrangement, results in extending to such organization or individual lower prices for ROYALTY-BASE PRODUCTS than those charged to outside concerns buying similar merchandise in similar amounts and under similar conditions, then, and in all similar events, the royalties to be paid under this Agreement for the ROYALTY-BASE PRODUCTS shall be based upon the NET SALES at which the purchaser of the ROYALTY-BASE PRODUCTS resells the ROYALTY-BASE PRODUCTS, rather than upon the NET SALES of LICENSEE.

7.6 Under this Agreement, ROYALTY-BASE PRODUCTS and ROYALTY-BASE SERVICES will be considered sold when invoiced, shipped, or paid, whichever occurs first.

7.7 Royalties shall be paid within THIRTY (30) days of the end of each ACCOUNTING PERIOD. Royalties shall be paid by check, denominated in United States dollars, and made payable to the National Aeronautics and Space Administration. The check shall be mailed to LICENSOR at the address set forth in ARTICLE XV of this Agreement concurrently with the report required in ARTICLE VIII of this Agreement.

7.8 LICENSOR shall assess interest, penalties, and administrative costs in accordance with the Federal Claims Collections Standards, 4 CFR §§ 100-105, on all payments due LICENSOR which are not timely paid by LICENSEE.

ARTICLE VIII

Reports

8.1 LICENSEE shall submit to LICENSOR written reports within THIRTY (30) days of the end of every ACCOUNTING PERIOD whether or not royalties are due. Each report shall be submitted concurrently with the royalties required by ARTICLE VII.

8.2 Each report shall include the following information:

- (a) A narrative description of the steps being taken to reduce the LICENSED INVENTION(S) to practice.
- (b) A narrative description of the steps being taken to create a market demand for the LICENSED INVENTION(S), to commercialize the LICENSED INVENTION(S), and to meet market demand for the LICENSED INVENTION(S).
- (c) A narrative description of the ROYALTY-BASE PRODUCTS and ROYALTY-BASE SERVICES currently being offered for sale by LICENSEE. Copies of current sales brochures, promotional materials, and price lists shall be included with this description.
- (d) A list of the geographic locations at which the LICENSED INVENTION(S) is being manufactured.
- (e) The number and type of ROYALTY-BASE PRODUCTS sold or disposed of by LICENSEE.
- (f) The number and type of ROYALTY-BASE PRODUCTS sold or disposed of by each reseller of ROYALTY-BASE PRODUCTS under Section 7.5.
- (g) LICENSEE'S GROSS SALES.
- (h) GROSS SALES for each reseller of ROYALTY-BASE PRODUCTS under Section 7.5.
- (i) LICENSEE'S NET SALES.
- (j) NET SALES for each reseller of ROYALTY-BASE PRODUCTS under Section 7.5.

(k) The amount of royalties due LICENSOR.

8.3 Each report shall be accompanied by a certification by an officer of LICENSEE that the LICENSEE is complying with the terms and conditions of this Agreement and that the responses to each part of Section 8.2 are accurate and complete.

8.4 LICENSEE shall, on an annual basis, submit to LICENSOR an audited balance sheet and an audited income statement. Internal audits are permissible, but LICENSOR reserves the right to require an independent audit and additionally reserves the right to approve of the auditor.

8.5 LICENSEE shall submit a final report to LICENSOR within THIRTY (30) days after the termination of this Agreement.

ARTICLE IX

Audit Rights

9.1 LICENSEE shall keep full, true, and accurate records for the purpose of LICENSOR verifying LICENSEE'S reports to LICENSOR under ARTICLE VIII, verifying LICENSEE'S royalty payments to LICENSOR under ARTICLE VII, and for determining LICENSEE'S activities in general under the Agreement. These records shall include, but are not limited to, ledgers and journals of account, customer orders, invoices, shipping documents, inventory records, computer records, purchase orders, and tax records. These records, as a whole, shall include information which will allow, at a minimum, identification of suppliers, customers, items sold or otherwise transferred, and/or services rendered, as well as whether the LICENSEE is operating within the scope of its license.

9.2 The records described in Section 9.1 shall be available for audit by LICENSOR, or by an authorized representative of LICENSOR, at all reasonable times for the LICENSE TERM and for three (3) calendar years thereafter. In addition, LICENSEE shall permit inspection by LICENSOR, or by an authorized representative of LICENSOR, of LICENSEE'S assembly facilities and of LICENSEE'S inventory of ROYALTY-BASE PRODUCTS, including parts, works-in-progress, and finished goods, during any audit by LICENSOR.

9.3 If LICENSOR, as a result of an audit, discovers an underpayment of royalties which exceeds [****] PERCENT ([****]%) of the royalties due for a particular period, then LICENSEE shall reimburse LICENSOR for the cost of the audit, including all related costs of performing the audit (e.g., travel, food, lodging, cost of professional services, etc.), in addition to any penalties assessed pursuant to Section 7.8.

ARTICLE X

Marking

10.1 LICENSEE shall mark all ROYALTY-BASE PRODUCTS, or products incorporating ROYALTY-BASE PRODUCTS, in accordance with the statutes of the United States relating to the

marking of patented articles (see 35 U.S.C. § 287). Such marking shall be accomplished by fixing on the article or when, from the character of the article, this cannot be done, by fixing to it, or to the package wherein one or more articles is contained, a label including the notation "Licensed from the National Aeronautics and Space Administration under U.S. Patent No. X,XXX,XXX." Such marking shall also be included into all literature and/or advertising materials describing the LICENSED INVENTION(S).

ARTICLE XI

Use of the NASA Name

11.1 Except as required by Section 10.1, LICENSEE may use the name of LICENSOR, or the acronym "NASA", only in truthful statements concerning its relationship with LICENSOR. The letters "NASA" may be used in such truthful statements only if they are:

- (a) used in their normal typed or printed form;
- (b) the same size, color, and intensity as the rest of the words in a sentence;
- (c) not used in their stylized version as they appear in the NASA logotype insignia; and
- (d) not used to indicate that NASA approves of the LICENSEE'S products, processes, etc.

11.2 Uses of the letters "NASA" and the words "National Aeronautics and Space Administration", other than those specified in Section 11.1, shall require the express written approval of LICENSOR. Approval by LICENSOR shall be based on applicable law (i.e., 42 U.S.C. §§ 2459(b), 2472(a), and 2473 (c)(l); and 14 CFR § 1221.100 *et seq.*) and NASA policy governing the use of the words "National Aeronautics and Space Administration" and the letters "NASA".

11.3 LICENSEE agrees to make copies of its marketing literature or items available to LICENSOR so that LICENSOR can determine that such use is in accordance with the terms of this ARTICLE.

ARTICLE XII

Disclaimer of Warranties

12.1 LICENSOR MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, AS TO ANY MATTER WHATSOEVER.

12.2 In particular, nothing in this Agreement shall be construed as:

- (a) A warranty or representation by LICENSOR as to the validity or scope of any LICENSED PATENT(S); or

(b) A warranty or representation that anything made, used, sold, or otherwise disposed of under any license granted in this Agreement is or will be free from infringement of any type, including patent infringement, copyright infringement, and trademark infringement; or

(c) A requirement that LICENSOR shall file any patent application, secure any patent, or maintain any patent in force, other than the LICENSED PATENT(S); or

(d) An obligation to bring or prosecute actions or suits against THIRD PARTIES for infringement; or

(e) An obligation to furnish any manufacturing or technical information; or, if any such information is supplied, a warranty or representation that such information is accurate; or

(f) Conferring a right to use in advertising, publicity or otherwise the name of any inventor of the LICENSED INVENTION(S) or the NASA name, seal, insignia, logotype insignia or any other adaptation without the prior written consent of LICENSOR (except as otherwise provided in ARTICLE XI); or

(g) Precluding the export from the United States of ROYALTY-BASE PRODUCTS on which royalties shall have been paid as provided in ARTICLE VII, provided that the item can be exported under the export control laws of the United States; or

(h) Granting by implication, estoppel, or otherwise, any licenses or other rights under any other patent of LICENSOR (or any other PERSON in the United States or any foreign country); or

(i) Granting by implication, estoppel, or otherwise, any licenses or rights under other patents or patent applications of LICENSOR other than as provided by this Agreement in Section 2.2, regardless of whether such other patents or patent applications are dominant, subordinate, or an improvement to the inventions as claimed, of the LICENSED PATENT(S) or LICENSED PATENT APPLICATIONS), nor to other applications that did not claim the inventions.

(j) Conferring upon any PERSON (1) any immunity from or defenses under the antitrust laws, (2) any immunity from a charge of patent misuse, or (3) any immunity from the operation of Federal, State, or other law.

ARTICLE XIII

Risk Allocation and Indemnification

13.1 LICENSOR makes no representation, extends no warranties of any kind, either express or implied, and assumes no responsibility whatsoever with respect to use, sales, or other disposition by LICENSEE or its vendees or other transferees of products incorporating or made by the use of (1) the LICENSED INVENTION(S) or (2) information, if any, furnished under this Agreement.

13.2 LICENSEE shall indemnify LICENSOR, its officers and employees, and hold them harmless against all liabilities, demands, damages, expenses, or losses including, but not limited to, attorney's fees, court costs, and the like, arising (1) out of the use by LICENSEE or its transferees of the LICENSED INVENTION(S) or information furnished under this Agreement, or (2) out of any sale, use, or other disposition by LICENSEE or its transferees of products, processes, or compositions, made by use of such inventions or information.

13.3 It shall be the sole responsibility of the LICENSEE to ensure that any and all embodiments of the LICENSED INVENTION(S) are safe under all circumstances.

13.4 Independent of, severable from, and to be enforced independently of any other enforceable or unenforceable provision of this Agreement, other than as provided in Sections 13.1 and 13.2, or other than for infringement of one PARTY'S intellectual property rights by another PARTY, (including any engagement in licensable activities by licenses beyond the scope of the license provided by this Agreement), neither PARTY will be liable to the other PARTY (nor to any THIRD PARTY claiming rights derived from the other PARTY'S rights) for incidental, consequential, special, punitive, or exemplary damages of any kind, including lost profits, loss of business, or other economic damage, and further including injury to property, as a result of breach of any warranty or other term of this Agreement, regardless of whether the PARTY liable or allegedly liable was advised, had reason to know, or in fact knew of the possibility thereof.

ARTICLE XIV

Patent Validity

14.1 If, in any proceeding in which the validity, infringement, or priority of invention of any claim of the LICENSED PATENT(S) to LICENSEE is in issue, a judgment or decree is entered which becomes final (below referred to as an "final judgment"), the construction placed upon any such claim by such final judgment shall thereafter be followed, not only as to such claim but as to all claims to which such construction applies, with respect to subsequently occurring acts. If such final judgment holds any claim invalid, LICENSEE shall be relieved prospectively (1) from including in its reports ROYALTY-BASE PRODUCTS and ROYALTY-BASE SERVICES sold or otherwise disposed of covered only by such claim or any broader claim to which such final judgment is applicable, and (2) from the performance of those other acts which may be required by this Agreement only because of any such claim. However, if there are two or more conflicting final judgments with respect to the same claim based on the same grounds or where the same issues were raised, the decision of the higher tribunal shall be followed, but if the tribunals be of equal dignity, then the decision more favorable to the claim shall be followed.

14.2 In the event evidentiary material comes to the attention of the LICENSEE subsequent to the LICENSEE'S execution of this Agreement which, in the judgment of the LICENSEE, bears on the validity or scope of any LICENSED PATENT(S), the LICENSOR will in good faith discuss with the LICENSEE whether such evidentiary material so affects the validity or scope of the LICENSED PATENT(S) to which it is asserted to apply that the terms of the license in respect to such LICENSED PATENT(S) should be modified.

14.3 The LICENSEE, subsequent to the date of its execution of this Agreement, may assert the invalidity of any claim in any LICENSED PATENT(S), if coupled with or followed by:

(a) withholding, or notice of intention to withhold, or denial of obligation to pay, royalties otherwise payable under this Agreement in respect to the LICENSEE'S operations under such claim; or

(b) initiation or participation in a suit challenging or denying the validity of such claim in reference to LICENSEE'S operations under this Agreement, that may, at the option of the LICENSOR, be conclusively presumed to constitute LICENSEE'S termination, as of the earliest provable date of such withholding, notice, denial, initiation, or participation, of its Agreement including its obligation for payment of royalties due from the date of the termination.

14.4 If an action by a THIRD PARTY requires the LICENSEE to defend its right to practice the LICENSED PATENT(S) pursuant to this Agreement, then LICENSOR may, in its sole discretion, cooperate and assist in all respects and, to the extent possible, make available relevant records, papers, information, samples, models, specimens; and the like.

ARTICLE XV

Points of Contact

15.1 The following individuals are designated as the points of contact for their respective PARTY. These points of contact are the principal representatives of the PARTIES involved in the performance of this Agreement.

LICENSOR

NASA Langley Research Center
Patent Counsel Office
3 Langley Blvd.
Mail Stop 212
Hampton, VA 23681-2199
Telephone No.: 757-864-9260
Facsimile No.: 757-964-9190

LICENSEE

Luna Technologies, Inc.
Douglas B. Juanarena,
President/CEO
2851 Commerce Street SE
Blacksburg, VA 26040
Telephone No.: 540-552-5128
Facsimile No.: 540-951-0760

ARTICLE XVI

Notices

16.1 Notices hereunder will be delivered and effective as follows:

(a) Every notice required or contemplated by this Agreement to be given either PARTY may be delivered in person or may be sent by courier, telecopy, express mail, telex, telegraph or postage prepaid certified or registered air mail (or its equivalent under the laws of the country where mailed), addressed to the PARTY for whom it is intended, at the address specified in ARTICLE XV. Either PARTY may change its address for notice by giving notice to the other PARTY of the change.

(b) Any written notice will be effective no earlier than the date delivered.

(c) Unless otherwise provided in this Agreement, notice by courier, or by express, certified, or registered mail, will be effective on the date it is officially recorded as delivered by return receipt or the equivalent, and in the absence of such record as to delivery, it will be rebuttably presumed to have been delivered on the fifth business day after it was deposited, first-class postage prepaid, in the mail.

(d) Notice by telex or telegraph will be deemed given at the time it is recorded by the carrier in the ordinary course of business as having been delivered, but in any event no later than one business day after dispatch.

(e) Notice not given in writing will be effective only if acknowledged in writing by a duly authorized officer of the PARTY to whom it was given.

(f) As used in this ARTICLE, a reference to a particular date means the date itself, if a business day, otherwise the first business day after the date.

ARTICLE XVII

Nonassertion

17.1 LICENSOR agrees not to assert any of its rights under any others of its patents against LICENSEE or its transferees, which rights are necessary to the practice of rights granted to LICENSEE under this Agreement.

ARTICLE XVIII

Disputes

18.1 All disputes concerning the interpretation or application of this Agreement shall be discussed mutually between the PARTIES. Any disputes which are not disposed of by mutual Agreement shall be decided by the NASA Associate General Counsel (Intellectual Property), or designee, who shall reduce the decision to writing and mail or otherwise furnish a copy thereof to LICENSEE. The decision shall be final and conclusive, unless within THIRTY (30) days from the date of receipt of such decision, LICENSEE mails or otherwise furnishes a written appeal addressed to the Administrator, National Aeronautics and Space Administration, Washington, DC 20546. LICENSEE shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. The NASA Administrator, or designee, shall make the decision on the appeal, which shall be the final agency decision from which there will be no further right of administrative appeal.

ARTICLE XIX

Breach

19.1 In the event of a BREACH of any warranty, covenant, or other provision of this Agreement, the following notice and cure procedures, if the BREACH is curable, shall apply.

19.2 The NONBREACHING PARTY shall give the BREACHING PARTY notice describing the BREACH and stating the time, as provided below, within which the BREACH must be cured.

19.3 If a provision of this Agreement sets forth a cure period for the BREACH in question, then that provision shall take precedence over any cure period set forth in this ARTICLE.

19.4 No cure period is required, except as may be otherwise provided in this Agreement, if:

(a) this Agreement sets forth specific deadline dates for the obligation allegedly breached; or

(b) this Agreement otherwise states that no cure period is required in connection with the termination in question.

19.5 If the BREACH is of an obligation to pay money, or a nonwillful curable BREACH of an obligation of the BREACHING PARTY relating to the NONBREACHING PARTY'S intellectual property rights, then the BREACHING PARTY shall have FIVE (5) business days to cure the BREACH after written notice of such BREACH by the BREACHING PARTY.

19.6 If the BREACH is willful and of an obligation of the BREACHING PARTY relating to the NONBREACHING PARTY'S intellectual property rights, then the NONBREACHING PARTY may, in its sole discretion, specify in the notice of BREACH that no cure period will be permitted.

19.7 If the BREACH is other than a BREACH of the kind described above in this ARTICLE, then the cure period will be THIRTY (30) days after the effective date of notice of the BREACH from the NONBREACHING PARTY.

19.8 The BREACHING PARTY will be deemed to have cured such BREACH if within the cure period it takes steps reasonably adequate to alleviate any damage to the NONBREACHING PARTY resulting from the BREACH and to prevent a similar future BREACH.

19.9 If a BREACH has not been cured at the end of its cure period, if any, then this Agreement may be terminated upon expiration of the cure period as provided by ARTICLE XX.

ARTICLE XX

Termination

20.1 The PARTIES may terminate or modify this Agreement by mutual consent upon such terms as they may agree in writing.

20.2 Either PARTY may terminate this Agreement by failing to extend the LICENSE TERM.

20.3 Either PARTY may terminate this Agreement upon the discovery by that PARTY of any intentional MATERIAL false statement or other intentional MATERIAL misrepresentation made or submitted to that PARTY, by the other PARTY, which BREACHES any obligation under the terms of this Agreement.

20.4 Either PARTY may terminate this Agreement upon any failure by the other PARTY to provide, within TEN (10) business days after notice, satisfactory and adequate assurances to the terminating PARTY that the other PARTY is able and willing to fully and effectively perform its obligations under this Agreement.

20.5 LICENSEE may prospectively terminate this Agreement as a whole, as well as any concomitant future obligations evidenced in writing executed after the LICENSE COMMENCEMENT DATE, with respect to any LICENSED PATENT(S) upon ninety (90) days written notice to LICENSOR.

20.6 This Agreement may be terminated by LICENSOR if:

(a) LICENSOR determines that LICENSEE has failed or will fail to achieve PRACTICAL APPLICATION of the LICENSED INVENTION(S) as provided by Section 5.1.

(b) LICENSOR determines that LICENSEE has failed or will fail to maintain PRACTICAL APPLICATION of the LICENSED INVENTION(S) as provided by Section 5.2.

(c) LICENSOR determines that LICENSEE has failed or will fail to both reduce to practice and manufacture the LICENSED INVENTION(S) in the United States as provided by Section 6.1.

(d) LICENSOR determines that LICENSEE has failed or will fail to meet market demand for the LICENSED INVENTION(S) as provided by ARTICLE V.

(e) LICENSEE fails to pay royalties as provided by ARTICLE VII.

(f) LICENSEE fails to submit reports as provided by ARTICLE VIII.

(g) LICENSEE fails to pay royalties sufficient to cover the patent maintenance fees due on the LICENSED PATENT(S) for each of the years that patent maintenance fees are due.

(h) LICENSOR determines that such action is necessary to meet the requirements for public use specified by Federal regulations issued after the LICENSE COMMENCEMENT DATE and LICENSEE does not reasonably satisfy such requirements.

(i) LICENSEE commits a MATERIAL BREACH of a covenant or term contained in this Agreement.

20.7 LICENSOR may terminate this Agreement if LICENSEE becomes "INSOLVENT." LICENSEE must notify LICENSOR within THIRTY (30) days after becoming INSOLVENT. LICENSEE'S failure to conform to this requirement shall be deemed a material, incurable breach.

20.8 LICENSEE must promptly inform LICENSOR of its intention to file a voluntary petition in bankruptcy or of another's communicated intention to file an involuntary petition in bankruptcy. LICENSOR may terminate this Agreement upon receiving notice of intention to file. LICENSEE'S filing without conforming to this requirement shall be deemed a material, pre-petition incurable breach.

20.9 Before LICENSOR modifies or terminates this Agreement for any cause, LICENSOR will furnish to LICENSEE a written notice stating LICENSOR'S intention to modify or terminate the Agreement and the reasons therefor. LICENSEE will be allowed THIRTY (30) days after receipt of such notice to remedy any BREACH of the Agreement or show cause why the Agreement should not be terminated. A response to such notice should be addressed to the General Counsel, National Aeronautics and Space Administration, Washington, DC 20546.

20.10 LICENSEE may directly appeal in writing, within THIRTY (30) days of receipt of the notice stating LICENSOR'S intention to modify or terminate the Agreement, to the NASA Administrator on the question of whether the Agreement should be terminated. If reconsideration of the intention to terminate the Agreement has been requested under Section 20.9, then LICENSEE may appeal to the NASA Administrator within THIRTY (30) days after receiving notice of an adverse decision or determination from the NASA General Counsel. The notice of appeal and all supporting documentation should be addressed to the Administrator, National Aeronautics and Space Administration, Washington, DC 20546. LICENSEE shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. The NASA Administrator, or designee, shall make the decision on the appeal, which shall be the final agency decision from which there will be no further right of administrative appeal.

20.11 If no action is taken under Sections 20.9 and 20.10, then the decision to modify or terminate this Agreement shall become final.

20.12 All royalties and reports due up to and including the date of termination of this Agreement are due within THIRTY (30) days of the date of termination.

ARTICLE XXI

Assignment

21.1 LICENSEE may not assign or transfer this Agreement, and any purported assignment or transfer shall be null and void and a BREACH of this Agreement.

ARTICLE XXII

Governing Law

22.1 This Agreement will be interpreted and enforced in accordance with United States federal law.

ARTICLE XXIII

Independent Entities

23.1 The Parties are separate and independent entities. Except as may be expressly and unambiguously provided in this Agreement, no partnership or joint venture is intended to be employee relationship.

23.2 Except to the extent expressly provided in this Agreement, neither PARTY has, and neither PARTY shall attempt to assert, the authority to make commitments for or to bind the other PARTY to any obligation.

ARTICLE XXIV

Effect of Partial Invalidity

24.1 If any one or more of the provisions of this Agreement should be ruled wholly or partly invalid or unenforceable by a court or other government body of competent jurisdiction, and as long as the fundamental objectives of the Agreement can be carried out, then:

(a) the validity and enforceability of all provisions of this Agreement not ruled to be invalid or unenforceable will be unaffected;

(b) the provision(s) held wholly or partly invalid or unenforceable will be deemed to be amended, and the court or other government body is authorized to reform the provision(s), to the minimum extent necessary to render them valid and enforceable in conformity with the PARTIES' intent as manifested herein; and

(c) if the ruling, and/or the controlling principle of law or equity leading to the ruling, is subsequently *overruled*, modified, or amended by legislative, judicial, or administrative action, then the provision(s) in question, as originally set forth in this Agreement, will be deemed to be valid and enforceable to the maximum extent permitted by the new controlling principle of law or equity.

ARTICLE XXV

Nonwaiver

25.1 The failure of either PARTY at any time to require performance by the other PARTY of any provision of this Agreement shall in no way affect the right of such PARTY to require future performance of such provision. Any waiver by either PARTY of any BREACH of any provision of this Agreement shall not be construed as a waiver of any continuing or succeeding BREACH of such provision, a waiver of the provision itself, or a waiver of any right under this Agreement.

ARTICLE XXVI

Entire Agreement

26.1 Except as may be expressly provided otherwise herein, this Agreement constitutes the entire Agreement between the PARTIES concerning the subject matter thereof. No prior or contemporaneous representations, inducements, promises, or agreements, oral or otherwise, between the PARTIES with reference thereto will be of any force or effect. This Agreement may only be modified by written agreement of the PARTIES.

ARTICLE XXVII

Article Headings

27.1 The ARTICLE headings contained in this Agreement are for reference purposes only and shall not in any way control the meaning or interpretation of this Agreement.

ARTICLE XXVIII

Counterparts

28.1 This Agreement may be executed in separate counterparts, each of which so executed and delivered shall constitute an original, but all such counterparts shall together constitute one and the same instrument. Any such counterpart may comprise one or more duplicates or duplicate signature pages, any of which may be executed by less than all of the PARTIES, provided that each PARTY executes at least one such duplicate or duplicate signature page. The PARTIES stipulate that a photostatic copy of an executed original will be admissible in evidence for all purposes in any proceeding as between the PARTIES.

ARTICLE XXIX

Acceptance

29.1 In witness whereof, each PARTY has caused this Agreement to be executed by its duly authorized representatives:

LICENSOR:

LICENSEE:

National Aeronautics and Space Administration

Luna Technologies, Inc.

By: /s/ Edward A. Frankle

/s/ Douglas B. Juanarena

Edward A. Frankle
NASA General Counsel

Douglas B. Juanarena
President and CEO

Date: December 20, 2000

Date: December 6, 2000

cc:
Office of Patent Counsel
NAA Langley Research Center

CONFIDENTIAL TREATMENT REQUESTED: Certain portions of this document have been omitted pursuant to a request for confidential treatment and, where applicable, have been marked with an asterisk (“[****]”) to denote where omissions have been made. The confidential material has been filed separately with the Securities and Exchange Commission.

LICENSE AGREEMENT
UNITED STATES OF AMERICA
AND
LUNA INNOVATIONS INCORPORATED
EXCLUSIVE LICENSE AGREEMENT DE-384
EFFECTIVE DATE: 10/28/04

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LICENSE AGREEMENT

PREAMBLE

This License Agreement ("AGREEMENT") is entered into between the National Aeronautics and Space Administration (NASA), an agency of the United States, hereinafter referred to as LICENSOR, having its headquarters at Washington, D.C., and Luna Innovations Incorporated, a corporation of the State of Delaware, having its principal place of business at 2851 Commerce Street, Blacksburg, VA 24060, hereinafter referred to as LICENSEE, as of the date of execution of the last PARTY hereto.

WITNESSETH:

WHEREAS, under the authority of 35 U.S.C. § 200 *et seq.*, the U.S. Department of Commerce has issued Patent Licensing Regulations (37 CFR Part 404) specifying the terms and conditions upon which licenses may be granted for inventions assigned to LICENSOR; and

WHEREAS, LICENSOR is the assignee of U.S. Patent No. 5,214,955 for an invention entitled "Constant Frequency Pulsed Phase-Lock Measuring Device," which issued on June 1, 1993; U.S. Patent No. 5,150,620 for an invention entitled "Method of Recertifying Load Bearing Member," which issued on September 29, 1992; U.S. Patent No. 5,841,032 for an invention entitled "Variable and Fixed Frequency Pulsed Phase-Locked Loop" which issued on November 24, 1998; U.S. Patent No. 5,617,873 for an invention entitled "Non-invasive Method And Apparatus For Monitoring Intracranial Pressure And Pressure Volume Index In Humans," which issued on April 8, 1997; U.S. Patent No. 6,413,227 for an invention entitled "Method And Apparatus For Assessment Of Changes In Intracranial Pressure," which issued on July 2, 2002; U.S. Patent No. 6,475,147 for an invention entitled "Ultrasonic Apparatus And Technique To Measure Changes In Intracranial Pressure," which issued on November 5, 2002; U.S. Patent No. 6,761,695 for an invention entitled "Method and Apparatus for Non-Invasive Measurement of Changes in Intracranial Pressure," which issued on July 13, 2004; U.S. Patent No. 6,746,410 for an invention entitled "Method And Apparatus For Determining Changes In Intracranial Pressure Utilizing Measurement Of The Circumferential Expansion Or Contraction Of A Patient's Skull," which issued on June 8, 2004; U.S. Patent No. 6,740,048 for an invention entitled "Non-Invasive Method Of Determining Diastolic Intracranial Pressure," which issued on May 25, 2004; U.S. Patent No. 6,773,407 for an invention entitled "Non-Invasive Method of Determining Absolute Intracranial Pressure," which issued on August 10, 2004; U.S. Patent Application No. 10/805,816, filed on March 22, 2004, entitled "Ultrasonic Apparatus and Method to Assess Compartment Syndrome;" and U.S. Patent Application No. 10/911,755 filed on August 2, 2004, entitled "Method and Apparatus to Assess Compartment Syndrome;" and PCT Patent Application Number PCT/US02/37580, filed on November 22, 2002, entitled "Method and Apparatus for Non-Invasive Measurement of Changes in Intracranial Pressure."

WHEREAS, U.S. Patent Application No. 10/911,755, entitled, "Method and Apparatus to Assess Compartment Syndrome" is jointly owned by LICENSOR and THE REGENTS OF THE UNIVERSITY OF CALIFORNIA (hereinafter "JOINT OWNER"), having a system-wide business

address of 1111 Franklin Street, Oakland, CA, (hereinafter LICENSOR and JOINT OWNER collectively referred to as JOINT OWNERS); and JOINT OWNERS have entered into an Agreement in regard to this jointly owned invention(s), entitled: "AGREEMENT BETWEEN THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AND THE REGENTS OF THE UNIVERSITY OF CALIFORNIA CONCERNING LICENSING OF 'ULTRASONIC APPARATUS AND METHOD TO ASSESS COMPARTMENT SYNDROME'" (hereinafter the "JOINT OWNERSHIP AGREEMENT") in which The REGENTS OF THE UNIVERSITY OF CALIFORNIA, designates LICENSOR as the primary negotiating and commercializing agent for any license involving the subject jointly owned invention(s);

WHEREAS, LICENSOR and LICENSEE agree that the JOINT OWNERSHIP AGREEMENT between JOINT OWNERS is incorporated into this License Agreement by reference (Appendix B);

WHEREAS, LICENSEE, in consideration of the grant of a license under U.S. Patent Nos. 5,150,620; 5,214,955; 5,617,873; 5,841,032; 6,413,227; 6,475,147; 6,740,048; 6,746,410; 6,761,695; and 6,773,407; U.S. Patent Application Nos. 10/805,816 and 10/911,755; and any national or regional Patent Application(s) that rely on PCT Patent Application Number PCT/US02/37580, will pay royalties, make all necessary capital investments, and achieve PRACTICAL APPLICATION of the invention; and,

WHEREAS, LICENSOR has determined that the granting of a license to LICENSEE under U.S. Patent Nos. 5,150,620; 5,214,955; 5,617,873; 5,841,032; 6,413,227; 6,475,147; 6,740,048; 6,746,410; 6,761,695; and 6,773,407; U.S. Patent Application Nos. 10/805,816 and 10/911,755; and any national or regional Patent Application(s) that rely on PCT Patent Application Number PCT/US02/37580 will provide the necessary incentive for LICENSEE to achieve the desired early PRACTICAL APPLICATION of the invention and the granting of such license to LICENSEE will therefore be in the public interest;

NOW, THEREFORE, in accordance with said Patent Licensing Regulations, and in consideration of the foregoing and of the terms hereinafter contained in this AGREEMENT, the LICENSOR and LICENSEE agree as set forth below:

ARTICLE I

Definitions

"ACCOUNTING PERIOD" shall mean the period of time for which royalties are calculated. The first ACCOUNTING PERIOD will begin on the LICENSE COMMENCEMENT DATE and end on December 31, 2004. Each subsequent ACCOUNTING PERIOD shall begin on the first day and end on the last day of each subsequent calendar year. The last ACCOUNTING PERIOD shall end on the LICENSE EXPIRATION DATE.

"BREACH" shall mean (a) a violation or nonperformance by a PARTY of a MATERIAL term, condition, covenant or warranty herein, or (b) a misrepresentation made hereunder or (c) a misrepresentation by LICENSEE to induce LICENSOR to enter into this AGREEMENT (also see "MATERIAL").

“BREACHING PARTY” shall mean the PARTY in BREACH, as used in Section 18.2.

“GROSS SALES” shall mean either the total amount invoiced by or for LICENSEE, and, in the event that some or all of the amount invoiced by LICENSEE is in the form of non-monetary remuneration, then the equivalent dollar value sum of such remuneration, for all disposals (i.e., sales, uses, including uses by LICENSEE, leases, transfers, etc.) of ROYALTY-BASE PRODUCTS, ROYALTY-BASE SERVICES and ROYALTY-BASE PROCESSES for consideration determined in, or as if in, an arm’s length transaction.

“INSOLVENT” shall mean that LICENSEE has either ceased to pay its debts (which may include failure to pay royalty payments under this AGREEMENT) in the ordinary course of business or cannot pay its debts as they fall due or is insolvent within the meaning of the Federal Bankruptcy Code (11 U.S.C. § 101 (31)).

“LICENSE COMMENCEMENT DATE” shall mean the date that the last PARTY has executed this AGREEMENT.

“LICENSE EXPIRATION DATE” shall mean the last day that this AGREEMENT is in effect.

“LICENSE TERM” shall mean the period of time starting with the LICENSE COMMENCEMENT DATE and ending with the LICENSE EXPIRATION DATE.

“LICENSED AREA” shall mean the United States of America, its territories, and its possession; and any national or regional area in the world that is covered by a LICENSED PATENT or LICENSED PATENT APPLICATION.

“LICENSED FIELD OR EMBODIMENT(S)” shall mean all medical applications for assessing and measuring: (1) intracranial pressure, and (2) Compartment Syndrome.

“LICENSED INVENTION” shall mean the inventions described in the LICENSED PATENT APPLICATION and as subsequently defined by the claims of the corresponding LICENSED PATENT and as may be further limited by ARTICLE II, and shall mean the inventions defined by the claims of the LICENSED PATENT and as may be further limited by ARTICLE II.

“LICENSED PATENT” shall mean any patents maturing from any LICENSED PATENT APPLICATION, and shall mean United States Patent Nos. 5,150,620; 5,214,955; 5,617,873; 5,814,033 ; 6,413,227; 6,475,147; 6,740,048; 6,746,410; and 6,761,695, and shall include any corresponding reissue patents, re-examinations and extensions of such LICENSED PATENT; modifications of said LICENSED PATENT by means of certificates of correction or reexamination certificates.

“LICENSED PATENT APPLICATION” shall mean United States Patent Application Nos. 10/263,286; 10/805,816 and 10/911,755; and any national or regional Patent Application(s) that rely

on PCT Patent Application Number PCT/US02/37580; as well as any continuation or divisional patent applications derived from these applications (specifically excluding any patent applications containing new matter).

“MATERIAL,” with respect to a particular matter (e.g., a BREACH), shall mean that the matter is shown to affect adversely (a) the rights and benefits of the other PARTY under this AGREEMENT; or (b) the ability of the other PARTY to perform its obligations hereunder; and, in either case, to such a degree that a reasonable person in the management of his or her own affairs would be more likely than not to decline to enter into this AGREEMENT in view of the matter in question.

“NET SALES” as to ROYALTY-BASE PRODUCTS and ROYALTY-BASE SERVICES shall mean GROSS SALES, less allowances for returns and less (to the extent separately stated, and not charged to the customer or others, on the invoices): (1) regular trade and quantity discounts; (2) insurance and shipping charges from the point of origin; (3) duties, tariffs, and other customs charges; and (4) sales, use, value added, and similar taxes. In the case of a sale or other disposition of ROYALTY-BASE PRODUCTS or ROYALTY-BASE SERVICES which are transferred to a purchaser who does not deal at arm’s length, or transferred or otherwise disposed of for other than monetary consideration (including allocations to LICENSEE’S own beneficial use), NET SALES shall be calculated in accordance with Section 7.6 of this AGREEMENT. As to ROYALTY-BASE PROCESSES, “NET SALES” shall mean GROSS SALES derived from the use, application, lease, transfer, or other utilization of the ROYALTY-BASE PROCESSES, less allowances for returns and less (to the extent separately stated, and not charged to the customer or others, on the invoices): i) regular trade and quantity discounts; ii) insurance; iii) duties, tariffs, and other customs charges; and iv) use, value added, sales, and similar taxes. In the case of a use of ROYALTY-BASE PROCESSES for the benefit of a purchaser who does not deal at arm’s length, or for other than monetary consideration (including LICENSEE’S own beneficial uses), NET SALES shall be calculated in accordance with Section 7.6 of this AGREEMENT.

“NONBREACHING PARTY” shall mean the PARTY not in BREACH, as used in Section 18.2.

“PARTY” shall mean a party to this AGREEMENT.

“PERSON” shall mean a natural person; a corporation (for profit or not-for-profit); an association; a partnership (general or limited); a joint venture; a trust; a government or political department, subdivision, or agency; or any other entity.

“PRACTICAL APPLICATION” shall mean, with respect to the LICENSED INVENTION, to reduce it to practice and to commercialize it, i.e., to manufacture it in the case of a composition or product, to practice it in the case of a process or method, or to operate it in the case of a machine or system; and, in each case, under such conditions as to establish: i) that a market for the LICENSED INVENTION has been created, and to the extent practicable, that a market has been created in the United States; ii) that it is being utilized; iii) that its benefits are, to the extent permitted by law or Government regulations, available to the public on reasonable terms; and iv) that market demand, at least in the United States, shall be reasonably met.

“ROYALTY-BASE PROCESSES” shall include: (i) any and all processes or methods which employ or are implemented by the practice of the LICENSED INVENTION, or (ii) the steps of any processes or method used, leased, transferred, or otherwise practiced by LICENSEE or its SUBLICENSEES that is covered by or included within the LICENSED INVENTION; and shall also include other processes or method steps not covered by or within any of the claims of the LICENSED INVENTION that LICENSEE or its SUBLICENSEES, would not have used, leased, transferred, or otherwise utilized but for the use, lease, transfer, or other disposition of at least one of the LICENSED INVENTION.

“ROYALTY-BASE PRODUCTS” shall include: i) the components of an article sold, used, leased, transferred, or otherwise disposed of by LICENSEE or its SUBLICENSEES, that are covered by or included within the LICENSED INVENTION; and ii) other components of the item not covered by or within the LICENSED INVENTION that LICENSEE or its SUBLICENSEE would not have sold, used, leased, transferred, or otherwise disposed of but for the sale, use, lease, transfer, or other disposition of the LICENSED INVENTION.

“ROYALTY-BASE SERVICES” shall include any services sold, used, leased, rented, transferred, or otherwise disposed of by LICENSEE or SUBLICENSEE, or their agents, which use or employ the LICENSED INVENTION.

“SUBLICENSEE” shall mean any PERSON who has the right, granted by LICENSEE, to make, use, or sell the LICENSED INVENTION.

“THIRD PARTIES” shall mean PERSONS other than the LICENSOR and the LICENSEE.

ARTICLE II

License Grant

2.1 LICENSOR hereby grants to LICENSEE a terminable, royalty-bearing, exclusive license to practice, i.e., to make, have made, use, offer to sell, sell, transfer, or dispose of, the LICENSED INVENTION as limited to the LICENSED AREA and as may be limited to a LICENSED FIELD OR EMBODIMENT(S), as defined in ARTICLE I.

2.2 LICENSOR, upon request, will use reasonable efforts to grant LICENSEE, in accordance with 37 CFR 404, a license to practice any inventions assigned to LICENSOR, without which license or licenses, the practice of the LICENSED INVENTION would result in infringement. The grant of said license or licenses shall be limited, however, to the extent necessary to practice the LICENSED INVENTION. There will be no such grant where said inventions are licensed exclusively.

2.3 Notwithstanding anything to the contrary in this AGREEMENT, LICENSEE shall take the license granted in this ARTICLE II subject to any outstanding licenses or other rights in THIRD PARTIES under agreements executed by LICENSOR prior to the LICENSE COMMENCEMENT DATE.

2.4 LICENSOR reserves an irrevocable, royalty-free right to practice and have practiced the LICENSED INVENTION, and any other inventions as provided in Section 2.2, throughout the world by or on behalf of the Government of the United States and on behalf of any foreign government pursuant to any existing or future treaty or agreement with the United States.

2.5 JOINT OWNER expressly reserves the right to use the jointly owned invention(s) and associated, non-NASA owned, technology for educational and research purposes.

2.6 LICENSOR intends to file a European Patent Application corresponding to PCT Application Number PCT/US02/37580, entitled "Method and Apparatus for Non-Invasive Measurement of Changes in Intracranial Pressure," To conserve costs, LICENSOR also intends to file such application directly through a foreign associate. LICENSEE agrees to pay timely the foreign associate, upon receipt of billing, the official fees (including maintenance fees) and the foreign associate's fees for assisting in prosecution of the European Patent Application. While LICENSOR will control prosecution, nevertheless, LICENSOR will use reasonable efforts to provide LICENSEE assurance of LICENSEE'S involvement in cost containment as it relates to this European patent application.

ARTICLE III

Sublicenses

3.1 Upon written approval by LICENSOR, LICENSEE may grant a written royalty-bearing, sublicense under the license granted in ARTICLE II provided that it submits to LICENSOR a written request, in advance, for permission to grant the sublicense, including with said request a copy of the proposed sublicense. The proposed sublicense shall refer to and be generally consistent with this AGREEMENT and shall include the rights reserved by LICENSOR under Section 2.4 and JOINT OWNER under Section 2.5. The proposed sublicense shall include the condition that the sublicense shall automatically terminate upon the revocation or termination of this AGREEMENT.

3.2 LICENSEE shall furnish LICENSOR with a copy of the sublicense, consistent with the proposed sublicense approved by LICENSOR and executed by both LICENSEE and its SUBLICENSEE, within fifteen (15) days after the grant of the sublicense by LICENSEE.

3.3 LICENSEE shall submit to LICENSOR, for advance approval, any proposed modification of a sublicense. LICENSEE shall also submit to LICENSOR a copy of the sublicense modification (either as an addendum or a new sublicense), consistent with the proposed sublicense modification and executed by both LICENSEE and its SUBLICENSEE, within fifteen (15) days after the effective date of the sublicense modification.

3.4 The granting of a sublicense by LICENSEE shall not operate to relieve LICENSEE from any of its obligations under this AGREEMENT.

3.5 LICENSEE shall be responsible for and remit royalties based upon its SUBLICENSEE'S activities as if said activities were its own.

ARTICLE IV

Term of License

4.1 Unless either PARTY terminates this Agreement in accordance with Article XIX at an earlier date, the license granted in ARTICLE II will be in effect for a LICENSE TERM that is equal to the unexpired term of the last patent to be in effect of the patent(s) encompassed under the definition of LICENSED PATENT. Except as may be expressly provided otherwise herein or agreed to in writing by LICENSOR, the license shall expire automatically at the end of the LICENSE TERM without notice to LICENSEE.

ARTICLE V

Practical Application

5.1 LICENSEE shall achieve PRACTICAL APPLICATION of a LICENSED INVENTION within [****] years of the LICENSE COMMENCEMENT DATE and in accordance with the schedule set forth in the APPENDIX A to this AGREEMENT and incorporated into this AGREEMENT. LICENSEE shall notify LICENSOR within 30 days of achieving PRACTICAL APPLICATION that PRACTICAL APPLICATION has been achieved. LICENSEE shall also provide evidence to verify the achievement.

5.2 LICENSEE, once PRACTICAL APPLICATION of the LICENSED INVENTION is achieved, shall thereafter maintain it throughout the LICENSE TERM.

5.3 After [****] years from the LICENSE COMMENCEMENT DATE, and at LICENSOR'S sole discretion, LICENSOR may unilaterally modify this Agreement to revoke the license to any LICENSED INVENTION, as defined by the claims of a LICENSED PATENT, or as described by a LICENSED PATENT APPLICATION, for which PRACTICAL APPLICATION has not been achieved by LICENSEE. Nothing in Section 5.3 is to be interpreted in any manner as to affect or alter any dates, deadlines, schedules or remedies specifically set out elsewhere in this Agreement or the Appendix thereto.

5.4 Should LICENSOR revoke a license to one or more LICENSED INVENTION pursuant to Section 5.3, LICENSOR shall then be free to license the revoked LICENSED INVENTIONS as well as certain potentially non-revoked LICENSED INVENTIONS, namely, those defined by the claims of U.S. Patent No. 5,214,955 entitled "Constant Frequency Pulsed Phase-Lock Measuring Device," U.S. Patent No. 5,150,620 entitled "Method of Recertifying Load Bearing Members," and U.S. Patent No. 5,841,032 entitled "Variable and Fixed Frequency Pulsed Phase-Locked Loop," in the LICENSED FIELD or EMBODIMENT(S), to any THIRD PARTY which licenses one or more of the revoked LICENSED INVENTIONS. Such a THIRD PARTY license agreement shall not be a breach of this AGREEMENT.

ARTICLE VI

United States Manufacture

6.1 LICENSEE agrees that any products embodying the LICENSED INVENTION or produced through the use of the LICENSED INVENTION shall be reduced to practice and manufactured substantially in the United States, in accordance with 35 U.S.C. 209(b).

6.2 LICENSEE shall make a bona fide attempt to use or sell the LICENSED INVENTION in the United States.

6.3 LICENSEE shall promptly report to LICENSOR its discontinuance of making the benefits of the LICENSED INVENTION available to the public.

ARTICLE VII

Royalty and Payment

7.1 For purposes of Article VII, the term ROYALTY-BASE PRODUCTS shall include ROYALTY-BASE SERVICES and ROYALTY-BASE PROCESSES.

7.2 In consideration of the license granted in ARTICLE II, LICENSEE shall remit to JOINT OWNERS a nonrefundable license fee in the amount of [****] Dollars (\$[****]) upon the execution of this AGREEMENT by LICENSEE, and an additional [****] Dollars (\$[****]) due two years from the execution of this AGREEMENT by the LICENSEE. This fee is to be distributed in accordance with Section 7.8.

7.3 LICENSEE agrees to pay JOINT OWNERS a running royalty of [****] Percent ([****]%) per LICENSED INVENTION used, with a maximum royalty of [****] Percent ([****]%) and a minimum royalty of [****] Percent ([****]%) of the NET SALES of ROYALTY-BASE PRODUCTS. The running royalty shall be remitted to JOINT OWNERS within 30 days of the end of every ACCOUNTING PERIOD, i.e., within 30 days after the last day of December of each year. These running royalties are to be distributed in accordance with Section 7.8.

7.4 LICENSEE agrees to pay JOINT OWNERS minimum annual royalties of [****] Dollars (\$[****]) for the fourth ACCOUNTING PERIOD (i.e., January-December 2007), [****] Dollars (\$[****]) for the fifth ACCOUNTING PERIOD, and [****] Dollars (\$[****]) for the sixth and all subsequent ACCOUNTING PERIODS. The minimum annual royalties shall be remitted within 30 days of the end of each ACCOUNTING PERIOD. These minimum annual royalties are to be distributed in accordance with Section 7.8.

7.5 For any particular ACCOUNTING PERIOD, the running royalties specified in Section 7.3 shall be credited against the minimum royalty specified in Section 7.4.

7.6 LICENSEE agrees that in the event any ROYALTY-BASE PRODUCTS shall be sold, transferred, or disposed of, to a third-party for purposes of resale in a transaction that does not represent an arm's length transaction, then the royalties to be paid under this AGREEMENT for the

ROYALTY-BASE PRODUCTS shall be based upon the NET SALES of the ROYALTY-BASE PRODUCTS by the third-party, rather than upon the NET SALES of the LICENSEE. In the event ROYALTY-BASE PRODUCTS are sold, transferred, or disposed of, to a third-party in a transaction that does not represent an arm's length transaction, and the purpose is not resale, then NET SALES shall be calculated as if the ROYALTY-BASE PRODUCTS had been sold, transferred, or disposed of at the same prices as those charged to outside concerns buying similar merchandise in similar amounts under similar circumstances. Examples of transactions that do not reflect an arm's length transaction includes sales, transfers or disposals (1) to any type of organization or individual who owns a controlling interest in LICENSEE by stock ownership or otherwise, (2) to any type of organization in which LICENSEE shall own, directly or indirectly, a controlling interest by stock ownership or otherwise, or (3) to any type of organization with which, or individual with whom, LICENSEE, its stockholders, or associated companies shall have any agreement, understanding, or arrangement (such as, among other things, an option to purchase stock, an arrangement involving a division of profits, or special rebates or allowances) without which agreement, understanding, or arrangement, prices paid by such organization or individual for the ROYALTY-BASE PRODUCTS would be higher than the NET SALES reported by LICENSEE, or if such agreement, understanding, or arrangement results in extending to such organization or individual lower prices for ROYALTY-BASE PRODUCTS than those charged to outside concerns buying similar merchandise in similar amounts and under similar conditions.

7.7 Under this Agreement, ROYALTY-BASE PRODUCTS will be considered sold when invoiced, when shipped, or upon receipt of payment, whichever occurs first.

7.8 Royalties shall be paid within thirty (30) days of the end of each ACCOUNTING PERIOD. Royalties and fees shall be paid by checks denominated in United States dollars. One check should be made payable to the National Aeronautics and Space Administration and one check should be made payable to The Regents of the University of California. LICENSOR (NASA) shall receive [****] PERCENT ([****]%) and JOINT OWNER (THE REGENTS OF THE UNIVERSITY OF CALIFORNIA) shall receive [****] PERCENT ([****]%) of the royalties and fees due. The checks shall be mailed by the LICENSEE directly to each of the JOINT OWNERS at their respective addresses as set forth in ARTICLE XV of this AGREEMENT. The royalty checks shall be mailed concurrently with the report required in ARTICLE VIII of this AGREEMENT. The JOINT OWNERS' acceptance of any royalty or fee payment does not eliminate the JOINT OWNERS' right to contest the accuracy of such payment in the future.

7.9 LICENSOR shall assess interest, penalties, and administrative costs in accordance with the Federal Claims Collections Standards, 31 C.F.R. §§ 900-904, on all payments due LICENSOR which are not timely paid by LICENSEE. In addition to these charges, LICENSOR is authorized to charge to LICENSEE the costs of collection and any associated reasonable attorney fees.

ARTICLE VIII

Reports

8.1 For purposes of Article VIII, the term ROYALTY-BASE PRODUCTS shall include ROYALTY-BASE SERVICES and ROYALTY-BASE PROCESSES.

8.2 LICENSEE shall submit to JOINT OWNERS written reports within thirty (30) days of the end of every ACCOUNTING PERIOD whether or not royalties are due. Each report shall be submitted concurrently with the royalties required by ARTICLE VII. To ensure that any proprietary information submitted by LICENSEE is protected to the fullest extent of the law, LICENSEE should mark with a proprietary notice, any portions of the report that is considered proprietary to LICENSEE.

8.3 Each report shall include the following information:

(a) With reference to the schedule set forth in APPENDIX A to this AGREEMENT, a narrative description of the steps being taken to reduce the LICENSED INVENTION to practice.

(b) With reference to the schedule set forth in APPENDIX A to this AGREEMENT, a narrative description of the steps being taken to create a market demand for the LICENSED INVENTION, to commercialize the LICENSED INVENTION, and to meet market demand for the LICENSED INVENTION.

(c) A narrative description of the ROYALTY-BASE PRODUCTS currently being offered for sale by LICENSEE and its SUBLICENSEES. Copies of current sales brochures, promotional materials, and price lists shall be included with this description.

(d) A list of the geographic locations at which the LICENSED INVENTION is being manufactured.

(e) The number and type of ROYALTY-BASE PRODUCTS sold or disposed of by LICENSEE.

(f) The number and type of ROYALTY-BASE PRODUCTS sold or disposed of by each SUBLICENSEE (if any).

(g) The number and type of ROYALTY-BASE PRODUCTS sold or disposed of by each reseller of ROYALTY-BASE PRODUCTS under Section 7.6.

(h) LICENSEE'S GROSS SALES.

(i) GROSS SALES for each SUBLICENSEE (if any).

(j) GROSS SALES for each reseller of ROYALTY-BASE PRODUCTS under Section 7.6.

(k) LICENSEE'S NET SALES.

(l) NET SALES for each SUBLICENSEE (if any).

(m) NET SALES for each reseller of ROYALTY-BASE PRODUCTS under Section 7.6.

(n) The amount of royalties due JOINT OWNERS.

8.4 Each report shall be accompanied by a certification by an officer of LICENSEE that the LICENSEE is complying with the terms and conditions of this AGREEMENT and that the responses to each part of Section 8.3 are accurate and complete.

8.5 LICENSEE shall, upon request, submit to LICENSOR an audited balance sheet and an audited income statement. Internal audits are permissible, but JOINT OWNERS reserve the right to require an independent audit and additionally reserves the right to approve of the auditor.

8.6 A final report shall be submitted to JOINT OWNERS by LICENSEE within thirty (30) days after the termination of this AGREEMENT.

ARTICLE IX

Audit Rights

9.1 LICENSEE shall keep full, true, and accurate records for the purpose of LICENSOR verifying LICENSEE'S reports to LICENSOR under ARTICLE VIII, verifying LICENSEE'S royalty payments to LICENSOR under ARTICLE VII, and for determining LICENSEE'S activities in general under the AGREEMENT. These records shall include, but are not limited to, ledgers and journals of account, customer orders, invoices, shipping documents, inventory records, computer records, purchase orders, and tax records. These records, as a whole, shall include information which will allow, at a minimum, identification of suppliers, customers, items sold or otherwise transferred, and/or services rendered, as well as whether the LICENSEE is operating within the scope of its license.

9.2 The records described in Section 9.1 shall be available for audit by LICENSOR, or by an authorized representative of LICENSOR, at all reasonable times for the LICENSE TERM and for three (3) calendar years thereafter. In addition, LICENSEE shall permit inspection by LICENSOR, or by an authorized representative of LICENSOR, of LICENSEE'S assembly facilities and of LICENSEE'S inventory of ROYALTY-BASE PRODUCTS, including parts, works-in-progress, and finished goods, during any audit by LICENSOR.

9.3 If LICENSOR, as a result of an audit, discovers an underpayment of royalties which exceeds \$ [****], then LICENSEE shall reimburse LICENSOR for the cost of the audit, including all related costs of performing the audit (e.g., travel, food, lodging, cost of professional services, etc.), in addition to any penalties assessed pursuant to Section 7.9.

ARTICLE X

Marking

10.1 LICENSEE and all SUBLICENSEE(S) shall mark all ROYALTY-BASE PRODUCTS, or products incorporating ROYALTY-BASE PRODUCTS, in accordance with the statutes of the United States relating to the marking of patented articles (*see* 35 U.S.C. § 287). Such marking shall be accomplished by fixing on the article or when, from the character of the article, this cannot be done, by fixing to it, or to the package wherein one or more of the articles is contained, a label including the notation "Licensed from the National Aeronautics and Space Administration under (insert patent number)." Such marking shall also be included in all literature and/or advertising materials describing the LICENSED INVENTION.

ARTICLE XI

Use of the JOINT OWNERS' Names and Disclosure

11.1 Except as required by Section 10.1, LICENSEE may use the name of LICENSOR, or the acronym "NASA," only in truthful statements concerning its relationship with LICENSOR. The letters 'NASA' may be used in such truthful statements only if they are:

- (a) used in their normal typed or printed form;
- (b) the same size, color, and intensity as the rest of the words in a sentence;
- (c) not used in their stylized version as they appear in the NASA logotype or NASA insignia; and
- (d) not used to indicate that NASA endorses the LICENSEE'S products, processes, etc.

11.2 Uses of the letters 'NASA', other than those required by Section 10.1 or specified in Section 11.1, shall require the express written approval of LICENSOR. Approval by LICENSOR shall be based on applicable law (i.e., 42 U.S.C. §§ 2459(b), 2472 (a), and 2473 (c) (I); and 14 CFR § 1221.100 *et seq.*) and NASA policy governing the use of the letters 'NASA' and the words 'National Aeronautics and Space Administration' and shall not be unreasonably withheld.

11.3 LICENSEE agrees to make copies of its marketing literature available to LICENSOR so that LICENSOR can determine that such use is in accordance with the terms of this ARTICLE.

11.4 Nothing contained in this Agreement confers any right on LICENSEE to use in advertising, publicity, or other promotional activities any name, trade name, trademark, or other

designation of JOINT OWNER (including contraction, abbreviation or simulation of any of the foregoing). Unless required by law, the use by LICENSEE of the name, "The Regents of the University of California" or the name of any campus of the University Of California is prohibited, without the express written consent of JOINT OWNER.

11.5 JOINT OWNERS may disclose to the Inventors the terms and conditions of this Agreement upon their request. If such disclosure is made, UNIVERSITY shall request the Inventors not disclose such terms and conditions to others.

11.6 JOINT OWNER may acknowledge the existence of this Agreement and the extent of the grant in Article II to third parties, but JOINT OWNER shall not disclose the financial terms of this Agreement to third parties, except where JOINT OWNER is required by law to do so, such as under the California Public Records Act.

ARTICLE XII

Disclaimer of Warranties

12.1 LICENSOR MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, AS TO ANY MATTER WHATSOEVER.

12.2 In particular, nothing in this AGREEMENT shall be construed as:

- (a) A warranty or representation by JOINT OWNERS as to the validity or scope of any LICENSED PATENT; or
- (b) A warranty or representation that anything made, used, sold, or otherwise disposed of under any license granted in this AGREEMENT is or will be free from infringement of any type, including patent infringement, copyright infringement, and trademark infringement; or
- (c) A requirement that LICENSOR shall file any patent application, secure any patent, or maintain any patent in force, other than the LICENSED PATENT; or
- (d) An obligation to bring or prosecute actions or suits against THIRD PARTIES for infringement; or
- (e) An obligation to furnish any manufacturing or technical information; or, if any such information is supplied, a warranty or representation that such information is accurate; or
- (f) Conferring a right to use in advertising, publicity or otherwise the name of any inventor of the LICENSED INVENTION or the NASA name, seal, insignia, logotype or any other adaptation without the prior written consent of LICENSOR (except as otherwise provided in ARTICLE XI); or

(g) Precluding the export from the United States of ROYALTY-BASE PRODUCTS on which royalties shall have been paid as provided in ARTICLE VII, provided that the item can be exported under the export control laws of the United States; or

(h) Granting by implication or estoppel, any licenses or other rights under any patent of JOINT OWNERS or any other PERSON in the United States or any foreign country; or

(i) Granting by implication, estoppel, or otherwise, any licenses or rights under patents or patent applications of JOINT OWNERS other than the LICENSED INVENTION, regardless of whether such other patents or patent applications are dominant, subordinate, or an improvement to the invention or inventions as claimed, of the LICENSED PATENT or LICENSED PATENT APPLICATION, nor to other applications that did not claim the invention.

(j) Conferring upon any PERSON (1) any immunity from or defenses under the antitrust laws, (2) any immunity from a charge of patent misuse, or (3) any immunity from the operation of Federal, State, or other law.

ARTICLE XIII

Risk Allocation and Indemnification

13.1 JOINT OWNERS make no representation, extend no warranties of any kind, either express or implied, and assumes no responsibility whatsoever with respect to use, sales, or other disposition by LICENSEE or its vendees or other transferees of products incorporating or made by the use of (1) the LICENSED INVENTION or (2) information, if any, furnished under this AGREEMENT.

13.2 LICENSEE shall indemnify JOINT OWNERS, their officers and employees, and hold them harmless against all liabilities, demands, damages, expenses, or losses including, but not limited to, attorney's fees, court costs, and the like, arising (1) out of the use by LICENSEE or its transferees of the LICENSED INVENTION or information furnished under this AGREEMENT, or (2) out of any sale, use, or other disposition by LICENSEE or its transferees of products, processes, or compositions, made by use of such inventions or information.

13.3 It shall be the sole responsibility of the LICENSEE to ensure that any and all embodiments of the LICENSED INVENTION are safe under all circumstances.

13.4 Independent of, severable from, and to be enforced independently of any other enforceable or unenforceable provision of this AGREEMENT, other than as provided in Sections 13.1 and 13.2, or other than for infringement of one PARTY'S intellectual property rights by another PARTY, (including any engagement in licensable activities by licenses beyond the scope of the license provided by this AGREEMENT), neither PARTY will be liable to the other PARTY (nor to any THIRD PARTY claiming rights derived from the other PARTY'S rights) for incidental, consequential, special, punitive, or exemplary damages of any kind, including lost profits, loss of business, or other economic damage, and further including injury to property, as a result of breach of any warranty or other term of this AGREEMENT, regardless of whether the PARTY liable or allegedly liable was advised, had reason to know, or in fact knew of the possibility thereof.

ARTICLE XIV

Patent Validity

14.1 If, in any proceeding in which the validity, infringement, or priority of invention of any claim of the LICENSED PATENT to LICENSEE is in issue, a judgment or decree is entered which becomes final (below referred to as a "final judgment"), the construction placed upon any such claim by such final judgment shall thereafter be followed, not only as to such claim but as to all claims to which such construction applies, with respect to subsequently occurring acts. If such final judgment holds any claim invalid, LICENSEE shall be relieved prospectively (1) from including in its reports ROYALTY-BASE PRODUCTS, ROYALTY-BASE PROCESSES or ROYALTY-BASE SERVICES sold or otherwise disposed of covered only by such claim or any broader claim to which such final judgment is applicable, and (2) from the performance of those other acts which may be required by this AGREEMENT only because of any such claim. However, if there are two or more conflicting final judgments with respect to the same claim based on the same grounds or where the same issues were raised, the decision of the higher tribunal shall be followed, but if the tribunals be of equal dignity, then the decision more favorable to the claim shall be followed.

14.2 In the event evidentiary material comes to the attention of the LICENSEE which, in the judgment of the LICENSEE, bears on the validity or scope of any LICENSED PATENT, the LICENSOR will in good faith discuss with the LICENSEE whether such evidentiary material so affects the validity or scope of the LICENSED PATENT to which it is asserted to apply that the terms of the AGREEMENT in respect to such LICENSED PATENT should be modified.

14.3 The LICENSEE, after the LICENSE COMMENCEMENT DATE, may assert the invalidity of any claim in any LICENSED PATENT, if coupled with or followed by:

(a) Withholding, or notice of intention to withhold, or denial of obligation to pay, royalties otherwise payable under this AGREEMENT in respect to the LICENSEE'S operations under such claim; or

(b) Initiation or participation in a suit challenging or denying the validity of such claim in reference to LICENSEE'S operations under this AGREEMENT, that may, at the option of the LICENSOR, be conclusively presumed to constitute LICENSEE'S termination, as of the earliest provable date of such withholding, notice, denial, initiation, or participation, of its AGREEMENT including its obligation for payment of royalties due from the date of the termination

ARTICLE XV

Points of Contact

15.1 The following individuals are designated as the points of contact for their respective PARTY and are responsible for keeping this information current by providing updated information as warranted. These points of contact are the principal representatives of the PARTIES involved in the performance of this AGREEMENT.

LICENSOR (NASA)

Patent Counsel
NASA Langley Research Center
Office of Chief Counsel
Mail Stop 212
Hampton, VA 23681-2199
Telephone No.: 757-864-9260
Facsimile No.: 757-864-9190

LICENSEE

Patents and Licensing
Luna Innovations Incorporated
2851 Commerce Street
Blacksburg, VA 24060
Telephone No.: 540-552-5128
Facsimile No.: 540-951-0760

JOINT OWNER (THE REGENTS OF THE UNIVERSITY OF CALIFORNIA, REPRESENTED BY ITS SAN DIEGO CAMPUS)

If sent to JOINT OWNER by mail:
University of California, San Diego
Technology Transfer & Intellectual Property Services
9500 Gilman Drive
Mail Code 0910
La Jolla, CA 92093-0910
Attention: Assistant Vice Chancellor
Telephone No.: (858) 534-5815
Facsimile No.: (858) 534-7345

If sent to JOINT OWNER by courier:
University of California, San Diego
Technology Transfer & Intellectual Property Services
10300 North Torrey Pines Road
Torrey Pines Center North, First Floor
La Jolla, CA 92037
Attention: Assistant Vice Chancellor

For wire payments to JOINT OWNER:

All payments due UNIVERSITY and made by wire transfers shall include an additional wire transfer fee of twenty-five dollar (US\$25) to the amount due. Wire transfers shall be made using the following information:

UCSD receiving bank name: [****]
UCSD bank account no.: [****]
UCSD bank routing (ABA) no.: [****]
UCSD bank account name: [****]
UCSD bank ACH format code: [****]

UCSD bank address:

[****]
[****]
[****]
[****]

UCSD addendum information:

Reference UCSD-TechTIPS Case No.: [****]

Department contact: Financial Manager

A fax copy of the transaction receipt should be sent to Financial Manager at: [****].

LICENSEE is responsible for all bank charges of wire transfer funds.

The bank charges should not be deducted from total amount due to the JOINT OWNER.

ARTICLE XVI

Notices

16.1 All notices hereunder will be in writing and will be delivered and effective as follows:

(a) Every notice required or contemplated by this AGREEMENT to be given either PARTY may be delivered in person or may be sent by commercial courier or U.S. mail, addressed to the PARTY for whom it is intended, at the address specified in ARTICLE XV.

(b) Any notice will be effective on the date that it is hand delivered or on the fifth business day after it was deposited with the commercial courier or the U.S. mail.

(c) As used in this ARTICLE, a reference to a particular date means the date itself, if a business day, otherwise the first business day after the date.

ARTICLE XVII

Infringement

17.1 If LICENSEE becomes aware of an infringement or has reasonable cause to believe that there has been an infringement of any LICENSED PATENT, LICENSEE shall notify

LICENSOR in writing concerning LICENSEE'S knowledge of any infringement or of the reasonable cause for belief of infringement. Such notice should include: an analysis of how the claims of any LICENSED PATENT read-on the allegedly infringing articles; the identity of the alleged infringers; a statement as to whether the alleged infringers are making, using, or selling the allegedly infringing articles; a statement describing the extent of the alleged infringement; and a statement which describes and quantifies the harm being suffered by the LICENSEE as a result of the alleged infringement. If such notice and information are furnished, LICENSOR may volunteer its opinion as to whether reasonable cause exists to believe that there has been an infringement. LICENSEE is authorized under the provisions of Chapter 29 of Title 35, United States Code, or other statutes, (a) to bring suit in its own name, at its own expense, and on its own behalf, for infringement of the LICENSED PATENT, and (b) in any such suit, to enjoin infringement and to collect for its use, damages, profits and awards of whatever nature, recoverable from such infringement, subject to payment of royalties due to JOINT OWNERS, and further, (c) to settle any claim or suit for infringement of the LICENSED PATENT, as by granting a sublicense under this AGREEMENT. With respect to the royalties due to JOINT OWNERS from LICENSEE'S successful infringement action, the parties agree to enter into good faith negotiations to arrive at the appropriate amount of royalties due to JOINT OWNERS. The authority to bring suit is subject to the continuing right of the United States to bring suit itself or to intervene in LICENSEE'S suit; and, in either event, LICENSEE shall give LICENSOR reasonable notice and assistance.

ARTICLE XVIII

Dispute or Breach

18.1 All disputes concerning the interpretation or application of this AGREEMENT shall be discussed mutually between the PARTIES. Any disputes that are not disposed of by mutual agreement shall be decided by the NASA Lead Counsel for the Intellectual Property Law Group, or designee, who shall reduce the decision to writing and mail or otherwise deliver a copy thereof to LICENSEE. LICENSEE may respond to such notice of a decision in accordance with the procedures set forth in Section 19.8.

18.2 In the event of a BREACH of any provision of this AGREEMENT, the NONBREACHING PARTY shall give the BREACHING PARTY notice describing the BREACH and stating that the BREACHING PARTY has thirty (30) days after notice of the BREACH to cure the BREACH or show cause why the AGREEMENT should not be terminated.

18.3 If a provision of this AGREEMENT sets forth a cure period for the BREACH in question other than thirty (30) days, then that provision shall take precedence over the cure period set forth in Section 18.2.

18.4 No cure period is required, except as may be otherwise provided in this AGREEMENT, if:

- (a) this AGREEMENT sets forth specific deadline dates for the obligation allegedly breached; or

(b) this AGREEMENT otherwise states that no cure period is required in connection with the termination in question.

18.5 The BREACHING PARTY will be deemed to have cured such BREACH if within the cure period it takes steps reasonably adequate to alleviate any damage to the NONBREACHING PARTY resulting from the BREACH and to prevent a similar future BREACH.

ARTICLE XIX

Termination or Modification

19.1 The PARTIES may terminate or modify this AGREEMENT by mutual consent upon such terms as they may agree in writing.

19.2 Either PARTY may terminate this AGREEMENT by failing to extend the LICENSE TERM, if an extension is provided for in Section 4.1.

19.3 Either PARTY may terminate this AGREEMENT upon the discovery by one PARTY of any intentional MATERIAL false statement or misrepresentation made or submitted by the other PARTY which BREACHES any obligation under the terms of this AGREEMENT or upon the discovery by one PARTY that the other PARTY has committed a MATERIAL BREACH of a provision of the AGREEMENT.

19.4 LICENSEE may prospectively terminate this AGREEMENT upon ninety (90) days written notice to LICENSOR.

19.5 This AGREEMENT may be terminated by LICENSOR if:

(a) LICENSOR determines that LICENSEE has failed or will fail to achieve or maintain PRACTICAL APPLICATION of the LICENSED INVENTION as provided by ARTICLE V.

(b) LICENSOR determines that LICENSEE has failed or will fail to reduce to practice and substantially manufacture the LICENSED INVENTION in the United States as provided by Section 6.1

(c) LICENSOR determines that LICENSEE has failed or will fail to meet market demand for the LICENSED INVENTION.

(d) LICENSEE fails to pay royalties or submit reports as provided by ARTICLE VII and VIII.

(e) LICENSOR determines that such action is necessary to meet the requirements for public use specified by Federal regulations issued after the date of the license and such requirements are not reasonably satisfied by LICENSEE.

(f) LICENSEE commits a BREACH of a covenant contained in this AGREEMENT.

19.6 LICENSOR may terminate this AGREEMENT if LICENSEE becomes "INSOLVENT." LICENSEE must notify LICENSOR within thirty (30) days after becoming INSOLVENT. LICENSEE'S failure to conform to this requirement shall be deemed a MATERIAL, incurable BREACH.

19.7 LICENSEE must promptly inform LICENSOR of its intention to file a voluntary petition in bankruptcy or of another's communicated intention to file an involuntary petition in bankruptcy. LICENSOR may terminate this AGREEMENT upon receiving notice of intention to file. LICENSEE'S filing without conforming to this requirement shall be deemed a MATERIAL, pre-petition incurable BREACH.

19.8 Before LICENSOR unilaterally modifies, or terminates this AGREEMENT for any cause, LICENSOR will deliver to LICENSEE and all SUBLICENSEES of record a written notice stating LICENSOR'S intention to modify or terminate the AGREEMENT and the reasons therefor. LICENSEE and SUBLICENSEES of record will be allowed thirty (30) days after: (1) such notice to remedy any BREACH of the AGREEMENT or show cause why the AGREEMENT should not be unilaterally modified or terminated; or, (2) such notice of a decision regarding a dispute, rendered in accordance with Article 18.1, to rebut such decision. A response to a notice of modification or termination or to a notice of a dispute decision should be addressed to the General Counsel, National Aeronautics and Space Administration, Washington, DC 20546. The General Counsel will render a determination based on the LICENSEE'S response within a reasonable time. Absent any response from LICENSEE to the notice regarding the modification, termination and/or dispute decision, the decision by the Lead Counsel for the Intellectual Property Law Group will be final and/or the AGREEMENT will be unilaterally modified or will terminate, effective thirty-one (31) days from the notice of modification, termination or dispute decision, with no right to appeal under Section 19.9.

19.9 LICENSEE may appeal in writing to the NASA Administrator, any determination rendered by the General Counsel in accordance with Section 19.8, within thirty (30) days after delivery of such determination. The notice of appeal and all supporting documentation should be addressed to the Administrator, National Aeronautics and Space Administration, Washington, DC 20546. LICENSEE shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. The decision on the appeal shall be made by the NASA Administrator or designee, which shall be the final agency decision from which there will be no further right of administrative appeal. Nothing in this Article shall be interpreted as precluding actions at law.

19.10 If no action is taken under Section 19.9, then the determination rendered by the General Counsel shall become final within thirty-one (31) days after delivery of the notice of such determination.

19.11 All royalties and reports due up to and including the date of termination of this AGREEMENT are due within thirty (30) days of the date of termination.

ARTICLE XX

Assignment

20.1 Upon written approval by LICENSOR, LICENSEE may assign this AGREEMENT provided that LICENSEE submits to LICENSOR, in advance, a written request for permission to grant the assignment, information that LICENSOR considers necessary to evaluate the proposed assignment, and a copy of the proposed assignment. If LICENSOR approves the assignment as being consistent with the Government's interests, the PARTIES and the assignee will be required to execute a novation agreement. At a minimum, the novation agreement will provide that LICENSEE waives all rights under the license, the assignee assumes all obligations under the AGREEMENT and that LICENSOR recognizes the assignee as the successor in interest to the AGREEMENT.

ARTICLE XXI

Governing Law

21.1 This AGREEMENT will be interpreted and enforced in accordance with United States federal law.

ARTICLE XXII

Independent Entities

22.1 The Parties are separate and independent entities. Except as may be expressly and unambiguously provided in this AGREEMENT, no partnership or joint venture is intended to be created by this AGREEMENT, nor any principal-agent or employer-employee relationship.

22.2 Except to the extent expressly provided in this AGREEMENT, neither PARTY has, and neither PARTY shall attempt to assert, the authority to make commitments for or to bind the other PARTY to any obligation.

ARTICLE XXIII

Effect of Partial Invalidity

23.1 If any one of more of the provisions of this AGREEMENT should be ruled wholly or partly invalid or unenforceable by a court or other government body of competent jurisdiction, and as long as the fundamental objectives of the AGREEMENT can be carried out, then:

- (a) the validity and enforceability of all provisions of this AGREEMENT not ruled to be invalid or unenforceable will be unaffected;

(b) the provision(s) held wholly or partly invalid or unenforceable will be deemed to be amended, and the court or other government body is authorized to reform the provision(s), to the minimum extent necessary to render them valid and enforceable in conformity with the PARTIES' intent as manifested herein; and

(c) if the ruling, and/or the controlling principle of law or equity leading to the ruling, is subsequently overruled, modified, or amended by legislative, judicial, or administrative action, then the provision(s) in question, as originally set forth in this AGREEMENT, will be deemed to be valid and enforceable to the maximum extent permitted by the new controlling principle of law or equity.

ARTICLE XXIV

Nonwaiver

24.1 The failure of either PARTY at any time to require performance by the other PARTY of any provisions of this AGREEMENT shall in no way affect the right of such PARTY to require future performance of that provision. Any waiver by either PARTY of any BREACH of any provision of this AGREEMENT shall not be construed as a waiver of any continuing or succeeding BREACH of such provision, a waiver of the provision itself, or a waiver of any right under this AGREEMENT.

ARTICLE XXV

Entire Agreement

25.1 Except as may be expressly provided otherwise herein, this AGREEMENT constitutes the entire agreement between the PARTIES concerning the subject matter thereof. No prior or contemporaneous representations, inducements, promises, or agreements, oral or otherwise, between the PARTIES with reference thereto will be of any force or effect. This AGREEMENT may only be modified by written agreement of the PARTIES.

ARTICLE XXVI

Article Headings

26.1 The ARTICLE headings contained in this AGREEMENT are for reference purposes only and shall not in any way control the meaning or interpretation of this AGREEMENT.

ARTICLE XXVII

Counterparts

27.1 This AGREEMENT may be executed in separate counterparts, each of which so executed and delivered shall constitute an original, but all such counterparts shall together constitute one and the same instrument. Any such counterpart may comprise one or more duplicates or duplicate signature pages, any of which may be executed by less than all of the PARTIES, provided that each PARTY executes at least one such duplicate or duplicate signature page. The PARTIES stipulate that a photostatic copy of an executed original will be admissible in evidence for all purposes in any proceeding as between the PARTIES.

ARTICLE XXVIII

Acceptance

28.1 In witness whereof, each PARTY has caused this AGREEMENT to be executed by its duly authorized representatives:

LICENSOR:

LICENSEE:

National Aeronautics and Space Administration

Luna Innovations Incorporated

By: /s/ Michael C. Wholley

By: /s/ Michael F. Gunther

Michael C. Wholley
General Counsel

Michael F. Gunther
Vice President Operations

Date: October 28, 2004

Date: September 24, 2004

APPENDIX A

Luna License Technical and Commercialization Milestones

Prototype Development and Validation Milestones

[****]

Commercialization Milestones

APPENDIX B

Joint Ownership Agreement No. DE-382

Effective Date: 9/7/04

JOINT OWNERSHIP AGREEMENT
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AND
THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
CONCERNING LICENSING OF
“ULTRASONIC APPARATUS AND METHOD TO ASSESS
COMPARTMENT SYNDROME”

The National Aeronautics and Space Administration (NASA), an agency of the United States (U.S.) Government, having its headquarters in Washington, D.C., and acting under the authority of the National Aeronautics and Space Act of 1958, as amended, and the Regents of the University of California, having a system-wide business address at 1111 Franklin St., Oakland, CA 94607-5200 (hereinafter JOINT OWNER), and represented by its San Diego campus (UCSD) Technology Transfer & Intellectual Property Services (TechTIPS), having an address at 9500 Gilman Drive, La Jolla, CA 92093-0910 (hereinafter UNIVERSITY).

ARTICLE 1.0 Background

1.1 This Joint Ownership Agreement (JOA) defines the responsibilities of NASA and JOINT OWNER (the “Parties”) concerning patent prosecution and licensing of the following jointly-owned invention: “Ultrasonic Apparatus and Method to Assess Compartment Syndrome,” which was reported in an invention disclosure submitted to NASA on December 9, 2003, and designated as NASA Case No. LAR 16854-1, and is referenced by UCSD Docket No. SD2004-098 hereinafter referred to as the “SUBJECT INVENTION.”

1.2 The SUBJECT INVENTION is jointly owned by NASA and JOINT OWNER. NASA will own an undivided interest in any 111(a) or (b) patent application and subsequently issuing patent(s) upon execution of an assignment from its employee, William T. Yost. JOINT OWNER will own an undivided interest upon execution of assignments from its employees, Toshiaki Ueno and Alan R. Hargens.

1.3 As used in this JOA, the term “JOINT INVENTION RIGHTS” shall mean any U.S. or foreign patent rights derived from the SUBJECT INVENTION and shall include any divisionals, continuations, or continuations-in-part of any patent application corresponding to or directed to the SUBJECT INVENTION, to the extent such patent application is also jointly-owned by the Parties; any patent (s) issuing from the foregoing patent application(s); and any reissue, extension, or revival of the foregoing patents.

1.4 Both NASA and JOINT OWNER are interested in licensing the SUBJECT INVENTION.

ARTICLE 2.0 Terms of Agreement

2.1 Any royalties and payments received from any license of the JOINT INVENTION RIGHTS will be distributed among the Parties as follows:

A. For any license that solely licenses the SUBJECT INVENTION, JOINT OWNER shall receive 50 percent of any royalties and payments and NASA shall receive 50 percent of these royalties and payments. This distribution shall be incorporated into any such license. Any such license shall require the licensee to pay such royalties and payments directly to NASA and directly to JOINT OWNER based on the preceding distribution.

B. For any license that licenses the SUBJECT INVENTION as well as additional NASA owned technologies that are not jointly owned with JOINT OWNER, JOINT OWNER shall receive 50 percent of the total royalties and payments received pro-rated by the number of exclusively licensed technologies, and NASA shall receive the remainder. That is to say, JOINT OWNER will receive 50 percent of the total royalties and payments received divided by the total number of technologies exclusively licensed. Therefore, should two technologies be licensed (e.g., the SUBJECT INVENTION and one NASA owned, exclusively licensed technology), then JOINT OWNER shall receive 25 percent of the total royalties and payments received from the license, and NASA shall receive 75 percent. However, if three or more technologies are licensed (where two or more are NASA owned, exclusively licensed technologies, it is agreed that JOINT OWNER will still receive 17 percent [rounded] of the total royalties and payments received from this license, and NASA will receive 83 percent [rounded]. This distribution shall be incorporated into any such license. Any such license shall require the licensee to pay such royalties and payments directly to NASA and directly to JOINT OWNER based on the preceding distribution.

2.2 Any license shall also require the licensee to submit identical reports to NASA and JOINT OWNER. JOINT OWNER shall keep such reports confidential, and will not disclose such information to third parties, which obligation shall continue to apply after expiration or termination of this JOA.

2.3 JOINT OWNER designates NASA as the primary patent prosecution, negotiating and commercializing party for any license involving the SUBJECT INVENTION. JOINT OWNER will assist NASA in finding an appropriate licensee.

2.4 Patent Prosecution.

2.4.1 At NASA's sole discretion, NASA will use reasonable efforts to prosecute U.S. and/or foreign patent applications for the SUBJECT INVENTION, using counsel of NASA's choice.

2.4.2 JOINT OWNER shall sign and shall require all inventors who are employees, contractors, or faculty members of JOINT OWNER to sign all lawful papers, to execute all oaths, and to do anything else necessary to aid NASA to obtain patent protection for the SUBJECT INVENTION. At NASA's sole discretion, if requested by JOINT OWNER, NASA may provide JOINT OWNER'S inventor (s) and/or patent attorney with the opportunity to participate in

the preparation of any applications, responses, actions, or other communication due to the U.S. Patent and Trademark Office relating to the SUBJECT INVENTION, subject to reasonable time limitations as determined by NASA. Furthermore, NASA shall provide JOINT OWNER with copies of all relevant documentation related to such prosecution to inform JOINT OWNER of the continuing prosecution, and JOINT OWNER agrees to keep this documentation confidential, which obligation shall continue to apply after the expiration or termination of this JOA.

2.4.3 NASA will use reasonable efforts to assume the full costs of U.S. prosecution of the U.S. patent applications and resulting patents comprising the JOINT INVENTION RIGHTS. NASA will use reasonable efforts to pay the maintenance fees for the U.S. patent (s) issuing on the SUBJECT INVENTION so long as the patent is licensed and the licensee is timely paying required royalties and fees. If such conditions are not met, NASA may at its sole discretion determine whether to pay a maintenance fee or continue patent prosecution. If NASA decides not to pay a maintenance fee or continue patent prosecution, NASA shall provide prior written notice to JOINT OWNER to permit JOINT OWNER to continue the prosecution and/or make the payment.

2.5 Licensing Responsibilities.

2.5.1 NASA will use reasonable efforts to market the SUBJECT INVENTION. Upon request, NASA shall inform JOINT OWNER at least annually of NASA's commercial development efforts and marketing efforts, including companies identified as potential licensees by NASA. NASA will also keep JOINT OWNER informed during any negotiations involving any of the SUBJECT INVENTION, which information shall include licensing terms and conditions and business information about the potential licensee. JOINT OWNER agrees to keep any such information confidential, and will not disclose such information to third parties, which obligation shall continue to apply after termination or expiration of this JOA.

2.5.2 NASA shall not issue any paid-up licenses or assign JOINT INVENTION RIGHTS to any third party, notwithstanding any other provision of this JOA, without the prior written consent of UNIVERSITY.

2.5.3 Prior to executing any agreements with a third-party licensee involving the JOINT INVENTION RIGHTS, NASA shall provide a copy of the final agreement to JOINT OWNER for JOINT OWNER'S review. Upon receipt of such final agreement, JOINT OWNER shall have fifteen (15) business days (the "Review Period") to provide comments. At the request of JOINT OWNER during the Review Period, NASA shall incorporate into any license such terms mandated by JOINT OWNER'S standard licensing practices, provided such terms do not conflict with NASA written policy nor with United States Federal Law. In the event of a conflict, the Parties agree to use good faith efforts to resolve the conflict.

2.5.4 Any license contemplated hereunder shall expressly be subject to 37 C.F.R. Part 404. Any such license shall incorporate by reference all provisions of this JOA between NASA and JOINT OWNER.

2.6 JOINT OWNER agrees not to practice, or authorize practice of, the SUBJECT INVENTION commercially, except as a NASA licensee or sublicensee. JOINT OWNER expressly reserves the right to use the SUBJECT INVENTION and associated, non-NASA owned, technology for educational and research purposes.

2.7 NASA reserves an irrevocable, royalty-free right to practice and have practiced the SUBJECT INVENTION, throughout the world by or on behalf of the Government of the United States and on behalf of any foreign government pursuant to any existing or future treaty or agreement with the United States.

ARTICLE 3.0 Period of Agreement

3.1 This JOA shall remain in effect until the expiration or abandonment of all JOINT INVENTION RIGHTS, unless terminated earlier in accordance with other provisions of this JOA.

ARTICLE 4.0 Governing Law

4.1 U.S. federal law governs this JOA for all purposes, including, but not limited to, determining the validity of the JOA, the meaning of its provisions, and the rights, obligations, and remedies of the Parties.

4.2 No provision of this JOA shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, Title 31 United States Code Sec. 1341.

ARTICLE 5.0 Modification and Entire Agreement

5.1 Except as may be expressly provided otherwise herein, this JOA constitutes the entire agreement between the Parties concerning the subject matter thereof. No prior or contemporaneous representations, inducements, promises, or agreements, oral or otherwise, between the Parties with reference thereto will be of any force or effect. This JOA may be modified only by written mutual agreement.

ARTICLE 6.0 Addresses, Points of Contact

6.1 The following individuals are designated as the points of contact for notice for their respective Party. These points of contact are the principal representatives of the Parties involved in the performance of this JOA.

NASA
Patent Counsel
Office of Chief Counsel
NASA Langley Research Center
Mail Stop 212
Hampton, VA 23681-2199

JOINT OWNER (as represented by UNIVERSITY)
Alan S. Paau, M.B.A., Ph.D.
Assistant Vice Chancellor
Technology Transfer and Intellectual Property
Services
University of California, San Diego
9500 Gilman Drive
La Jolla, CA 92093-0910

Either may change its designated point of contact or address by written notice to the other Party.

ARTICLE 7.0 Disclaimer of Warranties

7.1 ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXCLUDED HEREUNDER.

7.2 Nothing contained in this JOA shall be construed against either Party as (a) a warranty or representation as to the validity or scope of any patent on the SUBJECT INVENTION; (b) granting by implication, estoppel, or otherwise, any licenses or rights under patents other than patent(s) on the SUBJECT INVENTION; (c) a requirement to file any other patent application, or maintain any other patent in force; (d) an obligation to bring or prosecute actions against third parties for infringement; or (e) conferring any immunity from or defenses under antitrust laws, patent misuse laws, or any other state or Federal law.

7.3 Both Parties make no representations, extend no warranties of any kind, either express or implied, and assume no responsibilities whatsoever with respect to use, sale, or other disposition by the other Party, any licensee or any sublicensee or their vendees or other transferees of products incorporating or made by use of (a) the SUBJECT INVENTION or (b) information, if any, furnished under this JOA or any license.

7.4 Both Parties make no representation or warranty that the practice by any licensee or any sublicensee of a license for the JOINT INVENTION RIGHTS will be free from infringement or charges of infringement of other patents, and both Parties assume no liabilities whatsoever that may result from the exercise of the license

ARTICLE 8.0 Use of Names and Trademarks

8.1 Except for acknowledging the existence of this JOA, or as may be required by law, nothing in this JOA confers any right to use any name, trade name, trademark, campus or center name, or other designation of either Party to this JOA (including contraction, abbreviation, or simulation of any of the foregoing) in advertising, publicity, or other promotional activities, without the written consent from a duly authorized representative of the Party whose name or other designation is at issue.

ARTICLE 9.0 Assignability

9.1 This JOA is binding upon and inures to the benefit of the Parties hereto, their successors or assigns, but this JOA may not be assigned by either Party without the prior written consent of the other Party.

ARTICLE 10.0 Confidentiality

10.1 Subject to The California Public Records Act (as to the JOINT OWNER) and the Freedom of Information Act (as to NASA) and the right of each Party to acknowledge the existence of this JOA, UNIVERSITY and NASA, respectively, shall hold the other Party's proprietary business, patent prosecution, engineering, process and technical information, and other proprietary information in confidence using at least the same degree of care as that Party uses to protect its own proprietary information of a like nature for a period from the date of disclosure until five (5) years after the date of termination of this JOA. The disclosing Party shall label or mark confidential, or as otherwise appropriate, all proprietary information. If proprietary information is orally disclosed, the disclosing Party shall reduce the proprietary information to writing or to some other physically tangible form and deliver it to the receiving Party within thirty (30) days of the oral disclosure, marked and labeled as set forth above. Manuscripts published in scientific journals, papers, and presentations at public meetings that relate to proprietary information are exempt from the provisions of this Article after their timely submission to and subsequent timely approval of the other Party within thirty (30) days of their submission.

10.2 Notwithstanding the foregoing, nothing in this JOA in any way restricts or impairs the right of NASA or UNIVERSITY to use, disclose, or otherwise deal with any information or data documented: (a) that recipient can demonstrate by written records was previously known to it; (b) that is now, or becomes in the future, public knowledge other than through acts or omissions of recipient; (c) that is lawfully obtained without restrictions by recipient from sources independent of the disclosing Party; or (d) that was made independently without the use of proprietary information received hereunder.

10.3 The confidentiality obligations of the Parties under these terms will remain in effect for five (5) years from the termination date of this JOA.

ARTICLE 11.0 Termination

11.1 Unless a License Agreement is in effect or has been agreed upon as to all financial terms, either party hereto may terminate this Agreement for any reason upon at least sixty (60) days' written notice ("Notice of Termination") to the remaining party, but in any event not less than sixty (60) days prior to the date on which responses to any pending USPTO office actions need to be taken to preserve JOINT INVENTION RIGHTS. After effective termination, each party may separately license its interest in the JOINT INVENTION RIGHTS according to the licensing party's policy provided that each party pays one-half of all costs incurred thereafter in the preparation, prosecution, and maintenance of JOINT INVENTION RIGHTS. Apart from the obligation to share patent costs and apart from obligations identified in Article 10 (Confidentiality) and specific obligations accrued prior to termination, the parties will have no further rights or obligations under this Agreement after effective termination.

ARTICLE 12.0 Acceptance

IN WITNESS WHEREOF, each Party has caused this JOA to be executed by its duly authorized representatives:

National Aeronautics and Space Administration

The Regents of the University of California, San Diego Campus

By: _____
Keith T. Seften
Deputy General Counsel
(Administration and Management)

By: _____
Alan S. Paau, MBA, Ph.D.
Assistant Vice Chancellor

Date: _____

Date: _____

CONFIDENTIAL TREATMENT REQUESTED: Certain portions of this document have been omitted pursuant to a request for confidential treatment and, where applicable, have been marked with an asterisk ("****") to denote where omissions have been made. The confidential material has been filed separately with the Securities and Exchange Commission.

FIBER OPTIC PATENT LICENSE

This Agreement, effective as of the last date signed below (hereinafter, "Effective Date") Is made by and between UNITED TECHNOLOGIES CORPORATION, a Delaware corporation, having an office and a place of business at United Technologies Research Center, 411 Silver Lane, East Hartford, Connecticut, USA 06108 (hereinafter, "UTC") and LUNA INNOVATIONS INCORPORATED, a Delaware corporation, having a place of business at 2851 Commerce Street, Blacksburg, VA 24080 (hereinafter, "LICENSEE").

Whereas, UTC owns certain patents relating to measurement systems and fiber optic devices; and

Whereas LICENSEE is desirous of obtaining a license to practice such patents of UTC.

NOW, THEREFORE, in consideration for mutual promises and covenants contained herein, the Parties hereby agree as follows:

1. DEFINITIONS

1.1 "LICENSEE" means the above-mentioned corporation and all its divisions and subsidiaries in which LICENSEE has an ownership or controlling interest of not less than fifty percent (50%).

1.2 "Parties" means UTC and LICENSEE jointly, "Party" means either UTC or LICENSEE individually.

1.3 "Term of this Agreement" means the time from the Effective Date of this Agreement until either the termination or expiration of this Agreement, whichever occurs first, pursuant to Article 4 herein.

1.4 "UTC Licensed Patents" means the UTC patents listed in Appendix A of this Agreement including any continuations, divisional, foreign counterparts, reissues, or reexaminations thereof.

1.5 "Licensed Patents" means UTC Licensed Patents.

1.6 "Licensed Product" means any product which is covered by one or more claims of a Licensed Patent that has not expired or been abandoned or been finally declared Invalid or unenforceable by a tribunal from which no further appeal can be taken.

1.7 "Licensed Use" means any permitted use of a Licensed Product or practice of a method which is covered by one or more claims of a Licensed Patent that has not expired or been abandoned or been finally declared invalid or unenforceable by a tribunal from which no further appeal can be taken.

1.8 "Net Invoice Price" means the invoice price after deduction of regular volume and trade discounts, but before deduction of any other terms, including but not limited to shipping costs, duties, tariffs, sales and similar taxes. In no event shall the Net Invoice Price be less than the invoice price LICENSEE uses when Selling to a bona fide third party in an arms-length transaction, whether or not the Sale is to a third party or an entity enjoying a specially favored course of dealing with LICENSEE.

1.9 "Sale" or "Sales" means every disposition of Licensed Product or provision of a service using a Licensed Product or Licensed Use, including selling, renting, leasing, lending and bartering of an item or service. A Sale is considered to occur when the Licensed Product is delivered or Licensed Use service is provided or when an invoice is issued, whichever occurs first. A Sale exists irrespective of the collection of any debt. "Sold" or "Sell" have a corresponding meaning.

1.10 "UTC" as used herein means United Technologies Corporation as defined above and all its non-minority owned or controlled divisions, subsidiaries, and affiliates, and their successors in interest, including all other entities in which United Technologies Corporation, or its divisions or subsidiaries, have a non-minority ownership or controlling interest.

2. LICENSE AND SUB-LICENSE GRANT

2.1 UTC hereby grants to LICENSEE, a non-exclusive, non-transferable, worldwide, royalty-bearing license under UTC Licensed Patents to make, have made, use, offer for sale, and sell Licensed Products, without the right to sublicense others. This license, without the right to sublicense, extends to all fields of use *except* the field of underground oil, gas, and geothermal (steam) exploration, characterization, and extraction and associated oil and gas extraction and delivery equipment, including but not limited to, oil and gas off-shore pipelines and platform structures.

3. LICENSE FEE, ROYALTIES, REPORTING

3.1 LICENSEE shall pay to UTC a non-refundable license fee of [****] dollars US (\$[****]), due as follows:

[****] dollars US (\$[****]) on the Effective Date of this Agreement;

[****] dollars US (\$[****]) on or before December 1, 2004.

3.2 No royalties paid in Section 3.3 below shall count toward the payment of the license fee listed in Section 3.1 and neither expiration nor termination of this Agreement, for any reason, shall alter LICENSEE'S obligation to pay UTC the full license fee recited in Section 3.1.

3.3 In addition to the license fee paid in Section 3.1, LICENSEE shall pay to UTC, during the Term of this Agreement and subsequent thereto as set forth in Section 3.7, a royalty

of [****] Percent ([****]%) of Sales by LICENSEE. If a royalty is also payable for Licensed Product under the UTC/CRC Bragg Grating Patent License previously entered into by the Parties, LICENSEE shall pay under this Agreement [****] Percent ([****]%) of the Net Invoice Price for each of such Licensed Product Sold by LICENSEE.

Such payment to UTC shall be due at the end of each calendar quarter (hereinafter, "Due Date", i.e., on March 31, June 30, Sept. 30, and Dec. 31 of each year, for Sales during the preceding quarter, and shall be paid within [****] calendar days of each Due Date.

3.4 At the end of every calendar quarter during the Term of this Agreement and subsequent thereto as set forth in Section 3.7, LICENSEE shall provide a quarterly report to UTC indicating the total royalty due for the preceding quarter and itemizing each Sale by LICENSEE during the preceding quarter (or Sold earlier if not previously reported) and the Net Invoice Price. Such quarterly report shall be provided within sixty (60) calendar days of the Due Date and shall be provided even if no Sales occur In that quarter, LICENSEE'S failure to provide UTC such quarterly report within sixty (60) days of the Due Date shall be treated as a material breach of this Agreement.

3.5 During the Term of this Agreement and for six years thereafter, LICENSEE shall maintain appropriate business records regarding all Sales including the Net invoice Price. Additionally, LICENSEE will allow UTC, at UTC's discretion during normal LICENSEE business hours, to conduct or have conducted an audit of LICENSEE'S business records and operation regarding such Sales and will allow copies to be made and extracts taken from such records. The Parties shall immediately settle any underpayment or overpayment of royalty based on the results of such audit. In the event that such audit reveals an underpayment of more than [****] Percent ([****]%) of the royalty owed in any single quarter, LICENSEE shall reimburse UTC for the cost of such audit.

3.6 Any unpaid balance for any fees and royalties due hereunder from LICENSEE to UTC, after the time required for payment by this Article 3, shall be subject to Interest of [****]% per month (30 days) or portion thereof, or the highest rate allowed by law, whichever is less, from the Due Date until the amount due is fully paid.

3.7 Within sixty (60) calendar days of the termination or expiration of this Agreement, LICENSEE shall make a final payment to UTC of any outstanding payments owed to UTC during the Term of this Agreement and shall provide a final report pursuant to Section 3.4 associated with such final payment.

3.8 All payments due hereunder shall be made in US Dollars. Foreign currency/US dollar exchange rate used to calculate royalties due hereunder shall be an average foreign currency/US dollar exchange rate calculated from the sum of the foreign currency/US dollar exchange rates published in the *New York Wall Street Journal*, on the last business day of each of the three months in the calendar quarter for which a payment is due, divided by three (3).

4. TERM, TERMINATION, AND EXPIRATION

4.1 This Agreement shall become effective on the Effective Date and shall expire when the last of the Licensed Patents expires or is abandoned.

4.2 This Agreement may be terminated prior to expiration under Section 4.1 by:

4.2.1 mutual written agreement of the parties; or

4.2.2 by UTC in the event of a failure of LICENSEE to make any payment due or report within the time required by this Agreement; or

4.2.3 by UTC in the event of a material breach by LICENSEE of any other term or condition of this Agreement; or

4.2.4 by UTC in the event of a (i) declaration by a court of competent jurisdiction of the bankruptcy or insolvency of LICENSEE, (ii) filing by LICENSEE of a voluntary petition to any bankruptcy, insolvency, or other laws of any jurisdiction relating to or affecting enforcement of creditor's rights, (iii) filing by LICENSEE of any answer to any insolvency petition pursuant to any reorganization or insolvency law of any jurisdiction that admits the material allegations thereof; (iv) consent by LICENSEE to the filing of such involuntary petition, (v) making by LICENSEE of an assignment of a substantial part of its property for the benefit of creditors, (vi) application by LICENSEE for, or consent by LICENSEE to the appointment of a receiver or trustee for a substantial part of its property.

4.3 If UTC intends to terminate this Agreement pursuant to a condition set forth in Sections 4.2.2 or 4.2.3 of this Agreement, UTC shall notify LICENSEE of such intention by sending written notice to LICENSEE via the applicable Contact Points identified in Article 8 of this Agreement. If such condition is not cured within 30 days from the mailing of such notice, then UTC may, by written notice to LICENSEE, terminate this Agreement immediately.

4.4 If UTC intends to terminate this Agreement pursuant to any of the conditions set forth in Section 4.2.4 of this Agreement, UTC may immediately terminate this Agreement by sending written notice thereof to LICENSEE via the applicable Contact Points identified in Article 8 of this Agreement.

4.5 Upon expiration of this Agreement as set forth in Section 4.1 or termination of this Agreement under any of the conditions set forth in Section 4.2 of this Agreement, all the licenses, sub-licenses and rights granted to LICENSEE under this Agreement, including but not limited to the licenses and sub-licenses granted in Sections 2.1 and 2.2 shall be automatically revoked.

4.6 The following Sections of this Agreement shall survive termination and expiration of this Agreement: 3.1, 3.5-3.7, 5.2-5.4 and 5.6,

5. WARRANTY, LIABILITY, INDEMNITY

5.1 UTC warrants to LICENSEE that it has the authority to grant the licenses to LICENSEE herein.

5.2 LICENSEE, its successors and assigns, shall defend, indemnify and hold UTC harmless from any claim, demand, lawsuit, loss, cost, expense, obligation, liability, action,

proceeding, agreement, contract, judgment, or debt (including court costs and reasonable fees of attorneys and other professionals) of any nature whatsoever, whether or not well founded in fact or in law, whether in law or equity or otherwise, in connection with or related to use of Licensed Patents by LICENSEE, its customers, sub-contractors, agents, or employees (collectively, LICENSEE'S Representatives) or in connection with or related to LICENSEE'S or LICENSEE'S Representatives' manufacture, use, sale or service.

5.3 LICENSEE, its successors and assigns, shall have no recourse against UTC, whether by way of any suit, demand, proceeding, claim, or action, whether in law or equity or otherwise, for any loss, liability, damage, expense, debt, judgment, or cost that LICENSEE may suffer or incur at any time, in connection with or related to use by LICENSEE or LICENSEE'S Representatives of Licensed Patents or LICENSEE'S or LICENSEE'S Representatives' manufacture, use, sale or service related to the Licensed Patents.

5.4 THE PARTIES FURTHER AGREE THAT UTC DOES NOT MAKE ANY NOR DOES LICENSEE RECEIVE ANY REPRESENTATION OR WARRANTY OF ANY KIND WITH RESPECT TO THE ACCURACY, USEFULNESS, NOVELTY, VALIDITY, SCOPE, OR ENFORCEABILITY OF THE LICENSED PATENTS, LICENSED PRODUCTS, OR LICENSED USES, AND THAT UTC EXPRESSLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE LICENSED PATENTS, LICENSED PRODUCTS, OR LICENSED USES.

5.5 Nothing in this Agreement, or otherwise, shall be construed as:

5.5.1 granting LICENSEE any right or license under any UTC patent other than those specifically identified as Licensed Patents as set forth herein; or

5.5.2 a warranty or representation by either Party that any manufacture, sale, lease, or use of any tangible or intangible property covered under this Agreement will be free from infringement of any patents, except for Licensed Patents and only to the extent set forth herein; or

5.5.3 requiring either Party to defend, enforce, or otherwise assert any intellectual property right or other cause of action against a third party; or

5.5.4 requiring either Party to file or prosecute any patent application, to secure any patent, or maintain any patent in force; or

5.5.5 conferring to anyone by implication, estoppel, or otherwise any license or other right under any patent, except as expressly provided herein; or

5.5.6 conferring to anyone any right to use in any way, any of UTC's trademarks or trade names or any contraction, abbreviation, or simulation thereof.

5.6 In no event shall one Party be liable to the other Party for any incidental or consequential damages relating to or arising out of this Agreement.

5.7 In the event that the Dispute Resolution proceedings in Section 9 of this Agreement or a proceeding in a court of competent jurisdiction results in a finding/decision that one Party breached this Agreement, the breaching Party, its successors and assigns, shall indemnify the non-breaching Party for any expense(s) the non-breaching party incurs (including court approved costs and reasonable fees of attorneys and other professionals) in connection with or related to such a Dispute, as defined in Section 9.1 of this Agreement.

6. DEFENSE OF PATENTS

6.1 UTC shall have the sole discretion to decide whether to assert or defend the Licensed Patents. Any assertion or defense of the Licensed Patents shall be at UTC's sole expense and under UTC's sole control. If UTC asserts or defends any Licensed Patents for any reason, UTC shall be entitled to retain all damages, attorney fees, and other costs awarded in its favor as a result of such assertion or defense.

7. CHOICE OF LAW

7.1 This Agreement shall be governed by the laws of the State of Connecticut, USA, without regard to the conflicts of law principles of such State.

8. CONTACT POINTS FOR NOTICES AND PAYMENTS

8.1 Any notice, request, demand, waiver, consent, approval, or other communication not listed in Section 8.2 herein which is required or permitted to be given by a Party hereunder shall be given in writing and addressed to the appropriate Party at its address set forth below, or transmitted by Facsimile:

If to LICENSEE, to;

Michael Gunther
Luna Innovations Incorporated
2851 Commerce Street
Blacksburg, VA 24060
Fax: 540-951-0760

If to UTC, to:

Intellectual Property Counsel
United Technologies Research Center
411 Silver Lane
East Hartford, CT 06108
FAX: (860) 610-7428

with copy to:

Timothy J. Halter
Niro, Scavone, Haller & Niro
181 West Madison Street
Suite 4600
Chicago, IL 60602
FAX: (312) 236-1471

8.2 All payments to UTC, if made by wire transfer, shall be to:

unless otherwise directed by UTC. All payments, if by check, and quarterly reports (per Article 3) owed to UTC under this Agreement shall, unless otherwise directed by UTC, be sent to:

Niro, Scavone, Mailer & Niro
181 West Madison Street
Suite 4600
Chicago, IL 60602
ATTN: Timothy J. Haller

A copy of such reports shall be sent to:

United Technologies Research Center
Financial Dept.
Manager, Financial Operations
MS 129-03
411 Silver Lane
East Hartford, CT 06108

and

Intellectual Property Counsel
United Technologies Research Center
411 Silver Lane
East Hartford, CT 06108

9. DISPUTE RESOLUTION (negotiation, mediation, arbitration)

9.1 The Parties shall attempt in good faith to resolve any dispute of whatever nature arising out of the making or performance of, or otherwise relating to this Agreement or the breach, termination, enforceability, arbitrability or validity thereof (hereinafter, "Dispute"), promptly

by negotiations between the Parties in the normal course of business. If such good faith attempts do not resolve the Dispute, either Party may give the other party written notice of any such Dispute and request formal negotiations between the Parties. Such written notice shall be sent to the other Party via the applicable Contact Points identified in Article 8 of this Agreement and shall include the specific provision(s) of this Agreement involved in such Dispute, any facts or arguments in support of the matter, and a specific description of the relief or remedy sought. Within thirty (30) days from the date of mailing of such written notice, representatives of both Parties, having the authority to settle the Dispute, shall agree to meet at a mutually acceptable time and place, and thereafter as often as they reasonably deem necessary, to attempt to resolve the Dispute. If the Dispute has not been resolved within sixty (60) days from the date of mailing of such written notice or a mutually agreed upon extension thereof, or if the Parties fail to meet within such thirty (30) days or a mutually agreed upon extension thereof, the Parties shall initiate mediation of the Dispute pursuant to Section 9.2 herein. All negotiations pursuant to this Section 9.1 are deemed confidential and shall be treated as compromise and settlement negotiations for the purposes of Rule 408 of the Federal Rules of Evidence and any comparable law provision. Either Party may seek a preliminary injunction, attachment or other similar remedy available to it pending the outcome of negotiation, mediation, or arbitration hereunder, or a suit to compel compliance with this Article 9 dispute resolution process, in a U.S. court of competent jurisdiction.

9.2 Each Party shall provide the other Party with a written offer of terms of settlement that are acceptable as a minimum, if the Parties are still unable to resolve such Dispute by negotiation within the time limits set by Section 9.1 the Parties shall, within thirty (30) days thereafter, select a mediator and begin a good faith attempt to settle the Dispute by mediation, to be conducted at their joint cost. Unless the parties agree otherwise, the mediation shall be conducted in accordance with the Commercial Mediation Rules of the American Arbitration Association (AAA) then in effect by a mediator selected by mutual agreement of the Parties. If the Parties are unable to agree on a mediator within such thirty (30) days, or a mutually agreed extension thereof, the mediator will be selected by the AAA. Within thirty (30) days after the mediator has been selected, both Parties and their respective attorneys shall meet with the mediator for one mediation session of at least four hours, it being agreed that each Party representative attending such mediation session shall be senior to the representatives designated in Section 9.1 herein, with the authority to settle the Dispute. If the Dispute cannot be settled at such mediation session or at any mutually agreed continuation thereof, either Party may give the other Party and the mediator a written notice declaring the mediation process at an end, in which event the Dispute shall be resolved by arbitration as provided in Section 9.3 herein.

9.3 Upon completion of mediation pursuant to Section 9.2 herein, if no resolution of the Dispute has been reached, the Parties shall, within thirty (30) days thereafter, select an arbitrator and begin arbitration proceedings to be conducted in Hartford, Connecticut. Unless the parties agree otherwise, the arbitration shall be conducted in accordance with the applicable Arbitration Rules of the American Arbitration Association (AAA) then in effect, by a single arbitrator selected by mutual agreement of the Parties. If the Parties are unable to agree on an arbitrator within such thirty (30) days, or a mutually agreed extension thereof, the arbitrator will be selected by the AAA. The arbitrator shall be an attorney-at-law having at least ten (10) years experience in handling patent license disputes similar to the Dispute hereunder, shall complete arbitration proceedings within ninety (90) days after appointment, shall provide a written opinion of

any decision, and shall base such decision on the terms of this Agreement and on applicable law and judicial precedent. The arbitrator may award all costs and reasonable attorney's fees to the prevailing party plus applicable interest on any monetary damages. The findings of the arbitrator shall be final, binding, and enforceable as between the Parties and judgment on any award rendered by the arbitrator may be entered in any court having jurisdiction thereof.

10. GENERAL PROVISIONS

10.1 This Agreement represents the entire understanding between the Parties about the subject matter contained herein and supersedes all prior oral and/or written agreements, communications, and documents between the Parties with respect thereto.

10.2 No amendment or modification of this Agreement shall be valid or binding upon the Parties unless made in a writing specifically identifying this Agreement and executed by authorized representatives of both Parties.

10.3 LICENSEE shall have no right to assign, sell, or otherwise transfer any right or benefit hereunder.

10.4 Any failure of either Party to exercise a right granted by the terms or conditions of this Agreement shall not be construed as a waiver of such right or of any other rights under this Agreement by that Party and shall in no way affect that Party's exercise of such right or any other rights under this Agreement at a later date. No term or provision hereof shall be deemed waived and no breach consented to unless such waiver or consent shall be in writing and signed by the party claimed to have waived or consented.

10.5 The provisions of this agreement shall be deemed separable. If any provision of this Agreement shall be adjudged wholly or partially invalid, illegal, unenforceable or void by an arbitrator appointed under Article 9 or a court or tribunal of competent jurisdiction, such provision shall be deemed modified to the extent necessary to make it valid, legal, enforceable, or not void, if such modification does not materially alter the intention of the Parties nor substantially impair the value of this Agreement as to any Party. If such provision cannot be so modified, such provision shall be stricken from this Agreement and the validity, legality, and enforceability of the remaining provisions or parts thereof shall not in any way be affected or impaired.

10.6 The exercise by a party of its right to terminate this Agreement under Article 4 hereunder shall not constitute a waiver of any other rights, remedies, or damages available to such party under applicable law.

10.7 The Parties shall use their best efforts to maintain the terms of this Agreement confidential with access thereto being limited to those with a "need to know".

11. OFFSET CREDITS

11.1 LICENSEE agrees to notify UTC in advance of LICENSEE becoming involved in any prospective business venture in a foreign country which will make Licensed Products or in any way utilize Licensed Patents, including but not limited to starting a new business

or expanding an existing business, and agrees to give UTC the right of first refusal to obtain, at no cost, offset credits in such foreign country as a result of such venture. UTC will reimburse LICENSEE for out-of-pocket expenses of LICENSEE associated with the transfer of such offset credits to UTC.

BY SIGNING BELOW, the Parties have executed this Agreement by their duly authorized representatives, effective as of the last date signed below.

UNITED TECHNOLOGIES CORPORATION

United Technologies Research Center

By: /s/

Typed Name:

Title:

Date:

LUNA INNOVATIONS

By: /s/ Michael F. Gunther

Typed Name: Michael F. Gunther

Title: VP Operations

Date: September 22, 2003

CONFIDENTIAL TREATMENT REQUESTED: Certain portions of this document have been omitted pursuant to a request for confidential treatment and, where applicable, have been marked with an asterisk (“ [****]”) to denote where omissions have been made. The confidential material has been filed separately with the Securities and Exchange Commission.

FIBER OPTIC PATENT LICENSE
APPENDIX A
NON-EXCLUSIVELY LICENSED PATENTS
US PATENTS AND FOREIGN COUNTERPARTS

US Patent No (Doc)	Title	Issued	Foreign
4,761,073 (R-2909A)	Distributed Spatially Resolving Optical Fiber Strain Gauge	08/02/88	EPC PA No. 0192659; France, Germany, UK, Italy Japan PA No. 1885629 Priority Filing Date: 08/13/84
4,806,012 (R-2909B)	Distributed Spatially Resolving Optical Fiber Strain Gauge	01/21/89	EPC PA No. 0192659; France, Germany, UK, Italy Japan PA No. 1885629 Priority Filing Date: 08/13/84

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**AMENDED AND RESTATED
LICENSE AGREEMENT**

This agreement ("Agreement") is made by and between Luna Innovations, Inc., a Virginia corporation having an address at 2851 Commerce Street, Blacksburg, Virginia 24062 ("LICENSEE") and Virginia Tech Intellectual Properties, Inc., a non-profit organization having an address at 1872 Pratt Drive, Suite 1625, Blacksburg, Virginia 24060 ("VTIP").

This Agreement is effective as of March 19, 2004 ("Effective Date").

RECITALS

WHEREAS, VTIP is the owner by assignment of certain intellectual property listed in Appendix A, relating to (i) the discovery of a new class of endohedral metallofullerenes utilizing a trimetallic nitride template process, (ii) endohedral metallofullerenes as multi-functional medicinal agents, (iii) synthesis of the first water-soluble trimetallic nitride endohedral metallofullerols, and (iv) symmetric derivatives;

WHEREAS, the research was sponsored in part by the Government of the United States of America and as a consequence this license is subject to overriding obligations to the Federal Government under 35 U.S.C. §§ 200-212 and applicable regulations;

WHEREAS, the Inventors (as defined below) are employees of Virginia Polytechnic Institute and State University ("Virginia Tech"), and they are obligated to assign all of their right, title and interest in the Invention (as defined below) to Virginia Tech;

WHEREAS, Virginia Tech has assigned all of their right, title and interest in the Invention to VTIP;

WHEREAS, LICENSEE entered into a Confidential Disclosure Agreement with VTIP, effective September 7, 1999 ("CDA"), for the purpose of evaluating the Invention;

WHEREAS, VTIP is desirous that the Invention be developed and utilized to the fullest possible extent so that its benefits can be enjoyed by the general public;

WHEREAS, LICENSEE is desirous of obtaining certain rights from VTIP for commercial development, use, and sale of the Invention, and VTIP is willing to grant such rights;

WHEREAS, LICENSEE understands that VTIP may publish or otherwise disseminate information concerning the Invention and Technology (as defined below) at any time and that LICENSEE is paying consideration thereunder for its early access to the Invention and Technology, not continued secrecy therein, subject to Section 5.1(b) and the confidentiality obligations of Section 10.2.;

WHEREAS, the parties entered into a License Agreement effective June 26, 2002 (the "License Agreement"); and

WHEREAS, the parties desire to amend certain provisions thereof and to restate such License Agreement in its entirety.

NOW, THEREFORE, the parties agree:

ARTICLE 1. DEFINITIONS

The terms, as defined herein, shall have the same meanings in both their singular and plural forms.

1.1 "Affiliate" means any corporation or other business entity (i) in which LICENSEE owns or controls, directly or indirectly, at least fifty-one percent (51%) of the outstanding stock or other voting rights entitled to elect directors, or (ii) by which LICENSEE is owned or controlled directly or indirectly by at least fifty-one percent (51%) of the outstanding stock or other voting rights entitled to elect directors, or (iii) under common control with LICENSEE through ownership of at least fifty-one percent (51%) of the outstanding stock or other voting rights entitled to elect directors.

1.2 "Field" means all fields of human endeavor.

1.3 "Inventions" shall mean the inventions described in the patents, patent applications and disclosures set forth on Appendix A.

1.4 "Inventors" shall mean the inventors of the Inventions.

1.5 "Licensed Method" means any method, the use of which would constitute, but for the license granted to LICENSEE under this Agreement, an infringement of any Valid Claim.

1.6 "Licensed Product" means any composition or product, produced by the Licensed Method, or one the manufacture, use, sale, offer for sale, or importation of which would constitute, but for the license granted to LICENSEE under this Agreement, an infringement of any Valid Claim.

1.7 "Net Sales" means the total of the gross invoice prices of Licensed Products sold by LICENSEE, its Sublicensees, and Affiliates, or any combination thereof, less the sum of the following actual and customary deductions where applicable and separately listed: cash, trade, or quantity discounts; sales, use, tariff, import/export duties or other excise taxes imposed on particular sales (except for value-added and income taxes imposed on the sales of Product in foreign countries); transportation charges; or credits to customers because of rejections or returns.

1.8 "Patent Costs" means all out-of-pocket expenses for the preparation, filing, prosecution, and maintenance of all United States and foreign patents included in Patent Rights. Patent Costs shall also include reasonable out-of-pocket expenses for patentability opinions, inventorship determination, the preparation and prosecution of patent application, re-examination, re-issue, interference, and opposition activities related to patents or applications in Patent Rights.

1.9 “Patent Rights” means any of the following: the U.S. patent applications listed in Appendix A disclosing and claiming the Invention, filed by Inventors and assigned to VTIP; and continuing applications thereof including divisions, substitutions, and continuations-in-part; any patents issuing on said applications including re-issues, re-examinations and extensions; and any corresponding foreign applications or patents.

1.10 “Sponsor Rights” means all the applicable provisions of any license to the United States Government executed by VTIP and the overriding obligations to the Federal Government under 35 U.S.C. §§ 200-212 and applicable governmental implementing regulations.

1.11 “Sublicensee” means a third party to whom LICENSEE grants a sublicense of certain rights granted to LICENSEE under this Agreement.

1.12 “Technology” means the written technical information relating to the Invention which the Inventors provide to LICENSEE prior to the Effective Date.

1.13 “Term” means the period of time beginning on the Effective Date and ending on the expiration date of the longest-lived Patent Rights.

1.14 “Territory” means worldwide.

1.15 “Valid Claim” shall mean a claim of an issued and unexpired patent or a claim of a pending patent application within the Patent Rights which has not been held unpatentable, invalid or unenforceable by a court or other governmental agency of competent jurisdiction and has not been admitted to be invalid or unenforceable through re-issue, re-examination, disclaimer or otherwise; provided, however, that if the holding of such court or agency is later reversed by a court or agency with overriding authority, the claim shall be reinstated as a Valid Claim with respect to Net Sales made after the date of such reversal. Notwithstanding the foregoing provisions of this Paragraph 1.15, if a claim of a pending patent application within the Patent Rights has not issued as a claim of an issued patent within the Patent Rights, within four (4) years after the filing date from which such claim takes priority, such pending claim shall not be a Valid Claim for purposes of this Agreement.

ARTICLE 2. GRANTS

2.1 License. Subject to the limitations set forth in this Agreement and Sponsor’s Rights, VTIP hereby grants to LICENSEE, and LICENSEE hereby accepts, a license under Patent Rights to make, have made, use, sell, offer for sale, and import Licensed Products and to practice Licensed Methods and to use Technology, in the Field within the Territory and during the Term (the “Grant”). Improvements to Technology that are funded by LICENSEE and which would in the absence of this Agreement infringe Patent Rights are included in the Grant. The license granted herein is exclusive and VTIP shall not grant to third parties a further license under Patent Rights or to use Technology in the Field, within the Territory and during the Term.

2.2 Sublicense.

(a) The license granted in Paragraph 2.1 includes the right of LICENSEE to grant sublicenses to third parties during the Term.

(b) With respect to sublicense granted pursuant to Paragraph 2.2(a), LICENSEE shall:

(1) not receive, or agree to receive, anything of value in lieu of cash as consideration from a third party under a sublicense granted pursuant to Paragraph 2.2(a) (except for research and development funds, milestone payments, scientific benchmark payments and equity investments) without the express written consent of VTIP;

(2) to the extent applicable, include all of the rights of and obligations due to VTIP (and, if applicable, the Sponsor's Rights) and contained in this Agreement;

(3) promptly provide VTIP with a copy of each sublicense issued; and

(4) collect all payments due from Sublicensees and summarize and deliver to VTIP all reports due from Sublicensees.

(c) Upon termination of this Agreement for any reason, VTIP, at its sole discretion, shall determine whether LICENSEE shall assign to VTIP any and all sublicenses.

2.3 Reservation of Rights.

(a) VTIP and Virginia Tech reserve the right to use the Invention, Technology and Patent Rights for educational and research purposes, subject to Section 5.1(b) and the confidentiality obligations of Section 10.2.

(b) VTIP and Virginia Tech reserve the right to publish or otherwise disseminate any information about the Invention and Technology at any time; and subject to Section 5.1(b) and the confidentiality obligations of Section 10.2.

ARTICLE 3. CONSIDERATION

3.1 Fees and Royalties. As consideration for the license granted herein to LICENSEE under the Technology and Patent Rights, LICENSEE shall pay to VTIP the fees and royalties set forth in this Article 3. LICENSEE shall pay VTIP:

(a) a license issue fee of [****] Dollars (\$[****]) upon execution of this Agreement.

(b) a license issue fee of [****] Dollars (\$[****]), payable in [****] equal installments within 30 days after the LICENSEE has raised in excess of [****] Dollars (\$[****]) in venture funding, and ending on the fourth anniversary thereof.

(c) milestone payments in the amounts payable according to the following schedule or events:

For each product

- | | |
|----------------------------|-----------|
| (1) Phase I Complete | \$ [****] |
| (2) Phase II Complete | \$ [****] |
| (3) Phase III complete/NDA | \$ [****] |

(d) an earned royalty of up to [****] Percent ([****]%) of Net Sales on sales of Licensed Products by LICENSEE and/or its Affiliates.

(e) the applicable percentage (set forth below) of all sublicense fees from Sublicenses enacted during the Period as set forth below that are not earned royalties irrespective of date of receipt of payment:

<u>Percentage</u>	<u>Period</u>
[****]%	6/26/04-6/25/05
[****]%	6/26/05-6/25/06
[****]%	6/26/06-6/25/07
[****]%	6/26/07-6/25/08
[****]%	6/26/08 and thereafter

(f) on sublicense royalty payments received by LICENSEE from its Sublicensees on sales of Licensed Product by Sublicensees, [****] Percent ([****]%) of the Net Sales of Sublicensees.

(g) For the avoidance of doubt, sales by Affiliates of LICENSEE shall be included under the royalty calculation under paragraph (d) above, and shall not be included in the royalty calculations under paragraphs (e) and (f) even if such Affiliates are Sublicensees of LICENSEE.

(h) Should LICENSEE be obligated to pay royalties to third parties for certain patent rights in order to manufacture, use or sell the Licensed Products or to practice the Licensed Methods, the parties agree to renegotiate, in good faith, the provisions of this Section 3.1 so that LICENSEE pays a reasonable aggregate royalty to VTIP and such third parties.

3.2 Patent Costs. LICENSEE shall reimburse VTIP all past (prior to the Effective Date) and future (on or after the Effective Date) Patent Costs within thirty (30) days following receipt by LICENSEE of an itemized invoice from VTIP.

3.3 Due Diligence.

(a) LICENSEE shall:

- (1) diligently proceed with the development, manufacture and sale of Licensed Products;
- (2) prepare and supply a business plan to VTIP within six (6) months of the Effective Date;
- (3) raise in excess of [****] Dollars (U.S. \$[****]) within five (5) years of the Effective Date;
- (4) annually spend not less than One Hundred Thousand Dollars (U.S. \$100,000) for the development of Licensed Products during the first five (5) years of this Agreement. LICENSEE may, at its sole option, fund the research of any one of the Inventors and credit the amount of such funding actually paid to VTIP against its obligations under this paragraph;
- (5) use commercially reasonable efforts to market Licensed Products in the United States within [****] months of receiving regulatory approval to market such Licensed Products;
- (6) reasonably fill the market demand for Licensed Products following commencement of marketing at any time during the term of this Agreement;
- (7) use commercially reasonable efforts to obtain all necessary governmental approvals for the manufacture, use and sale of Licensed Products; and
- (8) LICENSEE agrees that wide distribution under a Material Transfer Agreement (as defined below) of research quantities of Licensed Product for non-commercial research and development will add to the potential commercial value of this license. To this end LICENSEE agrees to distribute research samples under terms and conditions satisfactory to VTIP and to LICENSEE. If such terms and conditions are not agreed upon and in place within 60 days of effective date then this license is terminated. The Material Transfer Agreement will contain terms and conditions satisfactory to VTIP and to LICENSEE.

(b) If LICENSEE fails to perform any of its obligations specified in Paragraphs 3.3(a) (1)-(7), then VTIP shall provide written notice to LICENSEE specifying in reasonable detail the alleged failure, citing a specific paragraph above in such notice. LICENSEE shall have ninety (90) days from the date of receipt of such notice to cure such breach. If, within such ninety-day period LICENSEE has not cured such breach (if such breach is reasonably capable of cure within such period) or diligently commenced efforts to cure such breach (if such breach is not reasonably capable of cure during such period), then VTIP shall have the right and option to either terminate this Agreement or change LICENSEE'S exclusive license to a nonexclusive license by providing written notice thereof to LICENSEE. This right, if exercised by VTIP shall supersede the rights granted in Article 2.

ARTICLE 4. REPORTS, RECORDS AND PAYMENTS

4.1 Reports.

(a) Progress Reports.

(1) Beginning January 1, 2005 and ending on the date of first commercial sale of a Licensed Product in the United States, LICENSEE shall submit to VTIP annual progress reports covering LICENSEE'S (and Affiliate's and Sublicensee's) activities to develop and test all Licensed Products and obtain governmental approvals necessary for marketing the same. Such reports shall include a summary of work completed; summary of work in progress; current schedule of anticipated events or milestones; and market plans for introduction of Licensed Products.

(b) Royalty Reports. After the first commercial sale of a Licensed Product anywhere in the world, LICENSEE shall submit to VTIP annual royalty reports on or before the date that is sixty (60) days after the anniversary date thereof. Each royalty report shall cover LICENSEE'S (and each Affiliate's and Sublicensee's) most recently completed calendar year and shall show:

(1) the gross sales, deductions as provided in Paragraph 1.7, and Net Sales during the most recently completed calendar quarter and the royalties, in US dollars, payable with respect thereto;

(2) the number of each type of Licensed Product sold;

(3) sublicense fees and royalties received during the most recently completed calendar quarter in US dollars, payable with respect thereto;

(4) the method used to calculate the royalties; and

(5) the exchange rates used.

If no sales of Licensed Products have been made and no sublicense revenues have been received by LICENSEE during any reporting period, LICENSEE shall so report.

4.2 Records and Audits.

(a) LICENSEE shall keep, and shall require its Affiliates and Sublicensees to keep accurate and correct records of all Licensed Products manufactured, used, and sold, and sublicense fees received under this Agreement. Such records shall be retained by LICENSEE for at least three (3) years following a given reporting period.

(b) All records shall be available during normal business hours for inspection at the expense of VTIP by VTIP's Internal Audit Department or by a Certified Public Accountant selected by VTIP and in compliance with the other terms of this Agreement for the sole purpose of verifying reports and payments. Such inspector shall not disclose to VTIP any information other

than information relating to the accuracy of reports and payments made under this Agreement or other compliance issues. In the event that any such inspection shows an under-reporting and underpayment in excess of [****] Percent ([****]%) for any twelve (12) month period, then LICENSEE shall pay the cost of the audit as well as any additional sum that would have been payable to VTIP had the LICENSEE reported correctly, plus an interest charge at a rate of [****] Percent ([****]%) per year. Such interest shall be calculated from the date the correct payment was due to VTIP up to the date when such payment is actually made by LICENSEE. For underpayment not in excess of [****] Percent ([****]%) for any twelve (12) month period, LICENSEE shall pay the difference within thirty (30) days without interest charge or inspection cost.

4.3 Payments.

(a) All fees and royalties due VTIP shall be paid in United States dollars and all checks shall be made payable to Virginia Tech Intellectual Properties, Inc. When Licensed Products are sold in currencies other than United States dollars, LICENSEE shall first determine the royalty in the currency of the country in which Licensed Products were sold and then convert the amount into equivalent United States funds, using the average of the exchange rate quoted in *The Wall Street Journal* during the period that is thirty (30) days prior to the last business day of the applicable reporting period.

(b) Royalty Payments.

(1) Royalties shall accrue when Licensed Products are invoiced, or if not invoiced, when delivered to a third party or Affiliate.

(2) LICENSEE shall pay earned royalties quarterly on or before February 28, May 31, August 31, and November 30 of each calendar year. Each such payment shall be for earned royalties accrued within LICENSEE'S most recently completed calendar quarter.

(3) Royalties earned on sales occurring or under sublicense granted pursuant to this Agreement in any country outside the United States shall not be reduced by LICENSEE for any taxes, fees, or other charges imposed by the government of such country on the payment of royalty income, except that all payments made by LICENSEE in fulfillment of VTIP tax liability in any particular country may be credited against earned royalties or fees due VTIP for that country. LICENSEE shall pay all bank charges resulting from the transfer of such royalty payments.

(4) If at any time legal restrictions prevent the prompt remittance of part or all royalties by LICENSEE with respect to any country where a Licensed Product is sold or a sublicense is granted pursuant to this Agreement, LICENSEE shall convert the amount owed to VTIP into US currency and shall pay VTIP directly from its US sources of fund for as long as the legal restrictions apply.

(5) LICENSEE shall not collect royalties from, or cause to be paid on, Licensed Products sold to the account of the U.S. Government or any agency thereof as provided for in the license to the U.S. Government.

(c) Late Payments. In the event royalty, reimbursement and/or fee payments are not received by VTIP when due, LICENSEE shall pay to VTIP interest charges at a rate of [****] Percent ([****]%) per year. Such interest shall be calculated from the date payment was due until actually received by VHP.

ARTICLE 5. PATENT MATTERS

5.1 Patent Prosecution and Maintenance.

(a) Provided that LICENSEE has reimbursed VTIP for Patent Costs pursuant to Paragraph 3.2, VTIP shall diligently prosecute and maintain the United States and, if available, foreign patents, and applications in Patent Rights using counsel of its choice. VTIP shall provide LICENSEE with copies of all relevant documentation relating to such prosecution and LICENSEE shall keep this documentation confidential. The counsel shall take instructions only from VTIP, and all patents and patent applications in Patent Rights shall be assigned solely to VTIP. Notwithstanding the foregoing, VTIP shall consult with LICENSEE regarding the prosecution of such patent applications and provide LICENSEE with a reasonable opportunity to review and comment on all proposed submissions to any patent office before submittal, and VTIP shall keep LICENSEE reasonably informed as to the status of such patent applications. All such comments shall reasonably be conveyed by VTIP to patent counsel.

(b) VTIP shall cooperate with LICENSEE in seeking such patent protection for the Inventions, and shall not publish, disclose, publicly use or sell the Inventions until it has taken reasonable and appropriate steps, after seeking comments from LICENSEE, to obtain patent protection for the Inventions in the appropriate jurisdictions.

(c) VTIP shall consider amending any patent application in Patent Rights to include claims reasonably requested by LICENSEE to protect the products contemplated to be sold by LICENSEE under this Agreement.

(d) LICENSEE shall apply for an extension of the term of any patent in Patent Rights if appropriate under the Drug Price Competition and Patent Term Restoration Act of 1984 and/or European, Japanese and other foreign counterparts of this law. LICENSEE shall prepare all documents for such application, and VTIP shall execute such documents and to take any other additional action as LICENSEE reasonably requests in connection therewith.

(e) LICENSEE may elect to terminate its reimbursement obligations with respect to any patent application or patent in Patent Rights upon three (3) months' written notice to VTIP. VTIP shall use reasonable efforts to curtail further Patent Costs for such application or patent when such notice of termination is received from LICENSEE. VTIP, in its sole discretion and at its sole expense, may continue prosecution and maintenance of said application or patent, and LICENSEE shall then have no further license with respect thereto. Non-payment of any portion of Patent Costs with respect to any application or patent may be deemed by VTIP as an election by LICENSEE to terminate its reimbursement obligations with respect to such application or patent.

5.2 Patent Infringement.

(a) If LICENSEE learns of any substantial infringement of Patent Rights, LICENSEE shall so inform VTIP and provide VTIP with reasonable evidence of the infringement. Neither party shall notify a third party of the infringement of Patent Rights without the consent of the other party. Both parties shall use reasonable efforts and cooperation to terminate infringement without litigation.

(b) LICENSEE may request VTIP to take legal action against such third party for the infringement of Patent Rights. Such request shall be made in writing and shall include reasonable evidence of such infringement and damages to LICENSEE. If the infringing activity has not abated thirty (30) days following LICENSEE'S request, VTIP shall elect to or not to commence suit on its own account. VTIP shall give notice of its election in writing to LICENSEE by the end of the sixtieth (60th) day after receiving notice of such request from LICENSEE. LICENSEE may thereafter bring suit for patent infringement at its own expense, if and only if VTIP elects not to commence suit and the infringement occurred in a jurisdiction where LICENSEE has an exclusive license under this Agreement. If LICENSEE elects to bring suit, VTIP may join that suit at its own expense.

(c) Recoveries from actions brought pursuant to Paragraph 5.2(b) shall belong to the party bringing suit. Legal actions brought jointly by VTIP and LICENSEE and fully participated in by both shall be at the joint expense of the parties and all recoveries shall be shared jointly by them in proportion to the share of expense paid by each party.

(d) Each party shall cooperate with the other in litigation proceedings at the expense of the party bringing suit. Litigation shall be controlled by the party bringing the suit, except that VTIP may be represented by counsel of its choice in any suit brought by LICENSEE.

5.3 Patent Marking. LICENSEE shall mark all Licensed Products made, used or sold under the terms of this Agreement, or their containers, in accordance with the applicable patent marking laws.

ARTICLE 6. GOVERNMENTAL MATTERS

6.1 Governmental Approval or Registration. If this Agreement or any associated transaction is required by the law of any nation to be either approved or registered with any governmental agency, LICENSEE shall assume all legal obligations to do so. LICENSEE shall notify VTIP if it becomes aware that this Agreement is subject to a United States or foreign government reporting or approval requirement. LICENSEE shall make all necessary filings and pay all costs including fees, penalties, and all other out-of-pocket costs associated with such reporting or approval process.

6.2 Export Control Laws. LICENSEE shall observe all applicable United States and foreign laws with respect to the transfer of Licensed Products and related technical data to foreign countries, including, without limitation, the International Traffic in Arms Regulations and the Export Administration Regulations.

6.3 Preference for United States Industry. If LICENSEE sells a Licensed Product or Combination Product in the US, LICENSEE shall manufacture said product substantially in the US. Upon LICENSEE'S written notice to VTIP and LICENSEE'S expense, VTIP shall reasonably assist LICENSEE in seeking an exemption from the foregoing requirement under the Bayh-Dole Act or other applicable law.

ARTICLE 7. TERMINATION OF THE AGREEMENT

7.1 Termination by VTIP. If LICENSEE fails to perform or violates any material term of Articles 2 and 3, then VTIP may give written notice of default ("Notice of Default") to LICENSEE. If LICENSEE fails to cure the default within ninety (90) days of the Notice of Default (except where a specific cure or cure period are prescribed for a breach or default in which event such cure or cure periods shall control), VTIP may terminate this Agreement and the license granted herein by a second written notice ("Notice of Termination") to LICENSEE. If a Notice of Termination is sent to LICENSEE, this Agreement shall automatically terminate on the effective date of that notice. Termination shall not relieve LICENSEE of its obligation to pay any fees owed at the time of termination and shall not impair any accrued right of VTIP or LICENSEE.

7.2 Termination by LICENSEE.

(a) LICENSEE shall have the right at any time and for any reason to terminate this Agreement upon a sixty (60) day written notice to VTIP. Said notice shall state LICENSEE'S reason for terminating this Agreement.

(b) Any termination under Paragraph 7.2(a) shall not relieve LICENSEE or VTIP of any obligation or liability accrued under this Agreement prior to termination or to rescind any payment made to VTIP or action by LICENSEE or VTIP prior to the time termination becomes effective. Termination shall not affect in any manner any rights of LICENSEE or VTIP arising under this Agreement prior to termination.

7.3 Survival on Termination. The following Paragraphs and Articles shall survive the termination or expiration of this Agreement in accordance with their terms:

- (a) Article 4 (REPORTS, RECORDS AND PAYMENTS);
- (b) Paragraph 5.2 (Patent Infringement);
- (c) Paragraph 7.4 (Disposition of Licensed Products on Hand);
- (d) Paragraph 8. l(c) (Limitation of Liability);
- (e) Paragraph 8.2 (Indemnification);

(f) Article 9 (USE OF NAMES AND TRADEMARKS); and

(g) Article 10 (MISCELLANEOUS PROVISIONS).

7.4 Disposition of Licensed Products on Hand. Upon termination or expiration of this Agreement, LICENSEE may dispose of all previously made or partially made Licensed Product within a period of one hundred and twenty (120) days of the effective date of such termination or expiration provided that the sale of such Licensed Product by LICENSEE, its Sublicensees, or Affiliates shall be subject to the terms of this Agreement, including but not limited to the rendering of reports and payment of royalties required under this Agreement.

ARTICLE 8. LIMITED WARRANTY AND INDEMNIFICATION

8.1 Limited Warranty.

(a) VTIP represents and warrants that (i) it has the lawful right to grant this license, (ii) it has the power and authority to execute, deliver and perform under this Agreement, (iii) the execution, delivery and performance of this Agreement will not conflict with or cause a default under any other agreement to which VTIP is a party or by which VTIP is bound, and (iv) VTIP has not received any notice of infringement with respect to the Inventions or the Technology from any third party.

(b) Except as set forth above, the license granted herein and the associated Technology are provided "AS IS" and without WARRANTY OF MERCHANTABILITY or WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE or any other warranty, express or implied. Except as set forth above, VTIP makes no representation or warranty that the Licensed Product, Licensed Method or the use of Patent Rights or Technology will not infringe any other patent or other proprietary rights.

(c) In no event shall VTIP be liable for any incidental, special or consequential damages resulting from exercise of the license granted herein or the use of the Invention, Licensed Product, Licensed Method or Technology.

(d) Nothing in this Agreement shall be construed as:

(1) a warranty or representation by VTIP as to the validity or scope of any Patent Rights;

(2) a warranty or representation that anything made, used, sold or otherwise disposed of under any license granted in this Agreement is or shall be free from infringement of patents of third parties;

(3) an obligation to bring or prosecute actions or suits against third parties for patent infringement except as provided in Paragraph 5.2 hereof,

(4) conferring by implication, estoppel or otherwise any license or rights under any patents of VTIP other than Patent Rights as defined in this Agreement, regardless of whether those patents are dominant or subordinate to Patent Rights;

(5) an obligation to furnish any know-how not provided in Patent Rights and Technology; or

(6) an obligation to update Technology.

8.2 Indemnification.

(a) LICENSEE shall indemnify, hold harmless and defend VTIP, its officers, employees, and agents; the sponsors of the research that led to the Invention; and the Inventors of the patents and patent applications in Patent Rights and their employers against any and all claims, suits, losses, damage, costs, fees, and expenses resulting from or arising out of exercise of this license or any sublicense. This indemnification shall include, but not be limited to, any product liability.

(b) LICENSEE, at its sole cost and expense, shall insure its activities in connection with the work under this Agreement and obtain, keep in force and maintain insurance or an equivalent program of self-insurance as follows:

(1) comprehensive or commercial general liability insurance (contractual liability included) with reasonable coverage limits appropriate for LICENSEE'S commercial activities; and

(2) the coverage and limits referred to above shall not in any way limit the liability of LICENSEE.

(c) LICENSEE shall furnish VTIP with certificates of insurance showing compliance with all requirements. Such certificates shall: (i) provide for thirty (30) day advance written notice to VTIP of any modification; (ii) indicate that VTIP has been endorsed as an additional insured under the coverage referred to above; and (iii) include a provision that the coverage shall be primary and shall not participate with nor shall be excess over any valid and collectable insurance or program of self-insurance carried or maintained by VTIP.

(d) VTIP shall notify LICENSEE in writing of any claim or suit brought against VTIP in respect of which VTIP intends to invoke the provisions of this Article. LICENSEE shall keep VTIP informed on a current basis of its defense of any claims under this Article.

ARTICLE 9. USE OF NAMES AND TRADEMARKS

9.1 Nothing contained in this Agreement confers any right to use in advertising, publicity, or other promotional activities any name, trade name, trademark, or other designation of either party hereto (including contraction, abbreviation or simulation of any of the foregoing). Unless required by law, the use by LICENSEE of the name Virginia Tech Intellectual Properties, Inc. is prohibited, without the express written consent of VTIP.

9.2 VTIP may disclose to the Inventors the terms and conditions of this Agreement upon their request. If such disclosure is made, VTIP shall request the Inventors not to disclose such terms and conditions to others pursuant to a non-disclosure agreement reasonably acceptable to LICENSEE.

9.3 VTIP may acknowledge the existence of this Agreement and the extent of the Grant in Article 2 to third parties, but VTIP shall not disclose the identity of LICENSEE or the financial terms of this Agreement to third parties, except where VTIP is required by law to do so.

ARTICLE 10. MISCELLANEOUS PROVISIONS

10.1 Correspondence. Any notice or payment required to be given to either party under this Agreement shall be deemed to have been properly given and effective:

(a) on the date of delivery if delivered in person, or

(b) five (5) days after mailing if mailed by first-class or certified mail, postage paid, to the respective addresses given below, or to such other address as is designated by written notice given to the other party.

If sent to LICENSEE:

Luna Innovations, Inc.
2851 Commerce Street
Blacksburg, VA 24060
Attention: Chief Financial Officer

If sent to VTIP:

Virginia Tech Intellectual Properties, Inc.
1872 Pratt Drive, Suite 1625
Blacksburg, VA 24060
Attention: Business Manager

10.2 Secrecy.

(a) "Confidential Information" shall mean the confidential or proprietary information of a party, including Technology, relating to the Invention and disclosed by either party to other party during the term of this Agreement, which if disclosed in writing shall be marked "Confidential", or if first disclosed otherwise, shall within thirty (30) days of such disclosure be reduced to writing by the disclosing party and sent to the recipient.

(b) The recipient shall:

(1) use the Confidential Information for the sole purpose of performing under the terms of this Agreement;

(2) safeguard Confidential Information against disclosure to others with the same degree of care as it exercises with its own data of a similar nature, which shall be no less than reasonable care;

(3) not disclose Confidential Information to others (except to its employees, agents, professional advisers, consultants, potential investors or acquirers who are bound to the recipient by a like obligation of confidentiality) without the express written permission of the disclosing party, except that the recipient shall not be prevented from using or disclosing any of the Confidential Information that:

(i) the recipient can demonstrate by written records was previously known to it;

(ii) is now, or becomes in the future, public knowledge other than through acts or omissions of the recipient; or

(iii) is lawfully obtained by the recipient from sources independent of the disclosing party; and

(c) The secrecy obligations of the recipient with respect to Confidential Information shall continue for a period ending five (5) years from the termination date of this Agreement.

10.3 Assignability. This Agreement may not be assigned by either party without the prior written consent of the other party, except that LICENSEE may assign the rights and obligations hereunder in connection with a merger and acquisition transaction or other change in control of LICENSEE.

10.4 No Waiver. No waiver by either party of any breach or default of any covenant or agreement set forth in this Agreement shall be deemed a waiver as to any subsequent and/or similar breach or default.

10.5 Failure to Perform. In the event of a failure of performance due under this Agreement and if it becomes necessary for either party to undertake legal action against the other on account thereof, then the prevailing party shall be entitled to reasonable attorneys' fees in addition to costs and necessary disbursements.

10.6 Governing Laws. THIS AGREEMENT SHALL BE INTERPRETED AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE COMMONWEALTH OF VIRGINIA, but the scope and validity of any patent or patent application shall be governed by the applicable laws of the country of the patent or patent application.

10.7 Force Majeure. A party to this Agreement may be excused from any performance required herein if such performance is rendered impossible or unfeasible due to any catastrophe or other major event beyond its reasonable control, including, without limitation, war, riot, and insurrection; laws, proclamations, edicts, ordinances, or regulations; strikes, lockouts, or other serious labor disputes; and floods, fires, explosions, or other natural disasters. When such events have abated, the non-performing party's obligations herein shall resume.

10.8 Headings. The headings of the several articles, paragraphs and sections are inserted for convenience of reference only and are not intended to be a part of or to affect the meaning or interpretation of this Agreement.

10.9 Entire Agreement. This Agreement embodies the entire understanding of the parties and supersedes all previous communications, representations or understandings, either oral or written, between the parties relating to the subject matter hereof.

10.10 Amendments. No amendment or modification of this Agreement shall be valid or binding on the parties unless made in writing and signed on behalf of each party.

10.11 Severability. In the event that any of the provisions contained in this Agreement is held to be invalid, illegal, or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provisions of this Agreement, and this Agreement shall be construed as if the invalid, illegal, or unenforceable provisions had never been contained in it.

IN WITNESS WHEREOF, both VTIP and LICENSEE have executed this Agreement, in duplicate originals, by their respective and duly authorized officers as of the Effective Date.

VTIP:

LICENSEE

By /s/ JAMES BLAIR

By /s/ KENT A. MURPHY

James Blair
President

Kent A. Murphy
President

Date: March 19, 2004

Date: March 19, 2004

APPENDIX A

- VTIP # 99.021 “Discovery of a New Class of Endohedral Metallofullerenes Utilizing a Trimetallic Nitride Template Process”
Patent No: 6,303,760
- VTIP # 02.040 “Endohedral Metallofullerenes as Multi-Functional Medicinal Agents”
US Patent Application 60/368,960
PCT Application PCT/US03/10137
- VTIP #02.002 “Synthesis of the First Water-Soluble Trimetallic Nitride Endohedral Metallofullerols”
(Disclosure)
- VTIP # 02.001 “Symmetric Derivatives”
US Patent Application 10/244,747

June 16, 2004

Keith Jones, Ph.D.
Director of Commercialization
Virginia Tech Intellectual Properties, Inc.
1872 Pratt Drive
Suite 1625
Blacksburg, VA 24060

Re: **Amended and Restated License Agreement with Luna Innovations, Inc.**

Dear Keith:

Reference is hereby made to the Amended and Restated License Agreement between Luna Innovations Incorporated. ("Luna") and Virginia Tech Intellectual Properties, Inc. ("VTIP"), effective March 19, 2004 ("License Agreement"). Section 3.3(a)(8) of the License Agreement provides generally that Luna shall distribute research samples of certain materials under terms and conditions satisfactory to VTIP and to Luna. The License Agreement further provides that if such terms and conditions are not agreed upon and in place within sixty (60) days of its effective date, the license is terminated.

The Material Transfer Agreement attached as Exhibit A hereto ("MTA") is hereby agreed to by the parties to this letter agreement as an acceptable form of Material Transfer Agreement pursuant to Section 3.3(a)(8) of the License Agreement. In addition, the parties agree as follows:

1. VTIP acknowledges that the materials to be provided pursuant to the MTA are likely to be scarce and very expensive. As such, VTIP agrees that Luna shall not be obligated to provide pursuant to such MTA, more than [****], by mass, of such materials that are under the control of Luna and not committed in writing to third parties at any given time.
2. VTIP further agrees that any recipient of such materials shall be obligated to pay for the materials, as indicated in Section 11 of the MTA. Such price shall, remunerate Luna for the costs incurred in, manufacturing, shipping and preparing the materials.

2851 Commerce Street
Blacksburg, VA 24060
P: 540.552.5128
F: 540.951.0760
www.lunainnovations.com

3. Luna agrees to make wide distribution of research quantities of Licensed Product for non-commercial research and development (Research Samples)
4. To this end LICENSEE agrees to make available at [****] samples of Licensed Product that are in inventory. Luna will supply on an annual basis to VTIP a list (herein the List) of Licensed Product on hand and a price list for Research Samples. The initial List is attached as Exhibit B.
5. VTIP further agrees that any dissemination of the Licensed Product pursuant to the MTA shall be effected so as not to jeopardize Luna's relationship with its corporate partners, joint venturers and other alliance partners ("Corporate Partners"). Should any such Corporate Partners object, in writing, to the distribution of a single compound or closely related group of compounds, contained in Licensed Product for use in any single field of use, even for research purposes, VTIP agrees to give Luna permission to cease such distribution for the requested field of use promptly.
6. Notwithstanding section 5 Luna agrees to continue to supply research quantities to existing customers.
7. Orders for Licensed Product will be tracked and reported to VTIP at least annually or on reasonable notice but not more than once a quarter. Order means a written request from a non-commercial research organization that includes a description of material, quantity, and price; and has a reasonable expectation of receiving payment. All orders will be distributed under the terms of the Material Transfer Agreement attached to this agreement as Exhibit A

If the foregoing terms properly reflect our agreement regarding the matters set forth in this letter agreement, please indicate your agreement with such terms by signing in the space indicated below and returning a duplicate original of this letter agreement to us.

Sincerely,

/S/ KENT A. MURPHY

Name: Kent A. Murphy
Title: CEO, Luna Innovations

Keith Jones
April 12, 2004
Page 3

Accepted and Agreed to:
VIRGINIA TECH INTELLECTUAL PROPERTIES, INC.

By: /s/ JAMES B. BLAIR

Name: James B. Blair
Title: President

Exhibit A

MATERIAL TRANSFER AGREEMENT

This Material Transfer Agreement ("Agreement") effective as of _____, 200__, is entered into by and between **Luna Innovations, Inc.**, a Delaware corporation ("Provider"), and _____, ("Recipient").

The Recipient has requested sample(s) of experimental material(s) for non commercial research purposes in connection with _____ ("Purpose").

The material(s) to be provided are _____ (*provide full description of material to be provided*) _____ ("Material"), which Material is the exclusive property of Provider.

Provider's [Chief Technology Officer] (*Name*) _____, will provide Recipient's _____ Scientist, _____ (*Name*) _____, _____ (*Title*) _____, with the Material.

The parties agree to the following terms and conditions for this material transfer:

1. Ownership and Use of Material; Quantities. The Material is the property of Provider and is to be used by Recipient solely for non commercial research purposes only in connection with the field of research described in Appendix A and only under the direction of the Recipient's Scientist. Recipient acknowledges and agrees that only _____ (*quantity*) of Material shall be furnished to Recipient,.

Restrictions. Recipient shall not transfer received or modified Material to any other party without the prior written consent of Provider.

2. Data; Results. The following data and related information will be supplied to the Provider's [Chief Technology Officer] at the end of the investigations or studies: _____ (*identify the testing data/information to be delivered—ex: report outlining the studies that were done, a summary of the results and its conclusions regarding the performance of the Material*) _____. Provider shall be granted an irrevocable royalty free license to said information. Provider will not disclose these data to a third party without prior approval by the Recipient.

3. Reciprocal Obligations. The Recipient agrees to deliver reasonable quantities of derivatives of Licensed Material to Provider if available, not otherwise encumbered and for reasonable compensation for Provider's research and development purposes pursuant to a material transfer agreement reasonably satisfactory to the parties.

4. Compliance with Law. Any and all studies conducted utilizing the Material will be conducted in accordance with all applicable laws, rules and regulations.

5. Return of Material. Any and all unused Material may be returned to Provider for a full refund.

6. Patent and Other Rights. Subject to any prior obligations to third parties existing and any rights reserved by the United States Government pursuant to 35 U.S.C. §§ 200 et seq, Recipient hereby grants to Provider an exclusive right of first negotiation for an agreement which would include a license (with the right to authorize and grant sublicenses), to any inventions and discoveries resulting from Recipient's use of the Material (herein inventions and discoveries). Provider shall have sixty (60) days from the date it receives such written description of any particular invention or discovery to evaluate its interest to develop and commercialize such inventions and discoveries. If Provider, within such sixty (60) day period, gives express written notice to Recipient of Provider's interest in first negotiating with Recipient regarding such inventions and discoveries, the parties shall negotiate in good faith and attempt to reach mutually acceptable agreement on the terms and conditions on which Recipient would grant rights to Provider to develop and commercialize such inventions and discoveries. If Provider fails to timely give such written notice, or if the parties fail to reach such mutually acceptable agreement within one hundred twenty (120) days after Recipient's receipt of Provider's notice of intent to negotiate, thereafter Recipient shall grant to Provider a royalty free non exclusive license to any inventions and discoveries resulting from Recipient's use of the Material.

7. Confidentiality. The parties may have need to disclose confidential information to one another relating to the Material and its use ("Confidential Information"). Information to be subject to this Agreement shall be disclosed in writing and labeled with an appropriate proprietary legend. When disclosed verbally or visually, the Confidential Information shall be designated as confidential at the time of such disclosure, with subsequent confirmation provided in writing within thirty (30) calendar days following such disclosure, referencing the date and description of the Confidential Information disclosed with an appropriate proprietary legend affixed thereto. In consideration of the disclosure of Confidential Information, the parties agree as follows:

a. Neither party will directly or indirectly divulge to unauthorized persons any Confidential Information received from the other party pursuant to this Agreement. The receiving party will disclose such information only to its employees or agents with a need to know for the Purpose of this Agreement, and any employees or agents to whom such information is disclosed shall be informed of the confidential nature of the disclosure and of this Agreement and shall agree, pursuant to an agreement or instrument reasonably acceptable to the disclosing party, to hold such information in confidence and be bound by this Agreement in the same manner that each party is bound. Each party will exercise the same degree of care as is normally applied to protect their own such information, but in any event, no less than reasonable care.

b. Each party may use Confidential Information only to the extent required to accomplish the Purpose of this Agreement. The receiving party will not copy any Confidential Information of the disclosing party, except as necessary to carry out the Purpose of this Agreement and shall protect any such copies in accordance with this Agreement. Confidential Information shall not be used for any purpose or in any manner that would constitute a violation of any laws or regulations, including without limitation, the export control laws of the United States.

c. The termination of this Agreement shall not relieve either party of its obligations with respect to Confidential Information received under this Agreement, and the confidentiality obligations under this Agreement shall survive the termination of this Agreement and continue for a term of Five (5) years from the initial receipt of any Confidential Information.

d. All Confidential Information shall remain the property of the disclosing party. Upon written request of the disclosing party, the receiving party shall immediately return or destroy the Confidential Information supplied by the disclosing party, including any and all copies thereof and including all analyses, compilations, summaries, studies and other material prepared by such party or its employees and based in whole or in part on, or otherwise containing or reflecting, any of the Confidential Information.

e. Recipient hereby acknowledges and agrees that in the event of any breach of this Section 7 by Recipient, including, without limitation, the disclosure of Confidential Information without the prior express written consent of Provider, Provider may suffer irreparable injury, such that no remedy at law will afford it adequate protection against, or appropriate compensation for, such injury. Accordingly, the Recipient hereby agrees that Provider may be entitled to specific performance of Recipient's obligations under this Section 7, as well as such further injunctive relief as may be granted by a court of competent jurisdiction.

f. Any confidentiality obligation under this Agreement shall not apply to any information, knowledge, data, and/or know-how with respect to which any of the following conditions exist:

- i. If the receiving party can show that such information was already in its possession at the time of the disclosure; or,
- ii. If the information disclosed by one party is or becomes publicly known during the term of this Agreement otherwise than through a breach of the receiving party's obligations under this Agreement; or,
- iii. If the receiving party later receives such information from a third party who is not under any obligation to keep such information confidential; or,
- iv. If such information is developed by one party independently of any disclosures made under this Agreement, as evidenced by that party's written records; or
- v. Such disclosure is in response to a valid order of a court of competent jurisdiction or other governmental body of the United States or any political subdivision thereof, or is otherwise required to be disclosed by law; provided, however, that the receiving party shall first have given prompt written notice to the disclosing party in order to allow the disclosing party to participate in objecting to production of the information.

8. Publication. Recipient will be free to publish results of the research utilizing the Material after providing Provider with a thirty (30) day period in which to review each publication to identify patentable subject matter and to identify any inadvertent disclosure of Provider's proprietary information. If necessary to permit the preparation and filing of U.S. patent applications, the Recipient agrees to grant an additional review period not to exceed sixty (60) days. Any further extension will require subsequent written agreement between the Recipient and Provider. Recipient agrees to provide appropriate acknowledgment of the source of the Material in all publications. Recipient shall not use the name of the Provider or any contraction or derivative thereof or the name(s) of the Provider's affiliates or employees in any advertising, promotional, sales literature, or fundraising documents without prior written consent from Provider. No news release, publicity or other public announcement, either written or oral, regarding the terms and/or the existence of this Agreement, or performance hereunder, shall be made by Provider or Recipient without the prior written approval of the other party.

9. No Other Licenses or Rights. Nothing in this Agreement grants any rights, either expressly, by implication, estoppel, or otherwise, to any license under any invention, patent, or in any know-how of the Provider nor any rights to use the Material or any product or process related thereto or derived therefrom for profit making or commercial purposes. If Recipient desires to use Material and related patents, if any, for profit-making or commercial purposes, Recipient agrees to negotiate in good faith a license with Provider prior to making any profit-making or commercial use. Provider shall have no obligation to grant such license to Recipient, and may grant exclusive or non-exclusive licenses to others who may be investigating uses of the Material.

10. Payment. Recipient shall make the following payment to cover the cost of producing the Material and shipping and preparation of the Material:
_____ (amount required) _____.

11. No Alteration of Rights. The provision of Material to Recipient is understood to alter in no way any rights of the U.S. Government or other research sponsor or Provider.

12. Disclaimer of Warranties. Any Material delivered pursuant to this Agreement is understood to be experimental in nature and may have hazardous properties. PROVIDER MAKES NO REPRESENTATIONS AND EXTENDS NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED. THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF ANY PATENT, COPYRIGHT, TRADEMARK, OR OTHER PROPRIETARY RIGHTS.

13. Limitation of Liability; Indemnity. Recipient assumes all liability for damages that may arise from its use, storage or disposal of the Material. In no event shall Provider be liable to Recipient for any use of such Material, and Recipient hereby agrees, where not precluded by federal or state law, to defend, indemnify, and hold Provider harmless from any loss, claim, damage, or liability, of whatsoever kind or nature, which may arise from or in connection with this Agreement or the use, storage or disposal of such Material hereunder.

14. Termination. Either party may terminate this Agreement at any time, in which case Recipient will discontinue within fifteen (15) days its use of the Material until such time as a new agreement between the parties is established. If no agreement is established between the parties, Recipient agrees, upon direction of Provider, to return any unused portions of the Material to the Provider, or dispose of it in a manner mutually agreeable to both parties.

15. Entire Agreement. This Agreement represents the entire, complete, and final understanding between the parties on the subject matter herein and supersedes any previous or other understandings, commitments, or agreements, oral or written.

16. Assignment. Neither party may assign its rights or obligations under this Agreement without the prior written consent of the other party, except that Provider may assign its rights and obligations hereunder in connection with a merger, acquisition or sale of substantially all of its assets or business.

17. Counterparts. This Agreement may be executed by the parties hereto in separate counterparts, each of which when so executed and delivered shall be an original, but all such counterparts shall together constitute one and the same agreement.

IN WITNESS WHEREOF, the parties have, through duly authorized representatives, executed this Agreement effective as of the date in the preamble hereof.

LUNA INNOVATIONS, INC.

(Recipient)

By: _____

Name

Title

Date

By: _____

Name

Title

Date

FIRST AMENDMENT TO INDUSTRIAL LEASE AGREEMENT

THIS FIRST AMENDMENT TO INDUSTRIAL LEASE AGREEMENT (the "Amendment") is made and effective as of this 11th day of May, 2006, by and between The Industrial Development Authority of Montgomery County, Virginia ("Landlord"), a public body corporate, having a principal place of business at 755 Roanoke Street, Suite 2 H, Christiansburg, Virginia 24073, and Luna Innovations Incorporated, ("Tenant"), a Virginia Corporation having a principal place of business at 10 South Jefferson Street, Suite 130, Roanoke, Virginia 24011.

WHEREAS, Landlord and Tenant entered into that certain Industrial Lease Agreement dated as of the 21st day of March, 2006 (the "Lease"), whereby the Landlord leased to Tenant that certain space 31,300 square feet located in the 109,000 sq. ft. Technology Manufacturing Building (the "Building") situated in the Blacksburg Industrial Park, 3150 State Street, Blacksburg, VA 24060, such space being more particularly described in the Lease (the "Premises");

WHEREAS, Landlord and Tenant desire to amend the Lease pursuant to the terms and conditions set forth herein.

NOW, THEREFORE, in consideration of the rents, covenants and agreements herein set forth, and for other good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree as follows:

1. The recitals set forth above are incorporated herein by reference and all capitalized terms not otherwise defined herein shall have the meanings as set forth in the Lease.

2. The first sentence of Section 1.4 of the Lease is deleted in its entirety and replaced with the following:

The Landlord shall provide the Tenant with an Up-fit improvement allowance of an amount up to Seven Hundred Nineteen Thousand Five Hundred Dollars (\$719,500) (the "Up-fit Allowance").

3. Section 3.1.1 of the Lease is hereby deleted in its entirety and replaced with the following:

"3.1.1 Payment. Beginning on the Commencement Date and for each month thereafter until September 30, 2007, Tenant shall pay to Landlord base rent for the Premises ("Base Rent") in advance, without demand or set-off, in the amount of Nineteen Thousand Five Hundred Sixty Two and 50/100 Dollars (\$19,562.50), based on an annual rent of \$7.50 per sq. ft., on or before the first day of each successive calendar month during the Term in lawful money of the United States of America, without prior notice or demand, at such place or places as may be designated in writing from time to time by Landlord. Beginning on October 1, 2007 for each of the next 59 calendar months thereafter, the Tenant shall pay to Landlord Base Rent for the Premises in advance, without demand or set-off, in the amount of Forty Thousand Four Hundred Twenty Nine and 16/100 Dollars (\$40,429.16), based on an annual rent of \$15.50 per sq. ft., on or before the first day of each successive calendar month during the Term in lawful money of the United States of America, without prior notice or demand, at such place or places as may be designated in writing from time to time by Landlord. In addition to the Base Rent for the Premises, Tenant shall pay to Landlord a Utilities Fee and a Common Area

Maintenance Fee for the Premises as indicated in Sections 4 and 8.1.1. The Tenant's proportionate share of the real estate taxes on the Premises have been included in the Base Rent, and the payment of the real estate taxes for the Property and the Building, of which the Premises are a part, shall be the sole responsibility of Landlord."

4. Section 3.1.4 of the Lease is hereby deleted in its entirety and replaced with the following:

"3.1.4 Letter of Credit. In addition to the required deposit, the Tenant shall cause to be put in place within five (5) business days following written notice from Landlord that construction of the improvements shown on Exhibit C and Exhibit D is ready to commence and shall remain continuously in place until the end of the Term, unless otherwise provided herein or agreed by the Landlord, a letter of credit issued by a Bank in the area that is acceptable to the Landlord in the amount of Seven Hundred Nineteen Thousand Five Hundred (\$719,500), against which the Landlord may draw upon the occurrence of an Event of Default, as defined in Section 13.1, by Tenant under this Lease (the "Letter of Credit"). Landlord agrees that the Letter of Credit may be issued and renewed on an annual basis; provided that in the event Tenant fails to provide Landlord with a renewal Letter of Credit within thirty (30) days prior to the termination of any then existing Letter of Credit, an Event of Default as defined in Section 13.1 shall be deemed to have occurred. The Letter of Credit shall be provided in a satisfactory form to the Landlord and be governed by the "Uniform Customs and Practices for Commercial Documentary Credits" promulgated by the XIII Congress of the International Chamber of Commerce (International Chamber of Commerce Brochure No. 500, 1993 revision) and the provisions of the Uniform Commercial Code-Letters of Credit—Title 8.5 of the Code of Virginia, 1950, as amended. The Landlord agrees that so long as the Tenant is in good standing with the Lease, the amount of the Letter of Credit shall automatically be reduced at each anniversary of the Commencement Date by the amount of One Hundred Nineteen Thousand Nine Hundred Sixteen and 67/100 Dollars (\$119,916.67), provided the Letter of Credit shall automatically terminate at the end of the Term."

5. This Amendment may be executed in any number of identical counterparts and, as so executed, shall constitute one agreement, binding on all the parties hereto, notwithstanding that all the parties are not signatories to the original or the same counterpart.

6. Except as specifically amended herein, the Lease shall remain in full force and effect.

[Remainder of Page Intentionally Left Blank – Signature Page Follows]

In Witness Whereof, Landlord and Tenant have executed this Amendment as of the 11th day of May, 2006.

**THE INDUSTRIAL DEVELOPMENT
AUTHORITY OF MONTGOMERY
COUNTY, VIRGINIA**

LUNA INNOVATIONS INCORPORATED

By: /s/ MICHAEL B. MILLER

Name: Michael B. Miller
Title: Chairman

/s/ SCOTT A. GRAEFF

Name: Scott A. Graeff
Title: CFO

COMMONWEALTH OF VIRGINIA, at large,
COUNTY OF MONTGOMERY, to-wit;

I, the undersigned, a notary public in and for the jurisdiction aforesaid, do hereby certify that Michael B. Miller, whose name as Chairman of the Industrial Development Authority of Montgomery County is signed to the foregoing Lease, has acknowledged the same before me in my jurisdiction aforesaid.

Given under my hand this 12th day of May, 2006.
My Commission expires: 02-28-07

/s/ Brenda Rigney

Notary Public

COMMONWEALTH OF VIRGINIA, at large,
CITY OF ROANOKE, to-wit;

I, the undersigned, a notary public in and for the jurisdiction aforesaid, do hereby certify that Scott A. Graeff, whose name as CFO, of Luna Innovations Incorporated is signed to the foregoing Lease, has acknowledged the same before me in my Jurisdiction aforesaid.

Given under my hand this 14th day of May, 2006.
My commission expires: 9-30-06

/s/ Leigh S. Holland

Notary Public

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We have issued our report dated March 21, 2006, accompanying the consolidated financial statements of Luna Innovations Incorporated, contained in the Registration Statement (Form S-1 No. 333-131764) and Prospectus. We consent to the use of the aforementioned reports in Amendment No. 5 to 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

May 19, 2006

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the use in this Registration Statement on Form S-1 (Registration No. 333-131764) 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 consent to the use of the aforementioned reports in Amendment No. 5 to the Registration Statement and Prospectus, and 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
May 17, 2006