

May 4, 2006

**VIA EDGAR AND MESSENGER**

Securities and Exchange Commission  
Division of Corporate Finance  
100 F Street, N.E.  
Washington, D.C. 20549-6010

Mail Stop 6010

Attention: Mr. Jeffrey P. Riedler  
Ms. Sonia Barros  
Ms. Suzanne Hayes  
Ms. Tabatha Akins  
Mr. Oscar Young

**Re: Luna Innovations Incorporated**  
**Registration Statement on Form S-1 (File No. 333-131764)**  
**Initially filed on February 10, 2006**  
**Amendment No. 2 filed on April 10, 2006**  
**Amendment No. 3 filed on April 28, 2006**

Ladies and Gentlemen:

On behalf of Luna Innovations Incorporated (the "**Company**"), we respectfully submit this letter as a supplement to our letters to you dated April 27, 2006 (the "**April 27 Response Letter**") and May 4, 2006 (the "**First Supplemental Response Letter**"), and in response to our telephone discussions with you on May 3<sup>rd</sup> and 4<sup>th</sup>, 2006.

In the April 27 Response Letter, we submitted for review the Company's response to comments from the staff (the "**Staff**") of the Securities and Exchange Commission (the "**Commission**") received by letter dated April 24, 2006, relating to the Company's Amendment No. 2 ("**Amendment No. 2**") to Registration Statement on Form S-1 (File No. 333-131764) filed with the Commission on April 10, 2006 (the "**Registration Statement**"). Concurrent with its filing of the April 27 Response Letter, the Company filed via EDGAR Amendment No. 3 to the Registration Statement ("**Amendment No. 3**"). We provided supplemental responses to certain comments from the Staff in the First Supplemental Response Letter. In this letter, we have provided a further supplemental response to the Staff's comment number 11.

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- 11. In the conclusion to your response to prior comment 55, you noted that the increase in the fair value of the stock could not be attributed to a single factor but reflects a number of factors. As such, please elaborate on the extent to which each of the factors contributed to the increase, with as much quantification as possible. In addition, please update your analysis through the date of your next and any subsequent responses or amendments. When you have an estimate of the IPO price, please ensure that you have sufficiently discussed the factors contributing to the difference between the fair value of the stock at the issuance date and the estimated IPO price, as contemplated by part f. of our comment.**

**SECOND SUPPLEMENTAL RESPONSE TO COMMENT 11:**

In response to the Staff's comment and subsequent conversations with the Staff on May 3<sup>rd</sup> and 4<sup>th</sup>, 2006, the Company is supplementally providing the following information for the Staff's consideration in connection with the Company's pricing of stock option grants made during the period from December 31, 2004 through the date of this supplemental response (the "**Updated Review Period**"). The following information (i) incorporates a revised stock-based compensation charge for options granted on May 20, 2005, June 1, 2005, June 3, 2005, November 11, 2005 and February 8, 2006 and (ii) assumes a proposed 1-for-1.7691911 reverse stock split that the Company will effect immediately prior to the closing of the offering.

*Further Revised Stock-Based Compensation Charge for Option Grants*

Following the submission of the First Supplemental Response Letter and after discussions among the Staff, the Company and its representatives on May 4, 2006, certain members of management and the Company's board of directors (collectively, the "**Review Committee**") reviewed and discussed the Company's financial and business outlook during the Updated Review Period in light of the anticipated pricing of the Company's initial public offering in late-May or mid-June 2006. Based on that review, the Company has revised the stock-based compensation charge for options granted on May 20, 2005, June 1, 2005, June 3, 2005, November 11, 2005 and February 8, 2006.

From the period beginning May 20, 2005 through June 3, 2005, the Board of Directors authorized the granting of 1,186,844 options to purchase Class B Common Stock at a strike price of \$0.35 per share. Thereafter it was determined that the underlying value of the Class B Common Stock was \$0.58 per share on June 30, 2005 based upon review of an independent third-party valuation report. After further review of the product development, financing and business milestones discussed in the First Supplemental Response Letter, the Review Committee determined that a better measurement of fair value of the Class B Common Stock during the period beginning May 20, 2005 through June 3, 2005 was \$0.81 per share. The incremental increase in intrinsic value of such options was therefore determined to be \$0.23 per share. This resulted in additional total compensation expense of \$272,974 to be recognized over the related service/vesting period and additional compensation expense for 2005 of \$42,013. Management has concluded that the additional expense related to fiscal year 2005 from both a quantitative and qualitative perspective to be immaterial to fiscal year 2005 and as such will record the compensation prospectively beginning in the first quarter 2006 through the remaining vesting period.

The Board also authorized the granting of approximately 895,813 options to purchase shares of the Company's Class B Common Stock on November 11, 2005. The original fair value of the Class B Common Stock was determined to be \$1.77 per share. This value was determined by the Compensation Committee of the Company's Board of Directors based upon analysis as of September 30, 2005 valuation report provided by an independent third-party valuation consultant. The valuation had included a discounted cash flow analysis which incorporated a terminal value that was based upon significant growth assumptions. This terminal value was substantially discounted because such projections required cash proceeds that were only available after successfully completing an initial public offering of the Company's Common Stock.

In early February 2006, the Company filed its Registration Statement for an initial public offering of its Common Stock. On or about the time of the filing, management had discussions with a group of underwriters regarding the value of the proposed offering. Based upon these discussions it was determined that a preliminary mid-point of the Company valuation was approximately \$10.00 per share assuming effectiveness of the initial public offering. Following the filing of the Registration Statement the Review Committee considered the magnitude of the November 11, 2005 option grants and the fact that the valuations arrived at with the assistance of the valuation consultant were significantly different than the potential \$10.00 valuation discussed with the underwriters. The Review Committee further noted that several factors contributed to the increase in value from November 2005 to February 2006. These factors included advancements in technology, stronger working capital position due to an additional \$8 million round of funding from Carilion Health System, additional contract awards, and strategic additions to the Board of Directors and the management team.

With the above factors in mind, the Review Committee reconsidered the \$1.77 per share price for options granted on November 11, 2005 and determined such price to be low given all of the available information. The Review Committee concluded that a better measurement of fair value of the Class B Common Stock on this date was \$3.00 per share. This revision of fair value of the underlying common stock created additional aggregate stock-based expense of \$604,759 to be recognized over the related service/vesting period of the options and an additional charge to expenses in 2005 of approximately \$26,109. Management has considered the quantitative and qualitative impacts of this expense for fiscal year 2005 and has concluded that such amount is immaterial. As such, management will record the additional share-based expense prospectively beginning in the first quarter of 2006 through the remaining service/vesting period of the applicable options.

In addition to the foregoing, certain of the options issued on November 11, 2005 were granted to former employees of Luna Technologies in connection with their employment with the Company. The options granted to these employees are subject to a four year vesting period, but such options do not have a service requirement on the part of the respective option holders. As a result, the additional intrinsic value of approximately \$499,000 related to these options will be recorded prospectively as additional purchase price for Luna Technologies.

As discussed above, the Company has revised its aggregate charge for compensation expense for the Updated Review Period and elected to record an aggregate of \$7,321,870 as compensation expense, as set forth in the tabular presentation below. This charge represents an increase of \$2,258,600 from the aggregate amount of compensation expense reflected in the First Supplemental Response Letter and an increase of \$5,544,217 from the aggregate amount of compensation expense reflected in Amendment No. 3. Below is an updated tabular presentation that summarizes all equity awards granted to employees,

directors and consultants of the Company during the Updated Review Period. The table below includes the amounts recorded as stock-based compensation expense as a result of those evaluations and as a result of the Company's adoption, effective January 1, 2006, of Financial Accounting Standards No. 123R, *Share Based Payment* (SFAS No. 123R). All share and per share numbers in the table reflect a 1-for-1.7691911 reverse stock split that the Company will effect immediately prior to the closing of the offering.

| <u>Grant Date</u> | <u>Number of Shares<br/>Granted</u> | <u>Per Share Value of<br/>Stock as Determined<br/>by the Board on the<br/>Grant Date</u> | <u>Reassessed<br/>Estimated Fair<br/>Value for Financial<br/>Accounting<br/>Purposes</u> | <u>Total Stock Based<br/>Compensation Expense<sup>5</sup></u> |
|-------------------|-------------------------------------|--|--|---|
| 01/01/05          | 310,662                             | \$0.35   | \$0.58   | \$71,452  |
| 03/21/05          | 1,130                               | \$0.35   | \$0.58   | \$260   |
| 04/18/05          | 2,826                               | \$0.35   | \$0.58   | \$650   |
| 05/20/05          | 1,048,363                           | \$0.35   | \$0.81 <sup>2</sup>  | \$482,247   |
| 05/20/05          | 113,046                             | \$0.39 <sup>1</sup>  | \$0.81 <sup>2</sup>  | \$47,479  |
| 06/01/05          | 2,826                               | \$0.35   | \$0.81 <sup>2</sup>  | \$1,300   |
| 06/03/05          | 22,609                              | \$0.35   | \$0.81 <sup>2</sup>  | \$10,400  |
| 07/01/05          | 56,523                              | \$0.35   | \$0.81   | \$26,001  |
| 07/21/05          | 11,305                              | \$0.35   | \$0.81   | \$5,200   |
| 08/01/05          | 108,242                             | \$0.35   | \$0.81   | \$49,791  |
| 11/11/05          | 491,674                             | \$1.77   | \$3.00 <sup>3</sup>  | \$604,759   |
| 11/11/05          | 404,139                             | \$1.77   | \$3.00 <sup>4</sup>  | N/A   |
| 02/08/06          | 868,900                             | \$1.77   | \$8.00   | \$5,011,734 <sup>6</sup>                                      |
| 03/14/06          | 113,046                             | \$1.77   | \$8.00   | \$706,440 <sup>6</sup>  |
| 04/19/06          | 50,871                              | \$7.08   | \$9.00   | \$304,156 <sup>6</sup>  |
|                   |                                     |  |  | TOTAL: \$7,321,870  |

- <sup>1</sup> This grant was made to Dr. Kent Murphy, who holds a significant minority interest in the Company. As a result, options granted to Dr. Murphy must have a strike price of at least 110% of fair market value to receive tax treatment as an incentive stock option under the Internal Revenue Code.
- <sup>2</sup> For the options granted from May 20, 2005 through June 3, 2005, management has considered the qualitative and quantitative effect of the change from an estimated fair value of \$0.58 (as set forth in the First Supplemental Response Letter) to \$0.81 and has determined the impact of \$42,013 on the 2005 Statement of Operations to be immaterial. The Company will record this effect beginning in 2006 over the remaining vesting period of the options.
- <sup>3</sup> For 491,674 of the 895,813 shares underlying the options granted on November 11, 2005, management has considered the qualitative and quantitative effect of the change from an estimated fair value of \$1.77 (as set forth in the First Supplemental Response Letter) to \$3.00 and has determined the impact of \$26,109 on the 2005 Statement of Operations to be immaterial. The Company will record this effect beginning in 2006 over the remaining vesting period of the options.
- <sup>4</sup> Options for 404,139 of the 895,813 shares underlying the options granted on November 11, 2005, were issued in connection with the Company's acquisition of Luna Technologies in September 2005. The goodwill of \$17,024 resulting from this transaction in 2005 will be recorded beginning in the first quarter of 2006 over the remaining vesting period of the options.
- <sup>5</sup> The Company will amortize stock-based compensation for such awards on a straight-line method over the related vesting period of the awards taking into account the effects of the employees' expected exercise and post-vesting employment termination behavior.
- <sup>6</sup> Effective January 1, 2006, the Company adopted Financial Accounting Standards No. 123R, *Share Based Payment* (SFAS No. 123R) using the modified prospective transition method. Under such transition method, the Company's 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 a Black-Scholes option pricing model. The Company 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.

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Please direct your questions or comments to the undersigned at (703) 734-3105 (office) or (703) 864-6313 (mobile), or to Trevor J. Chaplick at (703) 734-3106. In addition, we would request that you provide a facsimile of any additional comments you may have to the attention of Mr. Chaplick and the undersigned at (703) 734-3199. Thank you for your assistance.

Very truly yours,  
WILSON SONSINI GOODRICH & ROSATI  
Professional Corporation  
/s/ Mark R. Fitzgerald  
Mark R. Fitzgerald

cc: Kent A. Murphy, Ph.D.  
Aaron S. Hullman, Esq.  
**Luna Innovations Incorporated**

Trevor J. Chaplick, Esq.  
**Wilson Sonsini Goodrich & Rosati, Professional Corporation**

Marjorie Sybul Adams, Esq.  
Daniel I. Goldberg, Esq.  
**DLA Piper Rudnick Gray Cary US LLP**