



UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549

Mail Stop 3030

December 10, 2009

Via Facsimile and U.S. Mail

Randall Gausman  
Chief Financial Officer  
RAE Systems, Inc.  
3775 North First Street  
San Jose, CA 95134

**Re: RAE Systems, Inc.**  
**Form 10-K for the year ended December 31, 2008**  
**Filed March 13, 2009**  
**File No. 1-31783**

Dear Mr. Gausman:

We have reviewed your filing and have the following comments. Where indicated, we think you should revise your documents in response to these comments. If you disagree, we will consider your explanation as to why our comments are inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Form 10-K for the year ended December 31, 2008

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations, page 19

Stock-Based Compensation, page 21

1. We note that you base your expected volatility on the historical volatility of your common stock, adjusted by management for unusual and non-representative stock price activity not expected to recur. Please tell us and revise future filings to disclose the nature of any management adjustments made in determining your expected volatility. Clearly explain why the adjustments were necessary and discuss how these adjustments affected your stock based compensation expense.

Contractual Obligations, page 29

2. Please revise future filings to present all long-term liabilities reflected on your balance sheet in your table of contractual obligations. In this regard we note "other long-term liabilities" presented on your balance sheet of \$1,219 as of December 31, 2008. To the extent these liabilities represent contractual obligations, revise your future filings accordingly.

Item 11. Executive Compensation, page 35

3. We note that you increased base salary compensation for many of your executives by significant amounts including by 18% for Mr. Chen and 19% for Mr. Watson during fiscal year 2008. Yet your disclosure does not provide details of why you have made such increases. Tell us, and expand your disclosure in future filings to explain, what factors you considered in the decision to make these significant increases in compensation. See Regulation S-K Item 402(b)(ix).
4. Please revise your disclosure in future filings to provide an expanded analysis of how you arrived at and why you paid each particular level of compensation. For example, we note minimal discussion and analysis of how you determined specific stock option awards, as disclosed on page 13 of the definitive proxy statement that you incorporated by reference into your Form 10-K. In your response and in future filings, please expand your discussion to provide substantive analysis and insight into how the Compensation Committee made actual payout determinations for the fiscal year for which compensation is being reported. Please also clarify the reasons for differences in the relative size of the grants among the officers.
5. We note that you have not provided a quantitative discussion of the "award targets" or "specified thresholds" the Compensation Committee used in determining awards made

pursuant to the Management Incentive Program and Sales Incentive Program in 2008. Tell us, and in future filings discuss, the specific performance objectives established for the year. Refer to Item 402(b)(2)(v) of Regulation S-K. To the extent you believe that disclosure of such information, on a historical basis, would result in competitive harm such that the information could be excluded under Instruction 4 to Item 402(b) of Regulation S-K, please provide us with a detailed explanation supporting your conclusion. Refer to Question 118.04 of the Regulation S-K Compliance and Disclosure Interpretations, available on our website at <http://www.sec.gov/divisions/corpfin/guidance/regs-kinterp.htm>. In discussing how difficult or likely it will be to achieve the target levels or other factors, you should provide as much detail as necessary without disclosing information that poses a reasonable risk of competitive harm.

Financial Statements, page F-1

Note 6. Income Taxes, page F-22

6. We note that you have been granted a tax holiday in China. If material, please revise future filings to quantify the effect of the tax holiday. Refer to SAB Topic 11C. In addition, if material, please also revise MD&A in future filings to discuss the impact that the expiration of the tax holiday could have on your future earnings.

Exhibits 32.1 and 32.2

7. We note that the certifications provided in Exhibits 32.1 and 32.2 refer to the Form 10-K for the period ended December 31, 2007. Please amend your filing to provide certifications that relate to the Form 10-K for the year ended December 31, 2008.

Form 10-Q for period ended September 30, 2009

Exhibits 32.1 and 32.2

8. We note that the certifications provided in Exhibits 32.1 and 32.2 in each of your Forms 10-Q for the periods ended March 31, 2009, June 30, 2009 and September 30, 2009 refer to the Form 10-Q for the period ended March 31, 2008. Please amend your filings to provide certifications that relate to the quarterly reports on Form 10-Q with which they were filed.

As appropriate, please amend your filings and respond to these comments within 10 business days or tell us when you will provide us with a response. Please furnish a cover letter with your amendment that keys your responses to our comments and provides any requested information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your amendment and responses to our comments.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes all information required under the Securities Exchange Act of 1934 and that they have provided all information investors require for an informed investment decision. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

In connection with responding to our comments, please provide, in writing, a statement from the company acknowledging that:

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filing; and
- the company may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in our review of your filing or in response to our comments on your filing.

You may contact Eric Atallah, Staff Accountant, at (202) 551-3663 or me at (202) 551-3643 if you have questions regarding comments on the financial statements and related matters. Please contact Mary Beth Breslin, Staff Attorney, at (202) 551- 3625, or Jay Mumford, Reviewing Attorney, at (202) 551-3625 if you have questions on any other comments. In this regard, do not hesitate to contact me or Martin James, Senior Assistant Chief Accountant, at (202) 551-3671 with any questions.

Sincerely,

Kevin L. Vaughn  
Accounting Branch Chief