



DIVISION OF
CORPORATION FINANCE

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

December 8, 2010

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

**Re: RAE Systems Inc.
Revised Preliminary Proxy Statement on Schedule 14A
Filed November 23, 2010
File No. 001-31783
Amendment No. 1 to Schedule 13E-3
Filed November 23, 2010
File No. 005-58813**

Dear Mr. Gausman:

We have limited our review of your filings to those issues we have addressed in our comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter within ten business days by amending your filings, by providing the requested information, or by advising us when you will provide the requested response. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your filings and the information you provide in response to these comments, we may have additional comments.

1. The first bullet of the written acknowledgements provided by each filing person appears to disclaim responsibility for any disclosure not related to that filing person. Please ask each filing person to provide written acknowledgements exactly in the form as set forth at the end of this letter.

Schedule 13E-3

2. Regarding your response to prior comment 1 as it relates to Mr. Gausman and Mrs. Chen:
 - Please expand to clarify your belief as to whether each is currently an affiliate of the registrant. We note, for example, that Mr. Gausman currently serves as your chief financial officer and is therefore your affiliate. Also, your response regarding Mrs. Chen appears to address only whether her current employment with registrant provides her with "control" rights. Expand to address her ability to control in other ways, such as through the securities held by the trust for which

she serves as trustee. In this regard, we note that such trust is currently a party to the voting agreement mentioned in your disclosure. We also note your revised disclosure on page 23 in response to prior comment 6 regarding the affiliation of the “Rollover Holders” indicates the trust is your affiliate; and

- Clarify how you concluded that Mr. Gausman and Mrs. Chen would each not be in a position to control the surviving company. Address specifically in your response your disclosure that Mr. Gausman will continue to serve as your chief financial officer, the terms of the severance agreement mentioned on page 42 and the “FCPA Bonus” mentioned in the Form 8-K filed September 20, 2010 to announce the agreement related to the transaction. See Question 201.01 of our *Going Private Transactions, Exchange Act Rule 13e-3 and Schedule 13E-3* Compliance and Disclosure Interpretations. We also note that you refer to Mrs. Chen as an “executive” of the surviving entity on page 44 and it appears the trust for which she serves as trustee will hold a significant amount of securities of the surviving entity following the transaction.

Revised Preliminary Proxy Statement

Summary Term Sheet, page 1

3. We reissue prior comment 6. Please state whether each filing person believes the going private transaction is fair or unfair to unaffiliated security holders. The current disclosure is confusing (relating to the company) or incomplete (relating to the Purchaser Group and the Rollover Holders).

Purposes of the Transaction . . . , page 3

4. Please tell us why your revisions added in response to prior comment 3 do not include “Mr. Chen’s desire to receive cash for a portion of his shares,” as stated in that response, or the tax implications added to page 31. Also balance your disclosure regarding the advantages of the merger structure with disclosure that no alternative means of going private were considered, as disclosed on page 24.

Questions and Answers, page 9

5. Please revise this section to avoid duplicating disclosure already included in the Summary Term Sheet.

Implementation of a Strategic Process, page 15

6. Please expand your response to prior comment 9 to clarify whether the preliminary financial analyses were written, as previously requested and, if so, please provide us with a supplemental copy of the reports. Also clarify why you believe those analyses are not materially related to the transaction, given that the Special Committee reviewed these preliminary financial analyses in determining whether RAE Systems should pursue the Battery Ventures proposal. Alternatively, please provide the disclosure required by Item 1015 of Regulation M-A and file the presentations as exhibits to the Schedule 13E-3.

7. We note your revisions in response to prior comment 10. Please expand to clarify why and how the Special Committee believed that Bidders E – J were “unlikely to reach valuations that would be competitive with those” of the bidders you identify.
8. We reissue prior comment 11 given that it continues to be unclear from your disclosure on page 19 how the \$1.60 share price was determined. While we note the disclosure in the added parenthetical, it is unclear how those factors relate to the share price proposed. For example, why was the proposed share price tied to the range proposed by Bidder A and why was the selected share price at \$1.60 rather than some other number within that range? What impact did the conditions of Bidder A’s proposal, as indicated in the bullet points, have on the share price selected? Please revise.
9. We note your revisions in response to prior comment 12. Please:
 - expand your disclosure regarding the August 17, 2010 proposal to clarify what were the specific terms of the proposal to Mr. Chen and Dr. Hsi. For example, how many shares were proposed to be rolled over and cashed out, what were the proposed material terms of the securities to be issued and what was the proposed composition of the board and “related governance matters?” Also clarify whether any counter-proposals were made by Mr. Chen and Dr. Hsi; and
 - clarify the nature and extent of the discussions that occurred on August 20, 2010. For example, you refer to the terms being “further discussed,” but it is unclear what discussions transpired. You also state that Mr. Chen and Battery Ventures “confirmed the agreement,” but your disclosure does not mention any prior agreement, including when or how that agreement was reached or what were its material terms.
10. Please expand your revisions added in response to prior comment 13 to clarify the substantive negotiations that have occurred with the private equity firm, including the material terms proposed by the parties, and whether and why those terms were rejected or accepted.

Reasons for the Merger . . . page 22

11. We note your response to prior comment 5:
 - It is unclear how many of the factors you added to your disclosure in response to the first bullet would relate to your decision to go private now as opposed to any other time. For example, why are the business, market and execution risks different now than at another time? Why are the costs and expenses of being a public company now so great that they lead you to conclude that going private was preferable to remaining public and how are these costs and expenses reflected in your projection financial information on page 68? Please revise substantially. Also revise the similar conclusory statements added to the disclosure regarding the reasons of each other filing person;

- Clarify the nature of the “new cost reduction” and “significant investments” mentioned on page 22 and how being a public company could inhibit your ability to make those investments and take those measures. Also tell us, with a view toward disclosure, how the projected financial information on page 68 reflects the reduction and investment you mention;
 - The second bullet on page 23 refers vaguely to having considered your projected financial results and the risks to achieving those results. Clarify how those financial results were considered; and
 - Given your disclosure on page 24 and elsewhere that no alternative methods of going private were considered, clarify the basis for the disclosed beliefs that there was no reasonable prospect of such alternatives providing value at least comparable to an acquisition. Also clarify the “significant risks and uncertainties” you mention.
12. We note your revisions in response to prior comment 17. Please expand to clarify why the “Special Committee did not establish a specific going concern value . . . in considering the fairness of the merger consideration” given the disclosed beliefs of the Special Committee as to the going concern value of registrant as it relates to the liquidation value of registrant and the analysis of UBS, which was adopted by the Special Committee, appears to address the registrant’s going concern value.

Opinion of the Financial Advisor to RAE Systems’ Special Committee, page 25

13. We disagree with your analysis in response to prior comment 19 and we reissue the comment.

Selected Public Companies Analysis, page 27

14. We note your response to our prior comment 20 and reissue it, in part. Please disclose whether any companies that met the criteria you disclose were excluded and if so, name the excluded companies and disclose the reasons for the exclusion.
15. We note your response to prior comment 21. Please disclose the substance of your response in each of the analyses referenced in the initial comment.

Selected Transactions Analysis, page 29

16. We note your response to prior comment 20; however, the concern of that comment is not whether companies other than those disclosed were used in the analysis. Instead, the concern is whether in performing the analysis, companies that met the disclosed criteria were excluded from that analysis. Please expand your response or revise your disclosure, as appropriate.

Purposes and Reasons for the Merger of the Purchaser Group, page 30

17. We reissue prior comment 16, in part. Please revise to clarify the extent to which the conclusions disclosed on pages 30 – 32 regarding the procedural fairness of the transaction as determined by each filing person are based on the matters referenced in Item 1014(c) and (d) of Regulation M-A, particularly in light of the percentage of shares your affiliates intend to vote in favor of the transaction.

Certain Projections, page 67

18. We note your response to our prior comment 28. Please disclose that the projected financial information has been prepared in accordance with GAAP or, if not, comply with our prior comment.

Security Ownership of Certain Beneficial Owners and Management, page 75

19. Delete the last sentence of footnote 3 to the table in this section. The statement is inappropriate given the filing of the Schedule 13D.
20. We reissue prior comment 29 as it relates to Battery Ventures. While we note that such entity appears in note 3, it remains unclear why that entity is not also in your table.

Form of Proxy Card

21. Please revise your form of proxy card to clearly identify it as being preliminary. See Rule 14a-6(e)(1) of Regulation 14A.

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 the information the Securities Exchange Act of 1934 and all applicable Exchange Act rules require. Since the filing persons are in possession of all facts relating to each filing person's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

In responding to our comments, please provide a written statement from each filing person acknowledging that:

- the filing persons are 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 filings persons 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.

Randall Gausman
RAE Systems Inc.
December 8, 2010
Page 6

Please contact Allicia Lam at (202) 551-3316 or Geoffrey Kruczek at (202) 551-3641 with any questions.

Sincerely,

Russell Mancuso
Branch Chief

CC (by facsimile): David K. Michaels, Esq. – Fenwick & West LLP