



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

Mail Stop 3030

February 13, 2009

Via Facsimile and U.S. Mail

Mr. Robert J. Halliday
Chief Financial Officer
Varian Semiconductor Equipment Associates, Inc.
35 Dory Road
Gloucester, MA 01930

**Re: Varian Semiconductor Equipment Associates, Inc.
Form 10-K for the Fiscal Year Ended October 3, 2008
Filed November 26, 2008
Form 10-Q For the Quarter Ended January 2, 2009
File No. 000-25395**

Dear Mr. Halliday:

We have reviewed your filing and have the following comments. Where indicated, we think you should revise your documents in future filings 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 Fiscal Year Ended October 3, 2008

Item 1. Business, page 1

1. We note your disclosure under "Marketing and Sales" on page 6 that two customers each accounted for 10% or more of your total revenue in the fiscal year ended October 3, 2008 and that in prior fiscal years you had one or more customers that accounted for 10% or more of your total revenue. In your future filings, please disclose the name of any customer and its relationship, if any, with you or any of your subsidiaries if sales to the customer are made in an aggregate amount equal to 10% or more of your consolidated revenues and the loss of such customer would have a material adverse effect on you and your subsidiaries taken as a whole. Refer to Item 101(c)(1)(vii) of Regulation S-K.

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities, page 21

2. In your future filings where you disclose your authorized share repurchase program, please also indicate the current authorized amount of funds that remain available that may be expended in repurchasing shares of your common stock.

Notes to Consolidated Financial Statements, page F-7

Note 19. Retirement Plans, page F-31

3. We note your disclosure that you have two subsidiaries that sponsor defined benefit pension plans. Please revise future filings to include the disclosures required by SFAS 132(R), if applicable.

Exhibit 31. 1 and Exhibit 31.2

4. We note that the certifications filed pursuant to Exchange Act Rule 13a-14(a) are not in the exact form prescribed by Item 601(b)(31) of Regulation S-K. Specifically, you have made modifications to paragraph 4(d). Please revise your certifications in future filings to conform to the exact wording required by Item 601(b)(31) of Regulation S-K.

Form 10-Q for the Quarterly Period Ended January 2, 2009

Item 2. Management's Discussion And Analysis Of Financial Condition And Results Of Operations, page 16

Results of Operations, page 18

Cost of Product Revenue, page 19

5. We note your disclosures that gross margin was affected by inventory charges associated with product transitions, lower demand for legacy parts and lower forecasted utilization in customer manufacturing facilities. Please revise future filings to quantify the effects of the inventory charges on gross margin. Additionally, please disclose details of the impact that sales of inventory written-down has had on margins each period, if material, and whether the inventory was sold, scrapped or otherwise disposed of.

As appropriate, please respond to these comments within 10 business days or tell us when you will provide us with a response. Please furnish a cover letter that keys your responses to our comment and provides any requested information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your 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 Tara Harkins, Staff Accountant, at (202) 551-3639 or me at (202) 551-3616 if you have questions regarding comments on the financial statements and related matters.

Varian Semiconductor Equipment Associates, Inc.

Mr. Robert J. Halliday

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Please contact Geoff Kruczek, Staff Attorney, at (202) 551-3641, or Tim Buchmiller, Reviewing Attorney, at (202) 551-3635 if you have questions on any other comments. In this regard, do not hesitate to contact me or Kevin Vaughn, Accounting Branch Chief, at (202) 551-3643 with any questions.

Sincerely,

Lynn Dicker
Reviewing Accountant