



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

Mail Stop 3030

November 19, 2008

Via Facsimile and U.S. Mail

Mr. John F. Rein, Jr.  
Chief Financial Officer  
Veeco Instruments, Inc.  
Terminal Drive  
Plainview, New York 11803

**Re: Veeco Instruments, Inc.  
Form 10-K for the Year Ended December 31, 2007  
Filed February 28, 2008  
Form 10-Q for the Quarter Ended September 30, 2008  
Form 8-K Dated October 23, 2008  
File No. 000-16244**

Dear Mr. Rein:

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 Year Ended December 31, 2007

Item 9A. Controls and Procedures, page 44

1. We note your disclosure that your chief executive officer and chief financial officer concluded that your "disclosure controls and procedures are effective in timely alerting them to material information required to be included in [y]our periodic Securities and Exchange Commission filings." If you elect to include any qualifying language as to the effectiveness conclusion, or as to the definition of disclosure controls and procedures, in your future filings, such language should include, at a minimum, but only if true, that your officers concluded that your disclosure controls and procedures are effective to ensure that information required to be disclosed by you in reports that you file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in Securities and Exchange Commission rules and forms and is accumulated and communicated to your management, including your principal executive officer and principal financial officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure. See Exchange Act Rule 13a-15(e) for the complete definition of "disclosure controls and procedures." Alternatively, if true, your disclosure could simply indicate that your officers determined that your "disclosure controls and procedures are effective" without any further qualifications or attempts to define those disclosure controls and procedures.

Item 11. Executive Compensation, page 46

Grants of Plan-Based Awards

2. We note from footnote 1 to the Grants of Plan-Based Awards table on page 22 of the proxy statement that you have incorporated by reference into your Form 10-K that you have not disclosed the threshold, target or maximum targets to be achieved in order for your named executive officers to earn their respective bonuses under the Management Bonus Plan. Please include such disclosure, as applicable, in your future filings.

Cash Bonus: Annual

3. We note from your discussion under "Cash Bonus: Annual" on page 33 of the proxy statement that you have incorporated by reference into your Form 10-K that you have not disclosed the specific targets to be achieved in order for your named executive officers to earn their respective annual cash incentive payments under the Management Bonus Plan. Please provide such disclosure in your future filings, as applicable. 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. To the extent that it is appropriate to omit specific targets or performance

objectives, you are required to provide appropriate disclosure pursuant to Instruction 4 to Item 402(b) of Regulation S-K. Refer also 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. Similarly, if applicable, please disclose the performance targets for bonuses earned by your named executive officers under any long-term cash incentive plans such as those described under "Cash Bonus: Long-Term Incentive" on page 34 of your proxy statement.

#### Equity-Based Compensation

4. We refer to your disclosure under the caption "Equity-Based Compensation" on page 34 of the proxy statement that you have incorporated by reference into your Form 10-K. We note minimal, if any, discussion and analysis as to how the annual stock option and restricted stock grants were determined. In your future filings, as applicable, please include substantive analysis and insight into how your compensation committee made its stock option grant determinations with respect to each named executive officer. Refer to subparagraphs (b)(1)(iii) and (v) of Item 402 of Regulation S-K. For example, please discuss and analyze how the compensation committee determined the actual number of shares underlying the stock options and restriction stock grants that were awarded to your named executive officers and how and why those awards varied among the named executive officers.

#### Index to Consolidated Financial Statements, page F-1

#### Note 1. Description of Business and Significant Acquisition, page F-9

#### - Revenue Recognition, page F-10

5. We note that for contracts where no installation is required or installation is deemed perfunctory and no substantive customer acceptance provisions exist, you recognize revenue when title passes to the customer. However, we note that the amount of revenue is reduced by the amount of any customer retention, which you state is generally 10%-20%. Please address the following:
  - Tell us and revise future filings to discuss the customer acceptance provisions that exist and why you concluded that these provisions are not substantive.
  - Discuss the rights the customer has in the event of non-acceptance. For instance, discuss if the customer has a right to return the product or a right to withhold payment of the final 10-20%.

- In light of your conclusion that the installation is perfunctory and customer acceptance provisions are not substantive, please explain to us in greater detail why you defer 10-20% of the revenue until installation is complete and acceptance has occurred. Tell us why you believe your accounting is consistent with SAB Topic 13(A)(3).

- Intangible and Other Long-Lived Assets, page F-11

6. We note that your balance sheet includes \$36.1 million and \$43.9 million of purchased technology, net at December 31, 2007 and 2006, respectively. Further, we note that you have \$23.5 million and \$25.1 million of other intangible assets, net, at December 31, 2007 and 2006, respectively. Please revise future filings to include the disclosures required by paragraph 45(a)(1) of SFAS 142. Please revise your future filings to clearly explain the nature of the purchased technologies.

- Goodwill and Other Indefinite-Lived Intangibles, page F-12

7. Please revise future filings to disclose how you evaluate your goodwill for impairment.

Note 2. Business Combinations, page F-17

- Fluens Corporation, page F-17

8. We note that you determined that Fluens is a variable interest entity and that you are the primary beneficiary. Please tell us the basis for your conclusion under FIN 46(R). Discuss how your conclusion considers the condition for you to purchase the remaining interests upon the achievement of certain conditions.

Note 4. Debt, page F-18

9. We note from page F-19 that in the second quarter of 2007, you exchanged \$117.8 million of convertible subordinated notes (Old Notes) that originally matured in December 2008 with \$118 million of convertible subordinated notes (New Notes) that mature in 2012. You state that no net gain or loss was recorded on the exchange transactions since the carrying value of the Old Notes including unamortized deferred financing costs approximated the exchange value of the New Notes. Please address the following:
- Revise future filings to clearly disclose all material terms of the New Notes, including the maturity date and the interest rate.
  - Explain to us how you considered the guidance in EITF 96-19 in concluding that no loss on extinguishment relating to the unamortized deferred financing costs needed to be recorded.

- Also, please tell us how you considered the guidance in EITF 06-6.

Note 5. Stock Compensation Plans and Shareholders' Equity, page F-21

10. We note from your disclosures on page F-23 that you utilize the Black-Scholes option pricing model to determine the fair value of your stock options. Please revise future filings to explain how you determined the assumptions utilized in these models including the risk free interest rate, expected life, etc. Refer to the guidance in paragraphs A240-242 of SFAS 123(R) and SAB Topic 14.
11. Further to the above, we note that you calculate your expected volatility utilized within the Black-Scholes model by using a combination of both historical and implied volatilities of the underlying stock. Please revise your future filings to include a discussion of the basis for your conclusions regarding the extent to which you used historical volatility and implied volatility in your valuation. Please also summarize your evaluation of the factors in Question 2 and Question 3 of SAB Topic 14.D.1. Refer to Question 5 of SAB Topic 14.D.1.

Note 7. Commitments and Contingencies and Other Matters, page F-30

12. We note from page F-32 that you have capitalized legal costs associated with a lawsuit against Asylum Research Inc. (Asylum) for infringing upon five of your patents. We further note that the court ruled that Asylum was not infringing upon two of your patents and that you are continuing to amortizing the costs associated with this case to defend these two patents over their remaining lives. Please address the following:
  - Please explain to us why you believe continued capitalization of the costs relating to the "801" and "027" patents is appropriate as of December 31, 2007. In this regard, we note that although the patents appear to still be valid and enforceable, Asylum was found to have not been infringing upon these patents. Explain to us why you believe these costs represent costs to defend your "801" and "027" patents.
  - Please provide to us the amount of legal costs that you have deferred in the balance sheet and the amount of amortization recognized within the statement of operations related to these two patents.
13. We further note from page 15 of your September 30, 2008 Form 10-Q that you entered into a settlement agreement with Asylum to dismiss all pending legal actions against each other, entered into a cross-licensing agreement of each company's patents, and agreed to a mutual covenant not to sue. We also note that Asylum paid you a net payment and will pay ongoing royalties over five years as part of the settlement agreement. Based upon these disclosures, it appears that there are five elements to this settlement agreement: (i) the dismissal of the pending litigation by you against Asylum, (ii) the dismissal of the

pending litigation by Asylum against you, (iii.) the licensing of certain patents from Asylum, (iv.) the licensing of certain patents to Asylum and (v.) a covenant not to sue. Please tell us and revise future filings to clearly discuss each specific right you received and obligation you incurred and how you valued and accounted for each of the elements. Within your discussion, please provide the amounts that each party will pay or have paid as part of the settlement agreement. Cite the accounting literature on which you relied and how you applied the accounting literature to your situation.

Note 8. Foreign Operations, Geographic Area, and Product Segment Information, page F-34

14. We note on page F-35 and on page 12 from your September 28, 2008 Form 10-Q that you evaluate the performance of your segments based upon income (loss) from operations before interest, income taxes, amortization and certain items (EBITA). We believe the label of "EBITA" for this measure may be misleading in light of the fact that your segment profit measure is not a true EBITA measure, but instead also excludes other items such as restructuring charges and impairment charges. Please revise future filings to provide a more descriptive label for your measure of segment profit. In this regard, we would not object if you simply labeled it as "Segment profit (loss)."
15. Please revise future filings to disclose the basis for attributing revenues from external customers to individual countries consistent with paragraph 38(a) of SFAS 131.

Exhibits 31.1 and 31.2

16. 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. We note similar modifications within your March 31, 2008, June 30, 2008, and September 30, 2008 Forms 10-Q. Specifically, we note that you include the title of the certifying official in the introduction of your certification. We also note within the aforementioned quarterly reports that you removed the language "(the registrant's fourth fiscal quarter in the case of an annual report)" in 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 as of September 30, 2008

17. We note that as of September 30, 2008, you had \$105.4 million of goodwill. Further, we note that your stock price has declined from approximately \$16.70 per share as of December 31, 2007 to approximately \$7 per share as of late October 2008 in connection with an adverse change in the business climate. Please tell us how you considered the guidance in paragraph 28 of SFAS 142 as of September 30, 2008.

18. Further to the above, please tell us how you have considered the effect of a continued decline in the market value of your common stock on the valuation of your goodwill or intangible assets. To the extent that you believe an impairment charge for your goodwill or intangible assets may be required in future periods, you should revise your discussion in MD&A in future filings to discuss the impact that such a continued decline could have. In this regard, please also note the guidance in Item 2.06 of Form 8-K.

Form 8-K Dated October 23, 2008

19. We note on page 2 that you provide a forecasted range of your non-GAAP earnings per share for the fourth quarter of 2008. Please revise your future filings to provide a reconciliation of this non-GAAP measure to the most directly comparable GAAP measure. Refer to the guidance in Item 100(a)(2) of Regulation G.

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.

Veeco Instruments, Inc.  
Mr. John F. Rein, Jr.  
November 19, 2008  
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You may contact Tara Harkins, Staff Accountant, at (202) 551-3639 or me at (202) 551-3643 if you have questions regarding comments on the financial statements and related matters. Please contact Gabe Eckstein, Staff Attorney, at (202) 551-3286, 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 Martin James, Senior Assistant Chief Accountant, at (202) 551-3671 with any questions.

Sincerely,

Kevin L. Vaughn  
Accounting Branch Chief