



DIVISION OF
CORPORATION FINANCE

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

October 31, 2012

Via E-mail

Mr. John R. Peeler
Chief Executive Officer
Veeco Instruments, Inc.
Terminal Drive
Plainview, New York 11803

**Re: Veeco Instruments, Inc.
Form 10-K for the Year Ended December 31, 2011
Filed February 22, 2012
Form 10-Q for the Quarter Ended June 30, 2012
Filed July 27, 2012
File No. 000-16244**

Dear Mr. Peeler:

We have reviewed your filings and have the following comments. We have limited our review to only your financial statements and related disclosures and do not intend to expand our review to other portions of your documents. In 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 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, please tell us why in your response.

After reviewing the information you provide in response to these comments, we may have additional comments.

Form 10-K for the Year Ended December 31, 2011

Management's Discussion and Analysis of Financial Condition and Results of Operations, page 30

-Liquidity and Capital Resources, page 38

1. Based on disclosures herein and at page F-5 we see that your inventory levels have increased by approximately 5% from December 31, 2010 to December 31, 2011. We further noted disclosures on page 5 and throughout the filing that your industry is experiencing an overcapacity of MOCVD products and also see from disclosures on page 10 that your back-log has decreased by approximately 38% from December 31, 2010 to December 31, 2011. Finally, we noted based on disclosures at page 20 of your June 30,

2012 Form 10-Q that your bookings decreased 67.0% for the six months ended June 20, 2012 as compared to the six months ended June 30, 2011. Considering these factors, please explain to us in more detail how you have evaluated inventory for recoverability as of December 31, 2011, March 31, 2012 and June 30, 2012. Explain why you believe the full amount of inventory recorded at your December 31, 2011, March 31, 2012 and June 30, 2012 balance sheet dates are recoverable.

-Application of Critical Accounting Policies, page 40

-Inventory Valuation, page 42

2. We note your disclosures herein and on page F-13 related to your valuation of inventory. Please revise your future filings to discuss in more detail how you develop certain of your assumptions such as “management’s estimated usage for the next 12 months” for purposes of your inventory valuation analysis. Your revised disclosures should also indicate how you arrived at your estimates for projected usage and the historical variability of such estimates. Please provide us with a sample of your proposed disclosure.

Form 10-Q for the Quarterly Period Ended June 30, 2012

Financial Statements, page 5

Notes to Condensed Consolidated Financial Statements (Unaudited), page 8

Note 3 – Equity, page 10

Treasury Stock, page 11

3. We see that during the three months ended June 30, 2012 you cancelled and retired 5,278,828 shares of treasury stock you purchased under a stock repurchase program and recorded a reduction in treasury stock of \$200.2 million as well as a corresponding reduction of \$200.1 million and \$0.1 million in retained earnings and common stock, respectively. Please tell us the authoritative accounting literature you considered when determining how to record and present the acquisition and cancellation of treasury stock in your financial statements. Your response should specifically address how you determined the amounts recorded in common stock and retained earnings in connection with the referenced cancellation transaction, including why no amounts were recorded to additional paid-in-capital.

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 company and its management are

Mr. John R. Peeler
Veeco Instruments, Inc.
October 31, 2012
Page 3

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 responding to our comments, please provide a written 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.

You may contact Tara Harkins, Staff Accountant, at (202) 551-3639 or Jay Webb, Reviewing Accountant, at (202) 551-3603 if you have questions regarding these comments. In this regard, do not hesitate to contact me at (202) 551-3643.

Sincerely,

/s/ Jay Webb "for"

Kevin L. Vaughn
Accounting Branch Chief