



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

DIVISION OF
CORPORATION FINANCE

May 4, 2011

Mr. Chris L. Koliopoulos
Chief Executive Officer
Zygo Corporation.
Laurel Brook Road
Middlefield, CT 06455

**Re: Zygo Corporation
Form 10-K for the Fiscal Year Ended June 30, 2010
Filed September 13, 2010
File No. 000-12944**

Dear Mr. Koliopoulos:

We have reviewed your response letter dated April 13, 2011 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 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 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.

Forms 10-Q as of September 30 and December 31, 2010

Item 4. Controls and Procedures, pages 25 and 27, respectively

1. We note your response to prior comment three. As previously requested, please amend your September 30 and December 31, 2010 Forms 10-Q to provide a conclusion regarding the effectiveness of your disclosure controls and procedures as required by Item 307 of Regulation S-K.

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Forms 10-Q as of December 31, 2010

Notes to Condensed Consolidated Financial Statements

Note 3 – Acquisitions, page 8

2. We note your response to prior comment five. Please revise future filings to clarify how you determined that the ASML asset acquisition was a business, similar to your response.

You may contact Gary Newberry, Staff Accountant, at 202-551-3761 or Lynn Dicker, Reviewing Accountant, at 202-551-3616 if you have questions regarding these comments. In this regard, do not hesitate to contact me at 202-551-3643.

Sincerely,

Kevin L. Vaughn
Accounting Branch Chief