

Mail Stop 6010

August 27, 2008

Via U.S. Mail and Fax (952) 930-0130

Bradley D. Slye
Chief Executive Officer and Chief Financial Officer
Electro-Sensors, Inc.
6111 Blue Circle Drive
Minnetonka, Minnesota 55343-9108

Re: Electro-Sensors, Inc.
Form 10-KSB for the fiscal year ended December 31, 2007
Filed March 31, 2008
File No. 000-09587

Dear Mr. Slye:

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. Where indicated, we think you should revise your future filings in response to these comments. If you disagree, we will consider your explanation as to why our comment is 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 comment or on any other aspects of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Form 10-KSB for the fiscal year ended December 31, 2007

Net revenues, page 10

1. In future filings separately discuss and quantify sales of products and sales of software each period.

Liquidity and Capital Resources, page 12

2. Please tell us the reason for the significant cash dividends of \$3.9 million paid in fiscal 2006.

Critical Accounting Estimates, page 12

3. Please tell us why you do not believe that there are any significant accounting estimates that are critical at this time. Please explain why accounting for revenue recognition, equity method investments and available sale securities would not be considered critical accounting policies/estimates.

Item 7. Financial Statements

Revenue recognition, page 20

4. Tell us and revise future filings to explain whether your revenue arrangements include post shipment obligations, refund rights, customer acceptance, and discounts or other price adjustments and how this impacts the timing of revenue recognition. We note the reference to price adjustments being made to remain competitive on page 5.
5. We see that you have significant sales to distributors. Please tell us about the significant terms and conditions of those sales and whether there are any rights of return or subsequent pricing adjustments. In addition, clarify whether your sales to distributors are contingent on the sell through of the products by the distributor. Please refer requirements of SFAS 48 and SAB 104.

Note 2. Investment Reported On the Equity Method, page 24

6. We note your investment in PPT Vision is accounted for under the equity method. Please tell us whether separate financial statements for this equity investment are required by Rule 3-09 of Regulation S-X. In addition, tell us and disclose in future filings how you are accounting for your investment in Rudolph Technologies.
7. Please tell us whether you have guaranteed any obligations of PPT or are committed to provide further financial support for PPT.

Item 8A – Controls and Procedures, page 31

8. Please tell us why you have omitted management's discussion and evaluation of the Disclosure Controls and Procedures as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act. We note you have included Management's Report on Internal Controls over Financial Reporting, however, you are also required to evaluating the effectiveness of Disclosure Controls and Procedures. Please revise as appropriate. Refer to Item 307 of Regulation S-K.

Exhibits 31.1

9. The certifications pursuant to section 302 of the Sarbanes-Oxley act of 2002 are representations made by the CEO and CFO of the registrant in an individual capacity and not as members of management or officers of the Company. In future filings please revise the certifications to remove the title from the first sentence of the certifications. Refer to Item 601 of Regulation S-K.

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 with your response that keys your responses to our comments 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 Praveen Kartholy, Staff Accountant, at (202) 551-3778 or me at (202) 551-3676 if you have questions regarding these comments and related matters. You may also contact Martin F. James, Senior Assistant Chief Accountant, at (202) 551-3671.

Sincerely,

Brian R. Cascio
Accounting Branch Chief