

Mail Stop 6010

October 4, 2006

VIA U.S. MAIL AND FACSIMILE (952.944.6022)

Ms. Roberta L. Dircks
Vice President Finance and Administration and
Chief Financial Officer
Optical Sensors Incorporated
7615 Golden Triangle Drive, Suite C
Minneapolis, Minnesota 55344-3733

**Re: Optical Sensors Incorporated
Form 10-KSB for the fiscal year ended December 31, 2005
Filed March 31, 2006
File No. 000-27600**

Dear Ms. Dircks:

We have reviewed your filing 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 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 or may not 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 filings. We look forward to working with you in these respects. We welcome any questions you may have about our comments or on any other aspect 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, 2005

Item 7. Financial Statements, page 24

Note 17. Stockholders' Equity, page 45

1. You disclose that upon liquidation, dissolution or winding up of the company that a holder of the Series A, B and C convertible preferred stock is entitled to a liquidation preference and a sale of the company "will be deemed to be a liquidation, dissolution or winding up for this purpose." On page 37 you disclose that one of your preferred shareholders, Circle F, owns 73.78% of the company's common stock on an as converted basis. Rule 5-02.28 of Regulation S-X and EITF Topic D-98 require securities with redemption features that are not solely within the control of the issuer to be classified outside of permanent equity. To help us understand why you classified the Series A, B and C convertible preferred stock within equity, please address the following:
 - Tell us about your consideration of all of the events that could trigger redemption and how you considered that the occurrence of *any* triggering event that is not *solely* within your control without regard to its probability would require the preferred stock to be classified outside of permanent equity consistent with paragraph 4 of EITF Topic D-98. Your response should include a discussion of all of the individual facts and circumstances you considered in determining how the preferred stock was classified.
 - Since a sale of the company is a deemed liquidation event, please discuss your consideration of paragraph 5 of EITF Topic D-98 which states that "deemed liquidation events that require one or more particular class or type of equity security to be redeemed cause those securities to be classified outside of permanent equity."

Item 8A. Controls and Procedures, page 48

2. We note your disclosure that your "Chief Executive Officer and Chief Financial Officer concluded that the Company's disclosure controls and procedures were effective as of the end of the period covered by [your] report to ensure that information required to be disclosed by the Company in reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in Securities and Exchange Commission rules and forms." The language that is currently included after the word "effective" in your disclosure appears to be superfluous, since the

meaning of "disclosure controls and procedures" is established by Rule 13a-15(e) of the Exchange Act. In future filings please remove that language or revise the disclosure so that the language that appears after the word "effective" is substantially similar in all material respects to the language that appears in the entire two-sentence definition of "disclosure controls and procedures" set forth in Rule 13a-15(e).

3. We note your disclosure that there were "no significant changes in the Company's internal controls over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) during the Company's most recently completed quarter that have materially affected, or are reasonably likely to materially affect, the Company's internal controls over financial reporting." To the extent that your disclosure was provided to address Item 308(c) of Regulation S-B which requires disclosure of any change that occurred during the quarter that materially affected, or is reasonably likely to materially affect, your internal control over financial reporting, please note that the need for disclosure is not limited to significant changes that could affect your internal control over financial reporting. Please correct the disclosure in future filings to address all changes or advise us.

As appropriate, please revise future filings and respond to these comments within 10 business days or tell us when you will provide us with a response. Please furnish a letter that keys your responses to our comments and provides any requested information. Detailed 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.

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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 Kate Tillan, Assistant Chief Accountant, at (202) 551-3604 or me at (202) 551-3671 if you have any questions regarding these comments.

Sincerely,

Martin James
Senior Assistant Chief Accountant