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**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

FORM 12b-25

NOTIFICATION OF LATE FILING

(Check one): Form 10-K Form 20-F Form 11-K Form 10-Q Form 10-D Form N-SAR Form N-CSR

For Period Ended: September 30, 2006

- Transition Report on Form 10-K
 Transition Report on Form 20-F
 Transition Report on Form 11-K
 Transition Report on Form 10-Q
 Transition Report on Form N-SAR

For the Transition Period Ended: _____

Read Instruction (on back page) Before Preparing Form. Please Print or Type.
Nothing in this form shall be construed to imply that the Commission has verified any information contained herein.

If the notification relates to a portion of the filing checked above, identify the Item(s) to which the notification relates:

PART I — REGISTRANT INFORMATION

KLA-TENCOR CORPORATION

Full Name of Registrant

Former Name if Applicable

160 Rio Robles

Address of Principal Executive Office (*Street and Number*)

San Jose, California 95134

City, State and Zip Code

PART II — RULES 12b-25(b) AND (c)

If the subject report could not be filed without unreasonable effort or expense and the registrant seeks relief pursuant to Rule 12b-25(b), the following should be completed. (Check box if appropriate)

- (a) The reason described in reasonable detail in Part III of this form could not be eliminated without unreasonable effort or expense
- (b) The subject annual report, semi-annual report, transition report on Form 10-K, Form 20-F, Form 11-K, Form N-SAR or Form N-CSR, or portion thereof, will be filed on or before the fifteenth calendar day following the prescribed due date; or the subject quarterly report or transition report on Form 10-Q or subject distribution report on Form 10-D, or portion thereof, will be filed on or before the fifth calendar day following the prescribed due date; and
- (c) The accountant's statement or other exhibit required by Rule 12b-25(c) has been attached if applicable.

PART III — NARRATIVE

State below in reasonable detail why Forms 10-K, 20-F, 11-K, 10-Q, 10-D, N-SAR, N-CSR, or the transition report or portion thereof, could not be filed within the prescribed time period.

As previously announced, a Special Committee of independent directors, appointed by the Board of Directors of KLA-Tencor Corporation (the "Company"), is conducting an internal investigation relating to stock options granted to the employees of the Company, the timing of such grants and their related accounting and tax treatment.

On September 27, 2006, the Board of Directors concluded that financial statements and all earnings and press releases and similar communications issued by the Company relating to periods beginning on or after July 1, 1997, should no longer be relied upon, including the Company's financial statements for fiscal years 1998 through 2005, the interim periods contained therein, and the fiscal quarters ended September 30, 2005, December 31, 2005 and March 31, 2006.

On October 16, 2006, the Company announced that the Special Committee of the Company's Board of Directors had substantially completed its investigation of the Company's historical stock option practices. The Company now expects that the total additional non-cash charges for stock-based compensation expenses will not exceed \$400 million.

As a result of the ongoing work by the Company to complete its financial statements and the audit or review of the results thereof by PricewaterhouseCoopers LLP, the

Company's independent registered public accounting firm, the Company was unable to file its quarterly report on Form 10-Q for the three months ended September 30, 2006 by the required filing date of November 14, 2006, without unreasonable effort or expense. The Company does not anticipate that it will be able to file its Form 10-Q on or before the fifth calendar day following the prescribed due date, in accordance with Rule 12b-25.

The Company's management and the Special Committee have discussed these matters with PricewaterhouseCoopers LLP. The Company is focused on resolving these issues as quickly as possible and plans to file its Forms 10-K and 10-Q and any required restated financial statements as soon as practicable following the completion of the investigation.

SEC 1344 (03-05)

Persons who are to respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB control number.

(Attach extra Sheets if Needed)
PART IV — OTHER INFORMATION

(1) Name and telephone number of person to contact in regard to this notification

Richard P. Wallace (408) 875-3000
(Name) (Area Code) (Telephone Number)

(2) Have all other periodic reports required under Section 13 or 15(d) of the Securities Exchange Act of 1934 or Section 30 of the Investment Company Act of 1940 during the preceding 12 months or for such shorter period that the registrant was required to file such report(s) been filed? If answer is no, identify report(s). Yes No

Form 10-K for the year ended June 30, 2006

(3) Is it anticipated that any significant change in results of operations from the corresponding period for the last fiscal year will be reflected by the earnings statements to be included in the subject report or portion thereof? Yes No

If so, attach an explanation of the anticipated change, both narratively and quantitatively, and, if appropriate, state the reasons why a reasonable estimate of the results cannot be made.

The Company expects to record additional stock-based compensation expenses and related non-cash charges which will have an impact on its financial statements not to exceed \$400 million.

All statements included in this Form 12b-25, Notification of Late Filing, other than statements or characterizations of historical fact, are forward-looking statements. These forward-looking statements are based on the company's current expectations, estimates and projections about the company's industry and business, management's beliefs, and certain assumptions made by the company, all of which are subject to change. Forward-looking statements can often be identified by words such as "anticipates," "expects," "intends," "plans," "predicts," "believes," "seeks," "estimates," "may," "will," "should," "would," "could," "potential," "continue," "ongoing," similar expressions, and variations or negatives of these words. These statements are not guarantees of future performance and are subject to risks, uncertainties and assumptions that are difficult to predict. Therefore, the company's actual results could differ materially and adversely from those expressed in any forward-looking statements as a result of various factors. Our Annual Report on Form 10-K, subsequent Quarterly Reports on Form 10-Q, recent Current Reports on Form 8-K, and other SEC filings discusses important risk factors that could contribute to such differences or otherwise affect our business, results of operations and financial condition. We undertake no obligation to revise or update publicly any forward-looking statement for any reason, except as otherwise required by law.

KLA-TENCOR CORPORATION

(Name of Registrant as Specified in Charter)

has caused this notification to be signed on its behalf by the undersigned hereunto duly authorized.

Date November 15, 2006

By /s/ Jeff Hall
Jeff Hall
Chief Financial Officer

INSTRUCTION: The form may be signed by an executive officer of the registrant or by any other duly authorized representative. The name and title of the person signing the form shall be typed or printed beneath the signature. If the statement is signed on behalf of the registrant by an authorized representative (other than an executive officer), evidence of the representative's authority to sign on behalf of the registrant shall be filed with the form.

ATTENTION

Intentional misstatements or omissions of fact constitute Federal Criminal Violations (See 18 U.S.C. 1001).