

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-Q/A

Amendment No. 1

(Mark One)

Quarterly Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

For the quarterly period ended: September 30, 2010

or

Transition Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

For the transition period from _____ to _____

Commission File Number 000-09992

KLA-Tencor Corporation

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

04-2564110

(I.R.S. Employer
Identification No.)

One Technology Drive

Milpitas, California

95035

(Address of principal executive offices)
(Zip Code)

(408) 875-3000

(Registrant's telephone number, including area code)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

(Do not check if a smaller
reporting company)

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes No

As of October 13, 2010, there were 167,064,459 shares of the registrant's Common Stock, \$0.001 par value, outstanding.

KLA-Tencor Corporation
Explanatory Note

The sole purpose of this Amendment No. 1 to KLA-Tencor Corporation's Quarterly Report on Form 10-Q for the period ended September 30, 2010, filed with the Securities and Exchange Commission on October 29, 2010 (the "Form 10-Q") is to furnish Exhibit 101 to the Form 10-Q in accordance with Rule 405 of Regulation S-T. Exhibit 101 consists of the following eXtensible Business Reporting Language (XBRL) interactive data files that were omitted from KLA-Tencor Corporation's Form 10-Q:

| | |
|---------|---|
| 101.INS | XBRL Instance Document |
| 101.SCH | XBRL Taxonomy Extension Schema |
| 101.CAL | XBRL Taxonomy Extension Calculation Linkbase |
| 101.DEF | XBRL Taxonomy Extension Definition Linkbase |
| 101.LAB | XBRL Taxonomy Extension Label Linkbase |
| 101.PRE | XBRL Taxonomy Extension Presentation Linkbase |

No other changes have been made to the Form 10-Q. This Amendment No. 1 speaks as of the original filing date of the Form 10-Q, does not reflect events that may have occurred subsequent to the original filing date, and does not modify or update in any way disclosures made in the original Form 10-Q.

In accordance with Rule 406T of Regulation S-T, the interactive data files on Exhibit 101 hereto are deemed not filed or part of a registration statement or prospectus for purposes of Sections 11 or 12 of the Securities Act of 1933, as amended, are deemed not filed for purposes of Section 18 of the Securities and Exchange Act of 1934, as amended, and otherwise are not subject to liability under those sections.

PART II. OTHER INFORMATION

ITEM 6. EXHIBITS

EXHIBIT INDEX

| <u>Exhibit Number</u> | <u>Exhibit Description</u> |
|---------------------------|--|
| 10.45 (1) | Fiscal Year 2011 Performance Bonus Plan * + |
| 31.1 (1) | Certification of Chief Executive Officer under Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934 |
| 31.2 (1) | Certification of Chief Financial Officer under Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934 |
| 32 (1) | Certification of Chief Executive Officer and Chief Financial Officer Pursuant to 18 U.S.C. Section 1350 |
| 101.INS (2) | XBRL Instance Document |
| 101.SCH (2) | XBRL Taxonomy Extension Schema Document |
| 101.CAL (2) | XBRL Taxonomy Extension Calculation Linkbase Document |
| 101.DEF (2) | XBRL Taxonomy Definition Linkbase Document |
| 101.LAB (2) | XBRL Taxonomy Extension Label Linkbase Document |
| 101.PRE (2) | XBRL Taxonomy Extension Presentation Linkbase Document |

* Denotes a management contract, plan or arrangement.

+ Confidential treatment has been requested as to a portion of this exhibit.

(1) Previously filed as an exhibit to KLA-Tencor Corporation's Quarterly Report on Form 10-Q for the quarter ended September 30, 2010, filed with the Securities and Exchange Commission on October 29, 2010.

(2) Furnished with this Form 10-Q/A.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

KLA-Tencor Corporation
(Registrant)

November 23, 2010

(Date)

/S/ RICHARD P. WALLACE

Richard P. Wallace
President and Chief Executive Officer
(Principal Executive Officer)

November 23, 2010

(Date)

/S/ MARK P. DENTINGER

Mark P. Dentinger
Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

November 23, 2010

(Date)

/S/ VIRENDRA A. KIRLOSKAR

Virendra A. Kirloskar
Senior Vice President and Chief Accounting Officer
(Principal Accounting Officer)