UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

SCHEDULE TO

(Rule 13e-4)

TENDER OFFER STATEMENT UNDER SECTION 14(d)(1) OR 13(e)(1)

OF THE SECURITIES EXCHANGE ACT OF 1934

KLA-TENCOR CORPORATION

(Name of Subject Company (Issuer) and Filing Person (Offeror))

Options to Purchase Shares of Common Stock, Par Value \$0.001 Per Share

(Title of Class of Securities)

482480100

(CUSIP Number of Class of Securities)

(Underlying Common Stock)

Jeffrey L. Hall

Senior Vice President and Chief Financial Officer

KLA-Tencor Corporation

160 Rio Robles

San Jose, California 95134

(408) 875-3000

(Name, address and telephone number of person authorized to receive notices and communications on behalf of filing person)

Copy to:

S. James DiBernardo, Esq.

Jill Mather Bartow, Esq.

Morgan, Lewis, & Bockius LLP

Two Palo Alto Square

Palo Alto, California 94306

(650) 843-4000

CALCULATION OF FILING FEE

Transaction valuation* \$141,307,109

Amount of filing fee** \$4,338.13

- * The transaction valuation set forth above is based on the Black-Scholes option valuation model, and assumes that all outstanding options eligible for tender covering an aggregate of 5,139,344 shares of common stock of KLA-Tencor Corporation will be amended pursuant to this offer, which may not occur.
- ** The amount of the filing fee, calculated in accordance with Rule 0-11 under the Securities Exchange Act of 1934, as amended, as modified by Fee Advisory No. 5 for fiscal year 2007, equals \$30.70 per \$1,000,000 of transaction valuation. The transaction valuation set forth above was calculated for the sole purpose of determining the filing fee, and should not be used or relied upon for any other purpose.
- " Check box if any part of the fee is offset as provided by Rule 0-11(a)(2) and identify the filing with which the offsetting fee was previously paid. Identify the previous filing by registration statement number, or the Form or Schedule and the date of its filing.

Amount Previously Paid:

Form or Registration No.:

Filing party:

Date filed:

Not applicable.

Not applicable.

Not applicable.

Not applicable.

" Check the box if the filing relates solely to preliminary communications made before the commencement of a tender offer.

Check the appropriate boxes below to designate any transactions to which the statement relates:

" third party tender offer subject to Rule 14d-1.

- x issuer tender offer subject to Rule 13e-4.
- " going-private transaction subject to Rule 13e-3.
- " amendment to Schedule 13D under Rule 13d-2.

Check the following box if the filing is a final amendment reporting the results of the tender offer. "

ITEM 1. SUMMARY TERM SHEET.

The information set forth under Summary Term Sheet in the Offer to Amend or Replace Eligible Options, dated February 27, 2007 (the Offer to Amend or Replace), attached hereto as Exhibit (a)(1), is incorporated herein by reference.

ITEM 2. SUBJECT COMPANY INFORMATION.

- (a) The name of the issuer is KLA-Tencor Corporation, a Delaware corporation (the Company); the address of its principal executive offices is 160 Rio Robles, San Jose, California 95134; and its telephone number is (408) 875-3000. The information set forth in the Offer to Amend or Replace under Section 11 (Information Concerning KLA-Tencor) is incorporated herein by reference.
- (b) This Tender Offer Statement on Schedule TO relates to an offer by the Company to amend or replace outstanding Eligible Options (as defined in the Offer to Amend or Replace attached hereto as Exhibit (a)(1)) held by current employees subject to taxation in the United States so that those options will not be subject to adverse tax consequences under Internal Revenue Code Section 409A. Each eligible participant may elect to amend his or her Eligible Options to increase the exercise price per share of the Company s common stock, par value \$0.001 per share, purchasable thereunder and become eligible to receive a special Cash Bonus (as defined in the Offer to Amend or Replace) from the Company, all upon the terms and subject to the conditions set forth in the Offer to Amend or Replace and the related Election Form attached hereto as Exhibit (a)(6) (the Election Form) and the Stock Option Amendment and Special Bonus Agreement (the Amendment Agreement and, together with the Offer to Amend or Replace and the Election Form, as they may each be amended or supplemented from time to time, the Offer). Certain tendered Eligible Options may, in lieu of such amendment, be canceled and replaced with new options that will be exactly the same as the canceled options but will avoid adverse tax consequences under Section 409A. The Offer is currently set to expire at 11:59 p.m. Pacific Time on March 27, 2007 but may be extended (the Expiration Date). As of February 26, 2007, Eligible Options to purchase 5,139,344 shares of the Company s common stock were outstanding.

The information set forth in the Offer to Amend or Replace on the introductory pages and under Summary Term Sheet, Section 1 (Eligible Optiones; Eligible Optiones; Eligible Options; Amendment of Eligible Options and Cash Bonus; New Options; Expiration Date; Additional Considerations), Section 3 (Status of Eligible Options Not Amended or Replaced), Section 6 (Acceptance of Eligible Options for Amendment or Replacement and Commitment to Pay Cash Bonus With Respect to Amended Options) and Section 9 (Source and Amount of Consideration; Terms of Amended Options or New Options) is incorporated herein by reference.

(c) The information set forth in the Offer to Amend or Replace under Section 8 (Price Range of Common Stock Underlying the Options) is incorporated herein by reference.

ITEM 3. IDENTITY AND BACKGROUND OF FILING PERSON.

(a) The Company is the filing person. The information set forth under Item 2(a) above is incorporated herein by reference. The information set forth in Schedule I to the Offer to Amend or Replace (Information Concerning the Directors and Executive Officers of KLA-Tencor Corporation) is incorporated herein by reference.

ITEM 4. TERMS OF THE TRANSACTION.

(a) The information set forth in the Offer to Amend or Replace on the introductory pages and under Summary Term Sheet, Section 1 (Eligible Optionees; Eligible Optiones; Amendment of Eligible Options and Cash Bonus; New Options; Expiration Date; Additional Considerations), Section 3 (Status of Eligible Options Not Amended or Replaced), Section 4 (Procedures for Tendering Eligible Options), Section 5 (Withdrawal Rights), Section 6 (Acceptance of Eligible Options for Amendment or Replacement and Commitment to Pay Cash Bonus With Respect to Amended Options), Section 7 (Conditions of the Offer), Section 9 (Source and

Amount of Consideration; Terms of Amended Options or New Options), Section 10 (Amended Options and New Options Will Not Differ from Eligible Options), Section 13 (Status of Options Accepted by Us in the Offer; Accounting Consequences of the Offer), Section 14 (Legal Matters; Regulatory Approvals), Section 15 (Material U.S. Federal Income Tax Consequences), Section 16 (Extension of the Offer; Termination; Amendment) and Section 19 (Forward-Looking Statements; Miscellaneous), is incorporated herein by reference.

(b) The information set forth in the Offer to Amend or Replace under Section 12 (Interests of Directors and Officers; Transactions and Arrangements Concerning the Options; and Material Agreements with Directors and Officers) is incorporated herein by reference.

ITEM 5. PAST CONTACTS, TRANSACTIONS, NEGOTIATIONS AND ARRANGEMENTS.

(a) The information set forth in the Offer to Amend or Replace under Section 12 (Interests of Directors and Officers; Transactions and Arrangements Concerning the Options; and Material Agreements with Directors and Officers) is incorporated herein by reference. The KLA-Tencor Instruments Corporation Restated 1982 Stock Option Plan, the KLA-Tencor Corporation 2000 Nonstatutory Stock Option Plan and the KLA-Tencor Corporation 2004 Equity Incentive Plan, pursuant to which the Eligible Options have been granted are attached hereto as Exhibits (d)(1), (d)(3) and (d)(5), respectively, and contain information regarding the subject securities.

ITEM 6. PURPOSES OF THE TRANSACTION AND PLANS OR PROPOSALS.

- (a) The information set forth in the Offer to Amend or Replace under Section 2 (Purpose of the Offer) is incorporated herein by reference.
- (b) The information set forth in the Offer to Amend or Replace under Section 6 (Acceptance of Eligible Options for Amendment or Replacement and Commitment to Pay Cash Bonus With Respect to Amended Options) and Section 13 (Status of Options Accepted by Us in the Offer; Accounting Consequences of the Offer) is incorporated herein by reference.

ITEM 7. SOURCE AND AMOUNT OF FUNDS OR OTHER CONSIDERATION.

- (a) The information set forth in the Offer to Amend or Replace under Section 9 (Source and Amount of Consideration; Terms of Amended Options or New Options) and Section 17 (Fees and Expenses) is incorporated herein by reference.
- (b) The information set forth in the Offer to Amend or Replace under Section 7 (Conditions of the Offer) is incorporated herein by reference.
- (c) Not applicable.

ITEM 8. INTEREST IN SECURITIES OF THE SUBJECT COMPANY.

- (a) The information set forth in the Offer to Amend or Replace under Section 12 (Interests of Directors and Officers; Transactions and Arrangements Concerning the Options; and Material Agreements with Directors and Officers) is incorporated herein by reference.
- (b) The information set forth in the Offer to Amend or Replace under Section 12 (Interests of Directors and Officers; Transactions and Arrangements Concerning the Options; and Material Agreements with Directors and Officers) is incorporated herein by reference.

ITEM 9. PERSONS/ASSETS, RETAINED, EMPLOYED, COMPENSATED OR USED.

(a) Not applicable.

ITEM 10. FINANCIAL STATEMENTS.

- (a) The information set forth in the Offer to Amend or Replace under Section 11 (Information Concerning KLA-Tencor) and Section 18 (Additional Information) is incorporated herein by reference. Item 8 (Financial Statements and Supplementary Data) of the Company s Annual Report on Form 10-K for its fiscal year ended June 30, 2006 is incorporated herein by reference. Item 1 (Financial Statements (Unaudited)) of the Company s Quarterly Report on Form 10-Q for its fiscal quarter ended September 30, 2006 is incorporated herein by reference.
- (b) Not applicable.
- (c) Summary Information. The information set forth in the Offer to Amend or Replace under Section 11 (Information Concerning KLA-Tencor) is incorporated herein by reference.

ITEM 11. ADDITIONAL INFORMATION.

- (a) The information set forth in the Offer to Amend or Replace under Section 12 (Interests of Directors and Officers; Transactions and Arrangements Concerning the Options; and Material Agreements with Directors and Officers) and Section 14 (Legal Matters; Regulatory Approvals) is incorporated herein by reference.
- (b) Not applicable.

ITEM 12. EXHIBITS.

| (a)(1) | Offer to Amend or Replace, dated February 27, 2007. |
|---------|---|
| (a)(2) | Email Announcement of Offer to Amend or Replace, dated February 27, 2007. |
| (a)(3) | Frequently Asked Questions. |
| (a)(4) | Screenshot of Login Page to Offer website at https://kla.equitybenefits.com. |
| (a)(5) | Screenshot of Welcome Page to Offer website at https://kla.equitybenefits.com. |
| (a)(6) | Screenshot of Electronic Election Form (screenshots 1-2). |
| (a)(7) | Screenshot of Election Amendment Review. |
| (a)(8) | Screenshot of Agreement to Terms of Election (screenshots 1-3). |
| (a)(9) | Screenshot of Print Confirmation. |
| (a)(10) | Screenshot of Election Confirmation Statement. |
| (a)(11) | Instructions to Electronic Election Form. |
| (a)(12) | Form of Stock Option Amendment and Special Bonus Agreement. |
| (a)(13) | Form of Acknowledgement of Receipt of Election Form. |
| (a)(14) | Form of Email Reminder of Expiration Date. |
| (a)(15) | Paper Election Form. |
| (a)(16) | Form of Notice of Expiration of Offer, Amendment of Eligible Option and Commitment to Pay Cash Bonus. |
| | |

| (a)(17) | Material Income Tax Consequences for Eligible Optionees Resident Outside the United States.* |
|---------|---|
| (a)(18) | KLA-Tencor Corporation Annual Report on Form 10-K for the year ended June 30, 2006, filed with the Securities and Exchange Commission (the SEC) on January 29, 2007 is incorporated herein by reference. |
| (a)(19) | KLA-Tencor Corporation Quarterly Report on Form 10-Q for its fiscal quarter ended September 30, 2006, filed with the SEC on January 29, 2007, is incorporated herein by reference. |
| (b) | Not applicable. |
| (d)(1) | KLA-Tencor Corporation Restated 1982 Stock Option Plan, as amended November 18, 1996 is incorporated herein by reference from Exhibit 10.74 to Form S-8, filed with the SEC on March 7, 1997. |
| (d)(2) | KLA-Tencor Corporation Restated 1982 Stock Option Plan Form of Stock Option Agreement. |
| (d)(3) | KLA-Tencor Corporation 2000 Nonstatutory Stock Option Plan is incorporated herein by reference from Exhibit 10.3 to Form S-8, filed with the SEC on September 27, 2002. |
| (d)(4) | KLA-Tencor Corporation 2000 Nonstatutory Stock Option Plan Form of Stock Option Agreement. |
| (d)(5) | KLA-Tencor Corporation 2004 Equity Incentive Plan is incorporated herein by reference from Exhibit 10.1 to Form S-8, filed with the SEC on December 23, 2004. |
| (d)(6) | KLA-Tencor Corporation 2004 Equity Incentive Plan Form of Stock Option Agreement. |
| (g) | Not applicable. |
| (h) | Not applicable. |

^{*} To be filed by amendment.

ITEM 13. INFORMATION REQUIRED BY SCHEDULE 13E-3.

(a) Not applicable.

SIGNATURE

After due inquiry and to the best of my knowledge and belief, I certify that the information set forth in this Schedule TO is true, complete and correct.

KLA-TENCOR CORPORATION

By: /s/ Jeffrey L. Hall

Jeffrey L. Hall Chief Financial Officer

Date: February 27, 2007

INDEX OF EXHIBITS

| EXHIBIT NUMBER (a)(1) | DESCRIPTION Offer to Amend or Replace, dated February 27, 2007. |
|-----------------------------|---|
| (a)(2) | Email Announcement of Offer to Amend or Replace, dated February 27, 2007. |
| (a)(3) | Frequently Asked Questions. |
| (a)(4) | Screenshot of Login Page to Offer website at https://kla.equitybenefits.com. |
| (a)(5) | Screenshot of Welcome Page to Offer website at https://kla.equitybenefits.com. |
| (a)(6) | Screenshot of Electronic Election Form (screenshots 1-2). |
| (a)(7) | Screenshot of Election Amendment Review. |
| (a)(8) | Screenshot of Agreement to Terms of Election (screenshots 1-3). |
| (a)(9) | Screenshot of Print Confirmation. |
| (a)(10) | Screenshot of Election Confirmation Statement. |
| (a)(11) | Instructions to Electronic Election Form. |
| (a)(12) | Form of Stock Option Amendment and Special Bonus Agreement. |
| (a)(13) | Form of Acknowledgement of Receipt of Election Form. |
| (a)(14) | Form of Email Reminder of Expiration Date. |
| (a)(15) | Paper Election Form. |
| (a)(16) | Form of Notice of Expiration of Offer, Amendment of Eligible Option and Commitment to Pay Cash Bonus. |
| (a)(17) | Material Income Tax Consequences for Eligible Optionees Resident Outside the United States.* |
| (a)(18) | KLA-Tencor Corporation Annual Report on Form 10-K for the year ended June 30, 2006, filed with the SEC on January 29, 2007, is incorporated herein by reference. |
| (a)(19) | KLA-Tencor Corporation Quarterly Report on Form 10-Q for its fiscal quarter ended September 30, 2006, filed with the SEC on January 29, 2007, is incorporated herein by reference. |
| (b) | Not applicable. |
| (d)(1) | KLA-Tencor Corporation Restated 1982 Stock Option Plan, as amended November 18, 1996 is incorporated herein by reference from Exhibit 10.74 to Form S-8, filed with the SEC on March 7, 1997. |
| (d)(2) | KLA-Tencor Corporation Restated 1982 Stock Option Plan Form of Stock Option Agreement. |
| (d)(3) | KLA-Tencor Corporation 2000 Nonstatutory Stock Option Plan is incorporated herein by reference from Exhibit 10.3 to Form S-8, filed with the SEC on September 27, 2002. |
| (d)(4) | KLA-Tencor Corporation 2000 Nonstatutory Stock Option Plan Form of Stock Option Agreement. |
| (d)(5) | KLA-Tencor Corporation 2004 Equity Incentive Plan is incorporated herein by reference from Exhibit 10.1 to Form S-8, filed with the SEC on December 23, 2004. |
| (d)(6) | KLA-Tencor Corporation 2004 Equity Incentive Plan Form of Stock Option Agreement. |
| (g) | Not applicable. |
| (h) | Not applicable. |

* To be filed by amendment.

⁹