

FORM 4

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

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| OMB APPROVAL | |
| OMB Number: | 3235-0287 |
| Estimated average burden hours per response... | 0.5 |

Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. See Instruction 1(b).

STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP OF SECURITIES

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934 or Section 30(h) of the Investment Company Act of 1940

(Print or Type Responses)

| | | | | | |
|--|--|--|--|---|--|
| 1. Name and Address of Reporting Person * DENTINGER MARK P | | 2. Issuer Name and Ticker or Trading Symbol KLA TENCOR CORP [KLAC] | | 5. Relationship of Reporting Person(s) to Issuer (Check all applicable) <input type="checkbox"/> Director <input type="checkbox"/> 10% Owner <input checked="" type="checkbox"/> Officer (give title below) <input type="checkbox"/> Other (specify below) EVP & Chief Financial Officer | |
| (Last) (First) (Middle) C/O KLA-TENCOR CORPORATION, ONE TECHNOLOGY DRIVE | | 3. Date of Earliest Transaction (Month/Day/Year) 08/05/2012 | | | |
| (Street) MILPITAS, CA 95035 | | 4. If Amendment, Date Original Filed(Month/Day/Year) | | 6. Individual or Joint/Group Filing (Check Applicable Line) <input checked="" type="checkbox"/> Form filed by One Reporting Person <input type="checkbox"/> Form filed by More than One Reporting Person | |
| (City) (State) (Zip) | | | | | |

Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned

| 1. Title of Security (Instr. 3) | 2. Transaction Date (Month/Day/Year) | 2A. Deemed Execution Date, if any (Month/Day/Year) | 3. Transaction Code (Instr. 8) | | 4. Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5) | | | 5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4) | 6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4) | 7. Nature of Indirect Beneficial Ownership (Instr. 4) |
|---|--------------------------------------|--|--------------------------------|---|---|------------|-------|---|--|---|
| | | | Code | V | Amount | (A) or (D) | Price | | | |
| Common Stock | 08/05/2012 | | A | | 9,075 | A | (1) | 10,212 | D | |
| Common Stock | 08/05/2012 | | F | | 3,329 | D | (2) | \$ 52.1 6,883 | D | |
| Common Stock | 08/05/2012 | | A | | 9,075 | A | (3) | 15,958 | D | |
| Common Stock | 08/05/2012 | | F | | 3,329 | D | (4) | \$ 52.1 12,629 | D | |
| Common Stock - Restricted Stock Units (5) | | | | | | | | 104,400 (6) | D | |

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

SEC 1474 (9-02)
Persons who 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.

Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)

| 1. Title of Derivative Security (Instr. 3) | 2. Conversion or Exercise Price of Derivative Security | 3. Transaction Date (Month/Day/Year) | 3A. Deemed Execution Date, if any (Month/Day/Year) | 4. Transaction Code (Instr. 8) | | 5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4, and 5) | | 6. Date Exercisable and Expiration Date (Month/Day/Year) | | 7. Title and Amount of Underlying Securities (Instr. 3 and 4) | 8. Price of Derivative Security (Instr. 5) | 9. Number of Derivative Securities Beneficially Owned Following Reported Transaction(s) (Instr. 4) | 10. Ownership Form of Derivative Security: Direct (D) or Indirect (I) (Instr. 4) | 11. Nature of Indirect Beneficial Ownership (Instr. 4) |
|--|--|--------------------------------------|--|--------------------------------|---|---|-----|--|-----------------|---|--|--|--|--|
| | | | | Code | V | (A) | (D) | Date Exercisable | Expiration Date | | | | | |

Reporting Owners

| Reporting Owner Name / Address | Relationships | | | |
|--|---------------|-----------|-------------------------------|-------|
| | Director | 10% Owner | Officer | Other |
| DENTINGER MARK P C/O KLA-TENCOR CORPORATION ONE TECHNOLOGY DRIVE MILPITAS, CA 95035 | | | EVP & Chief Financial Officer | |

Signatures

Brian M. Martin as Attorney-in-Fact for Mark P. Dentinger

**Signature of Reporting Person

08/07/2012

Date

Explanation of Responses:

* If the form is filed by more than one reporting person, *see* Instruction 4(b)(v).

** Intentional misstatements or omissions of facts constitute Federal Criminal Violations. *See* 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

(1) On August 5, 2010, the Reporting Person received a grant of restricted stock units ("RSUs") covering 18,150 shares of KLA-Tencor common stock. On August 5, 2012, the Reporting Person vested in fifty percent (50%) of such RSUs.

(2) Pursuant to the terms of the August 5, 2010 RSU grant, 3,329 shares of KLA-Tencor common stock were automatically withheld at vesting to cover required tax withholding. Because the vesting date of such RSUs occurred on a day on which the NASDAQ Stock Market was closed for trading, the fair market value of KLA-Tencor common stock used for purposes of calculating the number of shares to be withheld was the closing price of KLA-Tencor common stock as reported on the NASDAQ Stock Market on the last completed trading day immediately prior to such vesting date.

(3) On August 5, 2010, the Reporting Person received a grant of performance-based RSUs that, following the completion of fiscal year 2012, was determined by the Compensation Committee of KLA-Tencor's Board of Directors (in August 2012) to cover, based on KLA-Tencor's financial performance during fiscal years 2011 and 2012, 18,150 shares of KLA-Tencor common stock. On August 5, 2012, the Reporting Person vested in fifty percent (50%) of such performance-based RSUs.

(4) Pursuant to the terms of the August 5, 2010 performance-based RSU grant, 3,329 shares of KLA-Tencor common stock were automatically withheld at vesting to cover required tax withholding. Because the vesting date of such RSUs occurred on a day on which the NASDAQ Stock Market was closed for trading, the fair market value of KLA-Tencor common stock used for purposes of calculating the number of shares to be withheld was the closing price of KLA-Tencor common stock as reported on the NASDAQ Stock Market on the last completed trading day immediately prior to such vesting date.

(5) Each RSU represents a contingent right to receive one share of KLA-Tencor common stock.

(6) Does not include performance-based RSUs, if any, held by the Reporting Person for which an assessment has not yet been made regarding the achievement of the applicable performance goals. Any such holdings will be reported on Form 4 within two business days of the date such assessment is made.

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, *see* Instruction 6 for procedure.

Potential 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 number.