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

FORM 11-K

ANNUAL REPORT PURSUANT TO SECTION 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended June 30, 2006

OR

TRANSITION REPORT PURSUANT TO SECTION 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission file number:

A. Full title of the plan and the address of the plan, if different from that of the issuer named below:

KLA-Tencor 401(k) Plan

B. Name of issuer of the securities held pursuant to the plan and the address of its principal executive office:

KLA Tencor Corporation
160 Rio Robles
San Jose, CA 95134

SIGNATURES

The Plan. Pursuant to the requirements of the Securities and Exchange Act of 1934, the trustees (or other persons who administer the KLA-Tencor 401(k) Plan) have duly caused this annual report to be signed on its behalf by the undersigned hereunto duly authorized.

KLA-TENCOR 401(k) PLAN

(Name of plan)

Date: December 21, 2006

By: /s/ Jeffrey L. Hall

(Signature)

Title: Chief Financial Officer

KLA-TENCOR CORPORATION ON
BEHALF OF THE PLAN
ADMINISTRATOR OF THE KLA-
TENCOR 401(k) PLAN

KLA-Tencor 401(k) Plan
Financial Statements
June 30, 2006 and 2005

KLA-TENCOR 401(k) PLAN

Financial Statements and Supplemental Schedule June 30, 2006 and 2005

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Participants and Plan Administrator of the KLA-Tencor 401(k) Plan

We have audited the financial statements of the KLA-Tencor 401(k) Plan (the Plan) as of June 30, 2006 and 2005, and for the years then ended, as listed in the accompanying table of contents. These financial statements are the responsibility of the Plan's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement. We were not engaged to perform an audit of the Plan's internal control over financial reporting. Our audits included consideration over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Plan's internal control over financial reporting. Accordingly, we express no such opinion. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by the Plan's management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the net assets available for benefits of the Plan as of June 30, 2006 and 2005, and the changes in net assets available for benefits for the years then ended, in conformity with accounting principles generally accepted in the United States of America.

Our audits were performed for the purpose of forming an opinion on the basic financial statements taken as a whole. The supplemental schedule, as listed in the accompanying table of contents, is presented for the purpose of additional analysis and is not a required part of the basic financial statements but is supplementary information required by the Department of Labor's Rules and Regulations for Reporting and Disclosure under the Employee Retirement Income Security Act of 1974. The supplemental schedule is the responsibility of the Plan's management. The supplemental schedule has been subjected to the auditing procedures applied in the audits of the basic financial statements and, in our opinion, is fairly stated in all material respects in relation to the basic financial statements taken as a whole.

/s/ Mohler, Nixon & Williams

MOHLER, NIXON & WILLIAMS
Accountancy Corporation

Campbell, California
December 6, 2006

KLA-TENCOR 401(k) PLAN

STATEMENTS OF NET ASSETS AVAILABLE FOR BENEFITS

	June 30,	
	2006	2005
Assets:		
Investments, at fair value	\$ 471,309,767	\$ 409,595,705
Participant loans	6,211,448	6,008,736
Assets held for investment purposes	477,521,215	415,604,441

Non-interest bearing cash	71,052	
Participants' contributions receivable	437,396	1,473,032
Employer contribution receivable		22,246
Other receivable	54,007	
Net assets available for benefits	<u>\$ 478,083,670</u>	<u>\$ 417,099,719</u>

See notes to financial statements.

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KLA-TENCOR 401(k) PLAN

STATEMENTS OF CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS

	Years ended June 30,	
	2006	2005
Additions to net assets attributed to:		
Investment income:		
Dividends and interest	\$ 18,431,646	\$ 8,710,878
Net realized and unrealized appreciation in fair value of investments	33,013,288	14,445,840
	<u>51,444,934</u>	<u>23,156,718</u>
Contributions:		
Participants'	32,881,092	31,419,067
Employer's	3,278,698	3,242,934
	<u>36,159,790</u>	<u>34,662,001</u>
Total additions	<u>87,604,724</u>	<u>57,818,719</u>
Deductions from net assets attributed to:		
Withdrawals and distributions	26,601,172	23,751,968
Administrative expenses	19,601	9,617
Total deductions	<u>26,620,773</u>	<u>23,761,585</u>
Net increase in net assets	60,983,951	34,057,134
Net assets available for benefits:		
Beginning of year	417,099,719	383,042,585
End of year	<u>\$ 478,083,670</u>	<u>\$ 417,099,719</u>

See notes to financial statements.

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KLA-TENCOR 401(k) PLAN

NOTES TO FINANCIAL STATEMENTS JUNE 30, 2006 AND 2005

NOTE 1 - THE PLAN AND ITS SIGNIFICANT ACCOUNTING POLICIES

General - The following description of the KLA-Tencor 401(k) Plan (the Plan) provides only general information. Participants should refer to

the Plan document and the Summary Plan Description for the Plan for a more complete description of the Plan's provisions.

The Plan is a defined contribution plan that was established in 1982 by KLA-Tencor Corporation (the Company) to provide benefits to eligible employees, as defined in the Plan document. The Plan is currently designed to be qualified under the applicable requirements of the Internal Revenue Code of 1986 (the Code), as amended, and the provisions of the Employee Retirement Income Security Act of 1974 (ERISA), as amended.

Administration - The Company is the Administrator of the Plan. The Company has appointed a Plan Committee (the Committee) to manage the day-to-day operation and administration of the Plan. The Company has contracted with Fidelity Management Trust Company (Fidelity) to act as the Plan's custodian and trustee. Expenses incurred for administering the Plan are paid by the Plan, unless the Company elects to pay such expenses.

Estimates - The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, and changes therein, and disclosure of contingent assets and liabilities. Actual results could differ from those estimates.

Basis of accounting - The financial statements of the Plan are prepared on the accrual method of accounting in accordance with accounting principles generally accepted in the United States of America.

Investments - Investments of the Plan are held by Fidelity and invested based solely upon instructions received from participants.

The Plan's investments in mutual funds, common stock and a common/collective trust are valued at fair value as of the last day of the Plan year, as measured by quoted market prices or as reported by Fidelity. Participant loans are valued at cost, which approximates fair value.

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Income taxes - The Plan is intended to be a qualified plan under Section 401(a) of the Code and related state statutes, and the trust, which is a part of the Plan, is intended to be exempt from tax under Section 501(a) of the Code. The Plan has been amended since receiving a favorable determination letter dated January 15, 2004.

Reconciliation of financial statements to Form 5500 - The differences between the information reported in the financial statements and the information reported in the Form 5500 arise primarily from presenting the financial statements on the accrual basis of accounting.

Risks and uncertainties - The Plan provides for various investment options in any combination of investment securities, including Company common stock (currently capped at 25% of a participant's account, see Note 2 below), offered by the Plan. Investment securities are exposed to various risks, such as interest rates, market fluctuations and credit risks. Due to the risk associated with certain investment securities, it is at least reasonably possible that changes in market values, interest rates or other factors in the near term would materially affect participants' account balances and the amounts reported in the statements of net assets available for benefits and the statements of changes in net assets available for benefits.

NOTE 2 - RELATED PARTY AND PARTY-IN-INTEREST TRANSACTIONS

Certain Plan investments in Company common stock, a common collective trust and mutual funds are managed by Fidelity. Purchases and sales of these funds are performed in the open market at fair value and qualify as party-in-interest transactions under ERISA regulations. These transactions are permitted under the provisions of the Plan and are specifically exempt from the prohibition of party-in-interest transactions under ERISA.

The Plan permits participants to direct their investments to the common stock of the Company. The investment in Company common stock is limited to 25% of a participant's account. Aggregate investment in Company stock was as follows at June 30:

	2006	2005
Number of shares	486,529	516,397
Fair value	\$20,225,015	\$22,556,209

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NOTE 3 - PARTICIPATION AND BENEFITS

Participant contributions - Participants may elect to have the Company contribute up to 25% of their eligible pre-tax compensation to the Plan. In addition, eligible participants can make catchup contributions, up to the maximum allowed under current tax regulations. Participants who elect to have the Company contribute a portion of their eligible compensation to the Plan agree to accept an equivalent reduction in taxable compensation. Contributions withheld are invested in accordance with the participant's direction.

Participants are also allowed to make rollover contributions of amounts received from other tax-qualified employer-sponsored retirement plans. Such contributions are deposited in the appropriate investment funds in accordance with the participant's direction and the Plan's provisions.

Employer contributions - The Company is allowed to make discretionary matching contributions as defined in the Plan and as approved by the Board of Directors. In 2006 and 2005, the Company contributed an amount equal to 50% of each eligible participant's contribution, not to exceed \$1,000 per participant per Plan year.

Prior to July 1, 2006, the Plan also allowed for a discretionary profit sharing contribution each calendar quarter as determined by the Board of Directors. The Company did not make any discretionary profit sharing contributions during the years ended June 30, 2006 and 2005.

Vesting - Participants are immediately vested in their contributions and the Company's matching and discretionary profit sharing contributions, at all times.

Participant accounts - Each participant's account is credited with the participant's contribution, Plan earnings or losses and an allocation of the Company's contributions, if any. Allocation of the Company's discretionary matching and profit sharing contributions are based on eligible participant contributions or eligible compensation, as defined in the Plan.

Payment of benefits - Upon termination, the participants or beneficiaries may elect to leave their account balance in the Plan, or receive their total benefits in a lump sum amount. Upon termination of employment, the Plan provides for automatic lump sum distribution of account balances of \$1,000 or less, and for an automatic rollover to an IRA on account balances greater than \$1,000 but not greater than \$5,000.

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Loans to participants - Participants may borrow not less than \$1,000 and up to the lesser of \$50,000 or 50% of their account balance. The loans are secured by the participant's balance, bear interest at the available market financing rates and must be repaid within a five-year period, unless the loan is used for the purchase of a principal residence in which case the maximum repayment period is fifteen years. The specific terms and conditions of such loans are established by the Committee. Outstanding loans at June 30, 2006 carry interest rates ranging from 6% to 11.5%.

NOTE 4 - INVESTMENTS

The following table includes the fair values of investments and investment funds that represent 5% or more of the Plan's net assets at June 30:

	2006	2005
Washington Mutual Investors Fund A	\$ 57,808,714	\$ 56,744,011
PIMCO Total Return Fund I	24,500,120	24,562,797
Growth Fund of America A	77,865,272	64,783,016
New Perspective Fund A	34,849,741	30,218,378
Income Fund of America A		34,702,061
American Funds Income Fund of America	34,786,017	
Fremont Institutional U.S. Micro Cap Fund	21,343,525	20,923,086
Fidelity Diversified International Fund	52,575,389	33,783,743
Fidelity Mid Cap Stock Fund	41,371,826	26,854,105
Fidelity Managed Income II Portfolio	36,656,745	33,757,246
Fidelity Spartan U.S. Equity Index Fund	30,386,273	27,923,994
KLA-Tencor Stock	20,225,015	22,556,209
Other funds individually less than 5% of net assets	45,152,578	38,795,795
Assets held for investment purposes	<u>\$ 477,521,215</u>	<u>\$ 415,604,441</u>

The Plan's investments (including gains and losses on investments bought and sold, as well as held during the year) appreciated (depreciated) in value as follows for the years ended June 30:

	2006	2005
Mutual funds	\$ 33,365,999	\$ 17,262,833
Common stock	(352,711)	(2,816,993)
	<u>\$ 33,013,288</u>	<u>\$ 14,445,840</u>

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NOTE 5 - PLAN TERMINATION OR MODIFICATION

The Company intends to continue the Plan indefinitely for the benefit of its participants; however, it reserves the right to terminate or modify the Plan at any time and for any reason, subject to the provisions of ERISA.

NOTE 6 - SUBSEQUENT EVENTS

Effective July 1, 2006, the Board of Directors approved an increase in the matching contribution to a maximum of \$3,000 per Plan year.

Effective September 28, 2006, participants are no longer allowed to purchase any Company common stock under the Plan until further notice. Participants may continue to sell their shares held in Company common stock under the Plan.

SUPPLEMENTAL SCHEDULE

KLA-TENCOR 401(k) PLAN

EIN: 04-2564110

PLAN #001

**SCHEDULE H, LINE 4i - SCHEDULE OF ASSETS (HELD AT END OF YEAR)
JUNE 30, 2006**

Identity of issue, borrower, lessor or similar party	Description of investment including maturity date, rate of interest, collateral, par or maturity value	Current value
Fidelity Management Trust Company:		
Washington Mutual Investors Fund A	Mutual fund	\$ 57,808,714
PIMCO Total Return Fund I	Mutual fund	24,500,120
Growth Fund of America A	Mutual fund	77,865,272
New Perspective Fund A	Mutual fund	34,849,741
Columbia International Value Fund A	Mutual fund	8,936,732
American Funds Income Fund of America	Mutual fund	34,786,017
Artisan Small Cap Value	Mutual fund	6,669,534
Fremont Institutional U.S. Micro Cap Fund	Mutual fund	21,343,525
* Fidelity Diversified International Fund	Mutual fund	52,575,389
* Fidelity Mid Cap Stock Fund	Mutual fund	41,371,826

* Fidelity Managed Income II Portfolio	Common/Collective Trust	36,656,745
* Fidelity Spartan U.S. Equity Index Fund	Mutual fund	30,386,273
* Fidelity Select Electronics Fund	Mutual fund	23,331,468
* KLA-Tencor Stock	Common stock	20,225,015
* Cash	Cash	3,396
* Participant loans	Interest rates ranging from 6% to 11.5%	6,211,448
		<u>\$ 477,521,215</u>

* Party-in-interest

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statement on Form S-8 (Nos. 999-60866, 333-49766 and 333-46598) of KLA-Tencor Corporation of our report dated December 6, 2006, with respect to the statements of net assets available for benefits of KLA-Tencor 401(k) Plan as of June 30, 2006 and 2005, the related statements of changes in net assets available for benefits for the years then ended, and the related supplemental Schedule H, line 4i-schedule of assets (held at end of year) as of June 30, 2006, which report appears in the June 30, 2006 annual report on Form 11-K of the KLA-Tencor 401(k) Plan.

By: /s/ Mohler, Nixon & Williams

MOHLER, NIXON & WILLIAMS
Accountancy Corporation

Campbell, California
December 19, 2006
