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

FORM 11-K

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

For the fiscal year ended June 30, 2007

OR

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

For the transition period from ______ to _____

Commission file number:

A.

В.

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

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

KLA-Tencor Corporation One Technology Dr Milpitas, CA 95035

SIGNATURES

The Plan. Pursuant to the requirements of the Securities 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, 2007

By:

/s/ Jeffrey L. Hall

Title:

(Signature) 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, 2007 and 2006

KLA-TENCOR 401(k) PLAN

Financial Statements and Supplemental Schedule June 30, 2007 and 2006

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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 KLA-Tencor 401(k) Plan (the Plan) as of June 30, 2007 and 2006, and for the years then ended, as listed in the accompanying table of contents. These financial statements are the responsibility of the Plan 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, 2007 and 2006, 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 20, 2007 2

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STATEMENTS OF NET ASSETS AVAILABLE FOR BENEFITS

	Ju	ine 30,	
	2007		2006
Assets:			
Investments, at fair value	\$ 568,747,688	\$	471,309,767
Participant loans	5,919,978		6,211,448
Assets held for investment purposes	574,667,666		477,521,215
Non-interest bearing cash	76,973		71,052
Participants' contributions receivable	459,765		437,396
Employer contribution receivable	216,122		
Other receivable	28,918		54,007
Net assets available for benefits	\$ 575,449,444	\$	478,083,670

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,		
	2007		2006
\$	26,984,415	\$	18,431,646
	65,434,300		33,013,288
	92,418,715		51,444,934
	36,521,109		32,881,092
	9,661,806		3,278,698
_			
	46,182,915		36,159,790
	138,601,630		87,604,724
	41 178 972		26,601,172
			19,601
			12,001
	41,235,856		26,620,773
	97,365,774		60,983,951
	\$	2007 \$ 26,984,415 65,434,300 92,418,715 36,521,109 9,661,806 46,182,915 138,601,630 41,178,972 56,884	2007 \$ 26,984,415 \$ 65,434,300 92,418,715 36,521,109 9,661,806 46,182,915 138,601,630 41,178,972 56,884 41,235,856

Net assets available for benefits:		
Beginning of year	478,083,670	417,099,719
End of year	\$ 575,449,444	\$ 478,083,670

See notes to financial statements.

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KLA-TENCOR 401(k) PLAN

NOTES TO FINANCIAL STATEMENTS JUNE 30, 2007 AND 2006

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 \Box 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.

As described in Financial Accounting Standards Board Staff Position, FSP ASG INV-1 and SOP 94-4-1, *Reporting of Fully Benefit-Responsive Investment Contracts Held by Certain Investment Companies Subject to the AICPA Investment Company Guide and Defined-Contribution Health and Welfare and Pension Plans* (the FSP), effective for the Plan year ending after December 15, 2006, applied retroactively for all periods presented, investment contracts held by a defined contribution plan are required to be reported at fair value. However, contract value is the relevant measurement attributable for that portion for the net assets available for benefits of a defined contribution plan attributable to fully benefit-responsive investment contracts because contract value is the amount participants would receive if they were to initiate permitted transactions under the terms of the Plan. The Company has considered the impact of this standard on these financial statements to be immaterial.

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

The Plan 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.

Effective September 28, 2006, participants were prohibited from purchasing any Company common stock under the Plan until further notice. Participants were allowed to continue to sell their shares held in Company common stock under the Plan. Effective February 1, 2007, the restriction on purchasing common stock was lifted.

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.

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.

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:

	2007	2006
Number of shares	344,700	486,529
Fair value	\$18,941,277	\$20,225,015
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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, and may elect to defer up to 100% of their profit sharing compensation into the Plan. 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 2007 and 2006, the Company contributed an amount equal to 50% of each eligible participant s contribution, not to exceed \$3,000 and \$1,000 per participant per Plan year, respectively.

The Plan 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 year ended June 30, 2006. This provision was eliminated effective July 1, 2006.

Vesting - Participants are immediately vested in their contributions and the Company s discretionary 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 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. Effective July 1, 2006, the Plan soption to automatically distribute account balances greater than \$1,000 but not greater than \$5,000 as a rollover to an IRA was eliminated.

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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 solarce, 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 15 years. The specific terms and conditions of such loans are established by the Committee. Outstanding loans at June 30, 2007 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:

	2007		2006
Washington Mutual Investors Fund A	\$ 69,186,458	\$	57,808,714
PIMCO Total Return Fund I	27,945,266		24,500,120
Growth Fund of America A	87,893,440	_	77,865,272
New Perspective Fund A	43,183,792		34,849,741
American Funds Income Fund of America	38,641,098	_	34,786,017
Fidelity Diversified International Fund	69,967,363		52,575,389
Fidelity Mid Cap Stock Fund	49,837,440	_	41,371,826
Fidelity Managed Income II Portfolio	41,611,523		36,656,745
Fidelity Spartan U.S. Equity Index Fund	35,631,579	_	30,386,273
Other funds individually less than 5% of net			
assets	110,769,707		86,721,118
Assets held for investment purposes	\$ 574,667,666	\$	477,521,215

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:

	2007	2006
Mutual funds	\$ 59,453,031	\$ 33,365,999
Common stock	5,981,269	(352,711)
	\$ 65,434,300	\$ 33,013,288

NOTE 5 - DIFFERENCES BETWEEN FINANCIAL STATEMENTS AND FORM 5500

The following is a reconciliation of net assets available for benefits per the financial statements to the Form 5500:

	Ju	ne 30,
	2007	2006
Net assets available for benefits per the		
financial statements	\$ 575,449,444	\$ 478,083,670
Less:		_
Participants[] contributions receivable		
per the financial statements	(459,765)	(437,396)
Employer contribution receivable		
per the financial statements	(216,122)	_
Adjustment to fair value		
relating to SOP 94-4-1	(619,836)	
Net assets available for benefits per the Form 5500	\$ 574,153,721	\$ 477,646,274

The following reconciles various differences between the changes in net assets available for benefits per the financial statements to the Form 5500:

	Y	ears ended June 30,	
	2007		2006
Participants[] contributions per the financial statements	\$ 36,521,109	\$	32,881,092
Prior year participants[] contribution receivable	437,396		1,473,032
Current year participants contributions receivable	(459,765)		(437,396)
Contributions per the Form 5500	\$ 36,498,740	\$	33,916,728
Employer]s contributions per the financial statements	\$ 9,661,806	\$	3,278,698
Prior year employer[]s contributions receivable			22,246
Current year employer[]s contributions receivable	(216,122)		
Employer]s contributions per the Form 5500	\$ 9,445,684	\$	3,300,944
Investment income per the financial statements	\$ 92,418,715		
Adjustment to fair value relating to SOP 94-4-1	(619,836)		
Investment income per the Form 5500	\$ 91,798,879		

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NOTE 6 - 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 7 - SUBSEQUENT EVENT

It is the Company \Box s intention to eliminate the Company common stock as an investment option effective during the 2008 Plan year.

SUPPLEMENTAL SCHEDULE

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KLA-TENCOR 401(k) PLAN

EIN: 04-2564110 PLAN #001

SCHEDULE H, LINE 4i - SCHEDULE OF ASSETS (HELD AT END OF YEAR) JUNE 30, 2007

_	Identity of issue, borrower, lessor or similar party	Description of investment including maturity date, rate of interest, collateral, par or maturity value	 Curre valu
	Fidelity Management Trust Company:		
_	Washington Mutual Investors Fund A	Mutual Fund	\$ 69,1
	PIMCO Total Return Fund I	Mutual Fund	27,9
	Growth Fund of America A	Mutual Fund	87,8
	New Perspective Fund A	Mutual Fund	43,1
	Columbia International Value Fund A	Mutual Fund	 19,8
	American Funds Income Fund of America	Mutual Fund	38,6
_	Artisan Small Cap Value Fund	Mutual Fund	11,9
	Mgrs Fremont Institutional Micro Cap Fund	Mutual Fund	18,3
	Rainier Sm/Mid Cap Fund	Mutual Fund	4,1
	Artisan Mid Cap Value Fund	Mutual Fund	6,0
*	Fidelity Diversified International Fund	Mutual Fund	69,9
*	Fidelity Mid Cap Stock Fund	Mutual Fund	49,8
*	Fidelity Managed Income II Portfolio	Common/Collective Trust	 40,9
*	Fidelity Spartan U.S. Equity Index Fund	Mutual Fund	35,6
*	Fidelity Select Electronics Fund	Mutual Fund	19,3
*	Fidelity Freedom Funds 2000	Mutual Fund	
*	Fidelity Freedom Funds 2010	Mutual Fund	5
*	Fidelity Freedom Funds 2020	Mutual Fund	6
*	Fidelity Freedom Funds 2030	Mutual Fund	1,1
*	Fidelity Freedom Funds 2040	Mutual Fund	4

*	Fidelity Freedom Funds 2005	Mutual Fund		2
*	Fidelity Freedom Funds 2015	Mutual Fund		6
*	Fidelity Freedom Funds 2025	Mutual Fund		1,3
*	Fidelity Freedom Funds 2035	Mutual Fund		8
*	Fidelity Freedom Funds 2045	Mutual Fund		1
*	Fidelity Freedom Funds 2050	Mutual Fund		
*	KLA-Tencor Corporation Stock	Common stock		18,9
*	Cash	Cash		
*	Participant loans	Interest rates ranging from 6% to 11.5%		5,9
			Total	\$ 574,0

* Party-in-interest