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

**POST-EFFECTIVE AMENDMENT NO. 1 TO
FORM S-8**

**REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933**

MERCURY COMPUTER SYSTEMS, INC.

(Exact Name of Registrant as Specified in its Charter)

Massachusetts
(State of Incorporation)

04-2741391
(I.R.S. Employer Identification Number)

**199 Riverneck Road
Chelmsford, Massachusetts 01824
(978) 256-1300**
(Address of Principal Executive Offices)

**MERCURY COMPUTER SYSTEMS, INC.
1997 STOCK OPTION PLAN**
(Full Title of the Plan)

**Anthony J. Medaglia, Jr., Esq.
Goodwin Procter LLP
Exchange Place
Boston, Massachusetts 02109
(617) 570-1000**
(Name, Address and Telephone Number, Including Area Code, of Agent for Service)

EXPLANATORY NOTE

Mercury Computer Systems, Inc. (the "Company") is filing this post-effective amendment to deregister certain of the securities originally registered pursuant to the Registration Statement on Form S-8 (File No. 333-112990), filed with the Securities and Exchange Commission on February 20, 2004 by the Company (the "Registration Statement") with respect to shares of the Company's common stock, par value \$0.01 per share ("Common Stock"), thereby registered for issuance under the Company's 1997 Stock Option Plan, as amended (the "1997 Plan"). An aggregate of 1,000,000 shares of Common Stock were registered for issuance under the 1997 Plan pursuant to the Registration Statement.

On November 14, 2005, the Company's shareholders approved the Company's 2005 Stock Incentive Plan (the "2005 Plan"), which replaces the 1997 Plan as of the date of approval. Following the approval of the 2005 Plan, no future awards will be made under the 1997 Plan. The maximum number of shares of Common Stock reserved and available for issuance under the 2005 Plan includes the shares available for issuance under the 1997 Plan, as of the effective date of the 2005 Plan. The total number of shares available for grant under the 1997 Plan on that date was 1,942,264 shares (the "Carried Forward Shares"). The Carried Forward Shares include 942,264 shares registered under the Registration Statement, which are hereby deregistered. Additional shares reserved for issuance under the 1997 Plan may become available in the future as a result of the forfeiture, cancellation or termination of awards (other than by exercise) under the 1997 Plan, and these additional shares will be included in the shares reserved for issuance under the 2005 Plan.

Contemporaneously with the filing of this Post-Effective Amendment No. 1 to the Registration Statement, the Company is filing a Registration Statement on Form S-8 to register the Carried Forward Shares for issuance pursuant to the 2005 Plan.

EXHIBIT INDEX

<u>Exhibit No.</u>	<u>Description</u>
23.1*	Consent of PricewaterhouseCoopers LLP
24.1	Powers of Attorney (included on the signature page to the Registration Statement on Form S-8 previously filed on February 20, 2004)

* Filed herewith

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in this Post-Effective Amendment No. 1 to the Registration Statement on Form S-8 (File No. 333-112990) of our report dated September 13, 2005 relating to the financial statements, financial statement schedule, management's assessment of the effectiveness of internal control over financial reporting and the effectiveness of internal control over financial reporting, of Mercury Computer Systems, Inc., which appears in Mercury Computer Systems, Inc.'s Annual Report on Form 10-K for the year ended June 30, 2005.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
November 23, 2005