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.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Post-Effective Amendment No. 1 to the Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the city of Chelmsford, the Commonwealth of Massachusetts on this 23rd day of November, 2005.

MERCURY COMPUTER SYSTEMS, INC.

By: <u>/s/ James R. Bertelli</u> James R. Bertelli President and Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1933, this Post-Effective Amendment No. 1 to the Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
/s/ James R. Bertelli	President, Chief Executive Officer and Director (Principal Executive Officer)	November 23, 2005
James R. Bertelli	(Finicipal Executive Officer)	
/s/ Robert E. Hult	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	November 23, 2005
Robert E. Hult		
/s/ Alex N. Braverman	Vice President, Controller and Chief Accounting Officer (Principal Accounting Officer)	November 23, 2005
Alex N. Braverman		
*	Director	November 23, 2005
Gordon B. Baty		
*	Director	November 23, 2005
Albert P. Belle Isle		
Coorgo W. Chamilland	Director	November 23, 2005
George W. Chamillard *	Director	N
	Director	November 23, 2005
Russell K. Johnsen		
*	Director	November 23, 2005
Sherman N. Mullin		
*	Director	November 23, 2005
Lee C. Steele		
*	Director	November 23, 2005
Richard P. Wishner		
*By: /s/ James R. Bertelli		

James R. Bertelli, Attorney-in-Fact

EXHIBIT INDEX

Exhibit No.	Description	
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