## 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 the securities originally registered pursuant to the Registration Statement on Form S-8 (File No. 333-124294), filed with the Securities and Exchange Commission on April 25, 2005 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 the 1,000,000 shares registered under the Registration Statement, which are hereby deregistered.

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 23<sup>rd</sup> 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	November 23, 2005
James R. Bertelli	(Principal Executive Officer)	
/s/ Robert E. Hult	Senior Vice President and Chief Financial	November 23, 2005
Robert E. Hult	Officer (Principal Financial Officer)	
/s/ Alex N. Braverman	Vice President, Controller and Chief Accounting	November 23, 2005
Alex N. Braverman	Officer (Principal Accounting Officer)	
*	Director	November 23, 2005
Gordon B. Baty		
*	Director	November 23, 2005
Albert P. Belle Isle		
*	Director	November 23, 2005
George W. Chamillard		
*	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	
24.1	Powers of Attorney (included on the signature page to the Registration Statement on Form S-8 previously filed on April 25, 2005)	