

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

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

CALCULATION OF REGISTRATION FEE

Title of Securities to be Registered	Amount to be Registered(1)	Proposed Maximum Offering Price Per Share(2)	Proposed Maximum Aggregate Offering Price(2)	Amount of Registration Fee(2)
Common Stock	1,000,000 shares	\$29.64	\$29,635,000.00	\$3,755.39

- (1) This registration statement also relates to such indeterminate number of additional shares of Common Stock as may be necessary to satisfy the antidilution provisions of the employee benefit plan described herein.
- (2) Calculated in accordance with Rule 457(c) and (h) under the Securities Act of 1933 solely for the purpose of determining the amount of the registration fee. The registration fee has been calculated based on the average of the high and low prices on the NASDAQ National Market on February 18, 2004.

NOTE

This registration statement is being filed solely for the purpose of registering 1,000,000 additional shares of common stock, par value \$.01 per share ("Common Stock"), of Mercury Computer Systems, Inc. ("Mercury") issuable pursuant to the Mercury Computer Systems, Inc. 1997 Stock Option Plan, as amended and restated (the "Plan"), originally adopted in 1997. The total number of shares issuable under the Plan is 7,650,000 shares, of which 6,650,000 shares were previously registered on Form S-8 (Reg. Nos. 333-53291 and 333-101993). The contents of these registration statements are incorporated herein by reference, except as otherwise noted below.

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

ITEM 5. INTERESTS OF NAMED EXPERTS AND COUNSEL

The validity of the Common Stock offered hereby will be passed upon for Mercury by Goodwin Procter LLP, Boston, Massachusetts. Anthony J. Medaglia, Jr., a partner of Goodwin Procter LLP, is Clerk of Mercury and owns 25,950 shares of Common Stock and options for the purchase of an additional 7,010 shares of Common Stock.

ITEM 6. INDEMNIFICATION OF DIRECTORS AND OFFICERS

Reference is made to Item 6 of the registration statements on Form S-8 (Reg. Nos. 333-53291 and 333-101993) incorporated herein by reference. In addition, Mercury has entered into indemnification agreements with its current directors. The indemnification agreements require, among other matters, that Mercury indemnify its directors to the fullest extent permitted by law and advance to the directors certain expenses, subject to reimbursement if it is subsequently determined that indemnification is not permitted.

ITEM 8. EXHIBITS

<u>Exhibit</u>	<u>Description</u>
4.1	1997 Stock Option Plan, as amended and restated (incorporated herein by reference to Exhibit 10.2 of Mercury's quarterly report on Form 10-Q for the fiscal quarter ended December 31, 2003 (File No. 000-23599)).
5.1*	Opinion of Goodwin Procter LLP.
23.1	Consent of Goodwin Procter LLP (included in Exhibit 5.1).
23.2*	Consent of PricewaterhouseCoopers LLP.
24.1	Power of Attorney (included in signature page to this registration statement).

* Filed herewith.

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 registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in Chelmsford, Massachusetts on February 20, 2004.

MERCURY COMPUTER SYSTEMS, INC.

By: /s/ James R. Bertelli

James R. Bertelli
President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS that each person whose signature appears below constitutes and appoints James R. Bertelli and Joseph M. Hartnett his true and lawful attorneys-in-fact and agents, each acting alone, with full powers of substitution and resubstitution, for him or in his name, place and stead, in any and all capacities to sign any and all amendments or post-effective amendments to this registration statement (or any registration statement for the same offering that is to be effective upon filing pursuant to Rule 462(b) under the Securities Act of 1933), and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, each acting alone, full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, each acting alone, or his or substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
/s/ James R. Bertelli _____ James R. Bertelli	Chairman, President and Chief Executive Officer (Principal Executive Officer)	February 20, 2004
/s/ Joseph M. Hartnett _____ Joseph M. Hartnett	Vice President, Interim Chief Financial Officer, Controller and Chief Accounting Officer (Principal Financial Officer and Principal Accounting Officer)	February 20, 2004
/s/ Gordon B. Baty _____ Gordon B. Baty	Director	February 20, 2004
/s/ Albert P. Belle Isle _____ Albert P. Belle Isle	Director	February 20, 2004
/s/ Russell K. Johnsen _____ Russell K. Johnsen	Director	February 20, 2004
/s/ Sherman N. Mullin _____ Sherman N. Mullin	Director	February 20, 2004

/s/ Lee C. Steele

Director

February 20, 2004

Lee C. Steele

/s/ Richard P. Wishner

Director

February 20, 2004

Richard P. Wishner

INDEX TO EXHIBITS

<u>Exhibit Number</u>	<u>Description</u>
4.1	1997 Stock Option Plan, as amended and restated (incorporated herein by reference to Exhibit 10.2 of Mercury's quarterly report on Form 10-Q for the fiscal quarter ended December 31, 2003 (File No. 000-23599)).
5.1*	Opinion of Goodwin Procter LLP.
23.1	Consent of Goodwin Procter LLP (included in Exhibit 5.1).
23.2*	Consent of PricewaterhouseCoopers LLP.
24.1	Power of Attorney (included in signature page to this registration statement).

* Filed herewith.

[Letterhead of Goodwin Procter LLP]

February 20, 2004

Mercury Computer Systems, Inc.
199 Riverneck Road
Chelmsford, Massachusetts 01824-2820

Re: Registration Statement on Form S-8 for Additional Shares

Ladies and Gentlemen:

We are counsel to Mercury Computer Systems, Inc., a Massachusetts corporation (the "Company"), and as such counsel we are familiar with the corporate proceedings taken in connection with the adoption of the Company's 1997 Stock Option Plan, as amended and restated (the "Plan"). We are also familiar with the Registration Statement on Form S-8 to which a copy of this opinion will be attached as an exhibit (the "Registration Statement"), relating to an additional 1,000,000 shares of the Company's common stock, par value \$.01 per share (the "Shares"), that the Company may issue pursuant to the Plan.

As such counsel, we have examined the corporate records of the Company including its Articles of Organization, as amended, Bylaws, as amended, minutes of meetings of its Board of Directors and stockholders, and such other documents as we have deemed necessary as a basis for the opinions herein expressed.

We are attorneys admitted to practice in The Commonwealth of Massachusetts. We express no opinion as to the laws of any jurisdiction other than the laws of the United States of America and The Commonwealth of Massachusetts, and also express no opinion with respect to the blue sky or securities laws of any state, including Massachusetts.

Based upon the foregoing, and having regard for such legal considerations as we deemed relevant, we are of the opinion that, upon issuance and delivery of the Shares against payment therefor in accordance with the terms of the Plan, the Shares will be validly issued, fully paid and nonassessable.

The foregoing assumes all requisite steps will be taken to comply with the requirements of the Securities Act of 1933, as amended, and applicable requirements of state laws regulating the offer and sale of securities.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement.

Very truly yours,

/s/ Goodwin Procter LLP

GOODWIN PROCTER LLP

CONSENT OF INDEPENDENT ACCOUNTANTS

We hereby consent to the incorporation by reference in this Registration Statement on Form S-8 of our report dated July 28, 2003 relating to the financial statements and financial statement schedule of Mercury Computer Systems, Inc., which appears in Mercury Computer Systems, Inc.'s Annual Report on Form 10-K for the fiscal year ended June 30, 2003.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
February 19, 2004