

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

FORM 8-K

CURRENT REPORT

**Pursuant to Section 13 or 15(d) of the
Securities Exchange Act of 1934**

Date of report (Date of earliest event reported): April 20, 2004

MERCURY COMPUTER SYSTEMS, INC.

(Exact Name of Registrant as Specified in Charter)

Massachusetts
**(State or Other Jurisdiction
of Incorporation)**

000-23599
(Commission File Number)

04-2741391
**(IRS Employer
Identification No.)**

199 Riverneck Road, Chelmsford, Massachusetts
(Address of Principal Executive Offices)

01824
(Zip Code)

Registrant's telephone number, including area code (978) 256-1300

N/A
(Former Name or Former Address, if Changed Since Last Report)

ITEM 5. OTHER EVENTS

On April 20, 2004, Mercury Computer Systems, Inc. (the “Company”) announced that it had commenced a private offering of up to \$100 million aggregate principal amount of convertible senior notes, subject to market and other conditions. The Company expects to grant the initial purchasers an option to purchase up to an additional \$25 million aggregate principal amount of such notes. The notes will be offered only to qualified institutional buyers, as defined in Rule 144A under the Securities Act of 1933, as amended (the “Securities Act”). The Company’s press release issued pursuant to Rule 135c under the Securities Act is attached hereto and incorporated herein by reference.

ITEM 7. EXHIBITS

(c) Exhibits. The following exhibit is filed with this Current Report on Form 8-K.

<u>Exhibit No.</u>	<u>Description</u>
99.1	Press release, dated April 20, 2004, issued by Mercury Computer Systems, Inc.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

MERCURY COMPUTER SYSTEMS, INC.

Dated: April 20, 2004

By: /s/ JOSEPH M. HARTNETT

Name: Joseph M. Hartnett

Title: Vice President, Controller and Chief Accounting Officer

EXHIBIT INDEX

Exhibit No.	Description
-------------	-------------

99.1	Press Release, dated April 20, 2004, of Mercury Computer Systems, Inc.
------	--

MERCURY COMPUTER SYSTEMS, INC. ANNOUNCES
OFFERING OF CONVERTIBLE SENIOR NOTES

Chelmsford, Massachusetts – April 20, 2004 – Mercury Computer Systems, Inc. (Nasdaq: MRCY) announced today that it has commenced a private offering of up to \$100 million aggregate principal amount of convertible senior notes. Mercury expects to grant the initial purchasers an option to purchase up to an additional \$25 million aggregate principal amount of such notes. Mercury intends to use the proceeds for general corporate purposes, including working capital, capital expenditures, research and development, and potential acquisitions or other strategic investments.

The notes will be offered only to qualified institutional buyers, as defined in Rule 144A under the Securities Act of 1933, as amended (the “Securities Act”). The notes will not be registered under the Securities Act or any state securities laws, and may not be offered or sold in the United States absent registration or an applicable exemption from the registration requirements of the Securities Act and applicable state securities laws.

This press release does not and will not constitute an offer to sell or the solicitation of an offer to buy the notes. This press release is being issued pursuant to and in accordance with Rule 135c under the Securities Act.

Forward-Looking Safe Harbor Statement

This press release contains certain forward-looking statements, as that term is defined in the Private Securities Litigation Reform Act of 1995. You should exercise caution in interpreting and relying on forward-looking statements because they involve known and unknown risks, uncertainties and other factors which are, in some cases, beyond Mercury's control, and could cause actual results to differ materially from those projected or anticipated. Such risks and uncertainties include, but are not limited to, Mercury's ability to complete the offering of convertible senior notes under acceptable terms or on the anticipated timetable, market conditions, and other risks and uncertainties detailed from time to time in Mercury's filings with the Securities and Exchange Commission.

Contacts:

Diane Basile
Mercury Computer Systems, Inc.
978-967-3105

Troy McCombs
Coltrin & Associates
212-221-1616