UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, DC 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): May 1, 2007

Mercury Computer Systems, Inc.

(Exact Name of Registrant as Specified in Charter)

Massachusetts (State or Other Jurisdiction 000-23599 (Commission File Number) 04-2741391 (IRS Employer

of Incorporation)

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)

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Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (*see* General Instruction A.2. below):

- " Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- " Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- " Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- " Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Item 2.05. Costs Associated with Exit or Disposal Activities.

On May 1, 2007, Mercury Computer Systems, Inc. (the Company) announced that it had initiated certain measures across the organization pursuant to a comprehensive restructuring plan designed to return the Company to profitability and growth. As part of this initiative, the Company s U.S. workforce will be reduced by approximately 80 positions. On May 1, 2007, the Company began notifying affected employees that their employment was being terminated. The workforce reduction plan affects primarily the Company s defense and commercial business units and corporate functions. Notification of affected personnel is expected to be substantially completed by May 8, 2007. The workforce reduction action is expected to result in total cash expenditures of approximately \$4.0 million, payable primarily over the next three quarters.

Additional information related to this workforce reduction action is contained in a press release issued by the Company on May 1, 2007, a copy of which is attached as Exhibit 99.1 to this Current Report on Form 8-K and incorporated by reference herein.

Safe Harbor Statement

This Current Report on Form 8-K contains statements regarding the workforce reduction action and total estimated cash expenditures associated with this action which are forward-looking statements as defined in Section 21E of the Securities Exchange Act of 1934, as amended. Such statements are based on current assumptions and expectations of the Company's management and are neither promises nor guarantees but involve risks and uncertainties, both known and unknown, that could cause actual results to differ materially from those discussed in the forward-looking statements. Important factors that could cause actual results to differ materially from those presently expected include, but are not limited to, difficulties for management in successfully implementing the restructuring plan, unanticipated delays in the implementation of the restructuring plan, unanticipated costs and expenses relating to the implementation of the restructuring plan, declines in the Company's revenues and earnings, and reliability and quality issues and adverse changes in general economic or market conditions. Reference is made to the discussion of risk factors detailed in our filings with the Securities and Exchange Commission, including, but not limited to, the Company's annual report on Form 10-K for the fiscal year ended June 30, 2006. The forward-looking statements included herein are made only as of the date of publication and the Company undertakes no obligation to update the information set forth in this Current Report on Form 8-K.

Item 9.01. Financial Statements and Exhibits.

(d) Exhibits.

Exhibit No. Description

99.1 Press Release, dated May 1, 2007, of 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 hereunto duly authorized.

MERCURY COMPUTER SYSTEMS, INC. (Registrant)

Date: May 3, 2007 By: /s/ Alex N. Braverman

Alex N. Braverman

Vice President, Corporate Controller and

Chief Accounting Officer

EXHIBIT INDEX

Exhibit No. Description

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