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**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, DC 20549**

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**FORM 8-K**

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**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 8, 2009

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**Mercury Computer Systems, Inc.**

(Exact Name of Registrant as Specified in Charter)

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

**000-23599**  
(Commission File Number)

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

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

**01824**  
(Zip Code)

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

**Not Applicable**

(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))
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**Item 8.01 Other Events.**

At a special meeting of shareholders held on May 8, 2009, the shareholders of Mercury Computer Systems, Inc. (the “Company”) approved a proposed stock option exchange program described in the Company’s Definitive Proxy Statement dated April 13, 2009, filed with the Securities and Exchange Commission on April 13, 2009, under the caption “Proposal to Approve a Stock Option Exchange Program.”

**The Company has not commenced the stock option exchange program referred to in this report. The Company will provide eligible employees with written materials explaining the full terms and conditions of the program, and will also file these materials with the Securities and Exchange Commission. WHEN THESE MATERIALS BECOME AVAILABLE, EMPLOYEES ELIGIBLE FOR THE EXCHANGE PROGRAM SHOULD READ THEM CAREFULLY, AS WELL AS ANY AMENDMENTS OR SUPPLEMENTS TO THOSE DOCUMENTS, BECAUSE THEY WILL CONTAIN IMPORTANT INFORMATION ABOUT THE EXCHANGE PROGRAM.**

**Once the materials are filed with the Securities and Exchange Commission, they will be available free of charge at [www.sec.gov](http://www.sec.gov) and by contacting the Company’s Investor Relations department at 201 Riverneck Road, Chelmsford, Massachusetts 01824, telephone 978-256-1300.**

**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.

Dated: May 8, 2009

MERCURY COMPUTER SYSTEMS, INC.

By: /s/ Alex A. Van Adzin

Alex A. Van Adzin

Vice President, General Counsel, and Corporation Secretary