

**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): October 19, 2006

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)

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 1.02. Termination of a Material Definitive Agreement.

On October 19, 2006, Mercury Computer Systems, Inc. (the "Company") prepaid in full two series of 7.30% senior secured notes due November 2, 2014 (the "Mortgage Notes"). The Mortgage Notes were issued in November 1999 in the original aggregate principal amount of \$14,500,000, and were collateralized by the Company's corporate headquarters, which consists of two buildings in Chelmsford, Massachusetts. The terms of the Mortgage Notes contained, among other provisions, financial covenants relating to the maintenance of an interest rate coverage ratio, certain leverage ratios and minimum consolidated net worth.

Since March 31, 2006, the Company had not been in compliance with certain of the financial covenants, and the Company elected to prepay the Mortgage Notes instead of renegotiating the financial covenants with the holders of the Mortgage Notes. The amount paid by the Company in connection with the prepayment of the Mortgage Notes equaled \$10,462,769.51, which included the then outstanding principal amount of the Mortgage Notes plus (1) a prepayment premium equal to \$708,171.61, and (2) a waiver fee equal to \$14,559.87 in consideration of the noteholders' waiver through October 19, 2006 of the Company's non-compliance with the financial covenants.

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: October 27, 2006

By: /s/ Robert E. Hult
Robert E. Hult
Senior Vice President, Operations and
Finance, Chief Financial Officer