

**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): September 29, 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 1.01. Entry into a Material Definitive Agreement.

On September 29, 2006, the Board of Directors of Mercury Computer Systems, Inc. (the “Company”) adopted a new compensation policy for non-employee directors.

Effective on October 1, 2006, each non-employee director will receive an annual retainer of \$55,000. In addition, the lead director and the chairman of the Audit Committee will each receive an additional annual retainer of \$15,000, the chairman of the Compensation Committee will receive an additional annual retainer of \$12,000, and the chairman of the Nominating and Governance Committee will receive an additional annual retainer of \$6,000. All of these retainers will be paid in cash in quarterly installments. Directors will continue to be reimbursed for their reasonable expenses incurred in connection with attendance at Board and committee meetings, but additional amounts formerly paid to non-employee directors for attendance at Board meetings and for membership on a committee will be discontinued for service after October 1, 2006 (other than the additional annual retainers for committee chairmen described above).

Quarterly retainer payments will be paid in arrears within 30 days following the end of each quarter, with the first payments under this policy to be made in January 2007 with respect to service during the quarter ended December 31, 2006.

New non-employee directors will be granted stock options to purchase 30,000 shares of common stock in connection with their election to the Board. These awards will vest as to 50% of the covered shares on each of the first two anniversaries of the date of grant, and will expire on the tenth anniversary of the date of grant.

Non-employee directors may also receive annual stock option awards at the discretion of the Compensation Committee. Beginning with fiscal year 2007, non-employee directors will receive annual stock option awards covering 16,000 shares. These awards will vest as to 50% of the covered shares on the date of grant and as to the remaining covered shares on the first anniversary of the date of grant, and will expire on the tenth anniversary of the date of grant. Non-employee directors will not be eligible to receive the annual stock option award for the fiscal year in which they are first elected. Non-employee directors who are first elected to the Board during the first half of Company’s fiscal year will be eligible to receive the annual stock option award for the next fiscal year; otherwise, non-employee directors will not be eligible to receive their first annual stock option award until the second fiscal year following the fiscal year in which they are first elected to the Board.

The above-described stock options will be granted under the Company’s 2005 Stock Incentive Plan (the “2005 Plan”). The form of Stock Option Agreement with respect to the above-described awards provides that the stock options shall terminate and no portion will be exercisable on the earliest of the following:

- the expiration date;
- 12 months following the date of the grantee’s death if the grantee dies while serving as a director; and

- five years following the date the grantee ceases to be a director if such cessation is for any reason other than death.

The stock option will be exercisable as described above after the grantee's death or after the grantee otherwise ceases to be a director only to the extent it was vested and exercisable immediately prior to the grantee's death or cessation of service as a director. All or a portion of such awards will immediately vest upon the occurrence of a change in control of the Company (as defined in the 2005 Plan).

The form of Stock Option Agreement under the 2005 Plan was filed as Exhibit 10.1 to the Company's current report on Form 8-K filed with the Securities and Exchange Commission on August 21, 2006 and is incorporated herein by reference.

Item 5.02. Departure of Directors or Principal Officers; Election of Directors; Appointment of Principal Officers.

(a) – (c) Not applicable.

(d) On September 29, 2006, the Company's Board of Directors voted to expand the size of the Board from eight to nine members, and elected Vincent Vitto to fill the newly-created vacancy as a Class III director. At the same time the Board nominated Mr. Vitto for re-election as a Class III director at the Special Meeting in Lieu of the 2006 Annual Meeting of Shareholders to be held on November 13, 2006.

Mr. Vitto recently retired after serving as President and Chief Executive Officer of The Charles Stark Draper Laboratory, Inc. since 1997. Prior to that he spent 32 years of increasing responsibility at MIT Lincoln Laboratory, rising to Assistant Director for Surface Surveillance and Communications. Mr. Vitto also serves as Vice Chairman of the Defense Science Board.

Item 9.01. Financial Statements and Exhibits.

(d) Exhibits.

<u>Exhibit No.</u>	<u>Description</u>
10.1	Mercury Computer Systems, Inc. Compensation Policy for Non-Employee Directors.

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 5, 2006

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

EXHIBIT INDEX

<u>Exhibit No.</u>	<u>Description</u>
10.1	Mercury Computer Systems, Inc. Compensation Policy for Non-Employee Directors.

Mercury Computer Systems, Inc.
 Compensation Policy for Non-Employee Directors

Objective

It is the objective of Mercury to compensate non-employee directors in a manner which will enable recruitment and retention of highly qualified directors and fairly compensate them for their services as a director.

Cash Compensation (effective October 1, 2006)

Annual retainer for non-employee directors:	\$55,000 per annum, paid quarterly
Additional annual retainers:	
(a) Lead Director:	\$15,000 per annum, paid quarterly
(b) Chairman of the Audit Committee:	\$15,000 per annum, paid quarterly
(c) Chairman of the Compensation Committee:	\$12,000 per annum, paid quarterly
(d) Chairman of the Nominating and Governance Committee:	\$6,000 per annum, paid quarterly

Directors are entitled to be reimbursed for their reasonable expenses incurred in connection with attendance at Board and committee meetings.

Quarterly retainer payments shall be paid in arrears within 30 days following the end of each quarter, with the first payments under this policy to be made in January 2007 with respect to service during the quarter ended December 31, 2006.

Equity Compensation

New non-employee directors will be granted stock options to purchase 30,000 shares of common stock in connection with their first election to the Board. These awards will vest as to 50% of the covered shares on each of the first two anniversaries of the date of grant, and will expire on the tenth anniversary of the date of grant.

Non-employee directors may also receive annual stock option awards at the discretion of the Compensation Committee. Beginning with fiscal year 2007, non-employee directors will receive annual stock option awards covering 16,000 shares. These awards will vest as to 50% of the covered shares on the date of grant and as to the remaining covered shares on the first anniversary of the date of grant, and will expire on the tenth anniversary of the date of grant. Non-employee directors will not be eligible to receive the annual stock option award for the fiscal year in which they are first elected. Non-employee directors who are first elected to the Board during the first half of Company's fiscal year will be eligible to receive the annual stock option award for the next fiscal year; otherwise, non-employee directors will not be eligible to receive their first annual stock option award until the second fiscal year following the fiscal year in which they are first elected to the Board.

Approved by the Board of Directors: September 29, 2006