

OBRIEN WILLIAM K  
Form 4  
October 22, 2010

**FORM 4**

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

OMB APPROVAL

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Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. See Instruction 1(b).

**STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP OF SECURITIES**

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934, Section 17(a) of the Public Utility Holding Company Act of 1935 or Section 30(h) of the Investment Company Act of 1940

(Print or Type Responses)

1. Name and Address of Reporting Person \*  
OBRIEN WILLIAM K

2. Issuer Name and Ticker or Trading Symbol  
MERCURY COMPUTER SYSTEMS INC [MRCY]

5. Relationship of Reporting Person(s) to Issuer

(Check all applicable)

(Last) (First) (Middle)  
201 RIVERNECK ROAD  
(Street)

3. Date of Earliest Transaction (Month/Day/Year)  
10/21/2010

Director  10% Owner  
 Officer (give title below)  Other (specify below)

CHELMSFORD, MA 01844  
(City) (State) (Zip)

4. If Amendment, Date Original Filed(Month/Day/Year)

6. Individual or Joint/Group Filing(Check Applicable Line)  
 Form filed by One Reporting Person  
 Form filed by More than One Reporting Person

**Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned**

| 1. Title of Security (Instr. 3) | 2. Transaction Date (Month/Day/Year) | 2A. Deemed Execution Date, if any (Month/Day/Year) | 3. Transaction Code (Instr. 8) | 4. Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5) | 5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4) | 6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4) | 7. Nature of Ownership (Instr. 4) |   |
|---------------------------------|--------------------------------------|----------------------------------------------------|--------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------|---|
|                                 |                                      |                                                    |                                | (A) or (D)                                                        | Price                                                                                         |                                                          |                                   |   |
| Common Stock                    | 10/21/2010                           |                                                    | A                              | V                                                                 | 5,333<br>(1)                                                                                  | A                                                        | \$ 0 10,666                       | D |

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

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**Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)**

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| 1. Title of Derivative Security (Instr. 3) | 2. Conversion or Exercise Price of Derivative Security | 3. Transaction Date (Month/Day/Year) | 3A. Deemed Execution Date, if any (Month/Day/Year) | 4. Transaction Code (Instr. 8) | 5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4, and 5) | 6. Date Exercisable and Expiration Date (Month/Day/Year) | 7. Title and Amount of Underlying Security (Instr. 3 and 4) |
|--------------------------------------------|--------------------------------------------------------|--------------------------------------|----------------------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------|
| Non-Qualified Stock Option (Right to buy)  | \$ 14.12                                               | 10/21/2010                           |                                                    | A                              | 8,000                                                                                   | 10/21/2010 <sup>(2)</sup> 10/21/2017                     | Common                                                      |

### Reporting Owners

| Reporting Owner Name / Address                                 | Relationships |           |         |       |
|----------------------------------------------------------------|---------------|-----------|---------|-------|
|                                                                | Director      | 10% Owner | Officer | Other |
| OBRIEN WILLIAM K<br>201 RIVERNECK ROAD<br>CHELMSFORD, MA 01844 | X             |           |         |       |

### Signatures

Charles A. Speicher, Attorney-in-fact 10/22/2010

\*\*Signature of Reporting Person Date

### Explanation of Responses:

- \* If the form is filed by more than one reporting person, see Instruction 4(b)(v).
- \*\* Intentional misstatements or omissions of facts constitute Federal Criminal Violations. See 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).
- (1) These shares of restricted stock vest in two equal installments on each of October 21, 2010 and 2011.
- (2) This option vests as to 4,000 shares on each of October 21, 2010 and 2011.
- (3) Field N/A to this transaction but was completed to allow for electronic filing only.

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, see Instruction 6 for procedure. Potential persons who are to respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB number.