



DIVISION OF
CORPORATION FINANCE

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

January 31, 2011

Mr. Robert E. Hult
Chief Financial Officer
Mercury Computer Systems, Inc.
201 Riverneck Road
Chelmsford, Massachusetts 01824

**Re: Mercury Computer Systems, Inc.
Form 10-K for the year ended June 30, 2010
File No. 000-23599**

Dear Mr. Hult:

We have reviewed your filings and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter within ten business days by providing the requested information, or by advising us when you will provide the requested response. If you do not believe our comments apply to your facts and circumstances, please tell us why in your response.

After reviewing the information you provide in response to these comments, we may have additional comments.

Form 10-K for the Year Ended June 30, 2010

Financial Statements, page 53

Note O. Product Warranty Accrual, page 82

1. We noted from your table that your warranty accrual decreased significantly during fiscal 2010 and that appears to be primarily a result of less accruals for warranties issued during the fiscal 2010 period, however, we noted that your sales increased during this period. Please explain.

Note P. Discontinued Operations, page 82

2. Please revise future filings to disclose the carrying amounts of the major classes of assets and liabilities included as part of each disposal group or tell us why you do not believe such disclosure is necessary. We refer you to FASB ASC 205-20-50-1.

Note Q. Income Tax (Benefit) Expense, page 84

3. We note from your disclosure on page 40 that your effective income tax rate for fiscal 2010 was (50.2%), as a result of releasing a portion of your valuation allowance on your U.S deferred tax assets. You state on page 40 that the change in the valuation allowance resulted in a benefit of \$14.8 million, which included a June 30, 2010 release of \$7.4 million of your valuation allowance. We note from page 86 that the remaining change in the valuation allowance that resulted in a tax benefit of approximately \$7.4 million was due to the current year changes in net deferred taxes. Giving specific consideration to negative evidence such as cumulative losses in recent years, provide us in more detail the positive and negative evidence considered by you in determining that it is more likely than not that the deferred tax assets net of the existing valuation allowance at June 30, 2010 will be realized, which caused you to decrease your valuation allowance by approximately \$14.8 million. In this regard, please explain to us the facts and circumstances the caused the change in the valuation allowance of approximately \$7.4 million that was due to current year changes in net deferred taxes as discussed on page 86, which appeared to be recognized as a tax benefit in your statement of operations. Refer to the guidance provided in paragraphs 30-5(e), 30-17 through 30-19, and 30-21 through 30-23 of FASB ASC 740-10-30.

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We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes all information required under the Securities Exchange Act of 1934 and that they have provided all information investors require for an informed investment decision. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

In connection with responding to our comments, please provide, in writing, a statement from the company acknowledging that:

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filing; and
- the company may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in our review of your filing or in response to our comments on your filing.

You may contact Julie Sherman at (202) 551-3640 or me at (202) 551-3212 with any questions regarding these comments. In this regard, do not hesitate to contact Martin James, Senior Assistant Chief Accountant, at (202) 551-3671.

Sincerely,

Jeffrey Jaramillo
Branch Chief