



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

DIVISION OF
CORPORATION FINANCE

February 28, 2013

Via E-mail

Mr. Jeffrey A. Graves
President and Chief Executive Officer
MTS Systems Corporation
14000 Technology Drive
Eden Prairie, Minnesota 55344

**Re: MTS Systems Corporation
Form 10-K for the Fiscal Year Ended September 29, 2012
Filed November 28, 2012
Form 10-Q for the Quarter Ended December 29, 2012
Filed January 31, 2013
File No. 000-2382**

Dear Mr. Graves:

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 Fiscal Year Ended September 29, 2012

Cash Flow Comparison, page 32

1. Refer to the "accelerated share repurchase program" agreement executed in 2012. Please file the complete agreement with all attachments. Also, please provide us your analysis regarding (1) the program's exemption from Securities Act registration, including with respect to shares that you may issue at the end of the contract and (2) the applicability of Rule 13e-4 and Regulation 14E to the program. Include in your analysis a clear explanation of the purpose, operation and effect of the relevant provisions of the agreement, including Sections 3.01(a)(ii), 3.01(b), 3.02, 3.03, 7.03 and Article 4. Cite with specificity the authority on which you rely. In addition, please tell us the source of the shares that the Seller provided at the Initial Settlement Date.

Quarterly Financial Information, page 37

2. We note from page 22 and from your June 30, 2012 Form 10-Q that you recorded \$7.8 million related to the settlement costs for U.S. government matters, which represents approximately 13% of your general and administrative expenses for the year ended 2012. Please revise your future filings to describe the effect of any unusual or infrequently occurring items, such as this matter, recognized in each full quarter within the two most recent fiscal years. Refer to Item 302(a)(3) of Regulation S-K.

Consolidated Statements of Income, page F-4

3. Further to the above, please revise future filings to separately present any material amounts of operating costs and expenses similar to this settlement expense within your statements of income. Refer to Rule 5-03(a) and (b)6 of Regulation S-X.

Notes to Consolidated Financial Statements, page F-7

Note 1 – Summary of Significant Accounting Policies, page F-7

-Stock Purchases, page F-15

4. We note your disclosures here and throughout the filing related to your accelerated share repurchase agreement with an unrelated third party investment bank. Please explain in more detail the terms of the agreement including the settlement alternatives and how you are accounting for this transaction pursuant to Topic 815-40 of FASB Accounting Standard Codification. Please explain to us in detail why you believe this contract is appropriately classified as permanent equity. Cite the accounting literature relied upon and how you applied it to your situation.

Note 7 - Income Taxes, page F-25

5. We note the disclosure of nondeductible expense in your federal tax rate reconciliation and related income tax disclosures in your fiscal year 2012 interim filings. Please revise future filings to disclose the reason for significant variations in the customary relationship between income tax expense and pretax accounting income. Refer to paragraph 740-270-50-1 of the FASB Accounting Standards Codification.

Note 9 – Commitments and Contingencies, page F-31

6. We note your disclosure for other investigative matters. Please tell us your accounting policy for these types of contingencies and whether you consider this a significant accounting policy. Please include disclosure of such policy in your future filings, to the extent applicable. Refer to the guidance in the Topic 450 of the FASB Accounting Standards Codification.

Form 10-Q for the Quarter Ended December 29, 2012

7. With a view toward clarified disclosure in future filings, please tell us the nature of the growth and productivity initiatives mentioned throughout this filing. Address in your response how those initiatives affected the expenses as described in this filing and the extent to which you have initiatives that will affect future periods. We note for example, your disclosure on pages 20, 22 and 25. In this regard, please see Regulation S-K Item 303(a)(3)(ii), and ensure that your future filings will describe clearly these and any other known trends or uncertainties if required by Item 303.

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 the information the Securities Exchange Act of 1934 and all applicable Exchange Act rules require. 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 responding to our comments, please provide a written 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.

You may contact Gary Newberry, Staff Accountant, at (202) 551-3761 or Tara Harkins, Reviewing Accountant, at (202) 551-3639 if you have any questions regarding comments on the financial statements and related matters. Please contact Sally Brammell, Staff Attorney, at (202) 551- 3779, or Russell Mancuso, Legal Branch Chief, at (202) 551- 3617 if you have questions on any other comments. In this regard, do not hesitate to contact me at (202) 551-3643.

Sincerely,

/s/ Tara Harkins for

Kevin L. Vaughn
Accounting Branch Chief

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