

Mail Stop 6010

September 19, 2005

Jong S. Whang
Chairman of the Board, President and Chief Executive Officer
Amtech Systems, Inc.
131 South Clark Drive
Tempe, AZ 85281

Re: Amtech Systems, Inc.
Form 10-K for the fiscal year ended September 30, 2004
Form 8-K dated September 27, 2004
Response letter dated July 21, 2005
File No. 0-11412

Dear Mr. Whang:

We have reviewed your filing and have the following comments. Where indicated, we think you should revise your document in response to these comments. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation.

In some of our comments, we may ask you to provide us with information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Form 10-K or the Fiscal Year Ended September 30, 2004

Consolidated Financial Statements

Note 1. Summary of Significant Accounting Policies, page 41

Revenue Recognition, page 41

1. We note your response to prior comment 17 in our letter dated June 30, 2005. You explain that the gross margin of deferred items has significantly increased because it is related to "holdbacks," i.e. payments contingent upon the completion of installation and acceptance. We see that deferred gross margin is 100% at March 31, 2005 and decreases to 40% at June 30, 2004. Please explain the circumstances contributing to the decrease in deferred gross margin. Clarify why you would not defer a consistent amount of revenue and costs for sales that have not met the revenue recognition criteria. Clarify how you determine the amount of product costs to be deferred for the holdback related to products that have not been accepted by the customer. Future filings should also clearly disclose the underlying reasons for changes in the amount of revenue and costs deferred.

Controls and Procedures, page 57

2. We note your responses to prior comments 23, 26 and 27. Please file the amendments to your Form 10-K, as well as your Form 10-Q for the quarter ended December 31, 2004, as requested.

Form 8-K dated September 27, 2004

Unaudited Pro Forma Condensed Combined Financial Information

3. We note your response to prior comment 22 and 29 in our letter dated June 30, 2005 that you will account for contingent payments made for inventory in excess of the amount originally paid to the seller similar to any other inventory purchase. It appears, based upon the guidance in paragraph 37(c) of SFAS 141, that inventory should be recorded initially at estimated selling prices. Tell us how you originally valued the inventory acquired and whether the acquired inventory was originally recorded at fair value. Additionally, contingent payments should be recorded as additional cost of the acquired entity. Refer to paragraph 27 of SFAS 141. Please support your accounting basis for recording contingent payments as inventory rather than additional purchase price.

* * *

As appropriate, please amend your filing and respond to these comments within 10 business days or tell us when you will provide us with a response. You may wish to provide us with marked copies of the amendment to expedite our review. Please furnish a cover letter with your amendment that keys your responses to our comments and provides any requested information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your amendment and responses to our comments.

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 Kristin Lochhead at 202.551.3664 or Brian Cascio at 202.551.3676 if you have questions regarding comments on the financial statements and related matters. Please contact Adelaja Heyliger at 202.551.3636 or me at 202.551.3625 with any other questions.

Sincerely,

Mary Beth Breslin
Attorney-Advisor