

June 30, 2005

Mail Stop 6010

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.
Annual Report on Form 10-K for the Fiscal Year Ended
September
30, 2004
Quarterly Report on Form 10-Q for Fiscal Quarters Ended
December 31, 2004 and March 31, 2005
Form 8-K dated September 27, 2004
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 for Fiscal Year Ended September 30, 2004

Part I
1. Note 1 to the financial statements - "Concentrations of Credit Risk" states that one customer accounted for 15% of accounts receivable as of September 30, 2004 and three customers accounted for 43% of accounts receivable as of September 30, 2003. Please describe in your response and in the appropriate section or sections of future filings such as MD&A and the description of your business, the material terms of your financing arrangements.

Item 1. Business, page 3

Backlog, page 10

2. We note your disclosure that your customers may delay delivery of products or cancel orders without sufficient notice. In your response and in future filings, please provide historical cancellation information and describe your cancellation policies.

Patents, page 11

3. We note your disclosure that you have licensed certain patents in the table on page 11. Tell us whether these licenses are material to your business, and if so, describe the material terms of the license agreements. Also tell us whether these license agreements have been filed as exhibits to the annual report.

Sales and Marketing. page 12

4. We note that one customer represented 10% of your net revenues in 2004 and two customers represented 15% and 12% of your net revenues in 2003. To the extent that revenues attributable to any particular customer accounted for 10% or more of your revenues in any of the periods for which you present financial statements, in future filings please identify that customer and quantify its portion of your revenues.

Item 2. Properties, page 14

5. We note that the lease on your Carlisle, PA facilities expires in June 2005. Please tell us whether you intend to renew this lease, and if so, whether you expect to renew on comparable terms to the current lease.

Part II

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations, page 17

Results of Operations, page 19

6. You disclose that your research and development costs decreased from 2003 to 2004 due to costs incurred in development of the small batch vertical furnace prior to the receipt the customer order. Please tell us how you account for such costs subsequent to the receipt of the customer order.

7. In future filings provide a discussion of the inventory write-downs each period, including the circumstances that lead to the impairments and whether this inventory was disposed of or sold. The impact of the sales of any inventory written-down on gross profit should also be discussed, if material.

Financial Condition, Liquidity and Capital Resources, page 23

8. In future filings please enhance your discussion of liquidity to more fully discuss your business' sources and uses of cash and capital expenditures. That analysis should focus on the drivers of your cash flows. For example, for cash flows from operations, quantify, discuss and explain reasons for changes in cash receipts from sales of goods and services and cash payments for operating and other expenses. Please note that discussions mirroring the indirect method cash flow statement generally provide insufficient analysis. That is, this discussion should not be a recitation of the line items in your cash flow statement. Your expanded analysis should fully consider the guidance set forth in FR-72. In addition, clarify the discussion on page 23 that "sufficient amounts of additional liquidity are available from various financing sources." Provide details of these sources and quantify amounts.

9. Please revise future filings to include your contractual obligations table in the format provided in FR-67. In addition, we note that your current discussion does not include debt obligations.

Critical Accounting Policies, page 24

10. Your discussion of revenue practices is essentially identical

to
the significant accounting policies disclosure from Note 1. While
the notes to financial statements should present the basic
accounting
policies, critical accounting policy disclosure should address the
nature and extent of subjective judgments and uncertainties
involved
in applying a principle at a given time or the variability that is
reasonably likely to result from its application over time. For
example, the disclosure about product sales is basically factual.
Please expand future filings to more fully describe subjective
judgments and uncertainties and significant estimates associated
with
its application. Refer to FR-60 and FR-72.

The ongoing volatility of the semiconductor equipment industry...
,
page 27

11. We note your disclosure that insufficient orders would result
in
under-utilization of your manufacturing facilities and negatively
impact your financial position and results of operations. In
future
filings, please expand your MD&A disclosure to discuss and
quantify
the effects of any changes in your utilization rates.

Our current capital structure could delay, defer or prevent a
change
of control, page 29

12. We note your disclosure that certain "key employees" have
severance arrangements. In future filings, please discuss the
material terms of your severance arrangements with all directors
and
named executive officers, and ensure that you have filed as
exhibits
all employment agreements with directors and named executive
officers.

If third parties violate our proprietary rights.... , page 29

13. We note your disclosure that, from time to time, you have
received communications from other companies asserting claims of
intellectual property infringement. Please tell us whether you
have
received any such claims during fiscal 2004 or during the two
fiscal
quarters since the end of fiscal 2004, or whether you are
otherwise
aware of any parties currently intending to pursue such claims
against you.

Consolidated financial statements for the fiscal year ended
September
30, 2004

Note 1. Summary of Significant Accounting Policies, page 41

Revenue Recognition, page 41

14. On page 19, you disclose that you have increased the
purchasing
of your own brands of used diffusion furnaces, refurbish them and
then resell them. Please disclose whether there any repurchase
obligations with your customers in future filings.

15. We note from page 12 that you sell to distributors. Describe
the
significant terms of your agreements with distributors, including
payment, return, exchanges, incentive programs and other
significant
matters. Explain and support when you recognize revenue to
distributors. To the extent material, please revise future
filings
to clarify. Refer to SAB 104, SFAS 48 and EITF 01-09 as necessary
in
your response.

16. We see that you defer significant amounts of gross profit on your balance sheet for sales in which customer acceptance has not occurred or if certain elements of the revenue arrangements (e.g. installation) have not been delivered. In your response and in future filings provide more details of the nature and accounting for the deferred profit. Tell us why you did not defer the revenue and related cost of sales in your balance sheet on a gross basis by analogy to paragraph 7 of SFAS 48?

17. As a related matter, please tell us why the gross profit margin related to the deferred items has significantly increased from September 30, 2002 (47%) to the September 30, 2004 (91%). We also note that your deferred profit margin has increased to 100% at December 31, 2004, as disclosed in your Form 10-Q for the quarter ended December 31, 2004.

Note 8. Major Customers and Foreign Sales, page 51

18. In future filings please provide the disclosures required by paragraph 38(a) of SFAS 131, including revenues from (1) external customers attributed to your country of domicile and (2) attributed to all foreign countries in total. Note that if revenues from any individual foreign country are material, that revenue should be disclosed separately. You should also disclose the basis for attributing revenues from external customers to individual customers.

Note 9. Business Segment Information, page 51

19. We note your disclosure that there are certain segments that are "aggregated" into the semiconductor equipment segment. Tell us whether those segments are aggregated under paragraph 17 of SFAS 131. If so, future filings should disclose that fact and indicate why aggregation is appropriate.

20. In future filings please provide the disclosures required by paragraph 38(b) of SFAS 131, including long-lived assets (1) located in your country of domicile and (2) located in all foreign countries in total in which you hold assets. Consider that long-lived assets presented in your segment disclosures should only include tangible assets. See Question 22 on the FASB Staff Implementation Guide to SFAS 131.

Note 11. Selected Quarterly Data (unaudited), page 55

21. Your gross margin for the fourth quarter of 2004 is substantially less than other quarters. In your response and in future filings please expand to describe the effect of any unusual or infrequently occurring items recognized in each full quarter within the two most recent fiscal years, as well as the aggregate effect and the nature of year-end or other adjustments which are material to the results of that quarter. Refer to Item 302 to Regulation S-K.

Note 12. Acquisition, page 55

22. In future filings provide details of how the values of the identifiable intangible assets were determined. In addition, clarify when you expect to pay the contingent consideration for the Kokusai acquisition and provide more details on how the consideration becomes

payable.

Item 9A. Controls and Procedures, page 57

23. We note your statement that your chief executive officer and your chief financial officer have concluded that your disclosure controls and procedures "are adequate to ensure material information and other information requiring disclosure is identified and communicated on a timely basis." It does not appear that your certifying officers have reached a conclusion that your disclosure controls and procedures are effective. Please revise to address your officers' conclusions regarding effectiveness of your disclosure controls and procedures.

24. We note your disclosure that you had no "significant" changes in your internal controls and procedures "subsequent to the date this evaluation was carried out." Please revise to indicate whether there was any change to your internal control over financial reporting during the fourth fiscal quarter that materially affected, or was reasonably likely to materially affect, your internal control over financial reporting. Refer to Item 308(c) of Regulation S-K.

Form 10-Q for the Quarter Ended December 31, 2004

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations, page 13

Results of Operations, page 14

25. You disclose that gross margin of your semiconductor equipment segment decreased due to "the increase in labor of 5% ... offset by a decrease in material of 2%..." and that the gross margin of your polishing supplies segment increased due to "the decrease in material and labor as a percentage of net revenues of 3% and 5%, respectively, offset by an increase in overhead of 3%." In future filings, when describing factors contributing to changes in margins, please also disclose why such changes occurred.

Item 4. Controls and Procedures, page 21

26. Please revise this section in accordance with the above comments to Item 9A of the Form 10-K, as applicable

Form 10-Q for Fiscal Quarter Ended March 31, 2005

Item 4. Controls and Procedures, page 23

27. We note your disclosure that there have been no "significant" changes in internal controls over financial reporting or in other factors that have materially affected, or are reasonably likely to materially affect, those controls "subsequent to the date this evaluation was carried out." Please revise to disclose all changes, not only "significant" changes, that occurred during the period covered by the report, rather than subsequent to the date of management's evaluation, that materially affected or were reasonably likely to materially affect your internal control over financial reporting.

Form 8-K dated September 27, 2004

Unaudited Pro Forma Condensed Combined Financial Information

28. Please clarify how you calculated the historical unaudited pro forma condensed combined statement of operations for KSEC/KEE for the

fiscal year ended September 30, 2003 and for the six months ended March 31, 2004. It is unclear from your disclosure how you determined these amounts. Please also provide the basis for your calculation.

29. Tell us what you mean in Note 2 that "if such [acquisition-related] contingent payments become due, they will be treated as normal inventory purchases".

* * *

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, Accounting Branch Chief, 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

Jong S. Whang
Amtech Systems, Inc.
June 30, 2005
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