July 21, 2005

Adelaja Heyliger, Esq. Division of Corporation Finance United States Securities and Exchange Commission 100 F Street, N.E. Washington, D.C. 20549

Re: Amtech Systems, Inc.

Annual Report on Form 10-K for fiscal year ended September 30, 2004

File No. 0-11412

Dear Sir or Madam

Below, in question and answer format, please find our responses to your comments sent under cover dated June 30, 2005.

#### Part 1

- 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.
- R: The financial terms of our parts, service and retrofit revenue, which comprise approximately 50% of consolidated revenue, are generally net 30 days from shipment, i.e. Net 30 F.O.B. Shipping Point or on equivalent terms. The financial terms of equipment or systems sales vary depending on the size of the order and the size, reputation and creditworthiness of the customer. As a result, the financial terms of equipment sales can range from 90% net 30 days after shipment and 10% net 30 days after acceptance to 30% net 30 days after order placement, 60% net 30 days after shipment and 10% net 30 days after acceptance. Letters of credit are required of certain customers depending on the size of the order, type of customer or its creditworthiness and its country of domicile. In the future, we will disclose the material aspects of our financing arrangements with customers.

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### 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.
- R. We have had no significant cancellations since fiscal 2002. We track new orders net of cancellation and have no formal mechanism to separately track cancellations or related penalties. However, we know the significant cancellations that occurred during the four-year period ended September 30, 2002. The significant cancellations amounted to \$1.2 million, \$-0-, \$3.5 million, and \$1.2 million in fiscal year 1999, 2000, 2001 and 2002, respectively. We received compensation in the form of cancellation penalties or return of volume discounts in the total amount of \$.5 million in 1999 and \$0.1 million in 2001 related to those order cancellations. These cancellations gave rise to the disclosure you refer to above. We will disclose summarized historical cancellation information in future filings. When customers cancel orders, we attempt to collect cancellation penalties, to the extent provided in our quotation, or to recover the costs incurred or committed prior to cancellation, while giving consideration to the potential for other current and future business with the customer. Thus, actual cancellation fees are negotiated on a case-by-case basis. We will describe our cancellation policies in future filings.

### 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.
- R. None of these licenses are considered material to our business and have not been filed as exhibits to the annual report. While the license under which we manufacture insert carriers resulted in royalty payments of \$108,000, \$84,000 and \$66,000 and revenue of \$2.6 million, \$2.0 million and \$1.7 million in fiscal years 2004, 2003 and 2002, respectively, this license is non-exclusive and expires in 2006, when the underlying patents expire. We believe that the revenue derived from these products is primarily a result of our manufacturing technical know-how, which we independently developed prior to entering into the license agreement and upon which we continually improve. The other seven (7) licenses listed on page 11 are paid-up, royalty free licenses that were part of the July 1, 2004 acquisition of the horizontal diffusion furnace operations and assets of

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Kokusai Semiconductor Equipment Corporation and were valued at \$102,000 in the acquisition.

#### 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.
- R. According to Regulation S-K § 229.101(c)1(vii) the name of the customer is required "if sales to the customer...amount to 10 percent or more of the registrant's consolidated revenues and the loss of such customer would have a material adverse effect on the registrant". The customer that accounted for 10% of consolidated revenue in 2004 was not the same as either of the customers that represented 15% and 12% of consolidated revenue in 2003. The ranking of our largest customers, most of whom represent less than 10% of consolidated revenue, varies significantly from year to year. Our products/systems are designed to operate for many years; thus, significant sales to the same customers in consecutive years generally do not occur. Since we do not rely on the same 10% or more customers for recurring revenue of a similar magnitude, we do not believe that the loss of any one of these customers would have a material adverse effect on future operations or the financial condition of the Company. In future filings, we will disclose the names of 10% or more customers if the conditions set forth in the regulations are met.

# 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.
- R. As intended, we exercised the option to renew the lease for one year on identical terms, except that the lease payments increased based upon the change in the consumer price index. We have 3 additional one-year renewal options under the lease. We will disclose any renewal and information about remaining options periods in future filings.

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# 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.
- R. Our research and development costs decreased in 2004, as the company re-deployed engineers that typically would work on research and development projects to work on the customer's order for a small batch vertical furnace. Subsequent to the receipt of the customer's order, we employed contract accounting and treated the subsequent costs as inventory, which we carried at the lower of cost or market until the furnace shipped in June 2005. Based on the contract, these inventory costs will be recovered through this sale
- 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.
- R. In future filings we will expand the discussion of inventory write-downs each period to include the circumstances that led to the impairments. To the extent it is material we will also discuss the impact of the subsequent sales of any written-down inventory on gross profit generated during that period.

### 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.
- R. In future filings, our discussion of liquidity will be written giving full consideration to the guidance set forth in FR-72. In future filings, we will disclose that we have historically

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obtained capital from one or more sources of financing, such as private placement of equity, public stock offering, working capital loans or term loans from banks or other financial institutions, equipment leasing, mortgage financing and internally generated cash flow. It was on this basis we stated "we believe...significant amounts of additional liquidity are available from various financing sources." While we have obtained financing at one time or another from nearly all of these sources, quantifying the amounts and describing the terms on which any future financing might be obtained would be speculative. Our disclosure to that effect states "there can be no assurance of the availability or sufficiency of these or any other source of funding..." When known transactions are consummated, we will disclose the terms of such transactions.

- 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.
- R. In future filings, we will disclose our contractual obligations in the table format provided in FR-67 and will 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.
- R. In future filings, we will expand our discussion of revenue practices to more fully describe subjective judgments and uncertainties and significant estimates associated with its application in accordance with the guidance provided in your comments and 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.

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R. In future filings, we will expand our MD&A disclosure to discuss and quantify the effects of changes in our utilization rates, if there has been a significant change in the utilization of the various operating plants, e.g. when there has been a significant change in product demand.

### 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.
- R. Severance agreements with named executive officers are disclosed in Item 11. Executive Compensation of Part III of our annual report on Form 10-K and the employment agreements of the named executive officers are filed as exhibits 10.3 and 10.8. No other directors or named executive officers have severance agreements.

#### 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.
- R. We have not received any communications in 2004 or in the nine months ended June 30, 2005, asserting claims of intellectual property infringement, nor are we otherwise aware of any parties currently intending to pursue such claims against us.

# 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 are any repurchase obligations with your customers in future filings.
- R. We have no repurchase obligations with our customers and we make no commitment to repurchase equipment at the time we sell it to the customer. Commitments to purchase

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such used equipment are only made when we have made a strategic decision to expand the quantities of low cost equipment we have for sale and we are able to identify available, well-maintained, used equipment that has been or shortly will be taken out of production. We will expand this discussion in future filings to make our strategy clear. To the extent we take on obligations to repurchase equipment from customers, we will disclose that information 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.
- R. Our sales to distributors are similar to our sales to other customers, except that they are not the end users, but instead they generally have an order from the end user before placing an order with us. Sales to our distributors are not contingent on future sales by the distributor to end-users. Returns from distributors are extremely rare. Our distributors do not stock our product, except for an immaterial amount of parts needed to provide timely repairs to the customer. Our sales to distributors do not include a general right of return. As with other customers, payment terms, etc. with distributors are negotiated on an order by order basis, but are generally on terms of F.O.B. shipping point with 90% due 30 days after shipment and 10% upon completion of installation and acceptance. We generally ship systems directly to our distributor's customer. Our distributor generally sells to the end-user on terms comparable to ours, except they add their mark-up to the price. We apply the provisions of SAB 104 and SFAS 48 in the same manner as with customer orders.
- 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?
- R. We recognize the revenue from the sale of equipment upon shipment equal to 90% or such other percentage that the customer is unconditionally obligated to pay based upon shipment and defer the portion of the revenue equal to the greater of the fair value of the installation or the amount contingent upon acceptance. As there are others that can perform the installation work, the undelivered services are not essential to the utility of delivered equipment. However, in those cases where the product is not yet proven, 100% of the revenue is deferred until final customer acceptance. We do defer revenue and costs in the statement of operations on a gross basis analogous to paragraph 7 of SFAS 48. We

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defer the same revenue and costs on a net basis on the balance sheet to facilitate the reader's understanding of the net before tax effect of the deferred profit on our book value, gross income and operating income. The gross amount of the deferred revenue and deferred costs are disclosed in note 1 on page 42.

- 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.
- R. When, as in 2002, there are large systems that do not meet the criteria in SAB 104 of a proven product, all of the revenue and costs of that system are deferred, causing the overall gross margin of the deferred items to more nearly reflect the gross margin in the statement of operations. Without any large unproven products that remain unaccepted as of period-end, the composition of the deferred items is much more heavily concentrated in "holdbacks", i.e. payments contingent upon completion of the installation and acceptance. Since there often is little or no portion of the cost of installation incurred as of period end and such costs are relatively minor in relation to the holdback, the overall margin on deferred items increases significantly when holdbacks represents a higher proportion of such items, as was the case as of September 30, 2004. As of December 31, 2004, the deferred items were composed entirely of such holdbacks.

#### 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.
- R. In future filings, we will separately disclose the revenues from the United States of America, our country of domicile, and will separately disclose revenue from any individual foreign country from which we derive a material portion of our revenue. We will also note in future filings that revenues are attributed to the geographic location in which the customers' facilities are located. Because we will disclose revenue from all foreign countries, either individually if material or in total by region, our total revenue from all foreign countries will effectively be disclosed.

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### 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.
- R. "Included" probably would have been a better choice of words than "aggregated", as the purpose of the sentence is to expand on the description of the semiconductor equipment segment in the preceding sentence by noting the segment also provides manufacturing support services. In future filings, we will make this distinction clear.
- 20. In future filings please provide the disclosures required by paragraph 38(b) of SFAS 131, includinglong-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.
- R. In future filings, we will provide disclosures of long-lived tangible assets located in the United States and in total for all foreign countries as required by paragraph 38(b) of SEAS 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.
- R. The significant unusual or infrequently occurring items in the fourth quarter of 2004 were the \$303,000 provision for inventory losses, represented by the difference between our valuation of the acquired Bruce Technologies, Inc. ("BTI") inventory and the values at which they were carried by the seller; an unusually high provision for inventory losses by existing operations of \$338,000; a \$465,000 increase in deferred profits compared to 2003; loss on the small batch vertical contract equal to the \$322,000 of costs expected to be incurred through completion in excess of the selling price; all of which were charged to costs of sales, and \$88,000 of integration costs related to the BTI acquisition. There were no other significant unusual or infrequently occurring items or year-end adjustments recognized or recorded within the two most recent fiscal years.

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In future filings, we will supplement our table of selected quarterly data with a description of 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.

### 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.
- R. In future filings, we will provide details of how the values of the identifiable intangible assets were determined. The seller's cost of the domestic inventory was \$3,158,000 for which we paid \$2,188,000. If we sell or consume in operations domestic inventory received in the acquisition in excess of the \$2,188,000 cash paid, we will make contingent payments for the quantities used based upon the seller's cost of the inventory, with such contingent payments capped at \$970,000.

# 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.
- R. Beginning with our Form 10-Q for the second quarter ended March 31, 2005, we have revised the wording of our officers' conclusions so that they comply with the guidance in your comment. We hereby submit the following revised disclosure:
  - Our management, including our Chief Executive Officer ("CEO") and Chief Financial Officer ("CFO"), has carried out an evaluation of the effectiveness of our disclosure controls and procedures as of September 30, 2004, pursuant to Exchange Act Rules 13a-15(e) and 15(d)-15(e). Based upon that evaluation, our CEO and CFO have concluded that as of such date, our disclosure controls and procedures in place were effective as of the end of the period covered by this annual report.

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There have been no changes in our internal controls over financial reporting during the fourth quarter of fiscal 2004 that have materially affected, or are reasonably likely to materially affect, our internal controls over financial reporting.

- 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.
- R. There was no change to our internal control over financial reporting during the fourth fiscal quarter that materially affected, or was reasonably likely to materially affect, our internal control over financial reporting and we will revise future disclosures to include this statement. See our revised disclosure in response to your comment No. 23, above.

### 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.
- R. In future filings, we will disclose the factors, e.g. product mix or utilization, that contributed to the changes in the components of gross margin.

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# 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.
- R. In future filings, we will revise Item 4, Controls and Procedures, in accordance with your comments to Item 9A of our Form 10-K. We hereby submit the revised disclosure for the quarter ended December 31, 2004, as follows:

Our management, including our Chief Executive Officer ("CEO") and Chief Financial Officer ("CFO"), has carried out an evaluation of the effectiveness of our disclosure controls and procedures as of December 31, 2004, pursuant to Exchange Act Rules 13a-15(e) and 15(d)-15(e). Based upon that evaluation, our CEO and CFO have concluded that as of such date, our disclosure controls and procedures in place were effective as of the end of the period covered by this quarterly report.

There have been no changes in our internal controls over financial reporting during the first quarter of fiscal 2005 that have materially affected, or are reasonably likely to materially affect, our internal controls over financial reporting.

# 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.
- R. In future filings, we will revise Item 4, Controls and Procedures, to disclose whether there have been any changes, that occurred during the period covered by the report that materially affected or were reasonably likely to materially affect our internal control over financial reporting. We hereby submit the revised disclosure for the quarter ended March 31, 2005, as follows:

Our management, including our Chief Executive Officer ("CEO") and Chief Financial Officer ("CFO"), has carried out an evaluation of the effectiveness of our disclosure controls and procedures as of March 31, 2005, pursuant to Exchange Act Rules 13a-15(e) and 15(d)-15(e). Based upon that evaluation, our CEO and CFO have concluded that as of such date, our disclosure controls and procedures in place were effective as of the end of the period covered by this quarterly report.

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There have been no changes in our internal controls over financial reporting during the second quarter of fiscal 2005 that have materially affected, or are reasonably likely to materially affect, our internal controls 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.
- R. The first column in the historical unaudited pro forma condensed combined statement of operations for fiscal 2003 and for the six months ended March 31, 2004 are the historic statements of Amtech Systems, Inc., as originally reported. The second column represents the combined statements of the horizontal furnace business of Kokusai Semiconductor Equipment Corporation ("KSEC") and Kokusai Electric Europe Gmbh (KEE) (the "Business"). The Business represents a carve-out of the horizontal furnace business and the combined statements of the Business include only net revenues, cost of revenues and direct operating expenses. Our use of abbreviated financial statements for the Business is based upon the approval we received in a letter from the Securities and Exchange Commission dated April 28, 2004. Since KSEC and KEE are on a March 31 fiscal year and prepare financial statements on a semi-annual basis, the historical combined statement of operations of the Business for the 12 months ended September 30, 2003 were derived from the audited combined statement of net revenues, cost of revenues and direct operating expenses for the year ended March 31, 2004 by first subtracting the related unaudited amounts for the six months ended March 31, 2004 and then adding the related unaudited amounts for the six months ended March 31, 2003. We believe the pro forma adjustments and other calculations are self-explanatory.
- 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".
- R. We paid the seller \$2,188,000 for domestic inventory the seller valued \$3,158,000. The contingent payments represent the difference between the seller's valuation and what was paid at closing and become due if and to the extent we consume any of the inventory in excess of the amounts previously paid. Thus the contingent payments, if any, will be similar to any other inventory purchase other than the fact that we have had possession since the closing. We did not accrue these contingent payments at closing because we believe that we will not consume more than \$2,188,000 of such inventory.

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We hope that we have been fully responsive to your comments. If you have any questions, please contact the undersigned, cell (602) 684-3087 or (480) 967-5146 extension 17.

Best regards, Amtech Systems, Inc.

/S/ ROBERT T. HASS

Robert T. Hass, CPA
Vice President-Finance/CFO