



DIVISION OF
CORPORATION FINANCE

Mail Stop 3030

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

March 31, 2009

Bradley C. Anderson
Vice President – Finance and Chief Financial Officer
Amtech Systems, Inc.
131 South Clark Drive
Tempe, Arizona 85281

Re: Amtech Systems, Inc.
Form 10-K for the fiscal year ended September 30, 2008
Filed December 10, 2008
File No. 000-11412
Form 10-Q for the period ended December 31, 2008
Filed February 9, 2009
Form 8-K/A dated November 2, 2007

Dear Mr. Anderson:

We have reviewed your filing and have the following comments. Where indicated, we think you should revise your document in future filings 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 on 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 the fiscal year ended September 30, 2008

Item 1. Business, page 3

1. We note your disclosure on page 4 that in “fiscal 2008, [y]our largest customer accounted for approximately 20% of [y]our net revenue” and that “[y]our top 10 customers collectively represented approximately 62% of [y]our net revenue.”

Additionally, we note your disclosure on page 14 that in “fiscal 2008, 2007 and 2006, one customer accounted for approximately 20%, 13% and 17% of [y]our net revenue, respectively.” Please tell us, and in future filings disclose, the name of the customer, which we note “has been different [each year],” and any relationship with that customer, pursuant to the requirements of Regulation S-K Item 101(c)(vii). Please also tell us which customers accounted for 22% and 20% of total accounts receivable at September 30, 2008.

Item 11. Executive Compensation

Determining Executive Compensation, page 7

2. We note your disclosure that your compensation committee considers “compensation of executives of comparable companies within similar industries” when making salary recommendations for your named executive officers. Since you appear to benchmark compensation, please discuss how each element of compensation relates to the data you analyzed from peer companies and include an analysis of where actual payments actually fell within the targeted parameters. If any of your named executive officers are compensated at levels that are materially different from the targeted levels of compensation, please also provide discussion and analysis as to why. In addition, in your applicable future filings, please identify the peer companies that you use. See Regulation S-K Item 402(b)(2)(xiv).
3. We also note your disclosure here and on page 8 that you rely upon “published and proprietary survey data” when implementing your compensation programs. Please identify the surveys you used and their components; include component companies, the elements of compensation that are benchmarked and how you determine such benchmarks.

Elements of Our Executive Compensation Program, page 8

4. You state that the compensation committee considers “the roles and responsibilities” and “the individual experience and skills of [y]our executives” when making compensation decisions. Please provide additional disclosure to discuss and analyze how individual performance contributes to actual compensation for named executive officers. For example, disclose the elements of individual performance, both quantitative and qualitative, and specific contributions by named executive officers that the compensation committee considers in its evaluation. If applicable, please also discuss how these elements are weighted and factored into specific compensation decisions. See Regulation S-K Item 402(b)(2)(vii).

Annual Cash Compensation, page 8

5. We note that you increased base salary compensation for your CEO and CFO by approximately 10% and for your chief accounting officer by approximately 15% during fiscal year 2008. Tell us, and expand your disclosure in future filings to explain, what factors you considered in the decision to make these material increases in compensation. See Regulation S-K Item 402(b)(ix).

Equity Incentive Compensation, page 9

6. We believe that investors will benefit from an expanded analysis of how you arrived at and why you paid each particular level of compensation for 2008. For example, we note minimal discussion and analysis of how you determined specific stock option awards, as disclosed on pages 9 and 10. We would expect to see a more focused discussion that provides substantive analysis and insight into how the Committee made actual payout determinations for the fiscal year for which compensation is being reported. Refer to paragraphs (b)(1)(iii) and (v) of Regulation S-K Item 402. In your response and in future filings, please also clarify the reasons for differences in the relative size of the grants among the officers.

Please understand that discussion of the various items of corporate and individual performance that were considered by you must be accompanied by a complete qualitative and quantitative discussion of how you determined to award each specific form and level of compensation. You should provide complete discussions of the specific factors considered by the Committee in ultimately approving this and other forms of compensation, including the reasons why the Committee believes that the amounts paid to each named executive officer are appropriate in light of the various items it considered in making specific compensation decisions.

Item 13. Certain Relationships and Related Transactions

7. Please provide the disclosure required by Regulation S-K Item 404(b).

Compliance with Section 16(a) of the Securities Exchange Act of 1934, page 20

8. We note your disclosure in the second paragraph under this heading. It appears that you have not disclosed the number of late reports or the number of transactions that were not reported on a timely basis by Messrs. Austin Marx and David Greenhouse. Please tell us, and in future filings include, the number of late reports, the number of transactions that were not reported on a timely basis, and any known failure to file a required form for all Section 16 reporting persons. See Regulation S-K Item 405(a)(2).

Financial Statements

Note 13. Acquisitions, page 63

9. We refer to the disclosure in Note 13 on page 63 that “the valuation of acquired assets was determined with the assistance of an independent third-party consultant.” Please tell us the nature and extent of your reliance on the third party for the asset valuations.

Note 10. Business Segment Disclosure, page 57

10. Please tell us how you concluded that the solar and semiconductor equipment products meet the requirements of SFAS 131 to be reported as one segment. In addition, tell us your consideration of providing the product line disclosures outlined in paragraph 37 of SFAS 131.

Exhibits 31.1 and 31.2

11. We note that you omitted a portion of the introductory language in paragraph 4 of Item 601(b)(31)(i) of Regulation S-K, which refers to internal control over financial reporting. We also note that the certification in Exhibit 31.2 includes two paragraphs 4(c). Finally, we note that the word “condition” was omitted from paragraph 3 of Exhibit 31.1 and was changed to “position” in paragraph 3 of Exhibit 31.2. Please file an amendment to the Form 10-K to include corrected certifications. You may file abbreviated amendments to these documents that include a cover page, explanatory note, signature page and paragraphs 1, 2, 4 and 5 of the certification.

Form 10-Q for the period ended December 31, 2008

Exhibits 31.1 and 31.2

12. In future filings, including any amendments, please ensure that the wording of the certification is exactly the same as that provided at Item 601(b)(31)(i) of Regulation S-K. For example, we note that you omitted the parenthetical phrase in paragraph 4(d) and changed the word “condition” to “position” in paragraph 3. In future filings please revise to ensure that the certifications are consistent with the required wording.

Form 8-K/A dated November 2, 2007

13. We note the reference in second paragraph of the audit report on page 1 that the audit was conducted in accordance with international auditing standards. Please have your auditors revise their report to indicate that the audit was conducted in accordance with generally accepted audited standards as required by Article 2 of Regulation S-X.
14. In the revised audit report, please present the city and country where signed as required by Rule 2-02 of Regulation S-X.
15. We note that the Form 8-K/A dated November 2, 2007 includes only audited financial statements of R2D. We also note the references in footnote (2) on pages 3 and 4 of Exhibit 99.4 to the financial statements of R2D as of June 30, 2007 "included elsewhere in this Form 8-K/A." Please tell us where you have included the interim financial statements as of June 30, 2007 required by Item 3-05 of Regulation S-X in your 8-K/A filing.

* * *

As appropriate, please respond to these comments within 10 business days or tell us when you will provide us with a response. Please furnish a cover letter with your response that keys your responses to our comments and provides any requested information. Detailed cover letters greatly facilitate our review. Please submit your cover letter on EDGAR. Please understand that we may have additional comments after reviewing your 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 filings;
- 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

Bradley C. Anderson
Amtech Systems, Inc.
March 31, 2009
Page 6

- 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 Jeanne Bennett, Staff Accountant, at (202) 551-3606 or myself at (202) 551-3676 if you have questions regarding comments on the financial statements and related matters. Please contact Celia Soehner, Staff Attorney, at (202) 551-3463 or Mary Beth Breslin, Senior Attorney, at (202) 551-3625 with any other questions.

Sincerely,

Brian Cascio
Accounting Branch Chief