



DIVISION OF  
CORPORATION FINANCE

MAIL STOP 3030

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

June 17, 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 8-K/A filed November 2, 2007**  
**Form 10-Q for the quarter ended March 31, 2009**  
**Filed May 11, 2009**  
**Form 8-K/A filed June 5, 2009**

Dear Mr. Anderson:

We have reviewed your response dated May 18, 2009 and related filings and have the following comments. Where indicated, we think you should revise your documents 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 11. Executive Compensation

Determining Executive Compensation, page 7

1. We note your responses to prior comments 2 and 3. Please disclose in future filings, if true, that you do not know the names of the individual companies that comprise the American Electronics Association Salary Survey.

Elements of Our Executive Compensation Program, page 8

2. With regard to your response to prior comment 4, please note that we would expect to see discussion in your future filings that addresses how individual performance and specific contributions by *each* named executive officer are evaluated by the compensation committee and how such appraisal translates into actual compensation. With regard to the quantitative contributions that are assessed by the committee in granting annual cash incentive bonuses, please expand your discussion in future filings to disclose how the performance objectives you cite on page 9 apply to each named executive officer. For example, it is unclear from your current disclosure whether these objectives are weighted equally and how your named executive officers may achieve these goals. Accordingly, please expand your discussion of your named executive officers' responsibilities and objectives and how your compensation levels reflect those responsibilities and objectives. We refer you to Regulation S-K Item 402(b)(xii).

Item 13. Certain Relationships and Related Party Transactions

3. Please note that you must include disclosure regarding policies for the review, approval or ratification of related person transactions under Item 404(b)(1) even when you do not have any reportable transactions under Item 404(a). See Question 130.06 of our Regulation S-K Compliance and Disclosure Interpretations, available on our website at <http://www.sec.gov/divisions/corpfin/guidance/regs-kinterp.htm>. Accordingly, please include the discussion of your policy regarding the review of related party transactions that you provided in response to prior comment 7 in your future filings.

Form 8-K/A filed November 2, 2007

4. We refer to your response to our prior comment number 15. Please tell us where you have presented the interim financial statements required by Rules 3-01, 3-02, 3-05 and Article 10 of Regulation S-X. In addition, tell us how the interim

financial statements provided on pages 3 and 4 of the pro forma financial information meet these requirements.

Form 10-Q for the quarter ended March 31, 2009

Critical Accounting Policies, page 25

5. In the interest of providing readers with a better insight into management's judgments into accounting for goodwill, please tell us and disclose the following in future filings:
- How you perform the two-step impairment test discussed in SFAS 142, including the reporting unit level at which you test goodwill for impairment and your basis for that determination;
  - Each of the valuation methodologies used to value goodwill (if multiple approaches are used), including sufficient information to enable a reader to understand how each of the methods differ, the assumed benefits of a valuation prepared under each method, and why management selected these methods as being the most meaningful for the company in preparing the goodwill impairment analysis;
  - How you weight each of the methods used including the basis for that weighting (if multiple approaches are used);
  - A quantitative and qualitative description of the material assumptions used and a sensitivity analysis of those assumptions based upon reasonably likely changes;
  - If applicable, how the assumptions and methodologies used for valuing goodwill in the current year have changed since the prior year highlighting the impact of any changes.

Form 8-K/A filed June 5, 2009

6. We note that your amended Form 8-K only includes the revised audit report for the financial statements of R2D. Please further amend the Form 8-K to include a complete Exhibit 99.3, including the financial statements and the related audit report.
7. Please revise the audit report to specifically state that the audit was conducted in accordance with "generally accepted auditing standards in the United States".

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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.

You may contact Jeanne Bennett, Staff Accountant, at (202) 551-3606 or me 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