



DIVISION OF
CORPORATION FINANCE

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

Mail Stop 6010

June 11, 2008

VIA U.S. MAIL and FACSIMILE

Steven R. Roth
Senior Vice President, Chief Financial Officer
Rudolph Technologies, Inc.
One Rudolph Road
PO Box 1000
Flanders, New Jersey 07836

**RE: Rudolph Technologies, Inc.
Form 10-K for the Fiscal Year Ended December 31, 2007
Filed March 3, 2008
Form 10-Q for the Quarterly Period Ended March 31, 2008
File No. 000-27965**

Dear Mr. Roth:

We have reviewed your filings and have the following comments. We have limited our review of your filings to those issues we have addressed in our comments. Where indicated, we think you should revise 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 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 December 31, 2007

Consolidated Financial Statements, page F-1

Summary of Significant Accounting Policies, page F-9

J. Goodwill and Other Intangible Assets, page F-11

1. You disclose that you estimate “the fair value of [your] aggregated reporting unit using the market value of [your] common stock at October 31 multiplied by the number of outstanding common shares (market capitalization) and an implied control premium as if it were to be acquired by a single stockholder.” You further disclose that you obtain “information on completed sales of similar companies in a comparable industry to estimate the implied control premium for the Company.” You further note that “[i]f the results of the initial market capitalization test produce results which are below the reporting unit carrying value, the Company may also perform a discounted cash flow test.” We note that you tested for goodwill impairment on October 31, 2007. Please tell us about the results of your goodwill impairment testing as of October 31, 2007 in determining that there was no impairment of goodwill at that date.
2. Further, we note that the market price of your common stock decreased from \$13.03 as of October 31, 2007 to \$11.32 as of December 31, 2007. Please tell us how you considered paragraph 28 of SFAS 142 in determining whether or not to perform an assessment of the impairment of your goodwill as of December 31, 2007. Please tell us about the results of your goodwill impairment testing as of December 31, 2007, if any.
3. In addition, we note that you reported revenues of \$37.2 million and \$48.4 million for the three months ended March 31, 2008 and 2007, respectively. We also note that your stock price was trading at \$9.77 at March 31, 2008. Given these factors, please tell us how you considered the guidance in paragraph 28 of SFAS 142 as of March 31, 2008 and tell us about the results of your goodwill impairment testing, if any.

Note 3. Business Combinations, page F-16

4. We note that you issued 1,307 shares of common stock as part of the consideration for PCTA on December 18, 2007. Please tell us and disclose in future filings the basis for determining the value assigned to the common stock issued, consistent with paragraph 51(d) of SFAS 141 and EITF 99-12.

Form 10-Q for the Quarter Ended March 31, 2008

Financial Statements

Note 3. Fair Value Measurements

5. You disclose that “[w]hen quoted market prices are unobservable, the Company uses quotes from independent pricing vendors based on recent trading activity and other relevant information. These investments are included in Level 2 and primarily comprise the Company's portfolio of corporate debt securities, auction rate securities, government-sponsored enterprise, and asset-backed securities.” These investments were \$10.3 million as of March 31, 2006. Please tell us and disclose in future filings information that will enable users of your financial statements to assess the inputs used to develop those measurements, including the valuation technique(s) used to measure fair value and a discussion of changes in valuation techniques, if any, during the period. Refer to paragraphs 32 and 39 of SFAS 157. Please also tell us why you did not include a discussion of your accounting policies under SFAS 157 in your critical accounting policies disclosure in MD&A.
6. Further to the above, we note that you hold \$3.1 million of auction-rate securities at March 31, 2008 that experienced failed auctions which are currently rated A or above. We further note that you did not record any impairment of these securities and you believe that you will sell these securities within the future. Please tell us why you do not believe that these assets are impaired at March 31, 2008. Within your discussion, please explain in more detail the significant other observable inputs (i.e level 2) that you relied upon in determining the fair value for these securities. Refer to the guidance in SFAS 157, 115, FSP FAS 115-1, and SAB Topic 5M.

Note 4. Marketable Securities

7. We note that you hold asset-backed securities and auction-rate securities as of March 31, 2008 and December 31, 2007. Please revise your future filings, as applicable, to clearly discuss the nature of the material aspects of these securities, as necessary, to provide your investors with information necessary for a clear understanding of your balance sheet items. For example, as appropriate, identify the nature of those securities that you hold such as the maturity dates, auction reset provisions, and interest rate provisions, the nature of the collateral underlying those securities, indicate what factors may affect the value or liquidity of those securities, disclose how the interest rates on those investments will be determined and any material risks. Also, if those securities are reasonably likely to affect your financial condition in a material way, please expand your discussion and analysis in MD&A in future filings to provide your investors with

information necessary for a clear understanding of the trend or uncertainty. Refer to Item 303(a) of Regulation S-K. Also add any appropriate disclosure required by Item 305 of Regulation S-K.

Item 4. Controls and Procedures

8. It is unclear from your disclosures if your principal executive and principal financial officers, or persons performing similar functions, have reached a conclusion that your disclosure controls and procedures were effective or were not effective as of March 31, 2008. Please amend your filing to include your conclusions regarding the effectiveness of your disclosure controls and procedures as of March 31, 2008 as required by Item 307 of Regulation S-K.

As appropriate, Please respond to these comment within 10 business days or tell us when you will provide us with a response. Please furnish a letter that keys your responses to our comments and provides any requested information. Detailed letters greatly facilitate our review. 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 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.

Steven R. Roth
Rudolph Technologies, Inc.
June 11, 2008
Page 5

You may contact me at (202) 551-3604 if you have questions. In this regard, please do not hesitate to contact Kevin Vaughn, Accounting Branch Chief, at (202) 551-3643 with any other questions.

Sincerely,

Kate Tillan
Assistant Chief Accountant