



DIVISION OF
CORPORATION FINANCE

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

July 6, 2011

Via Facsimile

Paul F. McLaughlin
Chairman and Chief Executive Officer
Rudolph Technologies, Inc.
One Rudolph Road, P.O. Box 1000
Flanders, NJ 07836

Re: Rudolph Technologies, Inc.
Form 10-K for the year ended December 31, 2010
Filed February 28, 2011
File No. 0-027965

Dear Mr. McLaughlin:

We have completed our review of your filing. We remind you that our comments or changes to disclosure in response to our comments do not foreclose the Commission from taking any action with respect to the company or 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. 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 the information the Securities Exchange Act of 1934 and all applicable rules require.

Sincerely,

/s/ Kevin L. Vaughn

Kevin L. Vaughn
Accounting Branch Chief