



DIVISION OF  
CORPORATION FINANCE

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

December 9, 2010

Mr. Michael Bielonko  
Chief Executive Officer  
Cyalume Technologies Holdings, Inc.  
96 Windsor Street  
West Springfield, Massachusetts 01089

**Re: Cyalume Technologies Holdings, Inc.**  
**Form 10-K for the fiscal year ended December 31, 2009**  
**Filed March 22, 2010**  
**File No. 0-52247**

Dear Mr. Bielonko:

We have limited our review to only your financial statements and related disclosures and do not intend to expand our review to other portions of your documents. Please comply with the following comments in future filings. Confirm in writing that you will do so and explain to us how you intend to comply. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter within ten business days by providing the requested information or by advising us when you will provide the requested response. If you do not believe our comments apply to your facts and circumstances, please tell us why in your response.

After reviewing the information you provide in response to these comments, we may have additional comments.

Form 10-K for the fiscal year ended December 31, 2009

Item 7: Management's Discussion and Analysis of Financial Condition and Results of Operations , page 15

1. We note that in December of 2008 you completed the purchase of the capital stock of CTI. Please tell us how you applied the guidance in paragraphs 805-10-55-11 through 55-15 of the FASB Accounting Standards Codification in identifying the acquiring entity in the transaction. In this regard we note the following:
  - prior to the acquisition Vector did not engage in any substantive activities;
  - 9,375,000 shares were outstanding at September 20, 2008 and 2,442,547 shares were repurchased prior to the transaction;
  - 7,308,428 shares were issued in the transaction resulting in the shareholders of CTI receiving a majority of the outstanding shares.

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Please file all correspondence over EDGAR. 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 Exchange Act rules require. 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 responding to our comments, please provide a written 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.

You may contact Michael Henderson, Staff Accountant, at (202) 551-3364 or Terry French, Accountant Branch Chief, at (202) 551-3828 if you have questions regarding comments on the financial statements and related matters. Please contact me at (202) 551-3810 with any other questions.

Sincerely,

Larry Spigel  
Assistant Director