

Mail Stop 6010

August 11, 2006

Via Facsimile and U.S. Mail

Roger G. Little  
Chairman of the Board, Chief Executive Officer  
and President  
Spire Corporation  
One Patriots Park  
Bedford, MA 01730-2396

**Re: Spire Corporation**  
**Form 10-KSB as of December 31, 2005 filed March 21, 2006**  
**File No. 0-12742**

Dear Mr. Little:

We have reviewed your filing and have the following comment. We have limited our review to only your financial statements and related disclosures and will make no further review of your documents. Please be as detailed as necessary in your response. In our comment, we ask you to provide us with supplemental information so we may better understand your disclosure. After reviewing this information, we may or may not 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 comment or on any other aspects of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Form 10-KSB as of December 31, 2005

Consolidated Financial Statements, page 24

Note 9. Sales of Licenses, page 39

1. We note your disclosure relating to the consortium agreement with Nisshinbo Industries and the manner in which you recognized the income related to the arrangement. Please address the following:
  - Explain to us how you concluded that it was appropriate to recognize as a gain \$3.32 million of the upfront fee upon receipt and explain your rationale for the allocation of the amount received between the fair values of the license and royalties. Cite the accounting literature on which you relied.
  - Tell us how you considered the guidance in Question 1 to SAB Topic 13A-3f in concluding on the appropriate accounting for the agreement.
  - Tell us how you concluded that the events that occurred in May and June 2005 relating to this agreement represented a discrete earnings event or the culmination of an earnings process.
  - Since we note that pursuant to the agreement you are transferring developing technology and that you are required to continue to provide Nisshinbo with periodic updates on every incremental improvement you have made in the state of the technology and share information on gains made in know-how in the preceding year, please explain how you concluded that you have met your delivery obligations and the delivery and performance criteria outlined in SAB Topic 13A.
  - We will have further comment upon our review of your response.

\* \* \* \* \*

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

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filings reviewed by the staff to be certain that they have provided all information investors 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.

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In connection with responding to our comment, 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
- 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 comment on your filing.

You may contact Kevin Vaughn, Staff Accountant, at (202) 551-3643 or me at (202) 551-3671 if you have questions regarding this comment.

Sincerely,

Martin James  
Senior Assistant Chief Accountant