



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

DIVISION OF
CORPORATION FINANCE

May 9, 2013

Via E-Mail

John W. Eaves
Chief Executive Officer
Arch Coal, Inc.
One CityPlace Drive, Ste. 300
St. Louis, MO 63141

**Re: Arch Coal, Inc.
Form 10-K for the Year Ended December 31, 2012
Filed March 1, 2013
Response Submitted April 12, 2013
File No. 001-13105**

Dear Mr. Eaves:

We have reviewed your filing and have the following comments. 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 amending your filing, 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 or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your filing and the information you provide in response to these comments, we may have additional comments.

10-K for the Year Ended December 31, 2012

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations, page 58

Critical Accounting Policies, page 74

Goodwill, page 75

1. We note your response to our prior comment two. With regard to your purchase of ICG in June 2011, please provide the following:
 - a) The amounts of reserves and assets acquired and what amounts were capitalized for the mining complex in development (Leer) and the development opportunity (Tygart 2) as of the acquisition date;
 - b) Further clarify the benefits you expect to derive from your strategic considerations on which you based your allocation of goodwill to properties only in the higher quality metallurgical market, see ASC 350-20-35-41;

- c) The amount, methodology and assumptions used to allocate the excess fair value of the acquisition assigned to each of the four reporting units: Beckley, Sentinel, Leer and Tygart 2. You state that these were expected to be the four most profitable operations. Please discuss your consideration of producing mines compared to those still in development.
2. We note your response to our prior comment three. With regard to your impairment testing at October 1, 2012, please address the following:
 - a) Tell us whether you consistently applied the methodology and basis used in the initial assignment of goodwill in your impairment analysis. If there were changes, please discuss each change and why it was appropriate.
 - b) Please compare the impairment analysis assumptions provided in your response (i.e. sales volumes, coal price, costs to produce or discount rate) to those used at acquisition date.
 - c) We note your analysis on sensitivity to near-term pricing and demand of coal. We also note that you produce or plan to produce primarily high volatile type A metallurgical coal at Sentinel, Leer and Tygart 2. We further note that the Leer mine is expected to be completed in 2013. Please discuss what factors led you to conclude that the Sentinel mine was impaired while goodwill allocated to Leer was not impaired. Discuss how the assumptions in your analysis differed between Leer and Sentinel.
 - d) Tell us whether you are using any market data to determine your forecasted prices and how your forecasts have compared to the actual realized prices. Explain to us whether or not historical trends are indicative of future forecasts, and provide the basis for your conclusions.
 - e) We note that Leer and Tygart 2 are in very different stages of development. Tell us what facts and assumptions you considered in determining the discount rate you used in regard to the additional risks associated with a project that is still in the process of obtaining permits and regulatory approval.

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3. We note your response to prior comment five and your disclosure in your March 31, 2013 Form 10-Q. Please provide us with draft disclosures related to ASC 450-20-50-3 that you plan to include in future filings.

You may contact Blaise Rhodes at (202) 551-3774 or Nasreen Mohammed, Assistant Chief Accountant, at (202) 551-3773 if you have questions regarding comments on the financial statements and related matters.

Sincerely,

/s/Tia L. Jenkins

Tia L. Jenkins
Senior Assistant Chief Accountant
Office of Beverages, Apparel, and
Mining