



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

DIVISION OF
CORPORATION FINANCE

June 7, 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 May 23, 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 2(a) that you consistently relied upon discounted cash flow analysis over the life of the mineral reserves as the basis for your assignment of goodwill and your impairment analysis. However, you used several financial metrics (net present value, life of mine EBITDA, EBITDA margin and internal rate of return) to determine the specific allocation (of goodwill) to the four reporting units. Please clarify which method(s) and basis were used in computing the fair value of your reporting units for impairment testing. For the Leer and Tygart 2 reporting units,

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please provide us the total fair value for the base case and the downside scenarios and the corresponding carrying value for each mine.

2. We note your responses to our prior comment 2(b) and (c). It appears the considerable changes to your assumptions on the projected quantity and quality of production to be sold into metallurgical markets, mining methods impacting total quantity of production and delays in development offset the negative impact of the lower near-term prices at Leer and Tygart 2. To the extent that you change methods and/or significant assumptions in regard to your impairment testing (e.g. coal prices, modifications to plant design, percentage of high quality metallurgical coal production expected etc.), please confirm you will expand your disclosure in future filings to discuss such changes. Please provide us with draft disclosures based on your impairment testing for the year ended December 31, 2012.

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