



UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, DC 20549

**FORM S-8**

**REGISTRATION STATEMENT UNDER  
THE SECURITIES ACT OF 1933**



(Exact name of registrant as specified in its charter)

**Delaware**  
(State or other jurisdiction  
of incorporation or organization)

**43-0921172**  
(I.R.S. Employer  
Identification Number)

**One CityPlace Drive, Suite 300  
St. Louis, Missouri 63141  
(314) 994-2700**  
(Address, including zip code, and telephone number, including area code  
of registrant's principal executive offices)

**Arch Coal, Inc. Deferred Compensation Plan**  
(Full title of the plan)

Robert G. Jones  
Vice President — Law, General Counsel and Secretary  
Arch Coal, Inc.  
One CityPlace Drive, Suite 300  
St. Louis, Missouri 63141  
(314) 994-2700  
(Name, address, including zip code, and telephone  
number, including area code, of agent for service)

**Calculation of Registration Fee**

Title of securities to be registered	Amount to be registered	Proposed maximum offering price per share	Proposed maximum aggregate offering price	Amount of registration fee
Deferred compensation obligations (1)	\$15,000,000(2)	100%	\$15,000,000(2)	\$461

- (1) The obligations under the Arch Coal, Inc. Deferred Compensation Plan are unsecured general obligations of Arch Coal, Inc. to pay deferred compensation in accordance with the terms of the Arch Coal, Inc. Deferred Compensation Plan.
- (2) Estimated solely for the purpose of determining the registration fee.

## Explanatory Note

### Registration of Additional Shares

Pursuant to Instruction E of Form S-8, this filing relates to the registration of additional securities of the same class as other securities for which a registration statement filed on this form relating to a benefit plan is effective. The contents of the registration statement on Form S-8 (File No. 333-68131) filed on December 1, 1998 are hereby incorporated by reference.

### Item 5. Interests of Named Experts and Counsel.

Gregory A. Billhartz, Assistant General Counsel and Assistant Secretary of Arch Coal, Inc., has rendered an opinion as to the validity of the deferred compensation obligations being registered hereby. Mr. Billhartz is paid a salary by us and is a participant in various employee benefit plans offered to our employees generally.

### Item 8. Exhibits.

The following exhibits are filed as part of this registration statement:

<u>Exhibit</u>	<u>Description</u>
4.1	Arch Coal, Inc. Deferred Compensation Plan (incorporated by reference to Exhibit 4.1 to the registrant's Registration Statement on Form S-8 filed on December 1, 1998 (File No. 333-68131)).
5.1	Opinion of counsel.
23.1	Consent of independent registered public accounting firm.
23.2	Consent of counsel (included in Exhibit 5.1).
24.1	Power of attorney.

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### Signatures

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of St. Louis, State of Missouri, on the 16<sup>th</sup> day of November, 2007.

Arch Coal, Inc.

By: /s/ Steven F. Leer  
 Steven F. Leer  
 Chairman and Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed below by the following persons in the capacities indicated:

Signatures	Capacity	Date
<u>/s/ Steven F. Leer</u> Steven F. Leer	Chairman and Chief Executive Officer (Principal Executive Officer)	November 16, 2007
<u>/s/ Robert J. Messey</u> Robert J. Messey	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	November 16, 2007
<u>/s/ John W. Lorson</u> John W. Lorson	Controller (Principal Accounting Officer)	November 16, 2007
<u>*</u> James R. Boyd	Director	November 16, 2007
<u>*</u> Frank M. Burke	Director	November 16, 2007
<u>*</u> John W. Eaves	President, Chief Operating Officer and Director	November 16, 2007
<u>*</u> Patricia F. Godley	Director	November 16, 2007
<u>*</u> Douglas H. Hunt	Director	November 16, 2007
<u>*</u> Brian J. Jennings	Director	November 16, 2007
<u>*</u> Thomas A. Lockhart	Director	November 16, 2007
<u>*</u> A. Michael Perry	Director	November 16, 2007
<u>*</u> Robert G. Potter	Director	November 16, 2007
<u>*</u> Theodore D. Sands	Director	November 16, 2007
<u>*</u> Wesley M. Taylor	Director	November 16, 2007

\*By: /s/ Robert G. Jones  
 Robert G. Jones, attorney-in-fact

[Arch Coal, Inc. letterhead]

November 16, 2007

Board of Directors  
Arch Coal, Inc.  
One CityPlace Drive, Suite 300  
St. Louis, Missouri 63141

Dear Ladies and Gentlemen:

I am Assistant General Counsel and Assistant Secretary for Arch Coal, Inc., a Delaware corporation (the "Company"). This opinion letter is being furnished to you in connection with the registration under the Securities Act of 1933, as amended (the "Act"), of \$15,000,000 of deferred compensation obligations relating to the Arch Coal, Inc. Deferred Compensation Plan (the "Plan").

In connection herewith, I have examined the Registration Statement on Form S-8 (Reg. No. 333-\_\_\_\_\_) (the "Registration Statement") to be filed with the Securities and Exchange Commission under the Act. I have also examined originals or copies certified or otherwise identified to my satisfaction of such other corporate records, agreements and instruments of the Company, certificates of public officials and officers of the Company and such other documents, records and instruments, and I have made such legal and factual inquiries as I have deemed necessary or appropriate as a basis to render the opinion hereinafter expressed.

In my examination of the foregoing, I have assumed the genuineness of all signatures on all documents examined by me (except the signatures of officers of the Company), the legal competence and capacity of each person executing documents, the authenticity of all documents submitted to me as originals, the conformity to authentic originals of all documents submitted to me as certified or photostatted copies, and the due authorization, execution and delivery of all documents (other than due authorization, execution and delivery on behalf of the Company) where due authorization, execution and delivery are a prerequisite to the effectiveness thereof.

Based upon the foregoing and in reliance thereon, and subject to the exceptions, qualifications and limitations stated herein, I am of the opinion that, when issued in accordance with the terms of the Plan, the deferred compensation obligations will be valid and binding obligations of the Company, enforceable in accordance with their terms, except as enforcement thereof may be limited by bankruptcy, insolvency or other laws of general applicability relating to or affecting enforcement of creditors' rights or by general equity principles.

The opinion expressed above is limited to the laws of the State of Missouri, the Federal laws of the United States of America and, to the extent required by the foregoing, the General Corporation Law of the State of Delaware as in effect (and published or otherwise generally available) on the date hereof, and I assume no obligation to revise or supplement the opinion should such law be changed by legislative action, judicial decision or otherwise. In rendering the opinion, I have not considered, and hereby disclaim any opinion as to, the application or impact of any laws, cases, decisions, rules or regulations of any other jurisdiction, court or administrative agency.

I hereby consent to the filing of this opinion letter as Exhibit 5.1 to the Registration Statement. In giving such consent, I do not thereby concede that I am within the category of persons whose consent is required under Section 7 of the Act or the rules and regulations of the Commission thereunder.

Sincerely,

/s/ Gregory A. Billhartz

Gregory A. Billhartz  
Assistant General Counsel and Assistant Secretary

**Consent of Independent Registered Public Accounting Firm**

We consent to the incorporation by reference in the Registration Statement (Form S-8) pertaining to the Arch Coal, Inc. Deferred Compensation Plan of our reports dated February 26, 2007, with respect to the consolidated financial statements and schedule of Arch Coal, Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 2006, Arch Coal, Inc. management's assessment of the effectiveness of internal control over financial reporting, and the effectiveness of internal control over financial reporting of Arch Coal, Inc., filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

St. Louis, Missouri  
November 15, 2007

**Power of Attorney**

KNOW ALL MEN BY THESE PRESENTS: That each of the undersigned directors and/or officers of Arch Coal, Inc., a Delaware corporation (the "Company"), hereby constitutes and appoints Steven F. Leer, Robert J. Messey and Robert G. Jones, and each of them, his or her true and lawful attorneys-in-fact and agents, with full power to act without the other, to sign the Company's registration statement on Form S-8 and any and all amendments (including post-effective amendments) thereto, and to file the same, with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission pursuant to the Securities Act of 1933, as amended, and to do and perform any and all other acts and things requisite and necessary to be done in connection with the foregoing as fully as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, may lawfully do or cause to be done by virtue hereof.

DATED: November 16, 2007

Signatures	Capacity
/s/ Steven F. Leer	Chairman and Chief Executive Officer
Steven F. Leer	
/s/ James R. Boyd	Director
James R. Boyd	
/s/ Frank M. Burke	Director
Frank M. Burke	
/s/ John W. Eaves	President, Chief Operating Officer and Director
John W. Eaves	
/s/ Patricia F. Godley	Director
Patricia F. Godley	
/s/ Douglas H. Hunt	Director
Douglas H. Hunt	
/s/ Brian J. Jennings	Director
Brian J. Jennings	
/s/ Thomas A. Lockhart	Director
Thomas A. Lockhart	
/s/ A. Michael Perry	Director
A. Michael Perry	
/s/ Robert G. Potter	Director
Robert G. Potter	
/s/ Theodore D. Sands	Director
Theodore D. Sands	
/s/ Wesley M. Taylor	Director
Wesley M. Taylor	