POTTER ROBERT G

Check this box

if no longer

subject to

Section 16.

Form 4 or

Form 4

September 17, 2009

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

OMB Number:

STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP OF **SECURITIES**

Form 5 Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934, obligations Section 17(a) of the Public Utility Holding Company Act of 1935 or Section may continue.

30(h) of the Investment Company Act of 1940 See Instruction

1(b).

(Print or Type Responses)

1. Name and Address of Reporting Person * POTTER ROBERT G

5. Relationship of Reporting Person(s) to Issuer

OMB APPROVAL

Expires:

response...

Estimated average

burden hours per

3235-0287

January 31,

2005

0.5

Symbol

(First) (Last)

(Middle)

ARCH COAL INC [ACI]

2. Issuer Name and Ticker or Trading

(Check all applicable)

ONECITYPLACE DRIVE

3. Date of Earliest Transaction (Month/Day/Year)

09/15/2009

X_ Director 10% Owner Officer (give title Other (specify

below)

(Street)

4. If Amendment, Date Original

Applicable Line)

Filed(Month/Day/Year)

X Form filed by One Reporting Person Form filed by More than One Reporting

(Instr. 4)

6. Individual or Joint/Group Filing(Check

Person

ST. LOUIS, MO 63141

(City) (State) (Zip)

Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned

1.Title of 2. Transaction Date 2A. Deemed Security (Month/Day/Year) Execution Date, if

(Instr. 3)

(Month/Day/Year)

4. Securities TransactionAcquired (A) or Code Disposed of (D) (Instr. 8) (Instr. 3, 4 and 5) 5. Amount of Securities Beneficially Owned

6. Ownership 7. Nature of Form: Direct Indirect (D) or Indirect Beneficial Ownership

Following Reported

Transaction(s)

or (Instr. 3 and 4) Code V Amount (D) Price

(A)

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

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SEC 1474 (9-02)

(Instr. 4)

Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)

1. Title of Derivative Conversion Security or Exercise (Instr. 3) Price of

3. Transaction Date 3A. Deemed (Month/Day/Year)

Execution Date, if (Month/Day/Year)

4. Transactionof Code Derivative (Instr. 8) Securities

5. Number 6. Date Exercisable and **Expiration Date** (Month/Day/Year)

7. Title and Amount of 8. Price **Underlying Securities** (Instr. 3 and 4)

Derivati Security (Instr. 5)

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Security (A) or Disposed of (D) (Instr. 3, 4, and 5) Code V (A) (D) Date Expiration Title Amount Exercisable Date or Number of Shares Phantom Common (2) (1) 09/15/2009 Α 192 (2) 192 \$ 21.0 Stock Stock

Acquired

Reporting Owners

Derivative

Signatures

/s/ Gregory A. Billhartz,
Attorney-in-Fact

09/17/2009

**Signature of Reporting Person Date

Explanation of Responses:

- * If the form is filed by more than one reporting person, see Instruction 4(b)(v).
- ** Intentional misstatements or omissions of facts constitute Federal Criminal Violations. See 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).
- Each share of phantom stock represents a right to receive the value in cash of one share of Arch Coal, Inc. common stock. The shares of phantom stock are held by the director through the Arch Coal, Inc. Deferred Compensation Plan for Non-Employee Directors (the "Plan"). The shares of phantom stock acquired by the director represent dividends attributable to amounts that the director elected to defer under the Plan into a hypothetical investment in shares of Arch Coal, Inc. common stock.
- (2) Shares of phantom stock are payable in cash following termination of the director's service as a director of Arch Coal, Inc. The director may transfer amounts held in the phantom stock account into an alternative investment account at any time.

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, *see* Instruction 6 for procedure. Potential persons who are to respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB number.

Reporting Owners 2