

Slone Deck
Form 4
February 24, 2010

FORM 4

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

OMB APPROVAL

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Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. See Instruction 1(b).

STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP OF SECURITIES

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934, Section 17(a) of the Public Utility Holding Company Act of 1935 or Section 30(h) of the Investment Company Act of 1940

(Print or Type Responses)

1. Name and Address of Reporting Person *
Slone Deck

2. Issuer Name and Ticker or Trading Symbol
ARCH COAL INC [ACI]

5. Relationship of Reporting Person(s) to Issuer

(Check all applicable)

(Last) (First) (Middle)
ONE CITYPLACE DRIVE, SUITE 300

3. Date of Earliest Transaction (Month/Day/Year)
02/22/2010

____ Director _____ 10% Owner
 Officer (give title below) _____ Other (specify below)
VP/Govt Investor & Public Aff

(Street)
ST. LOUIS, MO 63141

4. If Amendment, Date Original Filed(Month/Day/Year)

6. Individual or Joint/Group Filing(Check Applicable Line)
 Form filed by One Reporting Person
 Form filed by More than One Reporting Person

(City) (State) (Zip)

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

| 1. Title of Security (Instr. 3) | 2. Transaction Date (Month/Day/Year) | 2A. Deemed Execution Date, if any (Month/Day/Year) | 3. Transaction Code (Instr. 8) | 4. Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5) | 5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4) | 6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4) | 7. Nature of Ownership (Instr. 4) |
|---------------------------------|--------------------------------------|--|--------------------------------|---|---|--|-----------------------------------|
| | | | | (A) or (D) Price | | | |
| Common Stock | 02/22/2010 | | M | 2,366 A | 13,666 | D | |

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

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

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| 1. Title of Derivative Security (Instr. 3) | 2. Conversion or Exercise Price of Derivative Security | 3. Transaction Date (Month/Day/Year) | 3A. Deemed Execution Date, if any (Month/Day/Year) | 4. Transaction Code (Instr. 8) | 5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4, and 5) | 6. Date Exercisable and Expiration Date (Month/Day/Year) | 7. Title and Amount of Underlying Securities (Instr. 3 and 4) | 8. Pr Deriv Secur (Instr | |
|--|--|--------------------------------------|--|--------------------------------|---|--|---|--------------------------|----------------------------|
| | | | | Code | V (A) (D) | Date Exercisable | Expiration Date | Title | Amount or Number of Shares |
| Restricted Stock Units | (2) | 02/22/2010 | | M | 2,366 | (3) | (4) | Common Stock | 2,366 |

Reporting Owners

| Reporting Owner Name / Address | Relationships | | | |
|---|---------------|-----------|-------------------------------|-------|
| | Director | 10% Owner | Officer | Other |
| Slone Deck ONE CITYPLACE DRIVE SUITE 300 ST. LOUIS, MO 63141 | | | VP/Govt Investor & Public Aff | |

Signatures

/s/ Jon S. Ploetz,
Attorney-in-Fact

02/24/2010

**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).
- (1) The reporting person received 7,100 restricted stock units on February 22, 2007. The restricted stock units vest ratably over a three-year period. Upon vesting of 2,366 restricted stock units on February 22, 2010, the reporting person received 2,366 shares of common stock.
- (2) Each restricted stock unit represents a right to receive one share of common stock unless otherwise deferred, at the reporting person's election, pursuant to the Arch Coal, Inc. Executive Deferred Compensation Plan.
- (3) The reporting person received 7,100 restricted stock units on February 22, 2007. The restricted stock units vest ratably over a three-year period. On February 22, 2010, 2,366 restricted stock units vested.
- (4) The restricted stock units do not expire.

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.