Slone Deck Form 4 February 22, 2010

FORM 4

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

STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP OF

SECURITIES

OMB Number:

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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

1(b).

(Print or Type Responses)

See Instruction

1. Name and Address of Reporting Person * Slone Deck

2. Issuer Name and Ticker or Trading Symbol

5. Relationship of Reporting Person(s) to Issuer

ARCH COAL INC [ACI]

(Check all applicable)

(First) (Last)

3. Date of Earliest Transaction

10% Owner Other (specify

ONE CITYPLACE DRIVE, SUITE

(Street)

(Middle)

02/18/2010

(Month/Day/Year)

X_ Officer (give title below)

300

4. If Amendment, Date Original

Filed(Month/Day/Year) Applicable Line)

6. Individual or Joint/Group Filing(Check

(Instr. 4)

VP/Govt Investor & Public Aff

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

Person

Director

ST. LOUIS, MO 63141

(City) (State) (Zip) Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned

1.Title of Security (Instr. 3)

2. Transaction Date 2A. Deemed (Month/Day/Year)

Execution Date, if

(Month/Day/Year)

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

5. Amount of Securities Beneficially Owned Following

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

(Instr. 4)

Reported Transaction(s)

(A)

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

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)

1. Title of Derivative Security

Conversion or Exercise

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

Execution Date, if any

4. 5. Number of **Transaction**Derivative Code Securities

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

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

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(Instr. 3)	Price of Derivative Security		(Month/Day/Year)	(Instr.	8)	Acquired (A) or Disposed of (D) (Instr. 3, 4, and 5)					
				Code	V	(A)	(D)	Date Exercisable	Expiration Date	Title	Amount or Number of Shares
Employee Stock Options	\$ 22.65	02/18/2010		A		30,350		<u>(1)</u>	02/18/2020	Common Stock	30,350

Reporting Owners

Reporting Owner Name / Address Relationships

Director 10% Owner Officer Other

Slone Deck

ONE CITYPLACE DRIVE SUITE 300

VP/Govt Investor & Public Aff

ST. LOUIS, MO 63141

Signatures

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

**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 options vest ratably over 4 years as follows: 7,588 shares vest on February 18, 2011; 7,588 shares vest on February 18, 2012; 7,587 shares vest on February 18, 2013; 7,587 shares vest on February 18, 2014.

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.

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