

STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP

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

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934 or Section 30(h) of the Investment Company Act of 1940

OMB APPROVAL	
OMB Number:	3235-0287
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1. Name and Address of Reporting Person * <u>Slone Deck</u>  (Last) (First) (Middle) ONE CITYPLACE DRIVE SUITE 300  (Street) ST. LOUIS MO 63141  (City) (State) (Zip)	2. Issuer Name and Ticker or Trading Symbol <u>ARCH COAL INC [ ACI ]</u>	5. Relationship of Reporting Person(s) to Issuer (Check all applicable)  Director 10% Owner <input checked="" type="checkbox"/> Officer (give title below) Other (specify below) <u>VP Investor Rel &amp; Public Aff</u>
	3. Date of Earliest Transaction (Month/Day/Year) <u>05/15/2008</u>	
		6. Individual or Joint/Group Filing (Check Applicable Line)  <input checked="" type="checkbox"/> Form filed by One Reporting Person Form filed by More than One Reporting Person

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 Indirect Beneficial Ownership (Instr. 4)
			Code	V	Amount	(A) or (D)	Price			
Common Stock	05/15/2008		M		6,300	A	\$9.08	17,100	D	
Common Stock	05/15/2008		M		5,800	A	\$10.98	22,900	D	
Common Stock	05/15/2008		M		12,600	A	\$11.3	35,500	D	
Common Stock	05/15/2008		S		5,400	D	\$63.55	30,100	D	
Common Stock	05/15/2008		S		4,300	D	\$63.65	25,800	D	
Common Stock	05/15/2008		S		3,000	D	\$63.8	22,800	D	
Common Stock	05/15/2008		S		7,800	D	\$63.85	15,000	D	
Common Stock	05/15/2008		S		1,300	D	\$63.88	13,700	D	
Common Stock	05/15/2008		S		1,200	D	\$63.9	12,500	D	
Common Stock	05/15/2008		S		1,700	D	\$63.95	10,800	D	

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

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 Securities Underlying Derivative Security (Instr. 3 and 4)	8. Price of Derivative Security (Instr. 5)	9. Number of derivative Securities Beneficially Owned Following Reported Transaction(s) (Instr. 4)	10. Ownership Form: Direct (D) or Indirect (I) (Instr. 4)	11. Nature of Indirect Beneficial Ownership (Instr. 4)	
				Code	V	(A)	(D)	Date Exercisable	Expiration Date						Title
Employee Stock Options (right to buy)	\$9.08	05/15/2008		M			6,300	(1)	02/29/2012	Common Stock	6,300	\$9.08	0	D	
Employee Stock Options (right to buy)	\$10.98	05/15/2008		M			5,800	(2)	02/22/2011	Common Stock	5,800	\$10.98	0	D	
Employee Stock Options (right to buy)	\$11.3	05/15/2008		M			12,600	(3)	04/25/2012	Common Stock	12,600	\$11.3	0	D	

Explanation of Responses:

- The reporting person received 12,600 stock options on February 28, 2002. The stock options vested ratably over a four-year period as follows: 3,150 stock options vested on February 28, 2003; 3,150 stock options vested on February 28, 2004; 3,150 stock options vested on February 28, 2005 and 3,150 stock options vested on February 28, 2006.
- The reporting person received 5,800 stock options on February 22, 2001. The stock options vested ratably over a three-year period as follows: 1,934 stock options vested on February 22, 2002; 1,933 stock options vested on February 22, 2003; and 1,933 stock options vested on February 22, 2004.
- The reporting person received 12,600 stock options on April 25, 2002. The stock options vested ratably over a four-year period as follows: 3,150 stock options vested on April 25, 2003; 3,150 stock options vested on April 25, 2004; 3,150 stock options vested on April 25, 2005 and 3,150 stock options vested on April 25, 2006.

Remarks:

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

05/15/2008

\*\* Signature of Reporting Person

Date

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

\* 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).

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, see Instruction 6 for procedure.

**Persons who respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB Number.**