

# **Appendix A**

Blasting Logs

2011

And

2010

Apogee Coal Company  
Logan WV

# BLASTING LOG

3739



GENERAL INFORMATION

Blast Number **S64** Ticket Number **S64**

<b>Permittee</b> Apogee Coal, LLC.	<b>Date / Time</b> 6/22/2011 3:17 PM
<b>Customer / Operator</b> Apogee Coal, LLC.	<b>Permit No.</b> S-5006-05
<b>Location of Blast</b> Ridge 1& 2	<b>Lat</b> ° ' N 306625 - X
<b>Blasting Company</b> APOGEE COAL LLC	<b>Long</b> ° ' W 1768593 - Y
<b>Nearest Protected Structure</b> #5 Bill Joann Lambert	<b>Method</b> Handheld GPS - NAD83
<b>Distance and Direction</b> 3,645 ft NW, ?°	<b>SD to nearest protected</b> 111
<b>Nearest Other Structure</b> Consol Well 10844	
<b>Distance and Direction</b> 8,027 ft SE, ?°	
<b>Weather Conditions</b> Sunny	<b>90°F, Wind out of the</b> SW @ 0-5 mph
<b>Type of Material Blasted</b> Sandstone	<b>Blast Type</b> BREAKDOWN
<b>Matts or Protection Used</b> None used	<b>Total Tons</b> 0 <b>Total YD<sup>3</sup></b> 5,940
	<b>Powder Factor:</b> tons/lb 0.00 <b>lbs/yd<sup>3</sup></b> 1.00

BLAST INFORMATION

<b>Total Weight and Type(s) of Explosives used:</b> see attachment					
	<b>ANFO</b>	<b>Emulsion</b>	<b>Packaged</b>	<b>11 Primers</b>	<b>Total Weight</b>
	5,923.13 lbs.	0.00 lbs.	0.00 lbs.	5.50 lbs.	5,928.63 lbs.
<b>Total Holes</b>	11	<b>Angle</b>	°		
<b>Face Height (ft)</b>		<b>Burden (ft)</b>	18	<b>Backfill (ft)</b>	
<b>Depth (ft)</b>	45	<b>Spacing (ft)</b>	18	<b>Stemming (ft)</b>	15
<b>Sub Drill (ft)</b>		<b>Diameter (in)</b>	7.875	<b>Stemming Material</b>	Cuttings
<b>Maximum Weight of Explosives Allowed per 8ms Period (lbs):</b> 4392 as determined by SD of : 55					
<b>Maximum Weight of Explosives detonated per 8ms (lbs):</b> 1078 in 2.0 Holes					

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	50 ft unitronics	11						
Orica	1 Roll - Lead in Line	2						

---

**Method of Firing :** Electric      **Timer (ms) :** NA      **Circuit Type :** Row by Row  
**Initiated by :** Electronic      **Blasting Unit :** E B M      **No. of Circuits :**

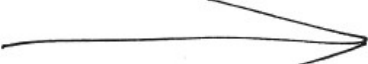
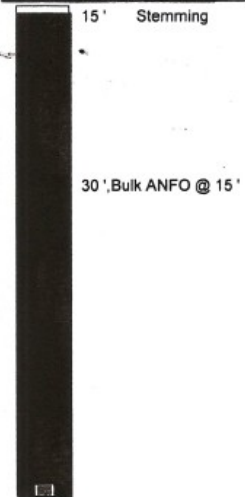
COMMENTS

Signature *Holes*      *UK*

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

Blast Number S64  
Blast Type BREAKDOWN


Date 6/22/2011  
Time 3:17 PM

Hole Cross Section	Timing Pattern
Depth (ft) 45 B X S (ft) 18 X 18 Hole dia. (in) 7.875 PF: 1.00 lbs/YD <sup>3</sup>	See Attached 
Angle (deg) Bench Ht. Stem (ft) 15 Tons/Lb.	
 <p>15' Stemming 30' Bulk ANFO @ 15'</p>	
PRIMER TYPE (S) UNIT WT. QTY. 1/2 LB CAST BOOSTER 0.5 1.0	Nearest Protected Structure: #5 Bill Joann Lambert Distance and Direction: 3,645 ft NW, ?°
Holes loaded the same: 11	

SEISMOGRAPH INFORMATION

<b>Date and Time of Recording(s)</b> 6/22/2011 3:17 PM												
Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
Reading(s) taken by : SAULS												
Analyzed by : SAULS												

BLASTER INFORMATION

<b>Name of Surface Blaster and Certification Number:</b> Brad Gregory - 3-299-88	<b>Crew:</b> 
---	--

Apogee Coal, LLC.  
S-5006-05

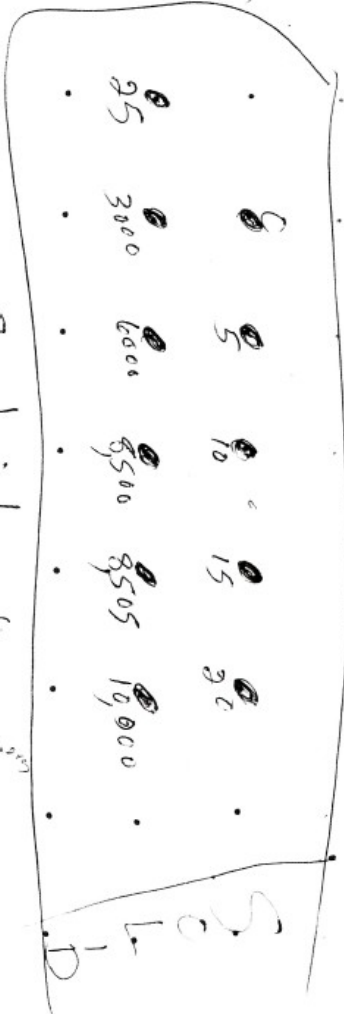
Blast Type **BREAKDOWN**  
Blast / Ticket Number **S64 /S64**

Date **6/22/2011**  
Time **3:17 PM**

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty	
1-11			45	45	1 NEBCO	Bulk ANFO	0.85	538.47	1 Orica	1/2 LB Cast	1	
<b>Burden (FT)</b>	<b>Spacing (FT)</b>	<b>Stemming (FT)</b>	<b>Angle (Deg)</b>		2				2			
18	18	15			3					<b>Total Primer QTY / Hole</b>	<b>1</b>	
					4					<b>Total Primer LBS / Hole</b>	<b>.5</b>	
					5							
					6							
					7							
					8							
								<b>Total Expl lbs. / hole</b>		538.47	<b>Expl-Primer LBS / Hole</b>	<b>538.97</b>
<b>Similar Holes - 11</b>					<b>11 Primers</b>	<b>5.50 LBS</b>	<b>Total Expl lbs. / Blast</b>	<b>5923.13</b>	<b>Similar Hole LBS</b>		<b>5929.00</b>	
<b>Total Holes Loaded this blast</b>										<b>Grand Total Explosives Weight</b>		
<b>11</b>										<b>5928.63</b>		

Shot

Shot



- 11 - Holes
- 11 - Dets
- 11 -  $\frac{1}{2}$  lb primers

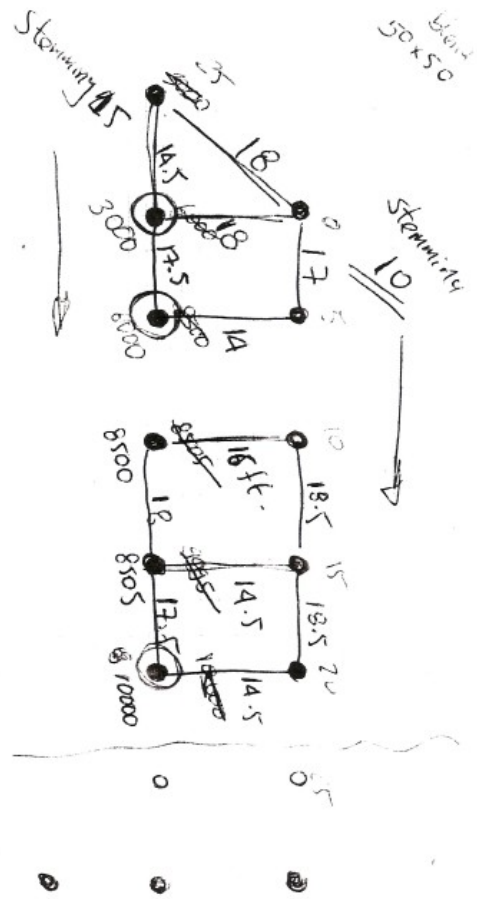
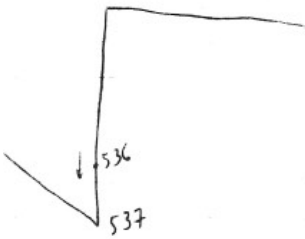
31645  
 Lambert Res.



2HPD

0 - 489 → ③  
 20 - 503 → ④  
 - 506 → Isolate Line  
           3 holes  
 8 - 550 → 10~11 holes  
 - 537

537  
 478  
 - 59



Apogee Coal Company  
Logan WV

# BLASTING LOG

GENERAL INFORMATION



Blast Number **S69** Ticket Number **S69**

Permittee Apogee Coal, LLC.	Date / Time 6/23/2011 3:27 PM
Customer / Operator Apogee Coal, LLC.	Permit No. S-5006-05
Location of Blast Ridge 1&2	Lat ° ' ' N 306665 - X
Blasting Company APOGEE COAL LLC	Long ° ' ' W 1768509 - Y
Nearest Protected Structure #5 Bill Joann Lambert	Method Handheld GPS - NAD83
Distance and Direction 3,561 ft NW, ?°	SD to nearest protected 86
Nearest Other Structure Consol Well 10844	
Distance and Direction 8,116 ft SE, ?°	
Weather Conditions Sunny	84°F, Wind out of the W @ 0-5 mph
Type of Material Blasted Sandstone	Blast Type BREAKDOWN
Matts or Protection Used None used	Total Tons 0 Total YD <sup>3</sup> 9,360
	Powder Factor: tons/lb 0.00 lbs/yd <sup>3</sup> 2.36

BLAST INFORMATION

Total Weight and Type(s) of Explosives used: **see attachment**

	ANFO	Emulsion	Packaged	26 Primers	Total Weight
	13,242.47 lbs.	8,828.31 lbs.	0.00 lbs.	19.50 lbs.	22,090.28 lbs.

Total Holes 26 Angle °

Face Height (ft) 30 Burden (ft) 18 Backfill (ft)

Depth (ft) 30 Spacing (ft) 18 Stemming (ft) 10

Sub Drill (ft) Diameter (in) 7.875 Stemming Material Cuttings

Maximum Weight of Explosives Allowed per 8ms Period (lbs) :4193 as determined by SD of : 55

Maximum Weight of Explosives detonated per 8ms (lbs) :1699 in 2.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	50 ft unitronics	26						
Orica	1 Roll - Lead in Line	1						

Firing : Electric Timer (ms) : NA Circuit Type : Row by Row  
: Electronic Blasting Unit : E B M No. of Circuits :



COMMENTS

*Inset*

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

Blast Number S69  
Blast Type BREAKDOWN


Date 6/23/2011  
Time 3:27 PM

Hole Cross Section	Timing Pattern
Depth (ft) 30      Angle (deg) B X S (ft) 18 X 18      Bench Ht. 30 Hole dia. (in) 7.875      Stem (ft) 10 PF: 2.36 lbs/YD <sup>3</sup> Tons/Lb.	<p>See Attached</p> 
	
PRIMER TYPE (S)      UNIT WT. QTY. 3/4 LB CAST PRIMER      0.8      1.0	
Holes loaded the same: 26	Nearest Protected Structure: #5 Bill Joann Lambert Distance and Direction: 3,561 ft NW, ?°

SEISMOGRAPH INFORMATION

<b>Date and Time of Recording(s)</b> 6/23/2011      3:27 PM															
Seis SN	Location	Dist (ft)	Dir.	SD	T	PPV	T Hz	V	PPV	V Hz	L	PPV	L Hz	Air dB	Air Hz
<b>Reading(s) taken by :</b> SAULS								<b>Analyzed by :</b> SAULS							

BLASTER INFORMATION

<b>Name of Surface Blaster and Certification Number:</b> Brad Gregory - 3-299-88	<b>Crew:</b> 
---	--



Apogee Coal, LLC.  
S-5006-05

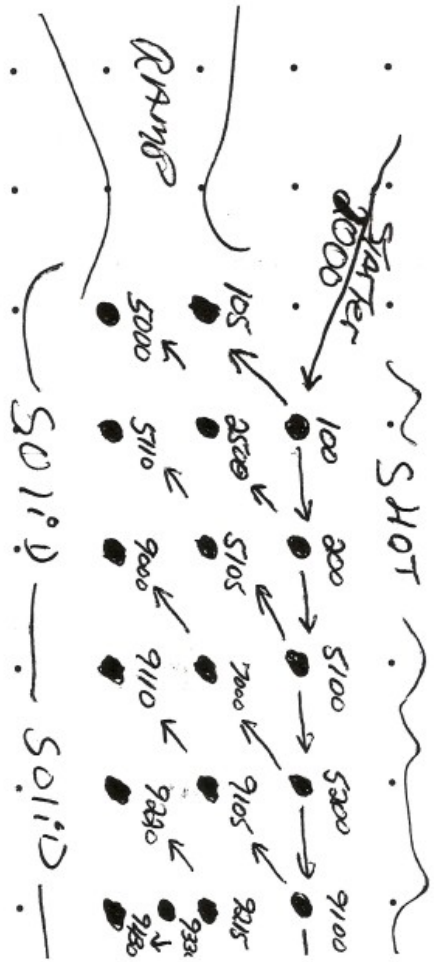
Blast Type **BREAKDOWN**  
Blast / Ticket Number **S69 /S69**

Date **6/23/2011**  
Time **3:27 PM**

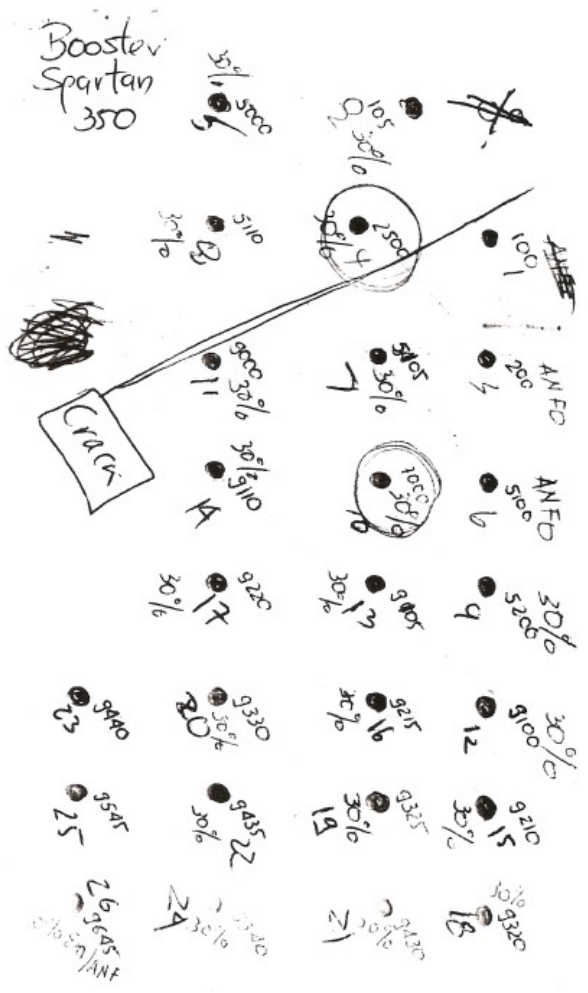
Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-26	30		30	30	1 Nelson	60/40	1.34	848.88	1	3/4 LB Cast	1
<b>Burden (FT)</b>	<b>Spacing (FT)</b>	<b>Stemming (FT)</b>	<b>Angle (Deg)</b>		2				2		
18	18	10			3					<b>Total Primer QTY / Hole</b>	<b>1</b>
					4					<b>Total Primer LBS / Hole</b>	<b>.75</b>
					5						
					6						
					7						
					8						
						<b>Total Expl lbs. / hole</b>		<b>848.88</b>		<b>Expl-Primer LBS / Hole</b>	<b>849.63</b>
<b>Similar Holes -</b>	<b>26</b>	<b>26 Primers</b>	<b>19.50 LBS</b>			<b>Total Expl lbs. / Blast</b>		<b>22070.78</b>		<b>Similar Hole LBS</b>	<b>22091.00</b>
<b>Total Holes Loaded this blast</b>										<b>Grand Total Explosives Weight</b>	
<b>26</b>										<b>22090.28</b>	

# Nelson Brothe

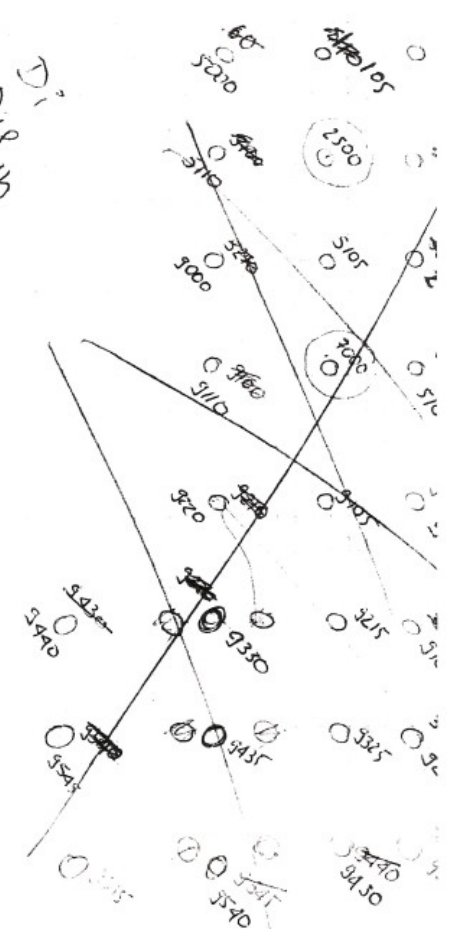
## UNI Tronics



Kelly Rd.



Deep Dip Di



Apogee Coal Company  
Logan WV

# BLASTING LOG



GENERAL INFORMATION

Blast Number **S71** Ticket Number **S71**

Permittee Apogee Coal, LLC.	Date / Time 6/24/2011 3:20 PM
Customer / Operator Apogee Coal, LLC.	Permit No. S-5006-05
Location of Blast Ridge 1 & 2	Lat ° ' N 306889 - X
Blasting Company APOGEE COAL LLC	Long ° ' W 1768347 - Y
Nearest Protected Structure #5 Bill Joann Lambert	Method Handheld GPS - NAD83
Distance and Direction 3,285 ft NW, ?°	SD to nearest protected 114
Nearest Other Structure Consol Well 10844	
Distance and Direction 8,386 ft SE, ?°	
Weather Conditions Sunny 85°F,	Wind out of the E @ 0-5 mph
Type of Material Blasted Sandstone	Blast Type Production
Matts or Protection Used None used	Total Tons 0 Total YD <sup>3</sup> 15,660
	Powder Factor: tons/lb 0.00 lbs/yd <sup>3</sup> 1.55

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used: see attachment**

	ANFO	Emulsion	Packaged	29 Primers	Total Weight
	19,399.99 lbs.	4,850.00 lbs.	0.00 lbs.	21.75 lbs.	24,271.73 lbs.

**Total Holes** 29 **Angle** 0 °

<b>Face Height (ft)</b>	45	<b>Burden (ft)</b>	18	<b>Backfill (ft)</b>	
<b>Depth (ft)</b>	45	<b>Spacing (ft)</b>	18	<b>Stemming (ft)</b>	9
<b>Sub Drill (ft)</b>		<b>Diameter (in)</b>	7.875	<b>Stemming Material</b>	Cuttings

**Maximum Weight of Explosives Allowed per 8ms Period (lbs) :3568 as determined by SD of : 55**  
**Maximum Weight of Explosives detonated per 8ms (lbs) : 837 in 1.0 Holes**

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	50 ft unitronics	29						

**Method of Firing** : Digital      **Timer (ms)** : NA      **Circuit Type** : Row by Row  
**Initiated by** : Electronic      **Blasting Unit** : E B M      **No. of Circuits** : 1

COMMENTS

*Signature shot for UK*

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

Blast Number S71  
Blast Type Production

Date 6/24/2011  
Time 3:20 PM

**Hole Cross Section**  
Depth (ft) 45      Angle (deg) 0  
B X S (ft) 18 X 18      Bench Ht. 45  
Hole dia. (in) 7.875      Stem (ft) 9  
PF: 1.55 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

9' Stemming

36' .80/20 @ 9'

*See Attachment*

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 29

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 3,285 ft NW, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 6/24/2011      3:20 PM  
Seis SN    Location      Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:  
Richard Cope - 5 506 08

Crew:

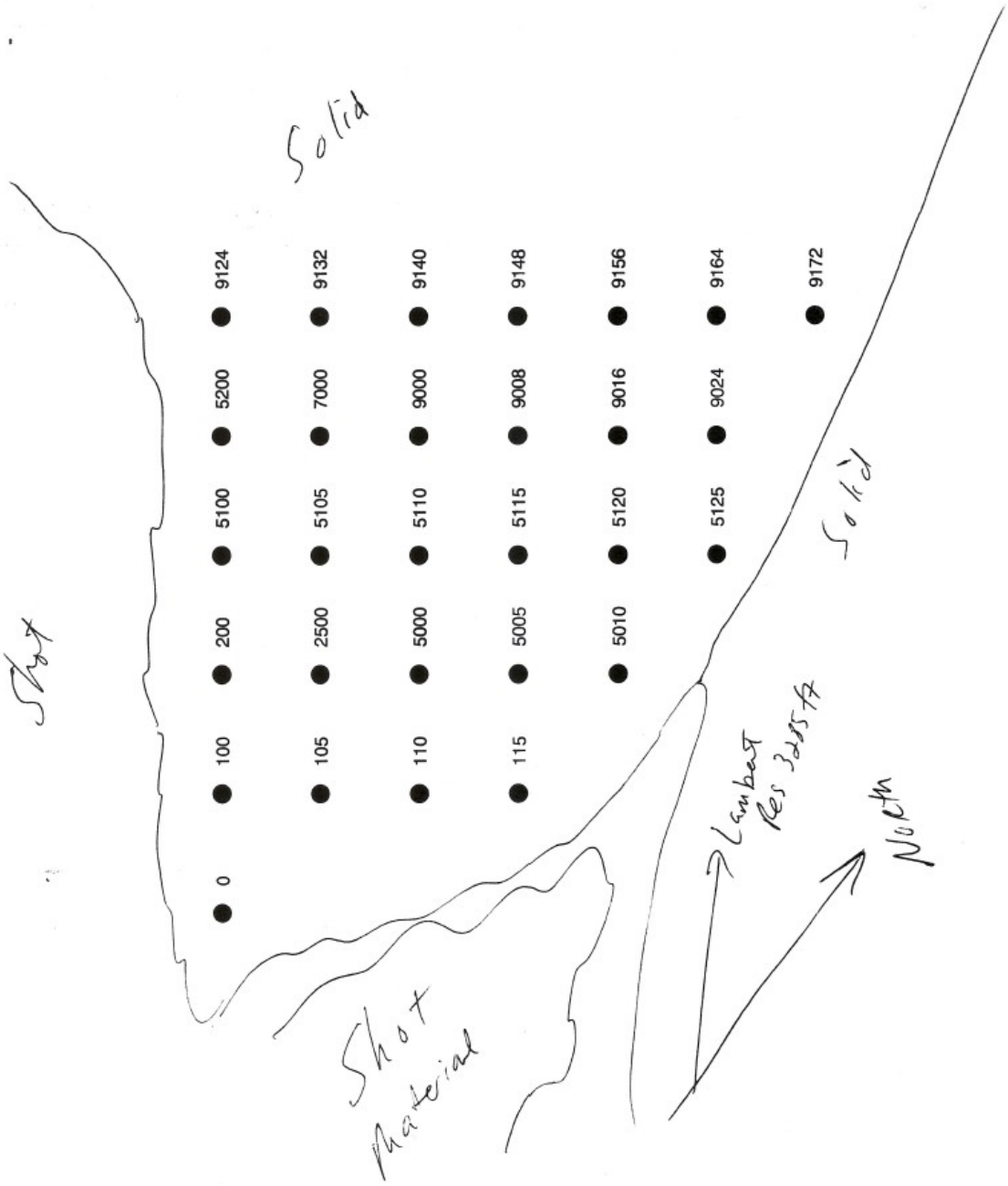
*RC*

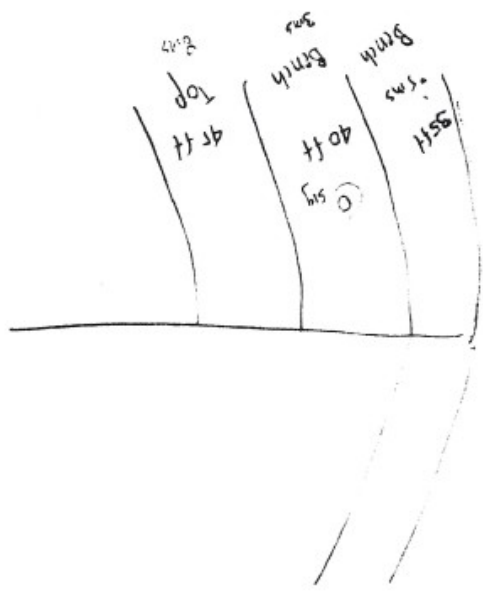
Apogee Coal, LLC.  
S-5006-05

Blast Type Production  
Blast / Ticket Number S71 /S71

Date 6/24/2011  
Time 3:20 PM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty		
1-29	45		45	45	1 Nelson	80/20	1.10	836.21	1	3/4 LB Cast	1		
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2				
18	18	9	0		3					Total Primer QTY / Hole	1		
					4					Total Primer LBS / Hole	.75		
					5								
					6								
					7								
					8								
								Total Expl lbs. / hole	836.21	Expl-Primer LBS / Hole	836.96		
<b>Similar Holes - 29</b>					<b>29 Primers</b>		<b>21.75 LBS</b>		<b>Total Expl lbs. / Blast</b>		<b>24249.98</b>	<b>Similar Hole LBS</b>	<b>24272.00</b>
<b>Total Holes Loaded this blast</b>										<b>Grand Total Explosives Weight</b>			
<b>29</b>										<b>24271.73</b>			







Apogee Coal Company  
Logan WV

# BLASTING LOG

GENERAL INFORMATION



Blast Number S81 Ticket Number S81

<b>Permittee</b> Apogee Coal, LLC.		<b>Date / Time</b> 6/29/2011 11:16 AM	
<b>Customer / Operator</b> Apogee Coal, LLC.		<b>Permit No.</b> S-5006-05	
<b>Location of Blast</b> Ridge 1&2	<b>Lat</b>	° ' N 306749	- X
<b>Blasting Company</b> APOGEE COAL LLC	<b>Long</b>	° ' W 1768201	- Y
<b>Nearest Protected Structure</b> #5 Bill Joann Lambert		<b>Method</b> Handheld GPS - NAD83	
<b>Distance and Direction</b> 3,311 ft NW, ?°		<b>SD to nearest protected</b> 116	
<b>Nearest Other Structure</b> Consol Well 10844			
<b>Distance and Direction</b> 8,403 ft SE, ?°			
<b>Weather Conditions</b> Sunny	90°F,	<b>Wind out of the</b> W @	0-2 mph
<b>Type of Material Blasted</b> Sandstone	<b>Blast Type</b> BREAKDOWN		
<b>Matts or Protection Used</b>	<b>Total Tons</b> 0	<b>Total YD<sup>3</sup></b> 17,280	
	<b>Powder Factor:</b> tons/lb 0.00	<b>lbs/yd<sup>3</sup></b> 1.51	

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	32 Primers	Total Weight
	20,812.25 lbs.	5,203.06 lbs.	0.00 lbs.	24.00 lbs.	26,039.31 lbs.

<b>Total Holes</b>	32	<b>Angle</b>	°
<b>Face Height (ft)</b>	95	<b>Burden (ft)</b>	18
<b>Depth (ft)</b>	45	<b>Spacing (ft)</b>	18
<b>Sub Drill (ft)</b>		<b>Diameter (in)</b>	7.875
		<b>Stemming Material</b>	Cuttings

**Maximum Weight of Explosives Allowed per 8ms Period (lbs):** 3625 as determined by SD of : 55  
**Maximum Weight of Explosives detonated per 8ms (lbs):** 814 in 1.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	50 ft unitronics	32						

**Method of Firing :** Electric      **Timer (ms) :** NA      **Circuit Type :**

**Initiated by :** Electronic      **Blasting Unit :** E B M      **No. of Circuits :**

COMMENTS

*Signature* OK Shot *Signature* Hole

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

Blast Number S81  
Blast Type BREAKDOWN

Date 6/29/2011  
Time 11:16 AM

**Hole Cross Section**  
Dépth (ft) 45      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 95  
Hole dia. (in) 7.875      Stem (ft) 10  
PF: 1.51 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

*See Attached*

10' Stemming

35' .80/20 @ 10'

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 32

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 3,311 ft NW, ?°

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 6/29/2011      11:16 AM  
Seis SN      Location      Dist (ft)      Dir.      SD      T      PPV      T Hz      V      PPV      V Hz      L      PPV      L Hz      Air dB      Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:  
Todd Keffer - 5-645-05

Crew:

*Todd Keffer*





Apogee Coal Company  
Logan WV

# BLASTING LOG

GENERAL INFORMATION



Blast Number **S82** Ticket Number **S82**

**Permittee** Apogee Coal, LLC. **Date / Time** 6/29/2011 3:33 PM  
**Customer / Operator** Apogee Coal, LLC. **Permit No.** S-5006-05  
**Location of Blast** Ridge 1& 2 **Lat** ° ' ' N 306912 - X  
**Blasting Company** APOGEE COAL LLC **Long** ° ' ' W 1768217 - Y  
**Nearest Protected Structure** #5 Bill Joann Lambert **Method** Handheld GPS - NAD83  
**Distance and Direction** 3,188 ft NW, ?° **SD to nearest protected** 77  
**Nearest Other Structure** Consol Well 10844  
**Distance and Direction** 8,499 ft SE, ?°  
**Weather Conditions** Sunny 90°F, **Wind out of the** SE @ 0-5 mph  
**Type of Material Blasted** Sandstone **Blast Type** BREAKDOWN  
**Matts or Protection Used** None used **Total Tons** 0 **Total YD<sup>3</sup>** 18,900  
**Powder Factor:** tons/lb 0.00 **lbs/yd<sup>3</sup>** 1.59

## BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	35 Primers	Total Weight
	24,064.16 lbs.	6,016.04 lbs.	0.00 lbs.	26.25 lbs.	30,106.45 lbs.

**Total Holes** 35 **Angle** 0°  
**Face Height (ft)** 45 **Burden (ft)** 18 **Backfill (ft)**  
**Depth (ft)** 45 **Spacing (ft)** 18 **Stemming (ft)** 8  
**Sub Drill (ft)** **Diameter (in)** 7.875 **Stemming Material** Cuttings  
**Maximum Weight of Explosives Allowed per 8ms Period (lbs)** :3360 as determined by SD of : 55  
**Maximum Weight of Explosives detonated per 8ms (lbs)** :1720 in 2.0 Holes

## INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	1 Roll - Lead in Line	1						
Orica	EXCEL 80 FT - 20	35						
Orica	S. EXCEL 40 FT- 42	5						
Orica	S. EXCEL 40 FT-100	30						

**Method of Firing** : Non Electric **Timer (ms)** : NA **Circuit Type** : Row by Row  
**Initiated by** : Non-Electric **Blasting Unit** : Handi Blaster **No. of Circuits** : 0

## COMMENTS

Signature

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

Blast Number S82  
Blast Type BREAKDOWN

Date 6/29/2011  
Time 3:33 PM

**Hole Cross Section**

Depth (ft) 45      Angle (deg) 0  
B X S (ft) 18 X 18      Bench Ht. 45  
Hole dia. (in) 7.875      Stem (ft) 8  
PF: 1.59 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

*See Attached*



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 35

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 3,188 ft NW, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 6/29/2011 3:33 PM  
Seis SN Location Dist (ft) Dir. SD T PPV T Hz V PPV V Hz L PPV L Hz Air dB Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:  
Todd Keffer - 5-645-05

Crew:

*Todd Keffer*

Apogee Coaf, LLC.  
S-5006-05

Blast Type **BREAKDOWN**  
Blast / Ticket Number **S82 /S82**

Date **6/29/2011**  
Time **3:33 PM**

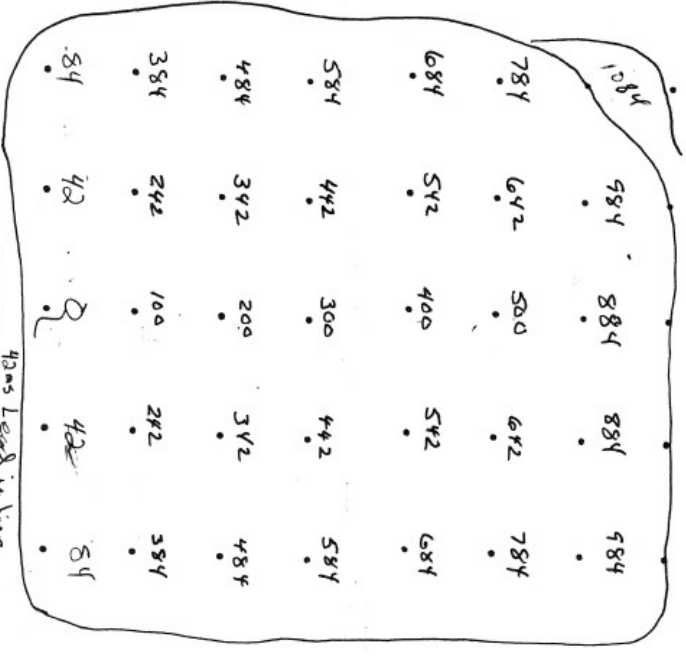
Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty	
1-35	45		45	45	1 Nelson	80/20	1.10	859.43	1	3/4 LB Cast	1	
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2			
18	18	8	0		3					Total Primer QTY / Hole	1	
					4					Total Primer LBS / Hole	.75	
					5							
					6							
					7							
					8							
								<b>Total Expl lbs. / hole</b>		859.43	<b>Expl-Primer LBS / Hole</b>	860.18
<b>Similar Holes -</b>	35		35 Primers	26.25 LBS		<b>Total Expl lbs. / Blast</b>		30080.20		<b>Similar Hole LBS</b>	<b>30107.00</b>	
<b>Total Holes Loaded this blast</b>										<b>Grand Total Explosives Weight</b>		
										<b>35</b>		
										<b>30106.45</b>		

3188  
Lambert Res

N

NO 2 LE

Solid



SHOT  $\frac{4205}{1}$  Lead in line

NO 2 LE



Apogee Coal Company  
Logan WV

# BLASTING LOG



GENERAL INFORMATION

Blast Number **S85** Ticket Number **S85**

<b>Permittee</b> Apogee Coal, LLC.	<b>Date / Time</b> 6/29/2011 6:45 PM
<b>Customer / Operator</b> Apogee Coal, LLC.	<b>Permit No.</b> S-5006-05
<b>Location of Blast</b> Ridge 1&2	<b>Lat</b> ° ' N 306998 - X
<b>Blasting Company</b> APOGEE COAL LLC	<b>Long</b> ° ' W 1768313 - Y
<b>Nearest Protected Structure</b> #5 Bill Joann Lambert	<b>Method</b> Handheld GPS - NAD83
<b>Distance and Direction</b> 3,179 ft NW, ?°	<b>SD to nearest protected</b> 78
<b>Nearest Other Structure</b> Consol Well 10844	
<b>Distance and Direction</b> 8,485 ft SE, ?°	
<b>Weather Conditions</b> Sunny	92°F, <b>Wind out of the</b> SE @ 0-5 mph
<b>Type of Material Blasted</b> Sandstone	<b>Blast Type</b> BREAKDOWN
<b>Matts or Protection Used</b> None used	<b>Total Tons</b> 0 <b>Total YD<sup>3</sup></b> 21,600
	<b>Powder Factor:</b> tons/lb 0.00 <b>lbs/yd<sup>3</sup></b> 1.55

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	40 Primers	Total Weight
	26,758.60 lbs.	6,689.65 lbs.	0.00 lbs.	30.00 lbs.	33,478.25 lbs.

**Total Holes** 40 **Angle** 0°

<b>Face Height (ft)</b>	45	<b>Burden (ft)</b>	18	<b>Backfill (ft)</b>	
<b>Depth (ft)</b>	45	<b>Spacing (ft)</b>	18	<b>Stemming (ft)</b>	9
<b>Sub Drill (ft)</b>		<b>Diameter (in)</b>	7.875	<b>Stemming Material</b>	Cuttings

**Maximum Weight of Explosives Allowed per 8ms Period (lbs):** 3340 as determined by SD of : 55  
**Maximum Weight of Explosives detonated per 8ms (lbs):** 1674 in 2.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	50 ft unitronics	40						

**Method of Firing :** Digital **Timer (ms) :** NA **Circuit Type :** Row by Row  
**Initiated by :** Electronic **Blasting Unit :** E B M **No. of Circuits :** 1

COMMENTS

OK shot

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

Blast Number S85  
Blast Type BREAKDOWN

Date 6/29/2011  
Time 6:45 PM

**Hole Cross Section**  
Depth (ft) 45      Angle (deg) 0  
B X S (ft) 18 X 18      Bench Ht. 45  
Hole dia. (in) 7.875      Stem (ft) 9  
PF: 1.55 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

*See Attached*

9' Stemming

36 '.80/20 @ 9'

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 40

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 3,179 ft NW, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 6/29/2011 6:45 PM  
Seis SN Location Dist (ft) Dir. SD T PPV T Hz V PPV V Hz L PPV L Hz Air dB Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:  
Todd Keffer - 5-645-05

Crew:

*Todd Keffer*

Apogee Coal, LLC.  
S-5006-05

Blast Type **BREAKDOWN**  
Blast / Ticket Number **S85 /S85**

Date **6/29/2011**  
Time **6:45 PM**

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty	
1-40	45		45	45	1 Nelson	80/20	1.10	836.21	1	3/4 LB Cast	1	
<b>Burden (FT)</b>	<b>Spacing (FT)</b>	<b>Stemming (FT)</b>	<b>Angle (Deg)</b>		2				2			
18	18	9	0		3					<b>Total Primer QTY / Hole</b>	<b>1</b>	
					4					<b>Total Primer LBS / Hole</b>	<b>.75</b>	
					5							
					6							
					7							
					8							
								<b>Total Expl lbs. / hole</b>		836.21	<b>Expl-Primer LBS / Hole</b>	<b>836.96</b>
<b>Similar Holes -</b>	<b>40</b>		<b>40 Primers</b>	<b>30.00 LBS</b>		<b>Total Expl lbs. / Blast</b>		<b>33448.25</b>		<b>Similar Hole LBS</b>	<b>33479.00</b>	
<b>Total Holes Loaded this blast</b>										<b>Grand Total Explosives Weight</b>		
<b>40</b>										<b>33478.25</b>		



Solid

SHOT

Solid

Shot

1184	1084	984	1084	1184
884	742	600	742	884
784	642	500	642	784
684	542	400	542	684
584	442	300	442	584
484	342	200	342	484
384	242	100	242	384
284	142	0	142	284

# BLASTING LOG

GENERAL INFORMATION



Blast Number **E35** Ticket Number **E35**

**Permittee** Apogee Coal, LLC. **Date / Time** 6/16/2010 12:15 PM  
**Customer / Operator** Apogee Coal, LLC. **Permit No.** S-5006-05  
**Location of Blast** Ridge 1&2 **Lat** ° ' ' N 301131 - X  
**Blasting Company** APOGEE COAL LLC **Long** ° ' ' W 1769680 - Y  
**Nearest Protected Structure** Cline residence **Method** Handheld GPS - NAD83  
**Distance and Direction** 7,689 ft S, ?° **SD to nearest protected** 325  
**Nearest Other Structure** Jackson Well  
**Distance and Direction** 5,101 ft SW, ?°  
**Weather Conditions** Partly Cloudy 90°F, **Wind out of the** N @ 5-10 mph  
**Type of Material Blasted** Sandstone **Blast Type** Production  
**Matts or Protection Used** None used **Total Tons** 0 **Total YD<sup>3</sup>** 16,380  
**Powder Factor:** tons/lb 0.00 **lbs/yd<sup>3</sup>** 1.21

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	48 Primers	Total Weight
	15,887.92 lbs.	3,971.98 lbs.	0.00 lbs.	36.00 lbs.	19,895.90 lbs.

**Total Holes** 39 **Angle** 0°  
**Face Height (ft)** 35 **Burden (ft)** 18 **Backfill (ft)** 2  
**Depth (ft)** 35 **Spacing (ft)** 18 **Stemming (ft)** 9 - 12  
**Sub Drill (ft)** **Diameter (in)** 7.875 **Stemming Material** Cuttings  
**Maximum Weight of Explosives Allowed per 8ms Period (lbs)** :6158 as determined by SD of : 65  
**Maximum Weight of Explosives detonated per 8ms (lbs)** : 558 in 1.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	1 Roll - Lead in Line	1						
Orica	EXCEL 40 FT - 20	48						
Orica	S. EXCEL 40 FT- 42	7						
Orica	S. EXCEL 40 FT-100	30						

**Method of Firing** : Non Electric **Timer (ms)** : NA **Circuit Type** : Row by Row  
**Initiated by** : Non-Electric **Blasting Unit** : Handi Blaster **No. of Circuits** : 0

COMMENTS

Company Apogee Coal, LLC.  
Blast Number S-5006-05

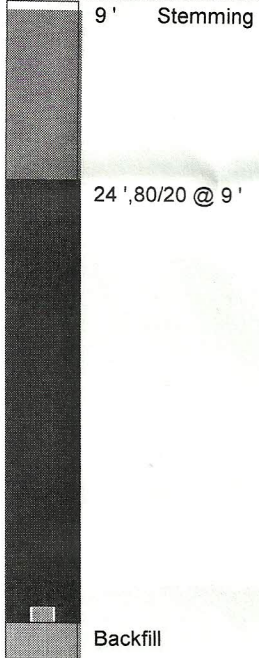
Blast Number E35  
Blast Type Production

Date 6/16/2010  
Time 12:15 PM

**Hole Cross Section**

Depth (ft) 35      Angle (deg) 0  
X S (ft) 18 X 18      Bench Ht. 35  
Hole dia. (in) 7.875      Stem (ft) 9  
PF: 1.33 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 30

Nearest Protected Structure: Cline residence

Distance and Direction: 7,689 ft S, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 6/16/2010 12:15 PM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:

Crew:

Richard Cope - 5 506 08

*VOID*

Location Apogee Coal, LLC.  
Number S-5006-05

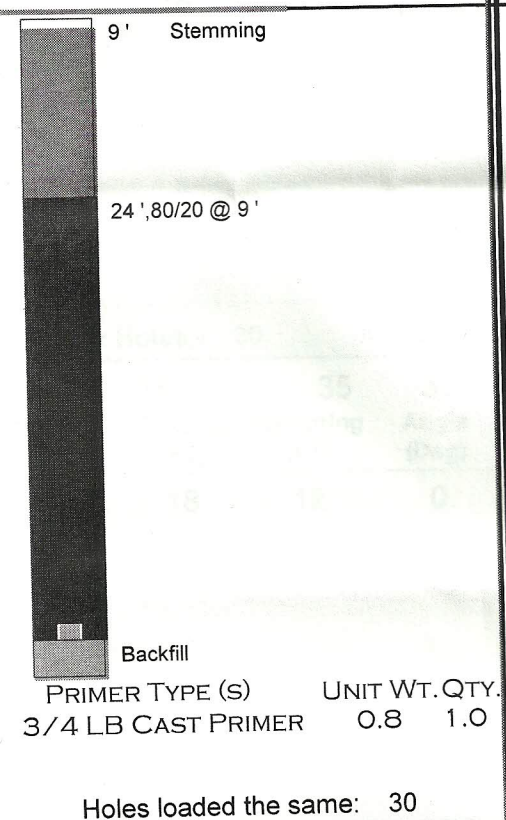
Blast Number E35  
Blast Type Production

Date 6/16/2010  
Time 12:15 PM

**Hole Cross Section**

Depth (ft) 35      Angle (deg) 0  
X S (ft) 18 X 18      Bench Ht. 35  
Hole dia. (in) 7.875      Stem (ft) 9  
PF: 1.33 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**



Nearest Protected Structure: Cline residence  
Distance and Direction: 7,689 ft S, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 6/16/2010 12:15 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:  
Richard Cope - 5 506 08

Crew:

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-30	35		35	35	1 Nelson	80/20	1.10	557.47	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	9	0		3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	557.47	Expl-Primer LBS / Hole	558.22

Similar Holes -	30	30 Primers	22.50 LBS	Total Expl lbs. / Blast	16724.13	Similar Hole LBS	16747.00
-----------------	----	------------	-----------	-------------------------	----------	------------------	----------

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
31-39	35		35	35	1 Nelson	80/20	1.10	232.28	1	3/4 LB Cast	2
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	80/20	1.10	116.14	2		
18	18	12	0		3					Total Primer QTY / Hole	2
					4					Total Primer LBS / Hole	1.5
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	348.42	Expl-Primer LBS / Hole	349.92

Similar Holes -	9	18 Primers	13.50 LBS	Total Expl lbs. / Blast	3135.77	Similar Hole LBS	3150.00
-----------------	---	------------	-----------	-------------------------	---------	------------------	---------

Total Holes Loaded this blast  
**39**

Grand Total Explosives Weight  
**19895.90**



# BLASTING LOG



GENERAL INFORMATION

Blast Number **E36** Ticket Number **E36**

Permittee Apogee Coal, LLC. Date / Time 6/16/2010 2:06 PM

Customer / Operator Apogee Coal, LLC. Permit No. S-5007-01

Location of Blast Guyan Mine Lat ° ' N 292455 - X

Blasting Company APOGEE COAL LLC Long ° ' W 1775162 - Y

Nearest Protected Structure Ball residence Method Handheld GPS - NAD83

Distance and Direction 3,783 ft S, ?° SD to nearest protected 151

Nearest Other Structure Dominion Well 1089

Distance and Direction 6,905 ft NE, ?° 292 779  
1775197

Weather Conditions Partly Cloudy 90°F, Wind out of the N @ 5-10 mph

Type of Material Blasted Sandstone Blast Type Production

Matts or Protection Used None used Total Tons 0 Total YD<sup>3</sup> 35,880

Powder Factor: tons/lb 0.00 lbs/yd<sup>3</sup> 1.13

BLAST INFORMATION

Total Weight and Type(s) of Explosives used: see attachment

	ANFO	Emulsion	Packaged	65 Primers	Total Weight
	30,494.38 lbs.	10,164.79 lbs.	0.00 lbs.	48.75 lbs.	40,707.92 lbs.

Total Holes	65	Angle	0 °		
Face Height (ft)	46	Burden (ft)	18	Backfill (ft)	2
Depth (ft)	46	Spacing (ft)	18	Stemming (ft)	8
Sub Drill (ft)		Diameter (in)	6.75	Stemming Material	Cuttings
Maximum Weight of Explosives Allowed per 8ms Period (lbs) :4731 as determined by SD of : 55					
Maximum Weight of Explosives detonated per 8ms (lbs) : 626 in 1.0 Holes					

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	50 ft unitronics	65						

Method of Firing : Digital Timer (ms) : NA Circuit Type : Row by Row

Initiated by : Electronic Blasting Unit : E B M No. of Circuits : 1

COMMENTS

Operation Apogee Coal, LLC.

Blast Number E36

Date 6/16/2010

Number S-5007-01

Blast Type Production

Time 2:06 PM

**Hole Cross Section**

**Timing Pattern**

Depth (ft) 46      Angle (deg) 0  
Diameter (ft) 18 X 18      Bench Ht. 46  
Hole dia. (in) 6.750      Stem (ft) 8  
Explosive: 1.13 lbs/YD<sup>3</sup>      Tons/Lb.

8' Stemming

36', 75/25 @ 8'

Backfill

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 65

**Nearest Protected Structure:** Ball residence

**Distance and Direction:** 3,783 ft S, ?°

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 6/16/2010 2:06 PM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Table with 13 columns: Seis SN, Location, Dist (ft), Dir., SD, T PPV, T Hz, V PPV, V Hz, L PPV, L Hz, Air dB, Air Hz. The table body is currently empty.

**Reading(s) taken by :** SAULS

**Analyzed by :** SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**

**Crew:**

Richard Cope - 5 506 08

*COPY*

gee Coal, LLC.  
007-01

Blast Type Production  
Blast / Ticket Number E36 /E36

Date 6/16/2010  
Time 2:06 PM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-65	46		46	46	1 Nelson	75/25	1.12	625.53	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	8	0		3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						

Total Expl lbs. / hole 625.53      Expl-Primer LBS / Hole 626.28

Similar Holes - 65      65 Primers 48.75 LBS      Total Expl lbs. / Blast 40659.17      Similar Hole LBS 40708.00

Total Holes Loaded this blast  
65

Grand Total Explosives Weight  
40707.92

Product Factor: tons/lb 0.00  
BLAST INFO

30,494.35 lbs      10,164.79 lbs      0.00 lbs      48.75      40708.00

Explosives Allowed per 3ms Period (lbs) 31 as determined by 30 of

Delay Type

02  
10/16/10  
5  
8/18

Blast Number **H18** Ticket Number **H18**

<b>Permittee</b> Apogee Coal, LLC.	<b>Date / Time</b> 9/15/2010 4:06 PM
<b>Customer / Operator</b> Apogee Coal, LLC. <i>CHAD</i>	<b>Permit No.</b> S-5006-05
<b>Location of Blast</b> Ridge 1&2	<b>Lat</b> ° ' ' N 302100 - X
<b>Blasting Company</b> APOGEE COAL LLC	<b>Long</b> ° ' ' W 1768464 - Y
<b>Nearest Protected Structure</b> #5 Bill Joann Lambert	<b>Method</b> Handheld GPS - NAD83
<b>Distance and Direction</b> 7,678 ft N, ?°	<b>SD to nearest protected</b> 129
<b>Nearest Other Structure</b> Dominion Well	
<b>Distance and Direction</b> 4,143 ft N, ?°	
<b>Weather Conditions</b> Partly Cloudy 86°F,	<b>Wind out of the</b> SE @ 0-2 mph
<b>Type of Material Blasted</b> Sandstone	<b>Blast Type</b> Production
<b>Matts or Protection Used</b>	<b>Total Tons</b> 0 <b>Total YD<sup>3</sup></b> 258,667
	<b>Powder Factor:</b> tons/lb 0.00 <b>lbs/yd<sup>3</sup></b> 1.33

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	388 Primers	Total Weight
	273,978.34 lbs.	68,494.59 lbs.	0.00 lbs.	291.00 lbs.	342,763.93 lbs.

**Total Holes** 194 **Angle** °

**Face Height (ft)** 90 **Burden (ft)** 20 **Backfill (ft)**

**Depth (ft)** 90 **Spacing (ft)** 20 **Stemming (ft)** 9

**Sub Drill (ft)** **Diameter (in)** 7.875 **Stemming Material** Cuttings

**Maximum Weight of Explosives Allowed per 8ms Period (lbs)** :5674 as determined by SD of : 55

**Maximum Weight of Explosives detonated per 8ms (lbs)** :3534 in 2.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	120 ft unitronics	194						
Orica	50 ft unitronics	120						
Orica	80 ft unitronics	74						

**Method of Firing** : Electric **Timer (ms)** : NA **Circuit Type** :

**Initiated by** : Electronic **Blasting Unit** : E B M **No. of Circuits** :

COMMENTS

**Hole Cross Section**

Depth (ft) 90      Angle (deg)  
 B X S (ft) 20 X 20      Bench Ht. 90  
 Hole dia. (in) 7.875      Stem (ft) 9  
 PF: 1.32 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

9' Stemming

38' 80/20 @ 9'

5' Cuttings @ 47'

38' 80/20 @ 52'

PRIMER TYPE (S)	UNIT WT.	QTY.
3/4 LB CAST PRIMER	0.8	2.0

Holes loaded the same: 194

**Nearest Protected Structure:** #5 Bill Joann Lambert

**Distance and Direction:** 7,678 ft N, ?°

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 9/15/2010 4:06 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

**Reading(s) taken by :** SAULS

**Analyzed by :** SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**  
 Todd Keffer - 5-645-05

**Crew:**

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty	
1-194	90		90	90	1 Nelson	80/20	1.10	882.66	1	3/4 LB Cast	2	
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	80/20	1.10	882.66	2			
20	20	9			3					Total Primer QTY / Hole	2	
					4					Total Primer LBS / Hole	1.5	
					5							
					6							
					7							
					8							
							Total Expl lbs. / hole	1765.32	Expl-Primer LBS / Hole		?	
Similar Holes - 194					388 Primers 291.00 LBS		Total Expl lbs. / Blast		342472.93	Similar Hole LBS		342764.00

Total Holes Loaded this blast

**194**

Grand Total Explosives Weight

**342763.93**

O PEN

Lambert House  
7678' → N

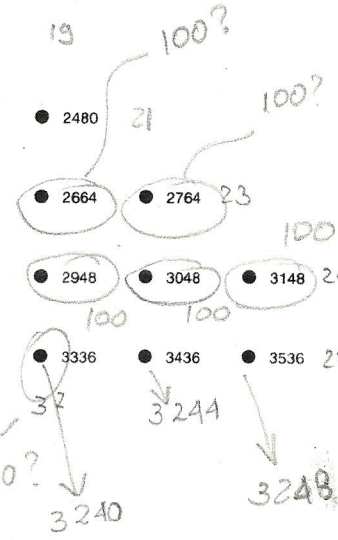
Valley Fill

20147 Signature Hole ↓

● 2000 2002 ● 2004 2006 ● 2008 2010 3

O PEN

● 2012	● 2016	● 2020	● 2024	● 2028	● 2032	● 2036	● 2040	● 2044	9												
● 2048	● 2052	● 2056	● 2060	● 2064	● 2068	● 2072	● 2076	● 2080	● 2084	● 2088	11										
● 2092	● 2096	● 2100	● 2104	● 2108	● 2112	● 2116	● 2120	● 2124	● 2128	● 2132	● 2136	● 2140	13								
● 2144	● 2148	● 2152	● 2156	● 2160	● 2164	● 2168	● 2172	● 2176	● 2180	● 2184	● 2188	● 2192	13								
● 2196	● 2200	● 2204	● 2208	● 2212	● 2216	● 2220	● 2224	● 2228	● 2232	● 2236	● 2240	● 2244	● 2248	● 2252	15						
● 2256	● 2260	● 2264	● 2268	● 2272	● 2276	● 2280	● 2284	● 2288	● 2292	● 2296	● 2300	● 2304	● 2308	● 2312	● 2316	● 2320	17				
● 2328	● 2332	● 2336	● 2340	● 2344	● 2348	● 2352	● 2356	● 2360	● 2364	● 2368	● 2372	● 2376	● 2380	● 2384	● 2388	● 2392	● 2396	19			
● 2408	● 2412	● 2416	● 2420	● 2424	● 2428	● 2432	● 2436	● 2440	● 2444	● 2448	● 2452	● 2456	● 2460	● 2464	● 2468	● 2472	● 2476	● 2480	21		
● 2496	● 2500	● 2504	● 2508	● 2512	● 2516	● 2520	● 2524	● 2528	● 2532	● 2536	● 2540	● 2544	● 2548	● 2552	● 2556	● 2560	● 2564	● 2664	● 2764	23	
● 2780	● 2784	● 2788	● 2792	● 2796	● 2800	● 2804	● 2808	● 2812	● 2816	● 2820	● 2824	● 2828	● 2832	● 2836	● 2840	● 2844	● 2848	● 2948	● 3048	● 3148	24
● 3168	● 3172	● 3176	● 3180	● 3184	● 3188	● 3192	● 3196	● 3200	● 3204	● 3208	● 3212	● 3216	● 3220	● 3224	● 3228	● 3232	● 3236	● 3336	● 3436	● 3536	25



2 charges,  
2 in bottom.

S O L I D

1st hole (Signature Hole)  
top charge & 2ms for the bottom,  
2000ms for the top charge & 2002ms for the bottom.

Lambert House  
7678

OPEN

OPEN

Signature Hole  
2

2000 2004 2008  
2003 2006 2010

3

Open

2012	2016	2020	2024	2028	2032	2036	2040	2044	2048	2052	2056	2060	2064	2068	2072	2076	2080	2084	2088	2092	2096	2100	2104	2108	2112	2116	2120	2124	2128	2132	2136	2140	2144	2148	2152	2156	2160	2164	2168	2172	2176	2180	2184	2188	2192	2196	2200	2204	2208	2212	2216	2220	2224	2228	2232	2236	2240	2244	2248	2252	2256	2260	2264	2268	2272	2276	2280	2284	2288	2292	2296	2300	2304	2308	2312	2316	2320	2324	2328	2332	2336	2340	2344	2348	2352	2356	2360	2364	2368	2372	2376	2380	2384	2388	2392	2396	2400	2404	2408	2412	2416	2420	2424	2428	2432	2436	2440	2444	2448	2452	2456	2460	2464	2468	2472	2476	2480	2484	2488	2492	2496	2500	2504	2508	2512	2516	2520	2524	2528	2532	2536	2540	2544	2548	2552	2556	2560	2564	2568	2572	2576	2580	2584	2588	2592	2596	2600	2604	2608	2612	2616	2620	2624	2628	2632	2636	2640	2644	2648	2652	2656	2660	2664	2668	2672	2676	2680	2684	2688	2692	2696	2700	2704	2708	2712	2716	2720	2724	2728	2732	2736	2740	2744	2748	2752	2756	2760	2764	2768	2772	2776	2780	2784	2788	2792	2796	2800	2804	2808	2812	2816	2820	2824	2828	2832	2836	2840	2844	2848	2852	2856	2860	2864	2868	2872	2876	2880	2884	2888	2892	2896	2900	2904	2908	2912	2916	2920	2924	2928	2932	2936	2940	2944	2948	2952	2956	2960	2964	2968	2972	2976	2980	2984	2988	2992	2996	3000	3004	3008	3012	3016	3020	3024	3028	3032	3036	3040	3044	3048	3052	3056	3060	3064	3068	3072	3076	3080	3084	3088	3092	3096	3100	3104	3108	3112	3116	3120	3124	3128	3132	3136	3140	3144	3148	3152	3156	3160	3164	3168	3172	3176	3180	3184	3188	3192	3196	3200	3204	3208	3212	3216	3220	3224	3228	3232	3236	3240	3244	3248	3252	3256	3260	3264	3268	3272	3276	3280	3284	3288	3292	3296	3300	3304	3308	3312	3316	3320	3324	3328	3332	3336	3340	3344	3348	3352	3356	3360	3364	3368	3372	3376	3380	3384	3388	3392	3396	3400	3404	3408	3412	3416	3420	3424	3428	3432	3436	3440	3444	3448	3452	3456	3460	3464	3468	3472	3476	3480	3484	3488	3492	3496	3500	3504	3508	3512	3516	3520	3524	3528	3532	3536	3540	3544	3548	3552	3556	3560	3564	3568	3572	3576	3580	3584	3588	3592	3596	3600	3604	3608	3612	3616	3620	3624	3628	3632	3636	3640	3644	3648	3652	3656	3660	3664	3668	3672	3676	3680	3684	3688	3692	3696	3700	3704	3708	3712	3716	3720	3724	3728	3732	3736	3740	3744	3748	3752	3756	3760	3764	3768	3772	3776	3780	3784	3788	3792	3796	3800	3804	3808	3812	3816	3820	3824	3828	3832	3836	3840	3844	3848	3852	3856	3860	3864	3868	3872	3876	3880	3884	3888	3892	3896	3900	3904	3908	3912	3916	3920	3924	3928	3932	3936	3940	3944	3948	3952	3956	3960	3964	3968	3972	3976	3980	3984	3988	3992	3996	4000
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

S O L I D

EACH HOLE HAD 2 charges,  
I in top of hole, I in bottom,  
for instance the first hole (Signature Hole)  
was @ 0ms for the top charge & 2ms for the bottom,  
The 2nd Hole was @ 200ms for the top charge & 200ms for the bottom.



Blast Number H20 Ticket Number H20

<b>Permittee</b> Apogee Coal, LLC.		<b>Date / Time</b> 9/16/2010 3:58 PM	
<b>Customer / Operator</b> Apogee Coal, LLC. <i>CHAD</i>		<b>Permit No.</b> S-5006-05	
<b>Location of Blast</b> Ridge 1&2	<b>Lat</b>	° ' ' N 302116	- X
<b>Blasting Company</b> APOGEE COAL LLC	<b>Long</b>	° ' ' W 1769201	- Y
<b>Nearest Protected Structure</b> #5 Bill Joann Lambert		<b>Method</b> Handheld GPS - NAD83	
<b>Distance and Direction</b> 7,901 ft N, ?°	<b>SD to nearest protected</b> 99		
<b>Nearest Other Structure</b> Dominion Well			
<b>Distance and Direction</b> 4,415 ft NW, ?°			
<b>Weather Conditions</b> Partly Cloudy	80°F,	<b>Wind out of the</b> E @	0-2 mph
<b>Type of Material Blasted</b> Sandstone	<b>Blast Type</b> Production		
<b>Matts or Protection Used</b>	<b>Total Tons</b> 0	<b>Total YD<sup>3</sup></b> 44,978	
	<b>Powder Factor:</b> tons/lb 0.00	<b>lbs/yd<sup>3</sup></b> 1.22	

**BLAST INFORMATION**

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	69 Primers	Total Weight
	54,998.28 lbs.	0.00 lbs.	0.00 lbs.	51.75 lbs.	55,050.03 lbs.

<b>Total Holes</b>	69	<b>Angle</b>	°
<b>Face Height (ft)</b>	44	<b>Burden (ft)</b>	20
<b>Depth (ft)</b>	44	<b>Spacing (ft)</b>	20
<b>Sub Drill (ft)</b>		<b>Diameter (in)</b>	9
		<b>Stemming Material</b>	Cuttings
<b>Maximum Weight of Explosives Allowed per 8ms Period (lbs) :</b> 6444 as determined by SD of : 55			
<b>Maximum Weight of Explosives detonated per 8ms (lbs) :</b> 6383 in 8.0 Holes			

**INITIATION PRODUCT INFORMATION**

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	50 ft unitronics	69						

<b>Method of Firing :</b> Electric	<b>Timer (ms) :</b> NA	<b>Circuit Type :</b>
<b>Initiated by :</b> Electronic	<b>Blasting Unit :</b> E B M	<b>No. of Circuits :</b>

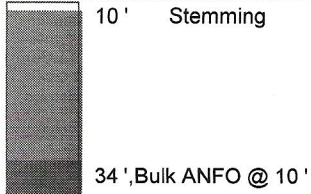
**COMMENTS**

*Signature Hole shot. This is the one that Jim timed out.*

**Hole Cross Section**

Depth (ft) 44      Angle (deg)  
B X S (ft) 20 X 20      Bench Ht. 44  
Hole dia. (in) 9.000      Stem (ft) 10  
PF: 1.22 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 69

**Nearest Protected Structure:** #5 Bill Joann Lambert

**Distance and Direction:** 7,901 ft N, ?°

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 9/16/2010      3:58 PM

Seis SN    Location      Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

**Reading(s) taken by :** SAULS

**Analyzed by :** SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**  
Todd Keffer - 5-645-05

**Crew:**

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty	
1-69	44		44	44	1 NEBCO	Bulk ANFO	0.85	797.08	1	3/4 LB Cast	1	
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2			
20	20	10			3					Total Primer QTY / Hole	1	
					4					Total Primer LBS / Hole	.75	
					5							
					6							
					7							
					8							
								Total Expl lbs. / hole	797.08	Expl-Primer LBS / Hole		797.83
Similar Holes - 69			69 Primers	51.75 LBS	Total Expl lbs. / Blast			54998.28	Similar Hole LBS		55051.00	

Total Holes Loaded this blast

**69**

Grand Total Explosives Weight

**55050.03**

# Nelson Brothers LLC

## UNI Tronics

## Blast Map

Coal Pit



Shot

Nelson Brothers LLC

Blast Map

UNI Tronics

Coal Pit



Shot

Shot

Lambert House  
 7901 → N

69 - Holes  
 69 - Det's  
 37.82697  
 081.79909  
 ELV - 1945'

Shot-Time = 3:58 PM

Apogee Coal Company  
Guyana WV

# BLASTING LOG

GENERAL INFORMATION



Blast Number **F9** Ticket Number **F9**

Date / Time 7/7/2010 4:09 PM  
 Permit No. S-5007-01  
 ° ' N 292109 - X  
 ° ' W 1773079 - Y  
 Method Handheld GPS - NAD83  
 SD to nearest protected 385

Permittee Apogee Coal, LLC.  
 Customer / Operator Apogee Coal, LLC.  
 Location of Blast Guyana Mine  
 Blasting Company APOGEE COAL LLC  
 Nearest Protected Structure Ball residence  
 Distance and Direction 3,520 ft S, ?°  
 Nearest Other Structure Jackson Well  
 Distance and Direction 8,071 ft NW, ?°  
 Weather Conditions Sunny / Hot  
 Type of Material Blasted Shale  
 Mats or Protection Used

Lat  
 Long  
 95°F,  
 Wind out of the E @ 0-2 mph  
 Blast Type Production  
 Total Tons 0  
 Powder Factor: tons/lb 0.00  
 Total YD<sup>3</sup> 16,020  
 lbs/yd<sup>3</sup> 0.23

## BLAST INFORMATION

Total Weight and Type(s) of Explosives used: see attachment

	ANFO	Emulsion	Packaged	267 Primers	Total Weight
	3,520.91 lbs.	0.00 lbs.	0.00 lbs.	200.25 lbs.	3,721.16 lbs.

Total Holes 267 Angle °  
 Face Height (ft) 5 Burden (ft) 18 Backfill (ft)  
 Depth (ft) 5 Spacing (ft) 18 Stemming (ft) 4  
 Sub Drill (ft) Diameter (in) 6.75 Stemming Material Cuttings  
 Maximum Weight of Explosives Allowed per 8ms Period (lbs) : 4097 as determined by SD of : 55  
 Maximum Weight of Explosives detonated per 8ms (lbs) : 84 in 6.0 Holes

## INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	EXCEL 40 FT - 20	267						
Orica	S. EXCEL 40 FT- 42	8						
Orica	S. EXCEL 40 FT-17	126						

Method of Firing : Non Electric  
 Initiated by : Non-Electric  
 Timer (ms) : NA  
 Blasting Unit : Handi Blaster  
 Circuit Type :  
 No. of Circuits :

## COMMENTS

Operation Apogee Coal, LLC.  
Permit Number S-5007-01

Blast Number F9  
Blast Type Production

Date 7/7/2010  
Time 4:09 PM

**Hole Cross Section**

Depth (ft) 5      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 5  
Hole dia. (in) 6.750      Stem (ft) 4  
PF: 0.22 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 267

**Nearest Protected Structure:** Ball residence

**Distance and Direction:** 3,520 ft S, ?°

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 7/7/2010 4:09 PM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

**Reading(s) taken by :** SAULS

**Analyzed by :** SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**

**Crew:**

Todd Keffer - 5-645-05

Apogee Coal, LLC.  
S-5007-01

Blast Type  
Blast / Ticket Number

Production  
F9 /F9

Date 7/7/2010  
Time 4:09 PM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-267	5		5	5	1 NEBCO	Bulk ANFO	0.85	13.19	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	4			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						

Total Expl lbs. / hole 13.19 Expl-Primer LBS / Hole 13.94

Similar Holes - 267 267 Primers 200.25 LBS Total Expl lbs. / Blast 3520.91 Similar Hole LBS 3722.00

Total Holes Loaded this blast  
**267**

Grand Total Explosives Weight  
**3721.16**



# BLASTING LOG



GENERAL INFORMATION

Blast Number F8 Ticket Number F8

**Permittee** Apogee Coal, LLC. **Date / Time** 7/7/2010 3:54 PM  
**Customer / Operator** Apogee Coal, LLC. **Permit No.** S-5006-05  
**Location of Blast** Ridge 1&2 **Lat** ° ' ' N 301611 - X  
**Blasting Company** APOGEE COAL LLC **Long** ° ' ' W 1765716 - Y  
**Nearest Protected Structure** #5 Bill Joann Lambert **Method** Handheld GPS - NAD83  
**Distance and Direction** 7,884 ft N, ?° **SD to nearest protected** 270  
**Nearest Other Structure** Dominion Well  
**Distance and Direction** 4,656 ft N, ?°  
**Weather Conditions** Sunny / Hot 95°F, **Wind out of the** SE @ 0-2 mph  
**Type of Material Blasted** Sandstone **Blast Type** BREAKDOWN  
**Matts or Protection Used** **Total Tons** 0 **Total YD<sup>3</sup>** 16,200  
**Powder Factor:** tons/lb 0.00 **lbs/yd<sup>3</sup>** 1.21

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	66 Primers	Total Weight
	14,615.87 lbs.	4,871.96 lbs.	0.00 lbs.	49.50 lbs.	19,537.33 lbs.

**Total Holes** 30 **Angle** °  
**Face Height (ft)** 95 **Burden (ft)** 18 **Backfill (ft)**  
**Depth (ft)** 45 **Spacing (ft)** 18 **Stemming (ft)** 8 - 40  
**Sub Drill (ft)** **Diameter (in)** 7.875 **Stemming Material** Cuttings  
**Maximum Weight of Explosives Allowed per 8ms Period (lbs)** :7167 as determined by SD of : 55  
**Maximum Weight of Explosives detonated per 8ms (lbs)** : 852 in 1.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	50 ft unitronics	66						

---

**Method of Firing** : Electric **Timer (ms)** : NA **Circuit Type** :  
**Initiated by** : Electronic **Blasting Unit** : E B M **No. of Circuits** :

COMMENTS

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

Blast Number F8  
Blast Type BREAKDOWN

Date 7/7/2010  
Time 3:54 PM

### Hole Cross Section

Depth (ft) 45      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 95  
Hole dia. (in) 7.875      Stem (ft) 9  
PF: 1.58 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern

9' Stemming

36', 75/25 @ 9'

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 11

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 7,884 ft N, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 7/7/2010 3:54 PM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Todd Keffer - 5-645-05

Crew:



Operation Apogee Coal, LLC.  
 Permit Number S-5006-05

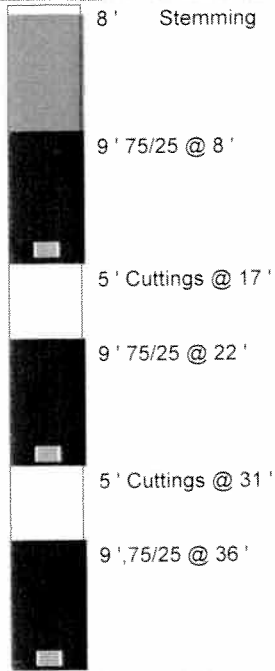
Blast Number F8  
 Blast Type BREAKDOWN

Date 7/7/2010  
 Time 3:54 PM

**Hole Cross Section**

Depth (ft) 45      Angle (deg)  
 B X S (ft) 18 X 18      Bench Ht. 95  
 Hole dia. (in) 7.875      Stem (ft) 8  
 PF: 1.18 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**



PRIMER TYPE (S)      UNIT WT. QTY.  
 3/4 LB CAST PRIMER      0.8      3.0

Holes loaded the same: 9

**Nearest Protected Structure:** #5 Bill Joann Lambert

**Distance and Direction:** 7,884 ft N, ? °

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 7/7/2010 3:54 PM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by :SAULS

Analyzed by :SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**  
 Todd Keffer - 5-645-05

**Crew:**

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

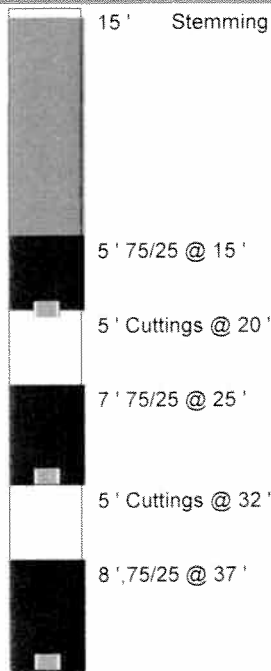
Blast Number F8  
Blast Type BREAKDOWN

Date 7/7/2010  
Time 3:54 PM

### Hole Cross Section

Depth (ft) 45      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 95  
Hole dia. (in) 7.875      Stem (ft) 15  
PF: 0.88 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      3.0

Holes loaded the same: 9

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 7,884 ft N, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 7/7/2010 3:54 PM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Todd Keffer - 5-645-05

Crew:

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

Blast Number F8  
Blast Type BREAKDOWN

Date 7/7/2010  
Time 3:54 PM

### Hole Cross Section

Depth (ft) 45      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 95  
Hole dia. (in) 7.875      Stem (ft) 40  
PF: 0.22 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern

40' Stemming

5' 7.5/25 @ 40'

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 1

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 7,884 ft N, ? °

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 7/7/2010 3:54 PM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:  
Todd Keffer - 5-645-05

Crew:

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-11	95		45	45	1 Nelson	75/25	1.12	851.41	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	9			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								TotalExpl lbs. / hole	851.41	Expl-Primer LBS / Hole	852.16
Similar Holes -		11	11 Primers	8.25 LBS	Total Expl lbs. / Blast		9365.51	Similar Hole LBS		9374.00	
12-20	95		45	45	1 Nelson	75/25	1.12	212.85	1	3/4 LB Cast	3
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	75/25	1.12	212.85	2		
18	18	8			3 Nelson	75/25	1.12	212.85		Total Primer QTY / Hole	3
					4					Total Primer LBS / Hole	2.25
					5						
					6						
					7						
					8						
								TotalExpl lbs. / hole	638.56	Expl-Primer LBS / Hole	640.81
Similar Holes -		9	27 Primers	20.25 LBS	Total Expl lbs. / Blast		5747.02	Similar Hole LBS		5768.00	
21-29	95		45	45	1 Nelson	75/25	1.12	189.20	1	3/4 LB Cast	3
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	75/25	1.12	165.55	2		
18	18	15			3 Nelson	75/25	1.12	118.25		Total Primer QTY / Hole	3
					4					Total Primer LBS / Hole	2.25
					5						
					6						
					7						
					8						
								TotalExpl lbs. / hole	473.01	Expl-Primer LBS / Hole	475.26
Similar Holes -		9	27 Primers	20.25 LBS	Total Expl lbs. / Blast		4257.05	Similar Hole LBS		4278.00	

Apogee Coal, LLC.  
S-5006-05

Blast Type  
Blast / Ticket Number

BREAKDOWN  
F8 /F8

Date 7/7/2010  
Time 3:54 PM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty	
30	95		45	45	1 Nelson	75/25	1.12	118.25	1	3/4 LB Cast	1	
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2			
18	18	40			3					Total Primer QTY / Hole	1	
					4					Total Primer LBS / Hole	.75	
					5							
					6							
					7							
					8							
								Total Expl lbs. / hole		118.25	Expl-Primer LBS / Hole	119.00
Similar Holes -	1		1 Primers	0.75 LBS	Total Expl lbs. / Blast			118.25	Similar Hole LBS	120.00		
Total Holes Loaded this blast										Grand Total Explosives Weight		
30										19537.33		

# BLASTING LOG



GENERAL INFORMATION

Blast Number **F7** Ticket Number **F7**

<b>Permittee</b> Apogee Coal, LLC.	<b>Date / Time</b> 7/6/2010 4:07 PM
<b>Customer / Operator</b> Apogee Coal, LLC.	<b>Permit No.</b> S-5006-05
<b>Location of Blast</b> Ridge 1& 2	<b>Lat</b> ° ' ' N 301599 - X
<b>Blasting Company</b> APOGEE COAL LLC	<b>Long</b> ° ' ' W 1765754 - Y
<b>Nearest Protected Structure</b> #5 Bill Joann Lambert	<b>Method</b> Handheld GPS - NAD83
<b>Distance and Direction</b> 7,893 ft N, ?°	<b>SD to nearest protected</b> 186
<b>Nearest Other Structure</b> Dominion Well	
<b>Distance and Direction</b> 4,656 ft N, ?°	
<b>Weather Conditions</b> Sunny / Hot 95°F,	<b>Wind out of the</b> SE @ 0-2 mph
<b>Type of Material Blasted</b> Sandstone	<b>Blast Type</b> Production
<b>Matts or Protection Used</b>	<b>Total Tons</b> 0 <b>Total YD<sup>3</sup></b> 107,667
	<b>Powder Factor:</b> tons/lb 0.00 <b>lbs/yd<sup>3</sup></b> 1.38

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	160 Primers	Total Weight
	111,747.57 lbs.	37,249.19 lbs.	0.00 lbs.	120.00 lbs.	149,116.76 lbs.
<b>Total Holes</b>	85	<b>Angle</b> °			
<b>Face Height (ft)</b>	95	<b>Burden (ft)</b>	18	<b>Backfill (ft)</b>	3
<b>Depth (ft)</b>	95	<b>Spacing (ft)</b>	20	<b>Stemming (ft)</b>	10 - 32
<b>Sub Drill (ft)</b>		<b>Diameter (in)</b>	7.875	<b>Stemming Material</b>	Cuttings
<b>Maximum Weight of Explosives Allowed per 8ms Period (lbs) :</b> 7166 as determined by SD of : 55					
<b>Maximum Weight of Explosives detonated per 8ms (lbs) :</b> 1799 in 1.0 Holes					

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
	120'EXCEL-20	85						
Orica	EXCEL 40 FT - 20	75						
Orica	S. EXCEL 40 FT- 42	4						
Orica	S. EXCEL 40 FT-100	81						
<b>Method of Firing :</b> Non Electric			<b>Timer (ms) :</b> NA			<b>Circuit Type :</b>		
<b>Initiated by :</b> Non-Electric			<b>Blasting Unit :</b> Handi Blaster			<b>No. of Circuits :</b>		

COMMENTS



Operation Apogee Coal, LLC.

Blast Number F7

Date 7/6/2010

Permit Number S-5006-05

Blast Type Production

Time 4:07 PM

### Hole Cross Section

Depth (ft) 95      Angle (deg)  
 B X S (ft) 18 X 20      Bench Ht. 95  
 Hole dia. (in) 7.875      Stem (ft) 10  
 PF: 1.42 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern

10' Stemming

38' 75/25 @ 10'

6' Cuttings @ 48'

38' 75/25 @ 54'

Backfill

PRIMER TYPE (S)	UNIT WT.	QTY.
3/4 LB CAST PRIMER	0.8	2.0

Holes loaded the same: 75

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 7,893 ft N, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 7/6/2010 4:07 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz

Reading(s) taken by :SAULS

Analyzed by :SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Todd Keffer - 5-645-05

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

Blast Number F7  
Blast Type Production

Date 7/6/2010  
Time 4:07 PM

### Hole Cross Section

Depth (ft) 95      Angle (deg)  
B X S (ft) 18 X 20      Bench Ht. 95  
Hole dia. (in) 7.875      Stem (ft) 32  
PF: 1.12 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern

32' Stemming

60', 75/25 @ 32'

Backfill

PRIMER TYPE (S)	UNIT WT.	QTY.
3/4 LB CAST PRIMER	0.8	1.0

Holes loaded the same: 10

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 7,893 ft N, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 7/6/2010 4:07 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Todd Keffer - 5-645-05

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-10	95		95	95	1 Nelson	75/25	1.12	1419.02	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	20	32			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	1419.02	Expl-Primer LBS / Hole	?
<b>Similar Holes -</b>		10	10 Primers	7.50 LBS	<b>Total Expl lbs. / Blast</b>			14190.17	<b>Similar Hole LBS</b>		<b>14198.00</b>
11-85	95		95	95	1 Nelson	75/25	1.12	898.71	1	3/4 LB Cast	2
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	75/25	1.12	898.71	2		
18	20	10			3					Total Primer QTY / Hole	2
					4					Total Primer LBS / Hole	1.5
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	1797.42	Expl-Primer LBS / Hole	?
<b>Similar Holes -</b>		75	150 Primers	112.50 LBS	<b>Total Expl lbs. / Blast</b>			134806.59	<b>Similar Hole LBS</b>		<b>134920.00</b>
<b>Total Holes Loaded this blast</b>										<b>Grand Total Explosives Weight</b>	
<b>85</b>										<b>149116.76</b>	

# BLASTING LOG

GENERAL INFORMATION



Blast Number F6 Ticket Number F6

<b>Permittee</b> Apogee Coal, LLC.	<b>Date / Time</b> 7/6/2010 4:07 PM
<b>Customer / Operator</b> Apogee Coal, LLC.	<b>Permit No.</b> S-5006-05
<b>Location of Blast</b> Ridge 1&2	<b>Lat</b> ° ' ' N 301410 - X
<b>Blasting Company</b> APOGEE COAL LLC	<b>Long</b> ° ' ' W 1765735 - Y
<b>Nearest Protected Structure</b> #5 Bill Joann Lambert	<b>Method</b> Handheld GPS - NAD83
<b>Distance and Direction</b> 8,083 ft N, ?°	<b>SD to nearest protected</b> 281
<b>Nearest Other Structure</b> Jackson Well	
<b>Distance and Direction</b> 4,494 ft S, ?°	
<b>Weather Conditions</b> Sunny / Hot 95°F,	<b>Wind out of the</b> SE @ 0-2 mph
<b>Type of Material Blasted</b> Sandstone	<b>Blast Type</b> BREAKDOWN
<b>Matts or Protection Used</b>	<b>Total Tons</b> 0 <b>Total YD<sup>3</sup></b> 17,280
	<b>Powder Factor:</b> tons/lb 0.00 <b>lbs/yd<sup>3</sup></b> 1.39

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	40 Primers	Total Weight
	18,021.51 lbs.	6,007.17 lbs.	0.00 lbs.	30.00 lbs.	24,058.68 lbs.

**Total Holes** 32 **Angle** °

**Face Height (ft)** 95 **Burden (ft)** 18 **Backfill (ft)**

**Depth (ft)** 45 **Spacing (ft)** 18 **Stemming (ft)** 10 - 15

**Sub Drill (ft)** **Diameter (in)** 7.875 **Stemming Material** Cuttings

**Maximum Weight of Explosives Allowed per 8ms Period (lbs) :** 6677 as determined by SD of : 55

**Maximum Weight of Explosives detonated per 8ms (lbs) :** 829 in 1.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	EXCEL 40 FT - 20	40						
Orica	S. EXCEL 40 FT- 42	4						
Orica	S. EXCEL 40 FT-100	28						

---

**Method of Firing :** Non Electric **Timer (ms) :** NA **Circuit Type :**

**Initiated by :** Non-Electric **Blasting Unit :** Handi Blaster **No. of Circuits :**

COMMENTS

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

Blast Number F6  
Blast Type BREAKDOWN

Date 7/6/2010  
Time 4:07 PM

### Hole Cross Section

Depth (ft) 45      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 95  
Hole dia. (in) 7.875      Stem (ft) 10  
PF: 1.53 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern

10' Stemming

35', 75/25 @ 10'

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 24

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 8,083 ft N, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 7/6/2010 4:07 PM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Brad Gregory - 3-299-88

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

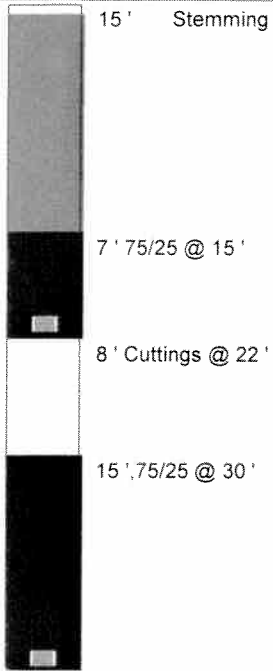
Blast Number F6  
Blast Type BREAKDOWN

Date 7/6/2010  
Time 4:07 PM

### Hole Cross Section

Depth (ft) 45      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 95  
Hole dia. (in) 7.875      Stem (ft) 15  
PF: 0.96 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      2.0

Holes loaded the same: 8

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 8,083 ft N, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 7/6/2010 4:07 PM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Brad Gregory - 3-299-88

Apogee Coal, LLC.  
S-5006-05

Blast Type      **BREAKDOWN**  
Blast / Ticket Number      **F6 /F6**

Date **7/6/2010**  
Time **4:07 PM**

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-24	95		45	45	1 Nelson	75/25	1.12	827.76	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	10			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								<b>Total Expl lbs. / hole</b>	827.76	<b>Expl-Primer LBS / Hole</b>	828.51
<b>Similar Holes -</b>	24		24 Primers	18.00 LBS	<b>Total Expl lbs. / Blast</b>			19866.23	<b>Similar Hole LBS</b>		<b>19885.00</b>
25-32	95		45	45	1 Nelson	75/25	1.12	354.75	1	3/4 LB Cast	2
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	75/25	1.12	165.55	2		
18	18	15			3					Total Primer QTY / Hole	2
					4					Total Primer LBS / Hole	1.5
					5						
					6						
					7						
					8						
								<b>Total Expl lbs. / hole</b>	520.31	<b>Expl-Primer LBS / Hole</b>	521.81
<b>Similar Holes -</b>	8		16 Primers	12.00 LBS	<b>Total Expl lbs. / Blast</b>			4162.45	<b>Similar Hole LBS</b>		<b>4175.00</b>
<b>Total Holes Loaded this blast</b>										<b>Grand Total Explosives Weight</b>	
<b>32</b>										<b>24058.68</b>	

Blast Number F5 Ticket Number F5

**Permittee** Apogee Coal, LLC. **Date / Time** 7/6/2010 1:28 PM  
**Customer / Operator** Apogee Coal, LLC. **Permit No.** S-5006-05  
**Location of Blast** Ridge 1&2 **Lat** ° ' ' N 301483 - X  
**Blasting Company** APOGEE COAL LLC **Long** ° ' ' W 1769485 - Y  
**Nearest Protected Structure** Cline residence **Method** Handheld GPS - NAD83  
**Distance and Direction** 8,014 ft S, ?° **SD to nearest protected** 368  
**Nearest Other Structure** Dominion Well  
**Distance and Direction** 5,108 ft NW, ?°  
**Weather Conditions** Sunny / Hot 90°F, **Wind out of the** N @ 0-2 mph  
**Type of Material Blasted** Sandstone **Blast Type** BARRIER  
**Matts or Protection Used** **Total Tons** 0 **Total YD<sup>3</sup>** 21,240  
**Powder Factor:** tons/lb 0.00 **lbs/yd<sup>3</sup>** 1.32

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	59 Primers	Total Weight
	20,930.50 lbs.	6,976.83 lbs.	0.00 lbs.	44.25 lbs.	27,951.58 lbs.

**Total Holes** 59 **Angle** °  
**Face Height (ft)** 30 **Burden (ft)** 18 **Backfill (ft)**  
**Depth (ft)** 30 **Spacing (ft)** 18 **Stemming (ft)** 10  
**Sub Drill (ft)** **Diameter (in)** 7.875 **Stemming Material** Cuttings  
**Maximum Weight of Explosives Allowed per 8ms Period (lbs)** :6175 as determined by SD of : 65  
**Maximum Weight of Explosives detonated per 8ms (lbs)** : 474 in 1.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	50 ft unitronics	59						

---

**Method of Firing** : Electric **Timer (ms)** : NA **Circuit Type** :  
**Initiated by** : Electronic **Blasting Unit** : E B M **No. of Circuits** :

COMMENTS



Operation Apogee Coal, LLC.

Blast Number F5

Date 7/6/2010

Permit Number S-5006-05

Blast Type BARRIER

Time 1:28 PM

**Hole Cross Section**

Depth (ft) 30      Angle (deg)  
 B X S (ft) 18 X 18      Bench Ht. 30  
 Hole dia. (in) 7.875      Stem (ft) 10  
 PF: 1.31 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

10' Stemming

20' .75/25 @ 10'

PRIMER TYPE (S)	UNIT WT.	QTY.
3/4 LB CAST PRIMER	0.8	1.0

Holes loaded the same: 59

Nearest Protected Structure: Cline residence

Distance and Direction: 8,014 ft S, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 7/6/2010 1:28 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:

Crew:

Todd Keffer - 5-645-05

*Todd Keffer*

Apogee Coal, LLC.  
S-5006-05

Blast Type BARRIER  
Blast / Ticket Number F5 /F5

Date 7/6/2010  
Time 1:28 PM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-59	30		30	30	1 Nelson	75/25	1.12	473.01	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	10			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	473.01	Expl-Primer LBS / Hole	473.76
Similar Holes -	59		59 Primers	44.25 LBS	Total Expl lbs. / Blast			27907.33	Similar Hole LBS	27952.00	
Total Holes Loaded this blast										Grand Total Explosives Weight	
59										27951.58	

Blast Number **F4** Ticket Number **F4**

<b>Permittee</b> Apogee Coal, LLC.	<b>Date / Time</b> 7/5/2010 4:03 PM
<b>Customer / Operator</b> Apogee Coal, LLC.	<b>Permit No.</b> S-5006-05
<b>Location of Blast</b> Ridge 1& 2	<b>Lat</b> ° ' ' N 301578 - X
<b>Blasting Company</b> APOGEE COAL LLC	<b>Long</b> ° ' ' W 1769078 - Y
<b>Nearest Protected Structure</b> Cline residence	<b>Method</b> Handheld GPS - NAD83
<b>Distance and Direction</b> 8,074 ft S, ?°	<b>SD to nearest protected</b> 183
<b>Nearest Other Structure</b> Dominion Well	
<b>Distance and Direction</b> 4,849 ft NW, ?°	
<b>Weather Conditions</b> Sunny / Hot 95°F,	<b>Wind out of the</b> N @ 0-2 mph
<b>Type of Material Blasted</b> Sandstone	<b>Blast Type</b> Production
<b>Matts or Protection Used</b>	<b>Total Tons</b> 0 <b>Total YD<sup>3</sup></b> 290,963
	<b>Powder Factor:</b> tons/lb 0.00 <b>lbs/yd<sup>3</sup></b> 1.31

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	357 Primers	Total Weight
	296,591.39 lbs.	83,061.05 lbs.	0.00 lbs.	267.75 lbs.	379,920.18 lbs.

**Total Holes** 317 **Angle** °

**Face Height (ft)** 30 - 100 **Burden (ft)** 20 **Backfill (ft)**

**Depth (ft)** 30 - 100 **Spacing (ft)** 20 **Stemming (ft)** 10

**Sub Drill (ft)** **Diameter (in)** 7.875 **Stemming Material** Cuttings

**Maximum Weight of Explosives Allowed per 8ms Period (lbs) :**7773 as determined by SD of : 55

**Maximum Weight of Explosives detonated per 8ms (lbs) :**1953 in 1.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	80 ft unitronics	173						
Orica	50 ft unitronics	149						
Orica	120 ft unitronics	35						

---

**Method of Firing :** Electric **Timer (ms) :** NA **Circuit Type :**

**Initiated by :** Electronic **Blasting Unit :** E B M **No. of Circuits :**

COMMENTS

Operation Apogee Coal, LLC.

Blast Number F4

Date 7/5/2010

Permit Number S-5006-05

Blast Type Production

Time 4:03 PM

**Hole Cross Section**

Depth (ft) 30      Angle (deg)

B X S (ft) 20 X 20      Bench Ht. 30

Hole dia. (in) 7.875      Stem (ft) 10

PF: 1.06 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

10' Stemming

20', 75/25 @ 10'

PRIMER TYPE (S)	UNIT WT.	QTY.
3/4 LB CAST PRIMER	0.8	1.0

Holes loaded the same: 24

**Nearest Protected Structure:** Cline residence

**Distance and Direction:** 8,074 ft S, ?°

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 7/5/2010 4:03 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**

**Crew:**

Richard Cope - 5 506 08

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

Blast Number F4  
Blast Type Production

Date 7/5/2010  
Time 4:03 PM

### Hole Cross Section

Depth (ft) 40      Angle (deg)  
B X S (ft) 20 X 20      Bench Ht. 40  
Hole dia. (in) 7.875      Stem (ft) 10  
PF: 1.20 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern

10' Stemming

30', 75/25 @ 10'

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 85

Nearest Protected Structure: Cline residence

Distance and Direction: 8,074 ft S, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 7/5/2010 4:03 PM

Seis SN    Location    Dist (ft)    Dir...    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Richard Cope - 5 506 08

Operation Apogee Coal, LLC.

Blast Number F4

Date 7/5/2010

Permit Number S-5006-05

Blast Type Production

Time 4:03 PM

**Hole Cross Section**

Depth (ft) 60      Angle (deg)  
B X S (ft) 20 X 20      Bench Ht. 60  
Hole dia. (in) 7.875      Stem (ft) 10  
PF: 1.33 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

10' Stemming

50', 75/25 @ 10'

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 60

Nearest Protected Structure: Cline residence

Distance and Direction: 8,074 ft S, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 7/5/2010 4:03 PM

Seis SN Location Dist (ft) Dir. SD T PPV T Hz V PPV V Hz L PPV L Hz Air dB Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:

Crew:

Richard Cope - 5 506 08

Operation Apogee Coal, LLC.

Blast Number F4

Date 7/5/2010

Permit Number S-5006-05

Blast Type Production

Time 4:03 PM

**Hole Cross Section**

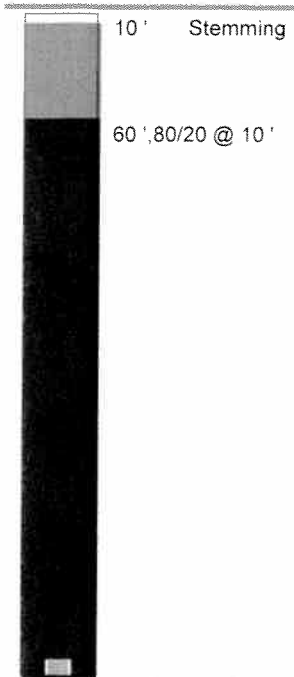
Depth (ft) 70      Angle (deg)

B X S (ft) 20 X 20      Bench Ht. 70

Hole dia. (in) 7.875      Stem (ft) 10

PF: 1.34 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**



PRIMER TYPE (S)	UNIT WT.	QTY.
3/4 LB CAST PRIMER	0.8	1.0

Holes loaded the same: 79

**Nearest Protected Structure:** Cline residence

**Distance and Direction:** 8,074 ft S, ?°

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 7/5/2010 4:03 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**

**Crew:**

Richard Cope - 5 506 08

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

Blast Number F4  
Blast Type Production

Date 7/5/2010  
Time 4:03 PM

### Hole Cross Section

Depth (ft) 85      Angle (deg)  
B X S (ft) 20 X 20      Bench Ht. 85  
Hole dia. (in) 7.875      Stem (ft) 10  
PF: 1.29 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern

10' Stemming

35' 80/20 @ 10'

5' Cuttings @ 45'

35' 80/20 @ 50'

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      2.0

Holes loaded the same: 5

Nearest Protected Structure: Cline residence

Distance and Direction: 8,074 ft S, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 7/5/2010 4:03 PM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Richard Cope - 5 506 08



Operation Apogee Coal, LLC.

Blast Number F4

Date 7/5/2010

Permit Number S-5006-05

Blast Type Production

Time 4:03 PM

**Hole Cross Section**

Depth (ft) 85      Angle (deg)  
 B X S (ft) 20 X 20      Bench Ht. 85  
 Hole dia. (in) 7.875      Stem (ft) 10  
 PF: 1.38 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

10' Stemming

75' .80/20 @ 10'

PRIMER TYPE (S)	UNIT WT.	QTY.
3/4 LB CAST PRIMER	0.8	1.0

Holes loaded the same: 29

Nearest Protected Structure: Cline residence

Distance and Direction: 8,074 ft S, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 7/5/2010 4:03 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:

Crew:

Richard Cope - 5 506 08

Operation Apogee Coal, LLC.

Blast Number F4

Date 7/5/2010

Permit Number S-5006-05

Blast Type Production

Time 4:03 PM

**Hole Cross Section**

Depth (ft) 100      Angle (deg)  
 B X S (ft) 20 X 20      Bench Ht. 100  
 Hole dia. (in) 7.875      Stem (ft) 10  
 PF: 1.32 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

10' Stemming

42' 80/20 @ 10'

6' Cuttings @ 52'

42' 80/20 @ 58'

PRIMER TYPE (S)      UNIT WT. QTY.  
 3/4 LB CAST PRIMER      0.8      2.0

Holes loaded the same: 35

**Nearest Protected Structure:** Cline residence

**Distance and Direction:** 8,074 ft S, ?°

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 7/5/2010 4:03 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**

**Crew:**

Richard Cope - 5 506 08

Apogee Coal, LLC.

Blast Type

Production

Date 7/5/2010

S-5006-05

Blast / Ticket Number

F4 /F4

Time 4:03 PM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-24	30		30	30	1 Nelson	75/25	1.12	473.01	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
20	20	10			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	473.01	Expl-Primer LBS / Hole	473.76
<b>Similar Holes -</b>		24	<b>24 Primers</b>		18.00 LBS	<b>Total Expl lbs. / Blast</b>		11352.13	<b>Similar Hole LBS</b>		<b>11371.00</b>
110	60		60	60	1 Nelson	75/25	1.12	1182.51	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
20	20	10			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	1182.51	Expl-Primer LBS / Hole	?
<b>Similar Holes -</b>		60	<b>60 Primers</b>		45.00 LBS	<b>Total Expl lbs. / Blast</b>		70950.84	<b>Similar Hole LBS</b>		<b>70996.00</b>
170	70		70	70	1 Nelson	80/20	1.10	1393.68	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
20	20	10			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	1393.68	Expl-Primer LBS / Hole	?
<b>Similar Holes -</b>		79	<b>79 Primers</b>		59.25 LBS	<b>Total Expl lbs. / Blast</b>		110100.49	<b>Similar Hole LBS</b>		<b>110160.00</b>

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
249	85		85	85	1 Nelson	80/20	1.10	812.98	1	3/4 LB Cast	2
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	80/20	1.10	812.98	2		
20	20	10			3					Total Primer QTY / Hole	2
					4					Total Primer LBS / Hole	1.5
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	1625.96	Expl-Primer LBS / Hole	?
<b>Similar Holes -</b>		5	10 Primers	7.50 LBS	<b>Total Expl lbs. / Blast</b>		8129.78	<b>Similar Hole LBS</b>		<b>8138.00</b>	
25	40		40	40	1 Nelson	75/25	1.12	709.51	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
20	20	10			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	709.51	Expl-Primer LBS / Hole	710.26
<b>Similar Holes -</b>		85	85 Primers	63.75 LBS	<b>Total Expl lbs. / Blast</b>		60308.21	<b>Similar Hole LBS</b>		<b>60372.00</b>	
254	85		85	85	1 Nelson	80/20	1.10	1742.10	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
20	20	10			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	1742.10	Expl-Primer LBS / Hole	?
<b>Similar Holes -</b>		29	29 Primers	21.75 LBS	<b>Total Expl lbs. / Blast</b>		50520.80	<b>Similar Hole LBS</b>		<b>50543.00</b>	

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
283	100		100	100	1 Nelson	80/20	1.10	975.57	1	3/4 LB Cast	2
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	80/20	1.10	975.57	2		
20	20	10			3					Total Primer QTY / Hole	2
					4					Total Primer LBS / Hole	1.5
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	1951.15	Expl-Primer LBS / Hole	?
Similar Holes -	35	70 Primers	52.50 LBS		Total Expl lbs. / Blast	68290.18	Similar Hole LBS	68343.00			

Total Holes Loaded this blast

**317**

Grand Total Explosives Weight

**379920.18**

Blast Number F3 Ticket Number F3

<b>Permittee</b> Apogee Coal, LLC.	<b>Date / Time</b> 7/3/2010 4:02 PM
<b>Customer / Operator</b> Apogee Coal, LLC.	<b>Permit No.</b> S-5006-05
<b>Location of Blast</b> Ridge 1& 2	<b>Lat</b> ° ' N 301347 - X
<b>Blasting Company</b> APOGEE COAL LLC	<b>Long</b> ° ' W 1765806 - Y
<b>Nearest Protected Structure</b> #5 Bill Joann Lambert	<b>Method</b> Handheld GPS - NAD83
<b>Distance and Direction</b> 8,141 ft N, ?°	<b>SD to nearest protected</b> 121
<b>Nearest Other Structure</b> Jackson Well	
<b>Distance and Direction</b> 4,418 ft S, ?°	
<b>Weather Conditions</b> Sunny / Hot 85°F,	<b>Wind out of the</b> E @ 0-5 mph
<b>Type of Material Blasted</b> Sandstone	<b>Blast Type</b> Production
<b>Matts or Protection Used</b>	<b>Total Tons</b> 0 <b>Total YD<sup>3</sup></b> 109,333
	<b>Powder Factor:</b> tons/lb 0.00 <b>lbs/yd<sup>3</sup></b> 1.59

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	169 Primers	Total Weight
	139,217.54 lbs.	34,804.38 lbs.	0.00 lbs.	126.75 lbs.	174,148.67 lbs.

<b>Total Holes</b>	82	<b>Angle</b>	°
<b>Face Height (ft)</b>	90	<b>Burden (ft)</b>	20
<b>Depth (ft)</b>	90	<b>Spacing (ft)</b>	20
<b>Sub Drill (ft)</b>		<b>Diameter (in)</b>	9
		<b>Stemming Material</b>	Cuttings

**Maximum Weight of Explosives Allowed per 8ms Period (lbs) :**6453 as determined by SD of : 55

**Maximum Weight of Explosives detonated per 8ms (lbs) :**4493 in 2.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	1 Roll - Lead in Line	1	Orica	S. EXCEL 40 FT-100	62			
Orica	EXCEL 120 FT - 24	82						
Orica	EXCEL 40 FT - 20	87						
Orica	S. EXCEL 40 FT- 42	30						

---

**Method of Firing :** Non Electric **Timer (ms) :** NA **Circuit Type :** Row by Row

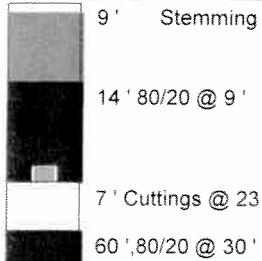
**Initiated by :** Non-Electric **Blasting Unit :** Handi Blaster **No. of Circuits :** 0

COMMENTS

**Hole Cross Section**

Depth (ft) 90      Angle (deg)  
 B X S (ft) 20 X 20      Bench Ht. 90  
 Hole dia. (in) 9.000      Stem (ft) 9  
 PF: 1.68 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**



PRIMER TYPE (S)      UNIT WT. QTY.  
 3/4 LB CAST PRIMER      0.8      2.0

Holes loaded the same: 60

**Nearest Protected Structure:** #5 Bill Joann Lambert

**Distance and Direction:** 8,141 ft N, ?°

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 7/3/2010 4:02 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**

**Crew:**

Richard Cope - 5 506 08

**Hole Cross Section**

Depth (ft) 90      Angle (deg)  
 B X S (ft) 20 X 20      Bench Ht. 90  
 Hole dia. (in) 9.000      Stem (ft) 60  
 PF: 0.68 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

60' Stemming

30', 80/20 @ 60'

PRIMER TYPE (S)	UNIT WT.	QTY.
3/4 LB CAST PRIMER	0.8	1.0

Holes loaded the same: 1

**Nearest Protected Structure:** #5 Bill Joann Lambert

**Distance and Direction:** 8,141 ft N, ?°

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 7/3/2010 4:02 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**

**Crew:**

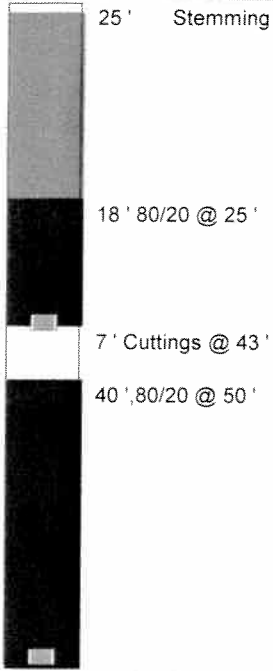
Richard Cope - 5 506 08



**Hole Cross Section**

Depth (ft) 90      Angle (deg)  
 B X S (ft) 20 X 20      Bench Ht. 90  
 Hole dia. (in) 9.000      Stem (ft) 25  
 PF: 1.32 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**



PRIMER TYPE (S)	UNIT WT.	QTY.
3/4 LB CAST PRIMER	0.8	2.0

Holes loaded the same: 15

**Nearest Protected Structure:** #5 Bill Joann Lambert

**Distance and Direction:** 8,141 ft N, ?°

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 7/3/2010 4:02 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by :SAULS

Analyzed by :SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**

**Crew:**

Richard Cope - 5 506 08

**Hole Cross Section**

Depth (ft) 90      Angle (deg)  
 B X S (ft) 20 X 20      Bench Ht. 90  
 Hole dia. (in) 9.000      Stem (ft) 10  
 PF: 1.50 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

10' Stemming  
 6' 80/20 @ 10'  
 7' Cuttings @ 16'  
 10' 80/20 @ 23'  
 7' Cuttings @ 33'  
 50' 80/20 @ 40'

PRIMER TYPE (s)      UNIT WT. QTY.  
 3/4 LB CAST PRIMER      0.8      3.0

Holes loaded the same: 6

**Nearest Protected Structure:** #5 Bill Joann Lambert

**Distance and Direction:** 8,141 ft N, ?°

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 7/3/2010 4:02 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz

**Reading(s) taken by :** SAULS

**Analyzed by :** SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**

**Crew:**

Richard Cope - 5 506 08

Apogee Coal, LLC.

S-5006-05

Blast Type

Blast / Ticket Number

Production

F3 /F3

Date 7/3/2010

Time 4:02 PM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
77-82	90		90	90	1 Nelson	80/20	1.10	1516.93	1	3/4 LB Cast	3
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	80/20	1.10	303.39	2		
20	20	10			3 Nelson	80/20	1.10	182.03		Total Primer QTY / Hole	3
					4					Total Primer LBS / Hole	2.25
					5						
					6						
					7						
					8						

Total Expl lbs. / hole	2002.34	Expl-Primer LBS / Hole	?
------------------------	---------	------------------------	---

Similar Holes - 6	18 Primers	13.50 LBS	Total Expl lbs. / Blast	12014.07	Similar Hole LBS	12028.00
-------------------	------------	-----------	-------------------------	----------	------------------	----------

Total Holes Loaded this blast	<b>82</b>	Grand Total Explosives Weight	<b>174148.67</b>
-------------------------------	-----------	-------------------------------	------------------

# BLASTING LOG

GENERAL INFORMATION



Blast Number: F2 Ticket Number: F2

<b>Permittee</b> Apogee Coal, LLC.	<b>Date / Time</b> 7/2/2010 10:06 AM
<b>Customer / Operator</b> Apogee Coal, LLC.	<b>Permit No.</b> S-5006-05
<b>Location of Blast</b> Ridge 1& 2	<b>Lat</b> ° ' ' N 301840 - X
<b>Blasting Company</b> APOGEE COAL LLC	<b>Long</b> ° ' ' W 1769424 - Y
<b>Nearest Protected Structure</b> #5 Bill Joann Lambert	<b>Method</b> Handheld GPS - NAD83
<b>Distance and Direction</b> 8,240 ft N, ?°	<b>SD to nearest protected</b> 379
<b>Nearest Other Structure</b> Dominion Well	
<b>Distance and Direction</b> 4,763 ft NW, ?°	
<b>Weather Conditions</b> Sunny / Hot 80°F,	<b>Wind out of the</b> W @ 0-5 mph
<b>Type of Material Blasted</b> Sandstone	<b>Blast Type</b> BREAKDOWN
<b>Matts or Protection Used</b> None used	<b>Total Tons</b> 0 <b>Total YD<sup>3</sup></b> 25,200
<b>Powder Factor:</b> tons/lb 0.00	<b>lbs/yd<sup>3</sup></b> 1.32

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	70 Primers	Total Weight
	24,832.79 lbs.	8,277.60 lbs.	0.00 lbs.	52.50 lbs.	33,162.89 lbs.

**Total Holes** 70 **Angle** °

**Face Height (ft)** 105 **Burden (ft)** 18 **Backfill (ft)**

**Depth (ft)** 30 **Spacing (ft)** 18 **Stemming (ft)** 10

**Sub Drill (ft)** **Diameter (in)** 7.875 **Stemming Material** Cuttings

**Maximum Weight of Explosives Allowed per 8ms Period (lbs)** :7500 as determined by SD of : 55

**Maximum Weight of Explosives detonated per 8ms (lbs)** : 474 in 1.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	EXCEL 40 FT - 20	70						
Orica	S. EXCEL 40 FT- 42	7						
Orica	S. EXCEL 40 FT-100	63						
Orica	0.5 Roll - Lead in Line	1						

**Method of Firing** : Non Electric **Timer (ms)** : NA **Circuit Type** : Row by Row

**Initiated by** : Non-Electric **Blasting Unit** : R F D **No. of Circuits** : 0

COMMENTS

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

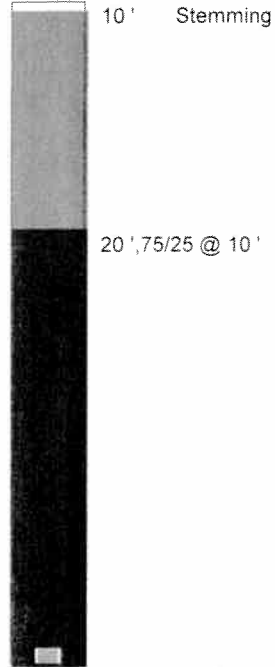
Blast Number F2  
Blast Type BREAKDOWN

Date 7/2/2010  
Time 10:06 AM

### Hole Cross Section

Depth (ft) 30      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 105  
Hole dia. (in) 7.875      Stem (ft) 10  
PF: 1.31 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern



PRIMER TYPE (s)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 70

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 8,240 ft N, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 7/2/2010 10:06 AM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Todd Keffer - 5-645-05

Apogee Coal, LLC.  
S-5006-05

Blast Type  
Blast / Ticket Number

BREAKDOWN  
F2 /F2

Date 7/2/2010  
Time 10:06 AM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-70	105		30	30	1 Nelson	75/25	1.12	473.01	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	10			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	473.01	Expl-Primer LBS / Hole	473.76
Similar Holes - 70					70 Primers	52.50 LBS	Total Expl lbs. / Blast		33110.39	Similar Hole LBS	33163.00
Total Holes Loaded this blast										Grand Total Explosives Weight	
70										33162.89	

Apogee Coal Company  
Logan WV

# BLASTING LOG



Blast Number **E62** Ticket Number **F1 E62**

GENERAL INFORMATION

8:32 AM

Permittee Apogee Coal, LLC.

Customer / Operator Apogee Coal, LLC.

Location of Blast Guyan Mine

Blasting Company APOGEE COAL LLC

Nearest Protected Structure Ball residence  
3,573 ft S, ?°

Distance and Direction  
Nearest Other Structure Dominion Well 1089  
7,029 ft NE, ?°

Weather Conditions Sunny / Hot  
85°F,

Type of Material Blasted Sandstone  
Matts or Protection Used None used

Date / Time 7/1/2010

Permit No. S-5007-01

N 292202

W 1775287

Method Handheld GPS - NAD83  
SD to nearest protected 1

Wind out of the N @ 0-5 mph

Blast Type Production

Total Tons 0

Powder Factor: tons/lb 0.00

Total YD<sup>3</sup> 31,200

lbs/yd<sup>3</sup> 1.23

BLAST INFORMATION

Total Weight and Type(s) of Explosives used: see attachment

ANFO	Emulsion
28,826.31 lbs.	9,608.77 lbs.

Packaged 0.00 lbs. 58 Primers 43.50 lbs. Total Weight 38,478.58 lbs.

Total Holes 47  
Face Height (ft) 5  
Depth (ft) 5  
Sub Drill (ft) 5  
Angle 0°  
- 60  
- 60

Burden (ft) 18  
Spacing (ft) 18  
Diameter (in) 6.75

Backfill (ft) 5 - 8  
Stemming (ft) Cuttings

Maximum Weight of Explosives Allowed per 8ms Period (lbs) : 4219  
Maximum Weight of Explosives detonated per 8ms (lbs) : 904 in 1.0 Holes  
Stemming Material as determined by SD of : 55

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	80 ft unitronics	50						

Method of Firing : Digital

Initiated by : Electronic

Timer (ms) : NA

Blasting Unit : E B M

Circuit Type : Row by Row

No. of Circuits : 1

COMMENTS

Operation Apogee Coal, LLC.  
Permit Number S-5007-01

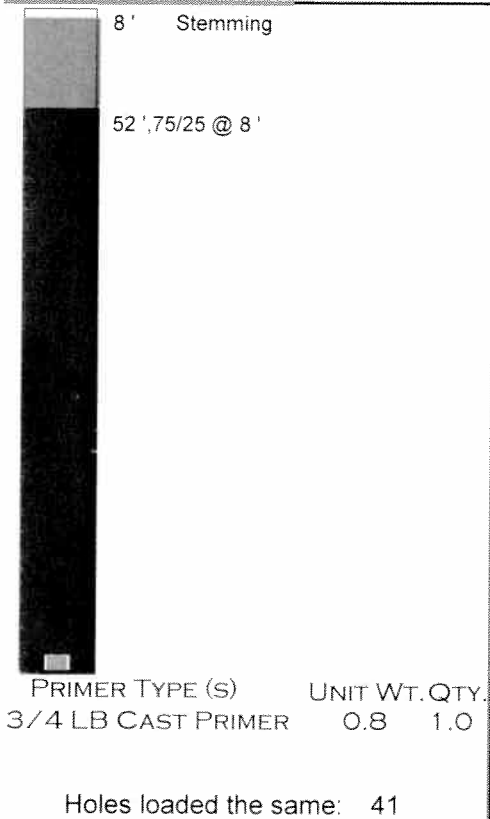
Blast Number E62  
Blast Type Production

Date 7/1/2010  
Time 8:32 AM

### Hole Cross Section

Depth (ft) 60      Angle (deg) 0  
B X S (ft) 18 X 18      Bench Ht. 60  
Hole dia. (in) 6.750      Stem (ft) 8  
PF: 1.25 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern



Nearest Protected Structure: Ball residence

Distance and Direction: 3,573 ft S, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 7/1/2010 8:32 AM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

~~Richard Cope - 5-506-08~~ Todd Keffer 5-645-05



Operation Apogee Coal, LLC.  
Permit Number S-5007-01

Blast Number E62  
Blast Type Production

Date 7/1/2010  
Time 8:32 AM

### Hole Cross Section

Depth (ft) 60      Angle (deg) 0  
B X S (ft) 18 X 18      Bench Ht. 60  
Hole dia. (in) 6.750      Stem (ft) 8  
PF: 0.87 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern

8' Stemming  
4' 75/25 @ 8'  
8' Cuttings @ 12'  
4' 75/25 @ 20'  
8' Cuttings @ 24'  
28' 75/25 @ 32'

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      3.0

Holes loaded the same: 1

Nearest Protected Structure: Ball residence

Distance and Direction: 3,573 ft S, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 7/1/2010 8:32 AM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

~~Richard Cope - 5 506 08~~

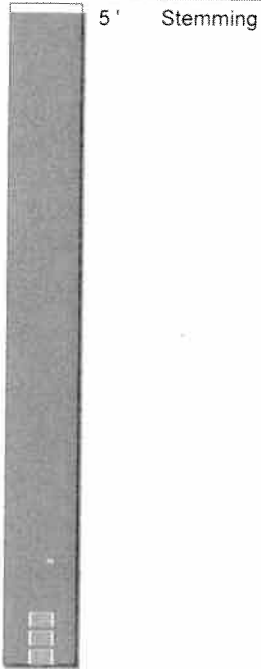
Operation Apogee Coal, LLC.  
Permit Number S-5007-01

Blast Number E62  
Blast Type Production

Date 7/1/2010  
Time 8:32 AM

### Hole Cross Section

Depth (ft) 5      Angle (deg) 0  
B X S (ft) 18 X 18      Bench Ht. 5  
Hole dia. (in) 6.750      Stem (ft) 5  
PF: 0.00 lbs/YD<sup>3</sup> ?      Tons/Lb.



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      3.0

Holes loaded the same: 4

### Timing Pattern

Nearest Protected Structure: Ball residence

Distance and Direction: 3,573 ft S, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 7/1/2010 8:32 AM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Richard Gope - 5 506 08

Operation Apogee Coal, LLC.  
Permit Number S-5007-01

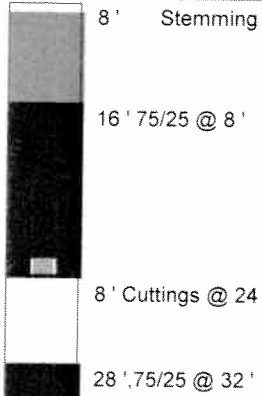
Blast Number E62  
Blast Type Production

Date 7/1/2010  
Time 8:32 AM

### Hole Cross Section

Depth (ft) 60      Angle (deg) 0  
B X S (ft) 18 X 18      Bench Ht. 60  
Hole dia. (in) 6.750      Stem (ft) 8  
PF: 1.06 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      2.0

Holes loaded the same: 1

Nearest Protected Structure: Ball residence

Distance and Direction: 3,573 ft S, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 7/1/2010 8:32 AM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

~~Richard Cope - 5 506 08~~

North  
 1000  
 2000

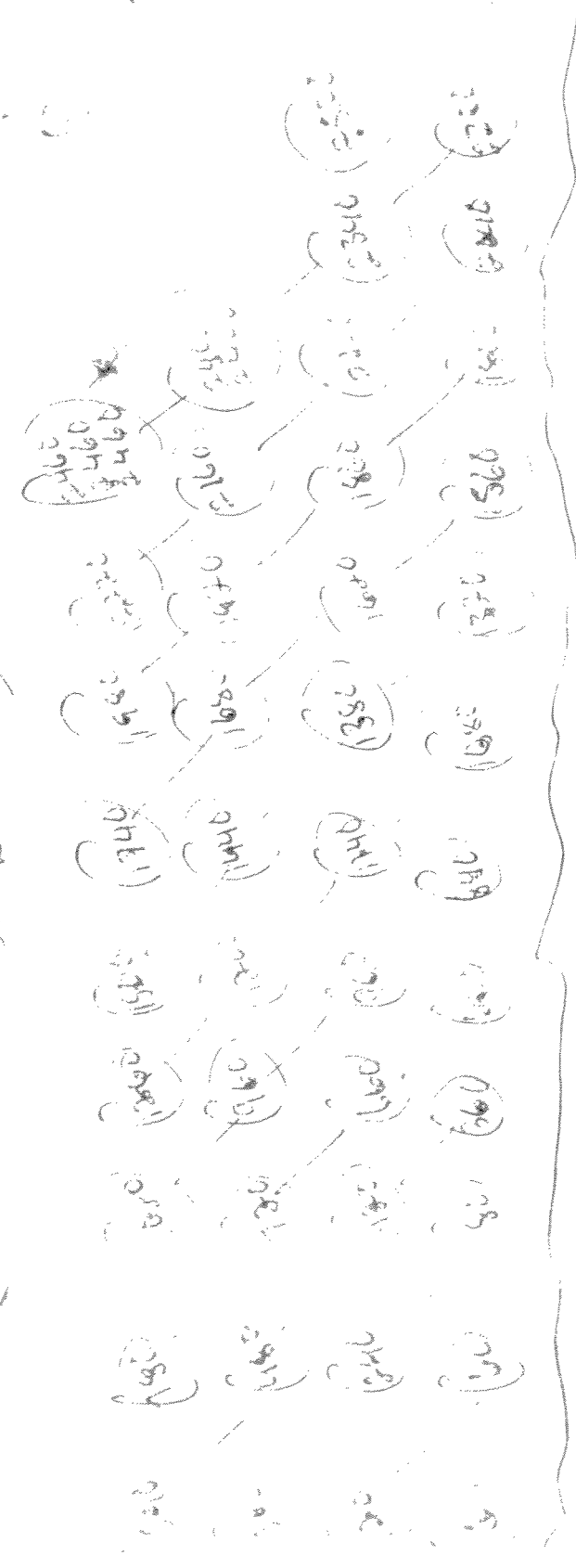


W  
 1000  
 2000

Road in →

← Solid →

↑ ADDRESS ↓



← Pit →  
 BENSON

(H... ..)

# BLASTING LOG

GENERAL INFORMATION



Blast Number E64 Ticket Number

E3  
E64

*Matt*

Permittee Apogee Coal, LLC.

Date / Time 7/3/2010 4:02 PM

Customer / Operator Apogee Coal, LLC.

Permit No. S-5006-05

Location of Blast Ridge 1 & 2

Lat ° ' N 301347 - X

Blasting Company APOGEE COAL LLC

Long ° ' W 1765806 - Y

Nearest Protected Structure #5 Bill Joann Lambert

Method Handheld GPS - NAD83

Distance and Direction 8,141 ft N, ?°

SD to nearest protected 121

Nearest Other Structure Jackson Well

Distance and Direction 4,418 ft S, ?°

*CB Cast LHS*  
*Surveyor got 4 corners*  
Wind out of the E @ 0-5 mph

Weather Conditions Sunny / Hot 85°F,

Type of Material Blasted Sandstone

Blast Type Production

Matts or Protection Used

Total Tons 0

Total YD<sup>3</sup> 109,333

Powder Factor: tons/lb 0.00

lbs/yd<sup>3</sup> 1.59

BLAST INFORMATION

Total Weight and Type(s) of Explosives used: see attachment

	ANFO	Emulsion	Packaged	169 Primers	Total Weight
	139,217.54 lbs.	34,804.38 lbs.	0.00 lbs.	126.75 lbs.	174,148.67 lbs.

Total Holes 82 Angle 15°

Face Height (ft) 90 Burden (ft) 20

Backfill (ft)

Depth (ft) 90 Spacing (ft) 20

Stemming (ft) 9 - 60

Sub Drill (ft) Diameter (in) 9

Stemming Material Cuttings

Maximum Weight of Explosives Allowed per 8ms Period (lbs) :6453 as determined by SD of : 55

Maximum Weight of Explosives detonated per 8ms (lbs) :4493 in 2.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	1 Roll - Lead in Line	1	Orica	S. EXCEL 40 FT-100	62			
Orica	EXCEL 120 FT - 24	82						
Orica	EXCEL 90 FT - 20	87						
Orica	S. EXCEL 40 FT- 42	30						

Method of Firing : Non Electric

Timer (ms) : NA

Circuit Type : Row by Row

Initiated by : Non-Electric

Blasting Unit : Handi Blaster

No. of Circuits : 0

COMMENTS

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

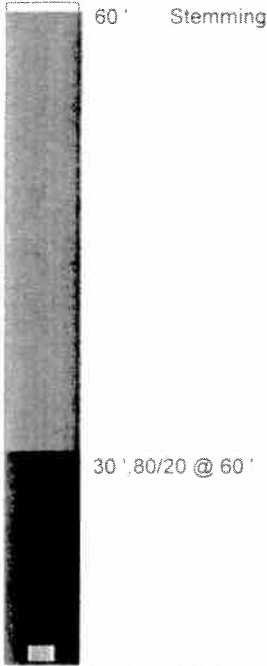
Blast Number E64  
Blast Type Production

Date 7/3/2010  
Time 4:02 PM

**Hole Cross Section**

Depth (ft) 90      Angle (deg) 15  
B X S (ft) 20 X 20      Bench Ht. 90  
Hole dia. (in) 9.000      Stem (ft) 60  
PF: 0.68 lbs/YD<sup>3</sup>      Tons/Lb.

Starter Hole



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 1

**Timing Pattern**

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 8,141 ft N, ? °

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 7/3/2010 4:02 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:

Crew:

~~Richard Cape~~ - 5 506-08

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

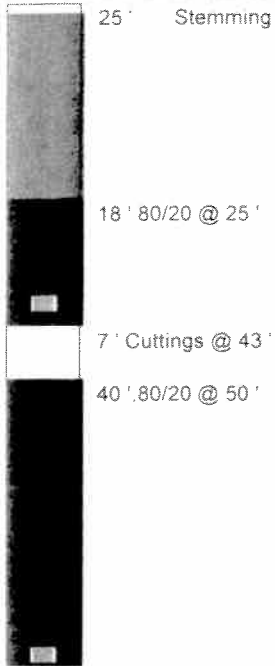
Blast Number E64  
Blast Type Production

Date 7/3/2010  
Time 4:02 PM

### Hole Cross Section

Depth (ft) 90      Angle (deg) 15  
B X S (ft) 20 X 20      Bench Ht. 90  
Hole dia. (in) 9.000      Stem (ft) 25  
PF: 1.32 lbs/YD<sup>3</sup>      Tons/Lb.

Face Row Hole(s)



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      2.0

Holes loaded the same: 15

### Timing Pattern

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 8,141 ft N, ? °

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 7/3/2010 4 02 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:  
Richard Cope - 5 506 08

Crew:

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

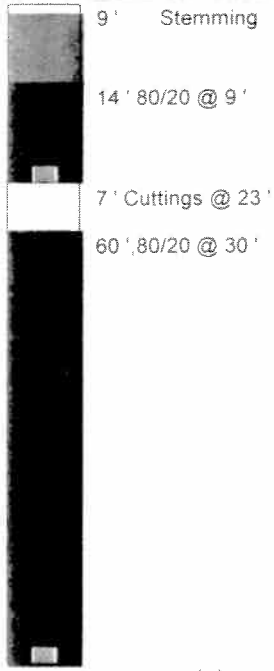
Blast Number E64  
Blast Type Production

Date 7/3/2010  
Time 4:02 PM

### Hole Cross Section

Depth (ft) 90      Angle (deg) 0  
B X S (ft) 20 X 20      Bench Ht. 90  
Hole dia. (in) 9.000      Stem (ft) 9  
PF: 1.68 lbs/YD<sup>3</sup>      Tons/Lb.

#### Typical Hole



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      2.0

Holes loaded the same: 60

### Timing Pattern

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 8,141 ft N . ? °

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 7/3/2010 4:02 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Richard Cope - 5 506 08



Operation Apogee Coal, LLC.

Blast Number E64

Date 7/3/2010

Permit Number S-5006-05

Blast Type Production

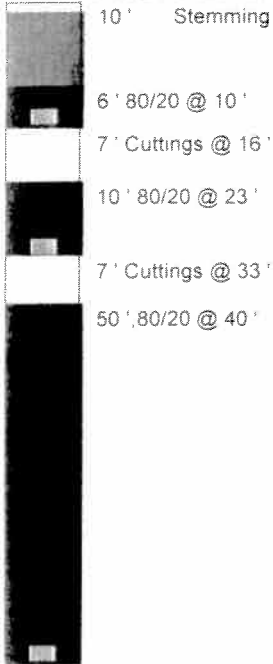
Time 4:02 PM

**Hole Cross Section**

Depth (ft) 90      Angle (deg) 0  
B X S (ft) 20 X 20      Bench Ht. 90  
Hole dia. (in) 9.000      Stem (ft) 10  
PF: 1.50 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

Back Row Hole(s)



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      3.0

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 8,141 ft N, ? °

Holes loaded the same: 6

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 7/3/2010 4:02 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:

Crew:

Richard Cope - 5 506 08

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1	90		90	90	1 Nelson	80/20	1.10	910.16	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
20	20	60	15		3					Total Primer QTY / Hole	1
Starter Hole					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	910.16	Expl-Primer LBS / Hole	910.91
Similar Holes -		1	1 Primers		0.75 LBS	Total Expl lbs. / Blast		910.16	Similar Hole LBS		911.00
17-76	90		90	90	1 Nelson	80/20	1.10	1820.31	1	3/4 LB Cast	2
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	80/20	1.10	424.74	2		
20	20	9	0		3					Total Primer QTY / Hole	2
Typical Hole					4					Total Primer LBS / Hole	1.5
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	2245.05	Expl-Primer LBS / Hole	?
Similar Holes -		60	120 Primers		90.00 LBS	Total Expl lbs. / Blast		134703.16	Similar Hole LBS		134794.00
2-16	90		90	90	1 Nelson	80/20	1.10	1213.54	1	3/4 LB Cast	2
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	80/20	1.10	546.09	2		
20	20	25	15		3					Total Primer QTY / Hole	2
Face Row Hole(s)					4					Total Primer LBS / Hole	1.5
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	1759.64	Expl-Primer LBS / Hole	?
Similar Holes -		15	30 Primers		22.50 LBS	Total Expl lbs. / Blast		26394.54	Similar Hole LBS		26418.00

Apogee Coal, LLC.  
S-5006-05

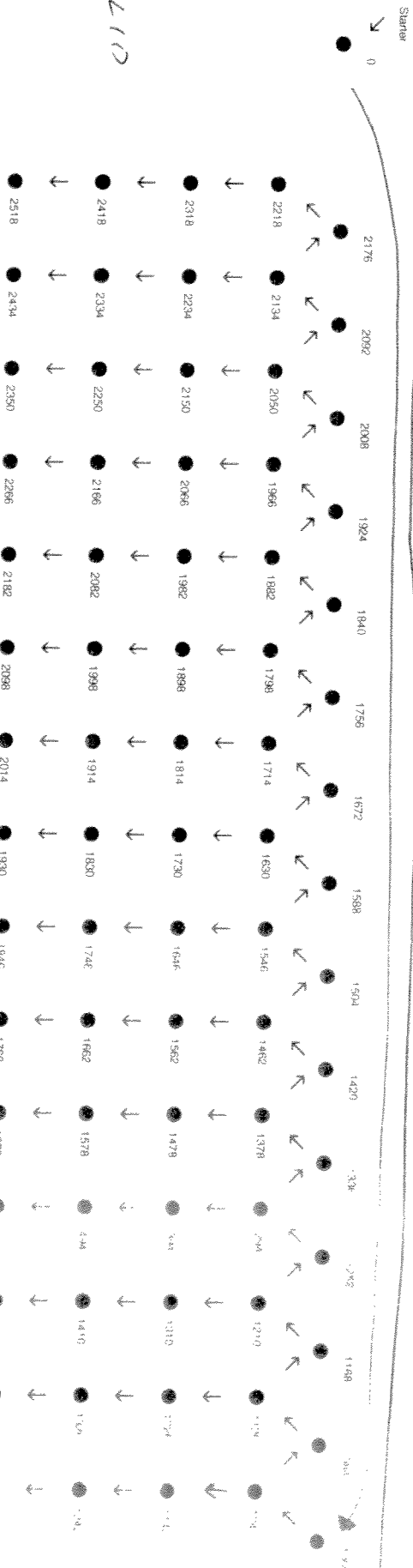
Blast Type Production  
Blast / Ticket Number E64 /E64

Date 7/3/2010  
Time 4:02 PM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
77-82	90		90	90	1 Nelson	80/20	1.10	1516.93	1	3/4 LB Cast	3
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	80/20	1.10	303.39	2		
20	20	10	0		3 Nelson	80/20	1.10	182.03		Total Primer QTY / Hole	3
Back Row Hole(s)					4					Total Primer LBS / Hole	2.25
					5						
					6						
					7						
					8						
							Total Expl lbs. / hole	2002.34	Expl-Primer LBS / Hole		?
Similar Holes -	6	18 Primers	13.50 LBS	Total Expl lbs. / Blast		12014.07	Similar Hole LBS		12028.00		
Total Holes Loaded this blast							Grand Total Explosives Weight				
82							174148.67				

N  
Lambert Residence  
8/11/88

OPEN FACE



SOLID

SOLID

SOLID

Handwritten notes at the bottom of the page, including the number '150' and other illegible scribbles.

OUT SLOPE

# BLASTING LOG

GENERAL INFORMATION



Blast Number: E61 Ticket Number: E61

<b>Permittee</b> Apogee Coal, LLC.	<b>Date / Time</b> 6/30/2010 3:56 PM
<b>Customer / Operator</b> Apogee Coal, LLC.	<b>Permit No.</b> S-5006-05
<b>Location of Blast</b> Ridge 1& 2	<b>Lat</b> ° ' ' N 301703 - X
<b>Blasting Company</b> APOGEE COAL LLC	<b>Long</b> ° ' ' W 1769342 - Y
<b>Nearest Protected Structure</b> Cline residence	<b>Method</b> Handheld GPS - NAD83
<b>Distance and Direction</b> 8,218 ft S, ?°	<b>SD to nearest protected</b> 199
<b>Nearest Other Structure</b> Dominion Well	
<b>Distance and Direction</b> 4,847 ft NW, ?°	
<b>Weather Conditions</b> Sunny / Hot 90°F,	<b>Wind out of the</b> N @ 0-2 mph
<b>Type of Material Blasted</b> Sandstone	<b>Blast Type</b> Production
<b>Matts or Protection Used</b>	<b>Total Tons</b> 0 <b>Total YD<sup>3</sup></b> 15,407
	<b>Powder Factor:</b> tons/lb 0.00 <b>lbs/yd<sup>3</sup></b> 1.77

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	16 Primers	Total Weight
	20,387.51 lbs.	6,795.84 lbs.	0.00 lbs.	12.00 lbs.	27,195.34 lbs.

**Total Holes** 16 **Angle** °

**Face Height (ft)** 65 **Burden (ft)** 20 **Backfill (ft)**

**Depth (ft)** 65 **Spacing (ft)** 20 **Stemming (ft)** 10

**Sub Drill (ft)** **Diameter (in)** 9 **Stemming Material** Cuttings

**Maximum Weight of Explosives Allowed per 8ms Period (lbs)** :7766 **as determined by SD of :** 55

**Maximum Weight of Explosives detonated per 8ms (lbs)** :1700 in 1.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	80 ft unitronics	16						

---

**Method of Firing :** Electric **Timer (ms) :** NA **Circuit Type :**

**Initiated by :** Electronic **Blasting Unit :** E B M **No. of Circuits :**

COMMENTS

Operation Apogee Coal, LLC.

Blast Number E61

Date 6/30/2010

Permit Number S-5006-05

Blast Type Production

Time 3:56 PM

**Hole Cross Section**

Depth (ft) 65      Angle (deg)  
B X S (ft) 20 X 20      Bench Ht. 65  
Hole dia. (in) 9.000      Stem (ft) 10  
PF: 1.76 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

10' Stemming

55', 75/25 @ 10'

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 16

Nearest Protected Structure: Cline residence

Distance and Direction: 8,218 ft S, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 6/30/2010 3:56 PM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:

Crew:

Brad Gregory - 3-299-88

Apogee Coal, LLC.  
S-5006-05

Blast Type                      Production  
Blast / Ticket Number      E61 /E61

Date 6/30/2010  
Time 3:56 PM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-16	65		65	65	1 Nelson	75/25	1.12	1698.96	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
20	20	10			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	1698.96	Expl-Primer LBS / Hole	?
Similar Holes -	16		16 Primers	12.00 LBS	Total Expl lbs. / Blast			27183.34	Similar Hole LBS	27196.00	
Total Holes Loaded this blast										Grand Total Explosives Weight	
<b>16</b>										<b>27195.34</b>	

# BLASTING LOG

GENERAL INFORMATION



Blast Number E60 Ticket Number E60

<b>Permittee</b> Apogee Coal, LLC.	<b>Date / Time</b> 6/30/2010 1:09 PM
<b>Customer / Operator</b> Apogee Coal, LLC.	<b>Permit No.</b> S-5006-05
<b>Location of Blast</b> Ridge 1& 2	<b>Lat</b> ° ' ' N 301732 - X
<b>Blasting Company</b> APOGEE COAL LLC	<b>Long</b> ° ' ' W 1768944 - Y
<b>Nearest Protected Structure</b> #5 Bill Joann Lambert	<b>Method</b> Handheld GPS - NAD83
<b>Distance and Direction</b> 8,174 ft N, ?°	<b>SD to nearest protected</b> 376
<b>Nearest Other Structure</b> Dominion Well	
<b>Distance and Direction</b> 4,655 ft N, ?°	
<b>Weather Conditions</b> Sunny / Hot 85°F,	<b>Wind out of the</b> N @ 0-2 mph
<b>Type of Material Blasted</b> Sandstone	<b>Blast Type</b> Production
<b>Matts or Protection Used</b>	<b>Total Tons</b> 0 <b>Total YD<sup>3</sup></b> 12,960
	<b>Powder Factor:</b> tons/lb 0.00 <b>lbs/yd<sup>3</sup></b> 1.32

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	36 Primers	Total Weight
	12,771.15 lbs.	4,257.05 lbs.	0.00 lbs.	27.00 lbs.	17,055.20 lbs.

**Total Holes** 36 **Angle** °

**Face Height (ft)** 30 **Burden (ft)** 18 **Backfill (ft)**

**Depth (ft)** 30 **Spacing (ft)** 18 **Stemming (ft)** 10

**Sub Drill (ft)** **Diameter (in)** 7.875 **Stemming Material** Cuttings

**Maximum Weight of Explosives Allowed per 8ms Period (lbs)** :7164 as determined by SD of : 55

**Maximum Weight of Explosives detonated per 8ms (lbs)** : 474 in 1.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	EXCEL 40 FT - 20	36						
Orica	S. EXCEL 40 FT- 42	3						
Orica	S. EXCEL 40 FT-100	33						

---

**Method of Firing** : Non Electric **Timer (ms)** : NA **Circuit Type** :

**Initiated by** : Non-Electric **Blasting Unit** : Handi Blaster **No. of Circuits** :

COMMENTS



Operation Apogee Coal, LLC.

Blast Number E60

Date 6/30/2010

Permit Number S-5006-05

Blast Type Production

Time 1:09 PM

### Hole Cross Section

Depth (ft) 30      Angle (deg)  
 B X S (ft) 18 X 18      Bench Ht. 30  
 Hole dia. (in) 7.875      Stem (ft) 10  
 PF: 1.31 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern

10' Stemming

20', 75/25 @ 10'

PRIMER TYPE (S)	UNIT WT.	QTY.
3/4 LB CAST PRIMER	0.8	1.0

Holes loaded the same: 36

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 8,174 ft N, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 6/30/2010 1:09 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Todd Keffer - 5-645-05

*Todd Keffer*

Apogee Coal, LLC.  
S-5006-05

Blast Type                      Production  
Blast / Ticket Number      E60 /E60

Date 6/30/2010  
Time 1:09 PM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-36	30		30	30	1 Nelson	75/25	1.12	473.01	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	10			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	473.01	Expl-Primer LBS / Hole	473.76
Similar Holes -	36		36 Primers	27.00 LBS	Total Expl lbs. / Blast			17028.20	Similar Hole LBS	17056.00	

Total Holes Loaded this blast

**36**

Grand Total Explosives Weight

**17055.20**

# BLASTING LOG

GENERAL INFORMATION



Blast Number **E59** Ticket Number **E59**

<b>Permittee</b> Apogee Coal, LLC.	<b>Date / Time</b> 6/29/2010 4:03 PM
<b>Customer / Operator</b> Apogee Coal, LLC. <i>Mark</i>	<b>Permit No.</b> S-5006-05
<b>Location of Blast</b> Ridge 1&2	<b>Lat</b> ° ' ' N 301655 - X
<b>Blasting Company</b> APOGEE COAL LLC	<b>Long</b> ° ' ' W 1769422 - Y
<b>Nearest Protected Structure</b> Cline residence	<b>Method</b> Handheld GPS - NAD83
<b>Distance and Direction</b> 8,178 ft S, ?°	<b>SD to nearest protected</b> 227
<b>Nearest Other Structure</b> Dominion Well	
<b>Distance and Direction</b> 4,926 ft NW, ?°	
<b>Weather Conditions</b> Sunny / Hot 85°F,	<b>Wind out of the</b> NE @ 0-2 mph
<b>Type of Material Blasted</b> Sandstone	<b>Blast Type</b> Production
<b>Matts or Protection Used</b>	<b>Total Tons</b> 0 <b>Total YD<sup>3</sup></b> 52,260
	<b>Powder Factor:</b> tons/lb 0.00 <b>lbs/yd<sup>3</sup></b> 1.36

## BLAST INFORMATION

<b>Total Weight and Type(s) of Explosives used:</b> see attachment					
	<b>ANFO</b>	<b>Emulsion</b>	<b>Packaged</b>	<b>85 Primers</b>	<b>Total Weight</b>
	53,390.50 lbs.	17,796.83 lbs.	0.00 lbs.	63.75 lbs.	71,251.09 lbs.
<b>Total Holes</b>	67	<b>Angle</b> °			
<b>Face Height (ft)</b>	65	<b>Burden (ft)</b>	18	<b>Backfill (ft)</b>	
<b>Depth (ft)</b>	65	<b>Spacing (ft)</b>	18	<b>Stemming (ft)</b>	9 - 10
<b>Sub Drill (ft)</b>		<b>Diameter (in)</b>	7.875	<b>Stemming Material</b>	Cuttings
<b>Maximum Weight of Explosives Allowed per 8ms Period (lbs) :</b> 8021 as determined by SD of : 55					
<b>Maximum Weight of Explosives detonated per 8ms (lbs) :</b> 1302 in 1.0 Holes					

## INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	80 ft unitronics	49						
Orica	50 ft unitronics	37						

---

**Method of Firing :** Electric **Timer (ms) :** NA **Circuit Type :**

**Initiated by :** Electronic **Blasting Unit :** E B M **No. of Circuits :**

## COMMENTS

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

Blast Number E59  
Blast Type Production

Date 6/29/2010  
Time 4:03 PM

### Hole Cross Section

Depth (ft) 65      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 65  
Hole dia. (in) 7.875      Stem (ft) 10  
PF: 1.67 lbs/YD<sup>3</sup>      Tons/Lb.



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 49

### Timing Pattern

*See Attached*

Nearest Protected Structure: Cline residence

Distance and Direction: 8,178 ft S, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 6/29/2010 4:03 PM

Seis. SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Seis. SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Todd Keffer - 5-645-05

Crew:

*Todd Keffer*

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

Blast Number E59  
Blast Type Production

Date 6/29/2010  
Time 4:03 PM

**Hole Cross Section**

Depth (ft) 65      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 65  
Hole dia. (in) 7.875      Stem (ft) 10  
PF: 0.61 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

10' Stemming

20', 75/25 @ 45'

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 9

Nearest Protected Structure: Cline residence

Distance and Direction: 8,178 ft S, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 6/29/2010 4:03 PM

Seis SN    Location                      Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:  
Todd Keffer - 5-645-05

Crew:

Operation Apogee Coal, LLC.  
 Permit Number S-5006-05

Blast Number E59  
 Blast Type Production

Date 6/29/2010  
 Time 4:03 PM

**Hole Cross Section**

Depth (ft) 65 Angle (deg)  
 B X S (ft) 18 X 18 Bench Ht. 65  
 Hole dia. (in) 7.875 Stem (ft) 9  
 PF: 0.45 lbs/YD<sup>3</sup> Tons/Lb.

**Timing Pattern**



PRIMER TYPE (S) UNIT WT. QTY.  
 3/4 LB CAST PRIMER 0.8 3.0

Holes loaded the same: 9

**Nearest Protected Structure:** Cline residence

**Distance and Direction:** 8,178 ft S, ?°

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 6/29/2010 4:03 PM

Seis SN Location Dist (ft) Dir. SD T PPV T Hz V PPV V Hz L PPV L Hz Air dB Air Hz

**Reading(s) taken by :** SAULS

**Analyzed by :** SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**  
 Todd Keffer - 5-645-05

**Crew:**

Apogee Coal, LLC.  
S-5006-05

Blast Type                      Production  
Blast / Ticket Number      E59 /E59

Date 6/29/2010  
Time 4:03 PM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty	
1-49	65		65	65	1 Nelson	75/25	1.12	1300.77	1	3/4 LB Cast	1	
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2			
18	18	10			3					Total Primer QTY / Hole	1	
					4					Total Primer LBS / Hole	.75	
					5							
					6							
					7							
					8							
								Total Expl lbs. / hole		1300.77	Expl-Primer LBS / Hole	?
Similar Holes - 49			49 Primers		36.75 LBS		Total Expl lbs. / Blast		63737.50		Similar Hole LBS 63775.00	
50-58	65		65	65	1 Nelson	75/25	1.12	473.01	1	3/4 LB Cast	1	
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2			
18	18	10			3					Total Primer QTY / Hole	1	
					4					Total Primer LBS / Hole	.75	
					5							
					6							
					7							
					8							
								Total Expl lbs. / hole		473.01	Expl-Primer LBS / Hole	473.76
Similar Holes - 9			9 Primers		6.75 LBS		Total Expl lbs. / Blast		4257.05		Similar Hole LBS 4264.00	
59-67	65		65	65	1 Nelson	75/25	1.12	118.25	1	3/4 LB Cast	3	
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	75/25	1.12	118.25	2			
18	18	9			3 Nelson	75/25	1.12	118.25		Total Primer QTY / Hole	3	
					4					Total Primer LBS / Hole	2.25	
					5							
					6							
					7							
					8							
								Total Expl lbs. / hole		354.75	Expl-Primer LBS / Hole	357.00
Similar Holes - 9			27 Primers		20.25 LBS		Total Expl lbs. / Blast		3192.79		Similar Hole LBS 3214.00	

Total Holes Loaded this blast

67

Grand Total Explosives Weight

71251.09

# BLASTING LOG

GENERAL INFORMATION



Blast Number E58 Ticket Number E58

Permittee Apogee Coal, LLC.	Date / Time 6/29/2010 4:03 PM
Customer / Operator Apogee Coal, LLC.	Permit No. S-5006-05
Location of Blast Ridge 1&2	Lat ° ' N 301293 - X
Blasting Company APOGEE COAL LLC	Long ° ' W 1769581 - Y
Nearest Protected Structure Cline residence	Method Handheld GPS - NAD83
Distance and Direction 7,836 ft S, ?°	SD to nearest protected 294
Nearest Other Structure Jackson Well	
Distance and Direction 5,176 ft SW, ?°	
Weather Conditions Sunny / Hot 85°F,	Wind out of the NE @ 0-2 mph
Type of Material Blasted Sandstone	Blast Type Production
Matts or Protection Used	Total Tons 0 Total YD <sup>3</sup> 11,400
	Powder Factor: tons/lb 0.00 lbs/yd <sup>3</sup> 1.18

BLAST INFORMATION

Total Weight and Type(s) of Explosives used: see attachment

	ANFO	Emulsion	Packaged	38 Primers	Total Weight
	10,110.49 lbs.	3,370.16 lbs.	0.00 lbs.	19.00 lbs.	13,499.66 lbs.

Total Holes 38 Angle °

Face Height (ft) 25 Burden (ft) 18 Backfill (ft)

Depth (ft) 25 Spacing (ft) 18 Stemming (ft) 10

Sub Drill (ft) Diameter (in) 7.875 Stemming Material Cuttings

Maximum Weight of Explosives Allowed per 8ms Period (lbs) :6341 as determined by SD of : 65

Maximum Weight of Explosives detonated per 8ms (lbs) : 711 in 2.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	EXCEL 40 FT - 20	38						
Orica	S. EXCEL 40 FT-17	7						
Orica	S. EXCEL 40 FT- 42	26						

Method of Firing : Non Electric Timer (ms) : NA Circuit Type :

Initiated by : Non-Electric Blasting Unit : Handi Blaster No. of Circuits :

COMMENTS



Operation Apogee Coal, LLC.

Blast Number E58

Date 6/29/2010

Permit Number S-5006-05

Blast Type Production

Time 4:03 PM

**Hole Cross Section**

Depth (ft) 25      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 25  
Hole dia. (in) 7.875      Stem (ft) 10  
PF: 1.18 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

10' Stemming

15', 75/25 @ 10'

PRIMER TYPE (S)      UNIT WT. QTY.  
1/2 LB CAST BOOSTER      0.5      1.0

Holes loaded the same: 38

**Nearest Protected Structure:** Cline residence

**Distance and Direction:** 7,836 ft S, ?°

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 6/29/2010 4:03 PM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**  
Todd Keffer - 5-645-05

**Crew:**

*Todd Keffer*



# BLASTING LOG

GENERAL INFORMATION



Blast Number E57 Ticket Number E57

**Permittee** Apogee Coal, LLC. **Date / Time** 6/29/2010 11:53 AM  
**Customer / Operator** Apogee Coal, LLC. **Permit No.** S-5007-01  
**Location of Blast** Guyan Mine **Lat** ° ' ' N 292590 - X  
**Blasting Company** APOGEE COAL LLC **Long** ° ' ' W 1773413 - Y  
**Nearest Protected Structure** Ball residence **Method** Handheld GPS - NAD83  
**Distance and Direction** 3,893 ft S, ?° **SD to nearest protected** 206  
**Nearest Other Structure** Dominion Well 1089  
**Distance and Direction** 8,024 ft NE, ?°  
**Weather Conditions** Clear / Calm 80°F, **Wind out of the** N @ 2-5 mph  
**Type of Material Blasted** Shale **Blast Type** Production  
**Matts or Protection Used** **Total Tons** 0 **Total YD<sup>3</sup>** 21,888  
**Powder Factor:** tons/lb 0.00 **lbs/yd<sup>3</sup>** 0.82

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	152 Primers	Total Weight
	13,480.66 lbs.	4,493.55 lbs.	0.00 lbs.	76.00 lbs.	18,050.21 lbs.

**Total Holes** 152 **Angle** °  
**Face Height (ft)** **Burden (ft)** 18 **Backfill (ft)**  
**Depth (ft)** 12 **Spacing (ft)** 18 **Stemming (ft)** 7  
**Sub Drill (ft)** **Diameter (in)** 7.875 **Stemming Material** Cuttings  
**Maximum Weight of Explosives Allowed per 8ms Period (lbs)** :5010 **as determined by SD of** : 55  
**Maximum Weight of Explosives detonated per 8ms (lbs)** : 356 **in** 3.0 **Holes**

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	EXCEL 40 FT - 20	152						
Orica	S. EXCEL 40 FT-17	143						
Orica	S. EXCEL 40 FT- 42	9						

**Method of Firing** : Non Electric **Timer (ms)** : NA **Circuit Type** :  
**Initiated by** : Non-Electric **Blasting Unit** : Handi Blaster **No. of Circuits** :

COMMENTS

Operation Apogee Coal, LLC.

Blast Number E57

Date 6/29/2010

Permit Number S-5007-01

Blast Type Production

Time 11:53 AM

**Hole Cross Section**

Depth (ft) 12      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht.  
Hole dia. (in) 7.875      Stem (ft) 7  
PF: 0.82 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

7' Stemming



5' 7.875 @ 7''

PRIMER TYPE (S)      UNIT WT. QTY.  
1/2 LB CAST BOOSTER      0.5      1.0

Holes loaded the same: 152

Nearest Protected Structure: Ball residence

Distance and Direction: 3,893 ft S, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 6/29/2010 11:53 AM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:

Crew:

Todd Keffer - 5-645-05

*Todd Keffer*

Apogee Coal, LLC

S-5007-01

Blast Type

Production

Date 6/29/2010

Blast / Ticket Number

E57 /E57

Time 11:53 AM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-152			12	12	1 Nelson	75/25	1.12	118.25	1 Orica	1/2 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	7			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.5
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	118.25	Expl-Primer LBS / Hole	118.75
Similar Holes -	152	152 Primers	76.00 LBS					Total Expl lbs. / Blast	17974.21	Similar Hole LBS	18051.00

Total Holes Loaded this blast

**152**

Grand Total Explosives Weight

**18050.21**

Apogee Coal Company  
Logan WV

# BLASTING LOG



GENERAL INFORMATION

Blast Number **E56** Ticket Number **E56**

*MATT*

Permittee Apogee Coal, LLC.  
Customer / Operator Apogee Coal, LLC.  
Location of Blast Ridge 1& 2  
Blasting Company APOGEE COAL LLC

Date / Time 6/28/2010 4:00 PM  
Permit No. S-5006-05  
Lat ° ' ' N 301198 - X  
Long ° ' ' W 1765851 - Y  
Method Handheld GPS - NAD83  
SD to nearest protected 131

Nearest Protected Structure Cline residence  
Distance and Direction 8,158 ft S, ?°  
Nearest Other Structure Jackson Well  
Distance and Direction 4,263 ft S, ?°

Weather Conditions Light Rain 75°F, Wind out of the E @ 5-10 mph

Type of Material Blasted Sandstone  
Blast Type Production

Matts or Protection Used  
Total Tons 0 Total YD<sup>3</sup> 120,213  
Powder Factor: tons/lb 0.00 lbs/yd<sup>3</sup> 1.46

BLAST INFORMATION

Total Weight and Type(s) of Explosives used: see attachment

	ANFO	Emulsion	Packaged	192 Primers	Total Weight
	131,933.08 lbs.	43,977.69 lbs.	0.00 lbs.	144.00 lbs.	176,054.77 lbs.
Total Holes	92	Angle °			
Face Height (ft)	98	Burden (ft)	18	Backfill (ft)	3
Depth (ft)	98	Spacing (ft)	20	Stemming (ft)	8 - 10
Sub Drill (ft)		Diameter (in)	7.875	Stemming Material	Cuttings

Maximum Weight of Explosives Allowed per 8ms Period (lbs) :6008 as determined by SD of : 55

Maximum Weight of Explosives detonated per 8ms (lbs) :3882 in 2.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
	120'EXCEL-20	99						
Orica	EXCEL 40 FT - 20	93						
Orica	S. EXCEL 40 FT- 42	8						
Orica	S. EXCEL 40 FT-100	84						

Method of Firing : Non Electric Timer (ms) : NA Circuit Type :  
Initiated by : Non-Electric Blasting Unit : Handi Blaster No. of Circuits :

COMMENTS

[Empty box for comments]

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

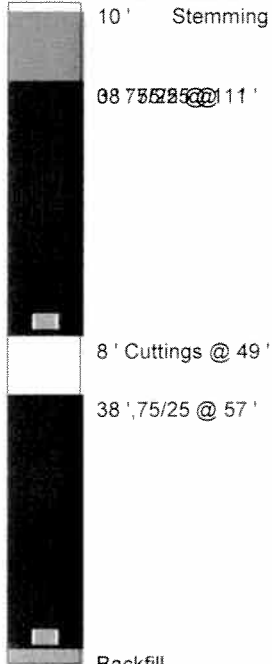
Blast Number E56  
Blast Type Production

Date 6/28/2010  
Time 4:00 PM

### Hole Cross Section

Depth (ft) 98      Angle (deg)  
B X S (ft) 18 X 20      Bench Ht. 98  
Hole dia. (in) 7.875      Stem (ft) 10  
PF: 1.38 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      2.0

Holes loaded the same: 11

Nearest Protected Structure: Cline residence

Distance and Direction: 8,158 ft S, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 6/28/2010 4:00 PM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:  
Brad Gregory - 3-299-88

Crew:

Operation Apogee Coal, LLC.

Blast Number E56

Date 6/28/2010

Permit Number S-5006-05

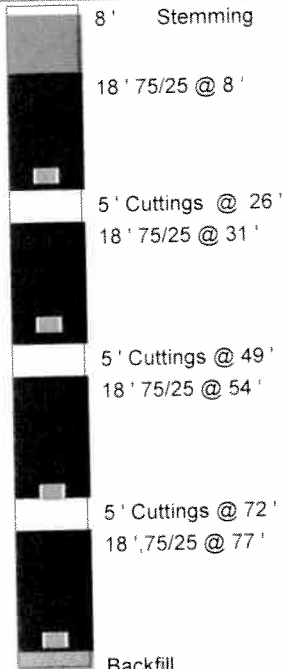
Blast Type Production

Time 4:00 PM

**Hole Cross Section**

**Timing Pattern**

Depth (ft) 98 Angle (deg)  
B X S (ft) 18 X 20 Bench Ht. 98  
Hole dia. (in) 7.875 Stem (ft) 8  
PF: 1.30 lbs/YD<sup>3</sup> Tons/Lb.



PRIMER TYPE (S) UNIT WT. QTY.  
3/4 LB CAST PRIMER 0.8 4.0

Holes loaded the same: 4

Nearest Protected Structure: Cline residence

Distance and Direction: 8,158 ft S, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 6/28/2010 4:00 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz

Reading(s) taken by :SAULS

Analyzed by :SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:  
Brad Gregory - 3-299-88

Crew:



# BLASTING LOG

GENERAL INFORMATION



Blast Number E45 Ticket Number E45

Permittee Apogee Coal, LLC.	Date / Time 6/22/2010 4:14 PM
Customer / Operator Apogee Coal, LLC.	Permit No. S-5006-05
Location of Blast Ridge 1&2	Lat ° ' ' N 301376 - X
Blasting Company APOGEE COAL LLC	Long ° ' ' W 1769287 - Y
Nearest Protected Structure Cline residence	Method Handheld GPS - NAD83
Distance and Direction 7,888 ft S, ?°	SD to nearest protected 253
Nearest Other Structure Jackson Well	
Distance and Direction 5,087 ft SW, ?°	
Weather Conditions Partly Cloudy 90°F,	Wind out of the N @ 0-2 mph
Type of Material Blasted Sandstone	Blast Type Production
Matts or Protection Used	Total Tons 0 Total YD <sup>3</sup> 25,344
	Powder Factor: tons/lb 0.00 lbs/yd <sup>3</sup> 1.22

BLAST INFORMATION

Total Weight and Type(s) of Explosives used: see attachment

	ANFO	Emulsion	Packaged	35 Primers	Total Weight
	23,118.39 lbs.	7,706.13 lbs.	0.00 lbs.	26.25 lbs.	30,850.77 lbs.

Total Holes 32 Angle °

Face Height (ft) 66 Burden (ft) 18 Backfill (ft)

Depth (ft) 66 Spacing (ft) 18 Stemming (ft) 10

Sub Drill (ft) Diameter (in) 6.75 Stemming Material Cuttings

Maximum Weight of Explosives Allowed per 8ms Period (lbs) :6126 as determined by SD of : 65

Maximum Weight of Explosives detonated per 8ms (lbs) : 974 in 1.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	50 ft unitronics	35						

---

Method of Firing : Electric Timer (ms) : NA Circuit Type :

Initiated by : Electronic Blasting Unit : E B M No. of Circuits :

COMMENTS

Operation Apogee Coal, LLC.

Blast Number E45

Date 6/22/2010

Permit Number S-5006-05

Blast Type Production

Time 4:14 PM

**Hole Cross Section**

Depth (ft) 66      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 66  
Hole dia. (in) 6.750      Stem (ft) 10  
PF: 1.23 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

10' Stemming

56', 75/25 @ 10'

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 29

**Nearest Protected Structure:** Cline residence

**Distance and Direction:** 7,888 ft S, ?°

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 6/22/2010 4:14 PM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**

**Crew:**

Todd Keffer - 5-645-05

Operation Apogee Coal, LLC.

Blast Number E45

Date 6/22/2010

Permit Number S-5006-05

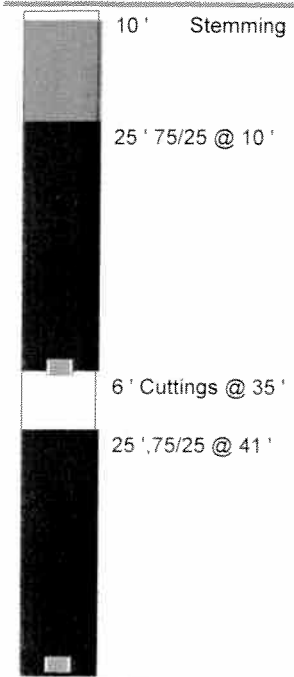
Blast Type Production

Time 4:14 PM

**Hole Cross Section**

Depth (ft) 66      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 66  
Hole dia. (in) 6.750      Stem (ft) 10  
PF: 1.10 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      2.0

Holes loaded the same: 3

**Nearest Protected Structure:** Cline residence

**Distance and Direction:** 7,888 ft S, ?°

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 6/22/2010      4:14 PM

Seis SN    Location      Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Empty table area for seismograph data.

**Reading(s) taken by :** SAULS

**Analyzed by :** SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**

**Crew:**

Todd Keffer - 5-645-05

Apogee Coal, LLC.  
S-5006-05

Blast Type Production  
Blast / Ticket Number E45 /E45

Date 6/22/2010  
Time 4:14 PM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-29	66		66	66	1 Nelson	75/25	1.12	973.04	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	10			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								TotalExpl lbs. / hole	973.04	Expl-Primer LBS / Hole	973.79
Similar Holes -		29	29 Primers	21.75 LBS	Total Expl lbs. / Blast		28218.16	Similar Hole LBS		28240.00	
30-32	66		66	66	1 Nelson	75/25	1.12	434.39	1	3/4 LB Cast	2
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	75/25	1.12	434.39	2		
18	18	10			3					Total Primer QTY / Hole	2
					4					Total Primer LBS / Hole	1.5
					5						
					6						
					7						
					8						
								TotalExpl lbs. / hole	868.79	Expl-Primer LBS / Hole	870.29
Similar Holes -		3	6 Primers	4.50 LBS	Total Expl lbs. / Blast		2606.36	Similar Hole LBS		2611.00	
Total Holes Loaded this blast										Grand Total Explosives Weight	
										32	30850.77

# BLASTING LOG

GENERAL INFORMATION



Blast Number E15A Ticket Number E15A

**Permittee** Apogee Coal, LLC. **Date / Time** 6/7/2010 4:03 PM

**Customer / Operator** Apogee Coal, LLC. **Permit No.** S-5006-05

**Location of Blast** Ridge 1 & 2 **Lat** ° ' ' N 302228 - X

**Blasting Company** APOGEE COAL LLC **Long** ° ' ' W 1765854 - Y

**Nearest Protected Structure** #5 Bill Joann Lambert **Method** Handheld GPS - NAD83

**Distance and Direction** 7,259 ft N, ?° **SD to nearest protected** 190

**Nearest Other Structure** Dominion Well

**Distance and Direction** 4,027 ft N, ?°

**Weather Conditions** Clear / Calm 80°F, **Wind out of the** NE @ 0-5 mph

**Type of Material Blasted** Sandstone **Blast Type** Pre Split

**Matts or Protection Used** **Total Tons** 0 **Total YD<sup>3</sup>** 23,940

**Powder Factor:** tons/lb 0.00 **lbs/yd<sup>3</sup>** 0.30

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	84 Primers	Total Weight
	4,278.34 lbs.	2,852.22 lbs.	0.00 lbs.	58.75 lbs.	7,189.31 lbs.

<b>Total Holes</b>	84	<b>Angle</b>	°		
<b>Face Height (ft)</b>	95	<b>Burden (ft)</b>	9	<b>Backfill (ft)</b>	
<b>Depth (ft)</b>	95	<b>Spacing (ft)</b>	9	<b>Stemming (ft)</b>	8
<b>Sub Drill (ft)</b>		<b>Diameter (in)</b>	7.875	<b>Stemming Material</b>	Cuttings
<b>Maximum Weight of Explosives Allowed per 8ms Period (lbs) :</b> 5362 as determined by SD of : 55					
<b>Maximum Weight of Explosives detonated per 8ms (lbs) :</b> 1456 in ? Holes					

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	120 ft unitronics	84						

**Method of Firing :** Electric **Timer (ms) :** NA **Circuit Type :**

**Initiated by :** Electronic **Blasting Unit :** E B M **No. of Circuits :**

COMMENTS

### Seismograph Data

Date and Time of Recording from the Seismogram: NO TRIGGERS  
Type (Brand and Model Number) of Instrument: Nomis SuperMini Sensitivity: 2-400 Hz.  
Person and Company Who Installed Seismograph: Travis Farmer/Sauls Seismic  
Person and Firm Taking Readings: Travis Farmer/Sauls Seismic  
Person and Firm Analyzing Readings: Travis Farmer/Sauls Seismic  
(Attach full waveform seismograms, for all seismograph recordings for this blast. Include calibration signal even if no trigger)  
Signature of Person Analyzing Readings: [Signature]  
Location of Seismograph: Gary Mullins residence  
(Specify owner's name and structure number from the blast map, including distance from blast)  
Trigger Levels: Ground: .05 ips Air: 120 dB Length of Recording Time: 10 sec.  
Vibrations Recorded: Longitudinal: \_\_\_\_\_ Transverse: \_\_\_\_\_ Vertical: \_\_\_\_\_ Air Blast: \_\_\_\_\_  
Frequency: Longitudinal: \_\_\_\_\_ Hz. Transverse: \_\_\_\_\_ Hz. Vertical: \_\_\_\_\_ Hz. Air Blast: \_\_\_\_\_ Hz.

Date and Time of Recording from the Seismogram: NO TRIGGERS  
Type (Brand and Model Number) of Instrument: Nomis Super Mini Sensitivity: 2-400 Hz.  
Person and Company Who Installed Seismograph: Travis Farmer/Sauls Seismic  
Person and Firm Taking Readings: Travis Farmer/Sauls Seismic  
Person and Firm Analyzing Readings: Travis Farmer/Sauls Seismic  
(Attach full waveform seismograms, for all seismograph recordings for this blast. Include calibration signal even if no trigger)  
Signature of Person Analyzing Readings: [Signature]  
Location of Seismograph: Cline residence  
(Specify owner's name and structure number from the blast map, including distance from blast)  
Trigger Levels: Ground: .05 ips Air: 120 dB Length of Recording Time: 10 sec.  
Vibrations Recorded: Longitudinal: \_\_\_\_\_ Transverse: \_\_\_\_\_ Vertical: \_\_\_\_\_ Air Blast: \_\_\_\_\_  
Frequency: Longitudinal: \_\_\_\_\_ Hz. Transverse: \_\_\_\_\_ Hz. Vertical: \_\_\_\_\_ Hz. Air Blast: \_\_\_\_\_ Hz.

Date and Time of Recording from the Seismogram: NO TRIGGERS  
Type (Brand and Model Number) of Instrument: Nomis Super Mini Sensitivity: 2-400 Hz.  
Person and Company Who Installed Seismograph: Travis Farmer/Sauls Seismic  
Person and Firm Taking Readings: Travis Farmer/Sauls Seismic  
Person and Firm Analyzing Readings: Travis Farmer/Sauls Seismic  
(Attach full waveform seismograms, for all seismograph recordings for this blast. Include calibration signal even if no trigger)  
Signature of Person Analyzing Readings: [Signature]  
Location of Seismograph: Gas well #1089  
(Specify owner's name and structure number from the blast map, including distance from blast)  
Trigger Levels: Ground: .05 ips Air: N dB Length of Recording Time: 10 sec.  
Vibrations Recorded: Longitudinal: \_\_\_\_\_ Transverse: \_\_\_\_\_ Vertical: \_\_\_\_\_ Air Blast: \_\_\_\_\_  
Frequency: Longitudinal: \_\_\_\_\_ Hz. Transverse: \_\_\_\_\_ Hz. Vertical: \_\_\_\_\_ Hz. Air Blast: \_\_\_\_\_ Hz.

Date and Time of Recording from the Seismogram: NO TRIGGERS  
Type (Brand and Model Number) of Instrument: Nomis SuperMini Sensitivity: 2-400 Hz.  
Person and Company Who Installed Seismograph: Travis Farmer/Sauls Seismic  
Person and Firm Taking Readings: Travis Farmer/Sauls Seismic  
Person and Firm Analyzing Readings: Travis Farmer/Sauls Seismic  
(Attach full waveform seismograms, for all seismograph recordings for this blast. Include calibration signal even if no trigger)  
Signature of Person Analyzing Readings: [Signature]  
Location of Seismograph: Gas well # 9930 ( Dingess Run Well)  
(Specify owner's name and structure number from the blast map, including distance from blast)  
Trigger Levels: Ground: .05 ips Air: N dB Length of Recording Time: 10 sec.  
Vibrations Recorded: Longitudinal: \_\_\_\_\_ Transverse: \_\_\_\_\_ Vertical: \_\_\_\_\_ Air Blast: \_\_\_\_\_  
Frequency: Longitudinal: \_\_\_\_\_ Hz. Transverse: \_\_\_\_\_ Hz. Vertical: \_\_\_\_\_ Hz. Air Blast: \_\_\_\_\_ Hz.

Seismograph Data

Date and Time of Recording from the Seismogram: NO TRIGGERS

Type (Brand and Model Number) of Instrument: Nomis 5400 Sensitivity: 2-400 Hz.

Person and Company Who Installed Seismograph: Travis Farmer/Sauls Seismic

Person and Firm Taking Readings: Travis Farmer/Sauls Seismic

Person and Firm Analyzing Readings: Travis Farmer/Sauls Seismic

(Attach full waveform seismograms, for all seismograph recordings for this blast. Include calibration signal even if no trigger)

Signature of Person Analyzing Readings: *Travis Farmer*

Location of Seismograph: Greg Ball residence

(Specify owner's name and structure number from the blast map, including distance from blast)

Trigger Levels: Ground: .05 ips Air: 120 dB Length of Recording Time: 10 sec.

Vibrations Recorded: Longitudinal: \_\_\_\_\_ Transverse: \_\_\_\_\_ Vertical: \_\_\_\_\_ Air Blast: \_\_\_\_\_

Frequency: Longitudinal: \_\_\_\_\_ Hz. Transverse: \_\_\_\_\_ Hz. Vertical: \_\_\_\_\_ Hz. Air Blast: \_\_\_\_\_ Hz.

# BLASTING LOG

GENERAL INFORMATION



Blast Number **E15** Ticket Number **E15**

**Permittee** Apogee Coal, LLC. **Date / Time** 6/7/2010 4:03 PM  
**Customer / Operator** Apogee Coal, LLC. **Permit No.** S-5006-05  
**Location of Blast** Ridge 1&2 **Lat** ° ' ' N 302228 - X  
**Blasting Company** APOGEE COAL LLC **Long** ° ' ' W 1765854 - Y  
**Nearest Protected Structure** #5 Bill Joann Lambert **Method** Handheld GPS - NAD83  
**Distance and Direction** 7,259 ft N, ?° **SD to nearest protected** 118  
**Nearest Other Structure** Dominion Well  
**Distance and Direction** 4,027 ft N, ?°  
**Weather Conditions** Clear / Calm 80°F, **Wind out of the** NE @ 0-5 mph  
**Type of Material Blasted** Sandstone **Blast Type** Production  
**Matts or Protection Used** None used **Total Tons** 0 **Total YD<sup>3</sup>** 251,926  
**Powder Factor:** tons/lb 0.00 lbs/yd<sup>3</sup> 1.35

## BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	358 Primers	Total Weight
	254,003.99 lbs.	84,668.00 lbs.	0.00 lbs.	268.50 lbs.	338,940.49 lbs.

**Total Holes** 179 **Angle** °  
**Face Height (ft)** **Burden (ft)** 0 - 20 **Backfill (ft)** 2  
**Depth (ft)** 0 - 95 **Spacing (ft)** 0 - 20 **Stemming (ft)** 0 - 9  
**Sub Drill (ft)** **Diameter (in)** 7.875 **Stemming Material** Cuttings  
**Maximum Weight of Explosives Allowed per 8ms Period (lbs)** :5362 as determined by SD of : 55  
**Maximum Weight of Explosives detonated per 8ms (lbs)** :3787 in 2.0 Holes

## INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	50 ft unitronics	179						
Orica	120 ft unitronics	263						

**Method of Firing** : Digital **Timer (ms)** : NA **Circuit Type** : Row by Row  
**Initiated by** : Electronic **Blasting Unit** : E B M **No. of Circuits** : 1

## COMMENTS



Operation Apogee Coal, LLC.  
Permit Number S-5006-05

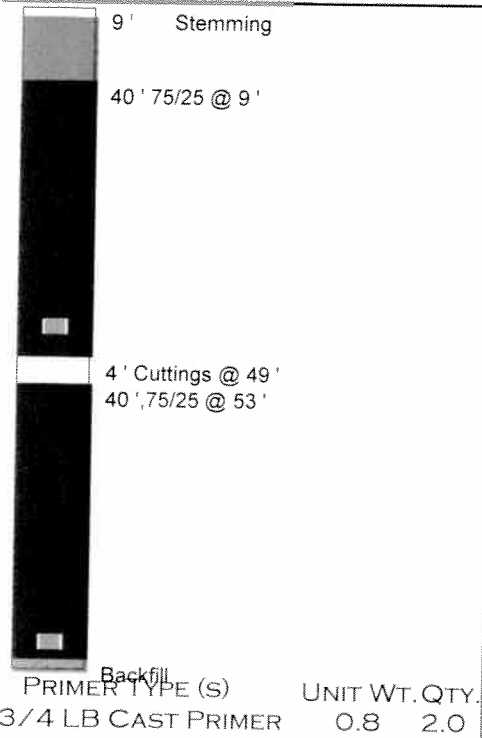
Blast Number E15  
Blast Type Production

Date 6/7/2010  
Time 4:03 PM

### Hole Cross Section

Depth (ft) 95      Angle (deg)  
B X S (ft) 20 X 20      Bench Ht.  
Hole dia. (in) 7.875      Stem (ft) 9  
PF: 1.34 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern



Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 7,259 ft N, ?°

Holes loaded the same: 179

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 6/7/2010 4:03 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:  
Richard Cope - 5 506 08

Crew:

Apogee Coal, LLC.  
S-5006-05

Blast Type Production  
Blast / Ticket Number E15 /E15

Date 6/7/2010  
Time 4:03 PM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
0			0	0	1 NEBCO	Bulk ANFO	0.85		1 Orica	1/2 LB Cast	0
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
0	0	0			3					Total Primer QTY / Hole	0
Preline					4					Total Primer LBS / Hole	0
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	0.00	Expl-Primer LBS / Hole	0.00
Similar Holes - 0		0 Primers		0.00 LBS	Total Expl lbs. / Blast			0.00	Similar Hole LBS		0.00
0			0	0	1 NEBCO	Bulk ANFO	0.85		1	3/4 LB Cast	0
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
0	0	0			3					Total Primer QTY / Hole	0
Preline					4					Total Primer LBS / Hole	0
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	0.00	Expl-Primer LBS / Hole	0.00
Similar Holes - 0		0 Primers		0.00 LBS	Total Expl lbs. / Blast			0.00	Similar Hole LBS		0.00
1-179			95	95	1 Nelson	75/25	1.12	946.01	1	3/4 LB Cast	2
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	75/25	1.12	946.01	2		
20	20	9			3					Total Primer QTY / Hole	2
					4					Total Primer LBS / Hole	1.5
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	1892.02	Expl-Primer LBS / Hole	?
Similar Holes - 179		358 Primers		268.50 LBS	Total Expl lbs. / Blast			338671.99	Similar Hole LBS		338941.00

Total Holes Loaded this blast  
**179**

Grand Total Explosives Weight  
**338940.49**

Seismograph Data

Date and Time of Recording from the Seismogram: NO TRIGGERS  
Type (Brand and Model Number) of Instrument: Nomis SuperMini Sensitivity: 2-400 Hz.  
Person and Company Who Installed Seismograph: Travis Farmer/Sauls Seismic  
Person and Firm Taking Readings: Travis Farmer/Sauls Seismic  
Person and Firm Analyzing Readings: Travis Farmer/Sauls Seismic  
(Attach full waveform seismograms, for all seismograph recordings for this blast. Include calibration signal even if no trigger)  
Signature of Person Analyzing Readings: [Signature]  
Location of Seismograph: Gary Mullins residence  
(Specify owner's name and structure number from the blast map, including distance from blast)  
Trigger Levels: Ground: .05 ips Air: 120 dB Length of Recording Time: 10 sec.  
Vibrations Recorded: Longitudinal: \_\_\_\_\_ Transverse: \_\_\_\_\_ Vertical: \_\_\_\_\_ Air Blast: \_\_\_\_\_  
Frequency: Longitudinal: \_\_\_\_\_ Hz. Transverse: \_\_\_\_\_ Hz. Vertical: \_\_\_\_\_ Hz. Air Blast: \_\_\_\_\_ Hz.

Date and Time of Recording from the Seismogram: NO TRIGGERS  
Type (Brand and Model Number) of Instrument: Nomis Super Mini Sensitivity: 2-400 Hz.  
Person and Company Who Installed Seismograph: Travis Farmer/Sauls Seismic  
Person and Firm Taking Readings: Travis Farmer/Sauls Seismic  
Person and Firm Analyzing Readings: Travis Farmer/Sauls Seismic  
(Attach full waveform seismograms, for all seismograph recordings for this blast. Include calibration signal even if no trigger)  
Signature of Person Analyzing Readings: [Signature]  
Location of Seismograph: Cline residence  
(Specify owner's name and structure number from the blast map, including distance from blast)  
Trigger Levels: Ground: .05 ips Air: 120 dB Length of Recording Time: 10 sec.  
Vibrations Recorded: Longitudinal: \_\_\_\_\_ Transverse: \_\_\_\_\_ Vertical: \_\_\_\_\_ Air Blast: \_\_\_\_\_  
Frequency: Longitudinal: \_\_\_\_\_ Hz. Transverse: \_\_\_\_\_ Hz. Vertical: \_\_\_\_\_ Hz. Air Blast: \_\_\_\_\_ Hz.

Date and Time of Recording from the Seismogram: NO TRIGGERS  
Type (Brand and Model Number) of Instrument: Nomis Super Mini Sensitivity: 2-400 Hz.  
Person and Company Who Installed Seismograph: Travis Farmer/Sauls Seismic  
Person and Firm Taking Readings: Travis Farmer/Sauls Seismic  
Person and Firm Analyzing Readings: Travis Farmer/Sauls Seismic  
(Attach full waveform seismograms, for all seismograph recordings for this blast. Include calibration signal even if no trigger)  
Signature of Person Analyzing Readings: [Signature]  
Location of Seismograph: Gas well #1089  
(Specify owner's name and structure number from the blast map, including distance from blast)  
Trigger Levels: Ground: .05 ips Air: N dB Length of Recording Time: 10 sec.  
Vibrations Recorded: Longitudinal: \_\_\_\_\_ Transverse: \_\_\_\_\_ Vertical: \_\_\_\_\_ Air Blast: \_\_\_\_\_  
Frequency: Longitudinal: \_\_\_\_\_ Hz. Transverse: \_\_\_\_\_ Hz. Vertical: \_\_\_\_\_ Hz. Air Blast: \_\_\_\_\_ Hz.

Date and Time of Recording from the Seismogram: NO TRIGGERS  
Type (Brand and Model Number) of Instrument: Nomis SuperMini Sensitivity: 2-400 Hz.  
Person and Company Who Installed Seismograph: Travis Farmer/Sauls Seismic  
Person and Firm Taking Readings: Travis Farmer/Sauls Seismic  
Person and Firm Analyzing Readings: Travis Farmer/Sauls Seismic  
(Attach full waveform seismograms, for all seismograph recordings for this blast. Include calibration signal even if no trigger)  
Signature of Person Analyzing Readings: [Signature]  
Location of Seismograph: Gas well # 9930 ( Dingess Run Well)  
(Specify owner's name and structure number from the blast map including distance from blast)  
Trigger Levels: Ground: .05 ips Air: N dB Length of Recording Time: 10 sec.  
Vibrations Recorded: Longitudinal: \_\_\_\_\_ Transverse: \_\_\_\_\_ Vertical: \_\_\_\_\_ Air Blast: \_\_\_\_\_  
Frequency: Longitudinal: \_\_\_\_\_ Hz. Transverse: \_\_\_\_\_ Hz. Vertical: \_\_\_\_\_ Hz. Air Blast: \_\_\_\_\_ Hz.

### Seismograph Data

Date and Time of Recording from the Seismogram: NO TRIGGERS  
Type (Brand and Model Number) of Instrument: Nomis 5400 Sensitivity: 2-400 Hz.  
Person and Company Who Installed Seismograph: Travis Farmer/Sauls Seismic  
Person and Firm Taking Readings: Travis Farmer/Sauls Seismic  
Person and Firm Analyzing Readings: Travis Farmer/Sauls Seismic  
(Attach full waveform seismograms for all seismograph recordings for this blast. Include calibration signal even if no trigger)  
Signature of Person Analyzing Readings: *Travis Farmer*  
Location of Seismograph: Greg Ball residence  
(Specify owner's name and structure number from the blast map, including distance from blast)  
Trigger Levels: Ground: .05 ips Air: 120 dB Length of Recording Time: 10 sec.  
Vibrations Recorded: Longitudinal: \_\_\_\_\_ Transverse: \_\_\_\_\_ Vertical: \_\_\_\_\_ Air Blast: \_\_\_\_\_  
Frequency: Longitudinal: \_\_\_\_\_ Hz. Transverse: \_\_\_\_\_ Hz. Vertical: \_\_\_\_\_ Hz. Air Blast: \_\_\_\_\_ Hz.

# BLASTING LOG

GENERAL INFORMATION



Blast Number E46 Ticket Number E46

**Permittee** Apogee Coal, LLC. **Date / Time** 6/23/2010 12:07 PM

**Customer / Operator** Apogee Coal, LLC. **Permit No.** S-5007-01

**Location of Blast** Guyan Mine **Lat** ° ' N 292469 - X

**Blasting Company** APOGEE COAL LLC **Long** ° ' W 1775244 - Y

**Nearest Protected Structure** Ball residence **Method** Handheld GPS - NAD83

**Distance and Direction** 3,817 ft S, ?° **SD to nearest protected** 129

**Nearest Other Structure** Dominion Well 1089

**Distance and Direction** 6,843 ft NE, ?°

**Weather Conditions** Light Rain 80°F, **Wind out of the** N @ 0-2 mph

**Type of Material Blasted** Sandstone **Blast Type** Production

**Matts or Protection Used** **Total Tons** 0 **Total YD<sup>3</sup>** 44,640

**Powder Factor:** tons/lb 0.00 lbs/yd<sup>3</sup> 1.21

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	62 Primers	Total Weight
	40,398.54 lbs.	13,466.18 lbs.	0.00 lbs.	46.50 lbs.	53,911.22 lbs.

**Total Holes** 62 **Angle** °

**Face Height (ft)** 0 - 60 **Burden (ft)** 0 - 18 **Backfill (ft)**

**Depth (ft)** 0 - 60 **Spacing (ft)** 0 - 18 **Stemming (ft)** 0 - 10

**Sub Drill (ft)** **Diameter (in)** 6.75 **Stemming Material** Cuttings

**Maximum Weight of Explosives Allowed per 8ms Period (lbs)** :4817 as determined by SD of : 55

**Maximum Weight of Explosives detonated per 8ms (lbs)** : 870 in 1.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	80 ft unitronics	44						
Orica	50 ft unitronics	18						

**Method of Firing** : Electric **Timer (ms)** : NA **Circuit Type** :

**Initiated by** : Electronic **Blasting Unit** : E B M **No. of Circuits** :

COMMENTS

Empty box for comments.

Operation Apogee Coal, LLC.

Blast Number E46

Date 6/23/2010

Permit Number S-5007-01

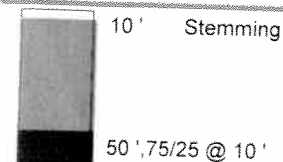
Blast Type Production

Time 12:07 PM

**Hole Cross Section**

Depth (ft) 60 Angle (deg)  
B X S (ft) 18 X 18 Bench Ht. 60  
Hole dia. (in) 6.750 Stem (ft) 10  
PF: 1.21 lbs/YD<sup>3</sup> Tons/Lb.

**Timing Pattern**



PRIMER TYPE (S)	UNIT WT.	QTY.
3/4 LB CAST PRIMER	0.8	1.0

Holes loaded the same: 62

Nearest Protected Structure: Ball residence

Distance and Direction: 3,817 ft S, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 6/23/2010 12:07 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:

Crew:

Todd Keffer - 5-645-05

*Todd Keffer*

Apogee Coal, LLC.

S-5007-01

Blast Type

Production

Date 6/23/2010

Blast / Ticket Number

E46 /E46

Time 12:07 PM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
0	0	0	0	0	1 Nelson	75/25	1.12		1	3/4 LB Cast	0
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	75/25	1.12		2		
0	0	0			3					Total Primer QTY / Hole	0
					4					Total Primer LBS / Hole	0
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	0.00	Expl-Primer LBS / Hole	0.00
Similar Holes -	0	0 Primers	0.00 LBS					Total Expl lbs. / Blast	0.00	Similar Hole LBS	0.00
1-62	60	60	60		1 Nelson	75/25	1.12	868.79	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	10			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	868.79	Expl-Primer LBS / Hole	869.54
Similar Holes -	62	62 Primers	46.50 LBS					Total Expl lbs. / Blast	53864.72	Similar Hole LBS	53912.00
Total Holes Loaded this blast										Grand Total Explosives Weight	
62										53911.22	

# BLASTING LOG

GENERAL INFORMATION



Blast Number E44 Ticket Number E44

**Permittee** Apogee Coal, LLC. **Date / Time** 6/21/2010 3:58 PM  
**Customer / Operator** Apogee Coal, LLC. **Permit No.** S-5006-05  
**Location of Blast** Ridge 1&2 **Lat** ° ' ' N 302254 - X  
**Blasting Company** APOGEE COAL LLC **Long** ° ' ' W 1769569 - Y  
**Nearest Protected Structure** #5 Bill Joann Lambert **Method** Handheld GPS - NAD83  
**Distance and Direction** 7,917 ft NW, ?° **SD to nearest protected** 364  
**Nearest Other Structure** Dominion Well  
**Distance and Direction** 4,479 ft NW, ?°  
**Weather Conditions** Sunny / Hot 95°F, **Wind out of the** N @ 0-2 mph  
**Type of Material Blasted** Sandstone **Blast Type** BREAKDOWN  
**Matts or Protection Used** **Total Tons** 0 **Total YD<sup>3</sup>** 12,240  
**Powder Factor:** tons/lb 0.00 **lbs/yd<sup>3</sup>** 1.22

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	34 Primers	Total Weight
	11,174.76 lbs.	3,724.92 lbs.	0.00 lbs.	25.50 lbs.	14,925.18 lbs.

**Total Holes** 34 **Angle** °  
**Face Height (ft)** 105 **Burden (ft)** 18 **Backfill (ft)**  
**Depth (ft)** 30 **Spacing (ft)** 18 **Stemming (ft)** 10 - 15  
**Sub Drill (ft)** **Diameter (in)** 7.875 **Stemming Material** Cuttings  
**Maximum Weight of Explosives Allowed per 8ms Period (lbs)** :6632 as determined by SD of : 55  
**Maximum Weight of Explosives detonated per 8ms (lbs)** : 474 in 1.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	EXCEL 40 FT - 20	34						
Orica	S. EXCEL 40 FT- 42	7						
Orica	S. EXCEL 40 FT-100	28						

**Method of Firing** : Non Electric **Timer (ms)** : NA **Circuit Type** :  
**Initiated by** : Non-Electric **Blasting Unit** : Handi Blaster **No. of Circuits** :

COMMENTS



Operation Apogee Coal, LLC.  
Permit Number S-5006-05

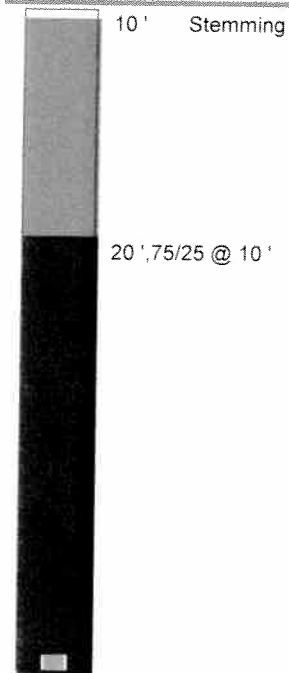
Blast Number E44  
Blast Type BREAKDOWN

Date 6/21/2010  
Time 3:58 PM

### Hole Cross Section

Depth (ft) 30      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 105  
Hole dia. (in) 7.875      Stem (ft) 10  
PF: 1.31 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 24

Nearest Protected Structure: #5 Bill Joann Lambert

Distance and Direction: 7,917 ft NW , ? °

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 6/21/2010 3:58 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Todd Keffer - 5-645-05

Operation Apogee Coal, LLC.

Blast Number E44

Date 6/21/2010

Permit Number S-5006-05

Blast Type BREAKDOWN

Time 3:58 PM

**Hole Cross Section**

Depth (ft) 30      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 105  
Hole dia. (in) 7.875      Stem (ft) 15  
PF: 0.99 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

15' Stemming

15',75/25 @ 15'

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 10

**Nearest Protected Structure:** #5 Bill Joann Lambert

**Distance and Direction:** 7,917 ft NW , ? °

**SEISMOGRAPH INFORMATION**

**Date and Time of Recording(s)** 6/21/2010      3:58 PM

Seis SN    Location      Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by :SAULS

Analyzed by :SAULS

**BLASTER INFORMATION**

**Name of Surface Blaster and Certification Number:**

**Crew:**

Todd Keffer - 5-645-05

Apogee Coal, LLC.  
S-5006-05

Blast Type **BREAKDOWN**  
Blast / Ticket Number **E44 /E44**

Date **6/21/2010**  
Time **3:58 PM**

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-24	105		30	30	1 Nelson	75/25	1.12	473.01	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	10			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								TotalExpl lbs. / hole	473.01	Expl-Primer LBS / Hole	473.76
<b>Similar Holes -</b>		24	24 Primers	18.00 LBS	<b>Total Expl lbs. / Blast</b>			11352.13	<b>Similar Hole LBS</b>		<b>11371.00</b>
25-34	105		30	30	1 Nelson	75/25	1.12	354.75	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	15			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								TotalExpl lbs. / hole	354.75	Expl-Primer LBS / Hole	355.50
<b>Similar Holes -</b>		10	10 Primers	7.50 LBS	<b>Total Expl lbs. / Blast</b>			3547.54	<b>Similar Hole LBS</b>		<b>3556.00</b>
<b>Total Holes Loaded this blast</b>										<b>Grand Total Explosives Weight</b>	
<b>34</b>										<b>14925.18</b>	

# BLASTING LOG



GENERAL INFORMATION

Blast Number **E43** Ticket Number **E43**

*MATT*

Permittee Apogee Coal, LLC.  
Customer / Operator Apogee Coal, LLC.  
Location of Blast Guyan Mine  
Blasting Company APOGEE COAL LLC  
Nearest Protected Structure Ball residence  
Distance and Direction 3,892 ft S, ?°  
Nearest Other Structure Dominion Well 1089  
Distance and Direction 6,775 ft NE, ?°  
Weather Conditions Partly Cloudy  
Type of Material Blasted Sandstone  
Matts or Protection Used

Date / Time 6/21/2010 10:21 AM  
Permit No. S-5007-01  
Lat ° ' N 292542 - X  
Long ° ' W 1775262 - Y  
Method  
SD to nearest protected 126

78°F, Wind out of the N @ 2-5 mph

Blast Type Production  
Total Tons 0 Total YD<sup>3</sup> 35,400  
Powder Factor: tons/lb 0.00 lbs/yd<sup>3</sup> 1.58

BLAST INFORMATION

Total Weight and Type(s) of Explosives used: see attachment

	ANFO	Emulsion	Packaged	59 Primers	Total Weight
	41,860.99 lbs.	13,953.66 lbs.	0.00 lbs.	44.25 lbs.	55,858.91 lbs.
Total Holes	59	Angle °			
Face Height (ft)	50	Burden (ft)	18	Backfill (ft)	
Depth (ft)	50	Spacing (ft)	18	Stemming (ft)	10
Sub Drill (ft)		Diameter (in)	7.875	Stemming Material	Cuttings
Maximum Weight of Explosives Allowed per 8ms Period (lbs) : 5008 as determined by SD of : 55					
Maximum Weight of Explosives detonated per 8ms (lbs) : 947 in 1.0 Holes					

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	50 ft untronics	60						

Method of Firing : Electric Timer (ms) : NA Circuit Type :  
Initiated by : Electronic Blasting Unit : E B M No. of Circuits :

COMMENTS

Operation Apogee Coal, LLC.  
Permit Number S-5007-01

Blast Number E43  
Blast Type Production

Date 6/21/2010  
Time 10:21 AM

### Hole Cross Section

Depth (ft) 50      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 50  
Hole dia. (in) 7.875      Stem (ft) 10  
PF: 1.58 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern

10' Stemming

040 1.75/25 @ 10'

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 59

Nearest Protected Structure: Ball residence

Distance and Direction: 3,892 ft S, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 6/21/2010 10:21 AM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Todd Keffer - 5-645-05

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-59	50		50	50	1 Nelson	75/25	1.12	946.01	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	10			3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						
								Total Expl lbs. / hole	946.01	Expl-Primer LBS / Hole	946.76
Similar Holes -	59		59 Primers	44.25 LBS	Total Expl lbs. / Blast			55814.66	Similar Hole LBS	55859.00	

Total Holes Loaded this blast

**59**

Grand Total Explosives Weight

**55858.91**

# BLASTING LOG

GENERAL INFORMATION



Blast Number E42 Ticket Number E42

<b>Permittee</b> Apogee Coal, LLC.	<b>Date / Time</b> 6/21/2010 10:20 AM
<b>Customer / Operator</b> Apogee Coal, LLC.	<b>Permit No.</b> S-5007-01
<b>Location of Blast</b> Guyan Mine	<b>Lat</b> ° ' ' N 292255 - X
<b>Blasting Company</b> APOGEE COAL LLC	<b>Long</b> ° ' ' W 1775144 - Y
<b>Nearest Protected Structure</b> Ball residence	<b>Method</b> Handheld GPS - NAD83
<b>Distance and Direction</b> 3,585 ft S, ?°	<b>SD to nearest protected</b> 136
<b>Nearest Other Structure</b> Dominion Well 1089	
<b>Distance and Direction</b> 7,073 ft NE, ?°	
<b>Weather Conditions</b> Partly Cloudy 78°F,	<b>Wind out of the</b> N @ 2-5 mph
<b>Type of Material Blasted</b> Sandstone	<b>Blast Type</b> Production
<b>Matts or Protection Used</b>	<b>Total Tons</b> 0 <b>Total YD<sup>3</sup></b> 26,400
	<b>Powder Factor:</b> tons/lb 0.00 <b>lbs/yd<sup>3</sup></b> 1.16

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	44 Primers	Total Weight
	22,935.94 lbs.	7,645.31 lbs.	0.00 lbs.	33.00 lbs.	30,614.26 lbs.

**Total Holes** 44 **Angle** °

**Face Height (ft)** **Burden (ft)** 18 **Backfill (ft)**

**Depth (ft)** 50 **Spacing (ft)** 18 **Stemming (ft)** 10

**Sub Drill (ft)** **Diameter (in)** 6.75 **Stemming Material** Cuttings

**Maximum Weight of Explosives Allowed per 8ms Period (lbs)** :4248 as determined by SD of : 55

**Maximum Weight of Explosives detonated per 8ms (lbs)** : 696 in 1.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	50 ft unitronics	44						

**Method of Firing** : Electric **Timer (ms)** : NA **Circuit Type** :

**Initiated by** : Electronic **Blasting Unit** : E B M **No. of Circuits** :

COMMENTS

Operation Apogee Coal, LLC.  
Permit Number S-5007-01

Blast Number E42  
Blast Type Production

Date 6/21/2010  
Time 10:20 AM

### Hole Cross Section

Depth (ft) 50      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht.  
Hole dia. (in) 6.750      Stem (ft) 10  
PF: 1.16 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern

10' Stemming

40', 75/25 @ 10'

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 44

Nearest Protected Structure: Ball residence

Distance and Direction: 3,585 ft S, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 6/21/2010 10:20 AM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Todd Keffer - 5-645-05

Crew:

*Todd Keffer*



Apogee Coal, LLC.  
S-5007-01

Blast Type Production  
Blast / Ticket Number E42 /E42

Date 6/21/2010  
Time 10:20 AM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty		
1-44			50	50	1 Nelson	75/25	1.12	695.03	1	3/4 LB Cast	1		
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2				
18	18	10			3					Total Primer QTY / Hole	1		
					4					Total Primer LBS / Hole	.75		
					5								
					6								
					7								
					8								
								Total Expl lbs. / hole	695.03	Expl-Primer LBS / Hole	695.78		
Similar Holes - 44								44 Primers	33.00 LBS	Total Expl lbs. / Blast	30581.26	Similar Hole LBS	30615.00
Total Holes Loaded this blast										Grand Total Explosives Weight			
44										30614.26			

Apogee Coal Company  
Logan WV

# BLASTING LOG

GENERAL INFORMATION



Blast Number **E54** Ticket Number **E54**

*Matt*

Permittee Apogee Coal, LLC.  
Customer / Operator Apogee Coal, LLC.  
Location of Blast Guyan Mine  
Blasting Company APOGEE COAL LLC

Date / Time 6/28/2010 9:01 AM  
Permit No. S-5007-01  
Lat ° ' N 292284 - X  
Long ° ' W 1773078 - Y  
Method Handheld GPS - NAD83  
SD to nearest protected 151

Nearest Protected Structure Ball residence  
Distance and Direction 3,686 ft S, ?°  
Nearest Other Structure Jackson Well  
Distance and Direction 7,965 ft NW, ?°

Weather Conditions Partly Cloudy 75°F, Wind out of the N @ 2-5 mph

Type of Material Blasted Sandstone Blast Type Production

Matts or Protection Used  
Total Tons 0 Total YD<sup>3</sup> 30,240  
Powder Factor: tons/lb 0.00 lbs/yd<sup>3</sup> 0.82

### BLAST INFORMATION

Total Weight and Type(s) of Explosives used: see attachment

	ANFO	Emulsion	Packaged	210 Primers	Total Weight
	18,624.59 lbs.	6,208.20 lbs.	0.00 lbs.	105.00 lbs.	24,937.79 lbs.

Total Holes 210 Angle °  
 Face Height (ft) 12 Burden (ft) 18 Backfill (ft)  
 Depth (ft) 12 Spacing (ft) 18 Stemming (ft) 7  
 Sub Drill (ft) Diameter (in) 7.875 Stemming Material Cuttings  
 Maximum Weight of Explosives Allowed per 8ms Period (lbs) :4492 as determined by SD of : 55  
 Maximum Weight of Explosives detonated per 8ms (lbs) : 594 in 5.0 Holes

### INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	EXCEL 40 FT - 20	210						
Orica	S. EXCEL 40 FT-17	196						
Orica	S. EXCEL 40 FT- 42	14						

Method of Firing : Non Electric Timer (ms) : NA Circuit Type :  
 Initiated by : Non-Electric Blasting Unit : Handi Blaster No. of Circuits :

### COMMENTS

[Empty box for comments]

# BLASTING LOG

GENERAL INFORMATION



Blast Number E55 Ticket Number E55

Permittee Apogee Coal, LLC.

Customer / Operator Apogee Coal, LLC.

Location of Blast Guyan Mine

Blasting Company APOGEE COAL LLC

Nearest Protected Structure Ball residence

Distance and Direction 3,635 ft S, ?°

Nearest Other Structure Jackson Well

Distance and Direction 8,200 ft NW, ?°

Weather Conditions Partly Cloudy

Type of Material Blasted Sandstone

Matts or Protection Used

*MATT*

Date / Time 6/28/2010 11:24 AM

Permit No. S-5007-01

Lat ° ' N 292321 - X

Long ° ' W 1773393 - Y

Method Handheld GPS - NAD83

SD to nearest protected 159

80°F, Wind out of the N @ 2-5 mph

Blast Type Production

Total Tons 0 Total YD<sup>3</sup> 40,608

Powder Factor: tons/lb 0.00 lbs/yd<sup>3</sup> 0.61

BLAST INFORMATION

Total Weight and Type(s) of Explosives used: see attachment

	ANFO	Emulsion	Packaged	282 Primers	Total Weight
	18,374.82 lbs.	6,124.94 lbs.	0.00 lbs.	141.00 lbs.	24,640.76 lbs.

Total Holes 282 Angle °

Face Height (ft) 12 Burden (ft) 18 Backfill (ft)

Depth (ft) 12 Spacing (ft) 18 Stemming (ft) 7

Sub Drill (ft) Diameter (in) 6.75 Stemming Material Cuttings

Maximum Weight of Explosives Allowed per 8ms Period (lbs) :4369 as determined by SD of : 55

Maximum Weight of Explosives detonated per 8ms (lbs) : 524 in 6.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	EXCEL 40 FT - 20	280						
Orica	S. EXCEL 40 FT- 42	21						
Orica	S. EXCEL 40 FT-17	259						

Method of Firing : Non Electric

Timer (ms) : NA

Circuit Type :

Initiated by : Non-Electric

Blasting Unit : Handi Blaster

No. of Circuits :

COMMENTS

Operation Apogee Coal, LLC.

Blast Number E55

Date 6/28/2010

Permit Number S-5007-01

Blast Type Production

Time 11:24 AM

**Hole Cross Section**

Depth (ft) 12      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 12  
Hole dia. (in) 6.750      Stem (ft) 7  
PF: 0.60 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

7' Stemming

5',75/25 @ 7'

PRIMER TYPE (S)      UNIT WT. QTY.  
1/2 LB CAST BOOSTER      0.5      1.0

Holes loaded the same: 282

Nearest Protected Structure: Ball residence

Distance and Direction: 3,635 ft S, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 6/28/2010 11:24 AM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:

Crew:

Brad Gregory - 3-299-88

# BLASTING LOG

GENERAL INFORMATION



Blast Number **E41** Ticket Number **E41**

**Permittee** Apogee Coal, LLC. **Date / Time** 6/19/2010 3:57 PM  
**Customer / Operator** Apogee Coal, LLC. **Permit No.** S-5006-05  
**Location of Blast** Ridge 1&2 **Lat** ° ' ' N 300705 - X  
**Blasting Company** APOGEE COAL LLC **Long** ° ' ' W 1768908 - Y  
**Nearest Protected Structure** Cline residence **Method** Handheld GPS - NAD83  
**Distance and Direction** 7,193 ft S, ?° **SD to nearest protected** 88  
**Nearest Other Structure** Jackson Well  
**Distance and Direction** 4,317 ft SW, ?° **Wind out of the** E @ 0-3 mph  
**Weather Conditions** Sunny / Hot 90°F, **Blast Type** Production  
**Type of Material Blasted** Sandstone **Total Tons** 0 **Total YD<sup>3</sup>** 434,889  
**Matts or Protection Used** None used **Powder Factor:** tons/lb 0.00 **lbs/yd<sup>3</sup>** 1.32

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	512 Primers	Total Weight
	428,968.76 lbs.	142,989.59 lbs.	0.00 lbs.	384.00 lbs.	572,342.34 lbs.

**Total Holes** 256 **Angle** 15°  
**Face Height (ft)** 110 **Burden (ft)** 20 **Backfill (ft)** 4  
**Depth (ft)** 110 - 115 **Spacing (ft)** 20 **Stemming (ft)** 9 - 12  
**Sub Drill (ft)** **Diameter (in)** 7.875 **Stemming Material** Cuttings  
**Maximum Weight of Explosives Allowed per 8ms Period (lbs)** :6161 as determined by SD of : 55  
**Maximum Weight of Explosives detonated per 8ms (lbs)** :6745 in 3.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	EXCEL 40 FT - 20	256	Orica	S.EXCEL 40 FT-100	237			
Orica	EXCEL 120 FT - 24	256	Orica	Lead line 493' Roll	2			
Orica	S. EXCEL 40 FT- 42	14						
Orica	S. EXCEL 40 FT-17	18						

**Method of Firing** : Non Electric **Timer (ms)** : NA **Circuit Type** : Row by Row  
**Initiated by** : Non-Electric **Blasting Unit** : Handi Blaster **No. of Circuits** : 0

COMMENTS

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

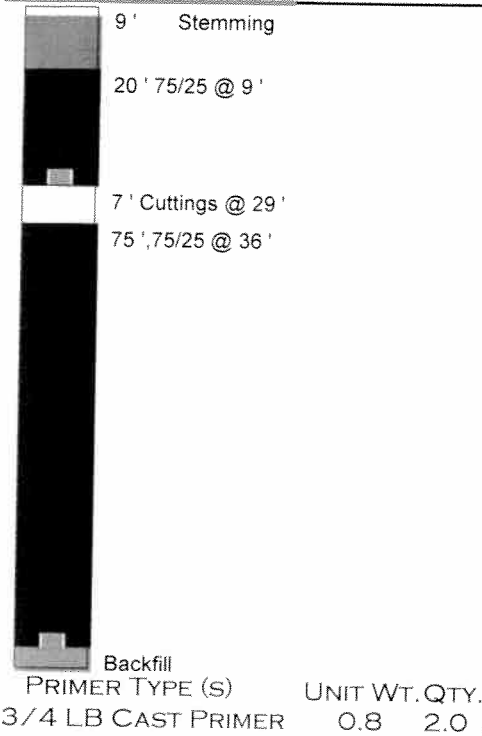
Blast Number E41  
Blast Type Production

Date 6/19/2010  
Time 3:57 PM

### Hole Cross Section

Depth (ft) 115      Angle (deg) 15  
B X S (ft) 20 X 20      Bench Ht. 110  
Hole dia. (in) 7.875      Stem (ft) 9  
PF: 1.32 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern



Holes loaded the same: 239

Nearest Protected Structure: Cline residence

Distance and Direction: 7,193 ft S, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 6/19/2010 3:57 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Richard Cope - 5 506 08

Operation Apogee Coal, LLC.  
Permit Number S-5006-05

Blast Number E41  
Blast Type Production

Date 6/19/2010  
Time 3:57 PM

### Hole Cross Section

Depth (ft) 110      Angle (deg) 15  
B X S (ft) 20 X 20      Bench Ht. 110  
Hole dia. (in) 7.875      Stem (ft) 12  
PF: 1.26 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern

12' Stemming  
12' 75/25 @ 12'  
7' Cuttings @ 24'  
75', 75/25 @ 31'

Backfill  
PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      2.0

Nearest Protected Structure: Cline residence

Distance and Direction: 7,193 ft S, ?°

Holes loaded the same: 17

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 6/19/2010 3:57 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:  
Richard Cope - 5 506 08

Crew:

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-239	110		115	115	1 Nelson	75/25	1.12	1773.77	1	3/4 LB Cast	2
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	75/25	1.12	473.01	2		
20	20	9	15		3					Total Primer QTY / Hole	2
					4					Total Primer LBS / Hole	1.5
					5						
					6						
					7						
					8						

TotalExpl lbs. / hole 2246.78 Expl-Primer LBS / Hole ?

Similar Holes - 239 478 Primers 358.50 LBS Total Expl lbs. / Blast 536979.58 Similar Hole LBS 537339.00

240	110		110	110	1 Nelson	75/25	1.12	1773.77	1	3/4 LB Cast	2
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	75/25	1.12	283.80	2		
20	20	12	15		3					Total Primer QTY / Hole	2
					4					Total Primer LBS / Hole	1.5
					5						
					6						
					7						
					8						

TotalExpl lbs. / hole 2057.57 Expl-Primer LBS / Hole ?

Similar Holes - 17 34 Primers 25.50 LBS Total Expl lbs. / Blast 34978.76 Similar Hole LBS 35005.00

Total Holes Loaded this blast

256

Grand Total Explosives Weight

572342.34



Apogee Coal Company  
Logan WV

# BLASTING LOG



**Blast Number** E53 **Ticket Number** E53

GENERAL INFORMATION

6/26/2010 1:41 PM

**Permittee** Apogee Coal, LLC.  
**Customer / Operator** Apogee Coal, LLC.

**Location of Blast** Guyan Mine

**Blasting Company** APOGEE COAL LLC

**Nearest Protected Structure** Ball residence  
3,543 ft S, ?°

**Distance and Direction** Jackson Well  
8,254 ft NW, ?°

**Nearest Other Structure** Sunny / Hot  
90°F

**Distance and Direction** Shale  
**Weather Conditions** None used

**Type of Material Blasted** Shale  
**Matts or Protection Used** None used

**Date / Time** 6/26/2010 1:41 PM  
**Permit No.** S-5007-01

**Lat** N 292226  
**Long** W 1773392

**Method** Handheld GPS - NAD83  
**SD to nearest protected** 3'

**Wind out of the** NE @ 0-5 mph  
37.79970  
081.78509

**Blast Type** Production  
**Total Tons** 0

**Powder Factor:** tons/lb 0.00

**Total YD<sup>3</sup>** 14,832  
**lbs/yd<sup>3</sup>** 0.38

## BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

ANFO	Emulsion
5,546.20 lbs.	0.00 lbs.

**Packaged** 103 Primers  
0.00 lbs. 51.50 lbs. **Total Weight** 5,597.70 lbs.

**Total Holes** 103 **Angle** 0°  
**Face Height (ft)** 12  
**Depth (ft)** 12  
**Sub Drill (ft)**

**Burden (ft)** 18  
**Spacing (ft)** 18  
**Diameter (in)** 7.875

**Backfill (ft)** 9  
**Stemming (ft)** Cuttings  
**Stemming Material** as determined by SD of : 55  
**Maximum Weight of Explosives Allowed per 8ms Period (lbs)** : 4150  
**Maximum Weight of Explosives detonated per 8ms (lbs)** : 109 in 2.0 Holes

## INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	Lead line 493' Roll	1						
Orica	EXCEL 40 FT - 20	103						
Orica	S. EXCEL 40 FT- 42	8						
Orica	S. EXCEL 40 FT-17	95						

**Method of Firing** : Non Electric  
**Initiated by** : Non-Electric  
**Timer (ms)** : NA  
**Blasting Unit** : RFD  
**Circuit Type** : Row by Row  
**No. of Circuits** : 0

## COMMENTS

Operation Apogee Coal, LLC.

Blast Number E53

Date 6/26/2010

Permit Number S-5007-01

Blast Type Production

Time 1:41 PM

### Hole Cross Section

Depth (ft) 12      Angle (deg) 0  
 B X S (ft) 18 X 18      Bench Ht. 12  
 Hole dia. (in) 7.875      Stem (ft) 9  
 PF: 0.37 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern

9' Stemming

3' Bulk ANFO @ 9'

PRIMER TYPE (S)	UNIT WT.	QTY.
1/2 LB CAST BOOSTER	0.5	1.0

Holes loaded the same: 103

Nearest Protected Structure: Ball residence

Distance and Direction: 3,543 ft S, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 6/26/2010 1:41 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

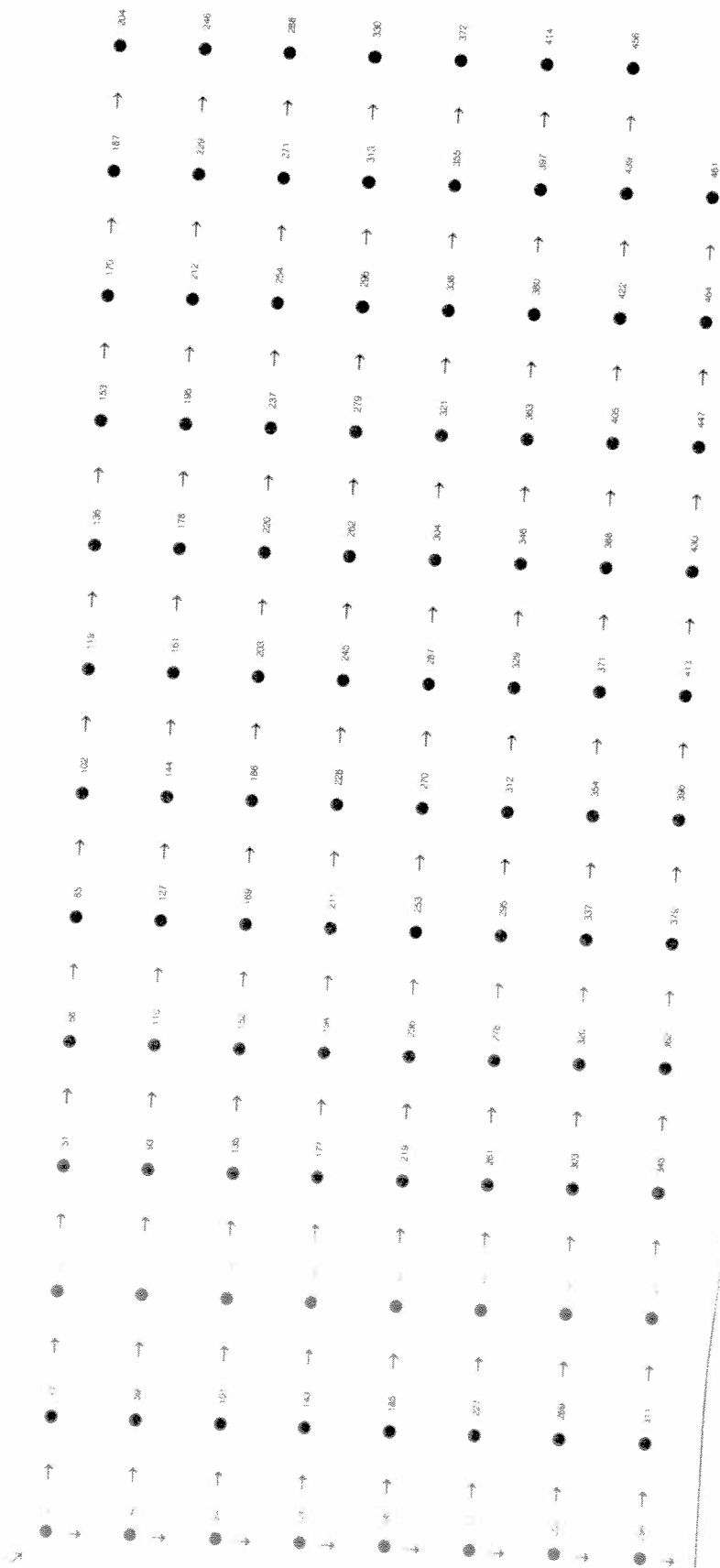
~~Richard Cope~~ 5 506 08

*VOID*

Solid

N ←

Solid



Solid

Shot

Blast Number E52 Ticket Number E52

Permittee Apogee Coal, LLC.

Date / Time 6/26/2010 10:17 AM

Customer / Operator Apogee Coal, LLC.

Permit No. S-5007-01

Location of Blast Guyan Mine

Lat ° ' ' N 292230 - X

Blasting Company APOGEE COAL LLC

Long ° ' ' W 1772915 - Y

Nearest Protected Structure Ball residence

Method Handheld GPS - NAD83

Distance and Direction 3,690 ft S, ?°

SD to nearest protected 355

Nearest Other Structure Jackson Well

Distance and Direction 7,868 ft NW, ?°

Weather Conditions Sunny / Hot

85°F, Wind out of the N @ 0-5 mph

Type of Material Blasted Shale

Blast Type Production

Matts or Protection Used None used

Total Tons 0 Total YD<sup>3</sup> 21,600

Powder Factor: tons/lb 0.00 lbs/yd<sup>3</sup> 0.60

BLAST INFORMATION

Total Weight and Type(s) of Explosives used: see attachment

	ANFO	Emulsion	Packaged	120 Primers	Total Weight
	12,923.19 lbs.	0.00 lbs.	0.00 lbs.	60.00 lbs.	12,983.19 lbs.

Total Holes 120 Angle 0°

Face Height (ft) 15 Burden (ft) 18 Backfill (ft)

Depth (ft) 15 Spacing (ft) 18 Stemming (ft) 9

Sub Drill (ft) Diameter (in) 7.875 Stemming Material Cuttings

Maximum Weight of Explosives Allowed per 8ms Period (lbs) :4502 as determined by SD of : 55

Maximum Weight of Explosives detonated per 8ms (lbs) : 108 in 1.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	Lead line 493' Roll	1						
Orica	EXCEL 40 FT - 20	120						
Orica	S. EXCEL 40 FT- 42	30						
Orica	S. EXCEL 40 FT-17	90						

Method of Firing : Non Electric

Timer (ms) : NA

Circuit Type : Row by Row

Initiated by : Non-Electric

Blasting Unit : R F D

No. of Circuits : 0

COMMENTS

Operation Apogee Coal, LLC.  
Permit Number S-5007-01

Blast Number E52  
Blast Type Production

Date 6/26/2010  
Time 10:17 AM

### Hole Cross Section

Depth (ft) 15      Angle (deg) 0  
B X S (ft) 18 X 18      Bench Ht. 15  
Hole dia. (in) 7.875      Stem (ft) 9  
PF: 0.60 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern

9' Stemming



6', Bulk ANFO @ 9'

PRIMER TYPE (S)      UNIT WT. QTY.  
1/2 LB CAST BOOSTER      0.5      1.0

Holes loaded the same: 120

Nearest Protected Structure: Ball residence

Distance and Direction: 3,690 ft S, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 6/26/2010 10:17 AM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Richard Gope - 5 506 08

V0112

Apogee Coal, LLC.

Blast Type

Production

Date 6/26/2010

S-5007-01

Blast / Ticket Number

E52 /E52

Time 10:17 AM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-120	15		15	15	1 NEBCO	Bulk ANFO	0.85	107.69	1 Orica	1/2 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	9	0		3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.5
					5						
					6						
					7						
					8						

Total Expl lbs. / hole 107.69      Expl-Primer LBS / Hole 108.19

Similar Holes - 120      120 Primers 60.00 LBS      Total Expl lbs. / Blast 12923.19      Similar Hole LBS 12984.00

Total Holes Loaded this blast 120      Grand Total Explosives Weight 12983.19



# BLASTING LOG

GENERAL INFORMATION



Blast Number E51 Ticket Number E51

Permittee Apogee Coal, LLC.

Date / Time 6/26/2010 9:35 AM

Customer / Operator Apogee Coal, LLC.

Permit No. S-5007-01

Location of Blast Guyan Mine

Lat ° ' N 292109 - X

Blasting Company APOGEE COAL LLC

Long ° ' W 1772983 - Y

Nearest Protected Structure Ball residence

Method Handheld GPS - NAD83

Distance and Direction 3,553 ft S, ?°

SD to nearest protected 561

Nearest Other Structure Jackson Well

Distance and Direction 7,995 ft NW, ?°

*3779970  
081.78505*

Weather Conditions Sunny / Hot 85°F,

Wind out of the N @ 0-5 mph

Type of Material Blasted Shale

Blast Type Production

Matts or Protection Used None used

Total Tons 0

Total YD<sup>3</sup> 18,432

Powder Factor: tons/lb 0.00

lbs/yd<sup>3</sup> 0.28

BLAST INFORMATION

Total Weight and Type(s) of Explosives used: see attachment

	ANFO	Emulsion	Packaged	128 Primers	Total Weight
	5,063.78 lbs.	0.00 lbs.	0.00 lbs.	64.00 lbs.	5,127.78 lbs.

Total Holes 128 Angle 0°

Face Height (ft) 12 Burden (ft) 18

Backfill (ft)

Depth (ft) 12 Spacing (ft) 18

Stemming (ft) 9

Sub Drill (ft) Diameter (in) 6.75

Stemming Material Cuttings

Maximum Weight of Explosives Allowed per 8ms Period (lbs) :4174 as determined by SD of : 55

Maximum Weight of Explosives detonated per 8ms (lbs) : 40 in 1.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	1 Roll - Lead in Line	1						
Orica	EXCEL 40 FT - 20	128						
Orica	S. EXCEL 40 FT- 42	29						
Orica	S. EXCEL 40 FT-17	99						

Method of Firing : Non Electric

Timer (ms) : NA

Circuit Type : Row by Row

Initiated by : Non-Electric

Blasting Unit : Handi Blaster

No. of Circuits : 0

COMMENTS



Operation Apogee Coal, LLC.

Blast Number E51

Date 6/26/2010

Permit Number S-5007-01

Blast Type Production

Time 9:35 AM

**Hole Cross Section**

Depth (ft) 12      Angle (deg) 0  
B X S (ft) 18 X 18      Bench Ht. 12  
Hole dia. (in) 6.750      Stem (ft) 9  
PF: 0.27 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**

9' Stemming



3' Bulk ANFO @ 9'

PRIMER TYPE (S)      UNIT WT. QTY.  
1/2 LB CAST BOOSTER      0.5      1.0

Holes loaded the same: 128

Nearest Protected Structure: Ball residence

Distance and Direction: 3,553 ft S, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 6/26/2010 9:35 AM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Empty table area for seismograph data.

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:

Crew:

~~Richard Cope - 5 506 08~~

*VOID*

Apogee Coal, LLC.

Blast Type

Production

Date 6/26/2010

S-5007-01

Blast / Ticket Number

E51 /E51

Time 9:35 AM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-128	12		12	12	1 NEBCO	Bulk ANFO	0.85	39.56	1 Orica	1/2 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	9	0		3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.5
					5						
					6						
					7						
					8						

Total Expl lbs. / hole 39.56

Expl-Primer LBS / Hole 40.06

Similar Holes - 128 128 Primers 64.00 LBS

Total Expl lbs. / Blast 5063.78

Similar Hole LBS 5128.00

Total Holes Loaded this blast

128

Grand Total Explosives Weight

5127.78

Solid

Solid

Solid

194	102	446	588	614	856	782	866	884	1034	1118	1202
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
33	450	428	512	397	681	765	649	933	1017	1101	1186
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
160	328	412	426	580	664	748	832	916	1000	1084	1168
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
143	311	386	479	563	647	731	815	899	983	1067	1151
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
128	214	378	462	546	630	714	798	882	966	1050	1134
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
84	22	336	420	504	588	672	756	840	924	1008	1092
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
101	268	352	436	520	604	688	772	856	940	1024	1108
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
118	246	370	454	538	622	706	790	874	958	1042	1126
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
127	387	471	555	639	723	807	891	975	1059	1143	1227
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓

Stuffer

Shot

Spoil

NORTH

Residence  
Ball  
3553ft

# BLASTING LOG

GENERAL INFORMATION



Blast Number **E50** Ticket Number **E50**

Permittee Apogee Coal, LLC.

Customer / Operator Apogee Coal, LLC.

Location of Blast Guyan Mine

Blasting Company APOGEE COAL LLC

Nearest Protected Structure Ball residence

Distance and Direction 3,475 ft S, ?°

Nearest Other Structure Jackson Well

Distance and Direction 8,033 ft NW, ?°

Weather Conditions Clear / Calm 90°F,

Type of Material Blasted Sandstone

Matts or Protection Used None used

Date / Time 6/25/2010 4:11 PM

Permit No. S-5007-01

Lat ° ' N 292015 - X

Long ° ' W 1772957 - Y

Method Handheld GPS - NAD83

SD to nearest protected 474

Wind out of the W @ 0-5 mph

Blast Type Production

Total Tons 0

Total YD<sup>3</sup> 17,280

Powder Factor: tons/lb 0.00

lbs/yd<sup>3</sup> 0.19

BLAST INFORMATION

Total Weight and Type(s) of Explosives used: see attachment

	ANFO	Emulsion	Packaged	120 Primers	Total Weight
	3,164.86 lbs.	0.00 lbs.	0.00 lbs.	60.00 lbs.	3,224.86 lbs.

Total Holes 120 Angle 0°

Face Height (ft) 12 Burden (ft) 18

Backfill (ft)

Depth (ft) 12 Spacing (ft) 18

Stemming (ft) 10

Sub Drill (ft) Diameter (in) 6.75

Stemming Material Cuttings

Maximum Weight of Explosives Allowed per 8ms Period (lbs) :3992 as determined by SD of : 55

Maximum Weight of Explosives detonated per 8ms (lbs) : 54 in 2.0 Holes

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	EXCEL 40 FT - 20	120						
Orica	S. EXCEL 40 FT- 42	25						
Orica	S. EXCEL 40 FT-17	94						
Orica	1 Roll - Lead in Line	1						

Method of Firing : Non Electric

Timer (ms) : NA

Circuit Type : Row by Row

Initiated by : Non-Electric

Blasting Unit : R F D

No. of Circuits : 0

COMMENTS

Operation Apogee Coal, LLC.  
Permit Number S-5007-01

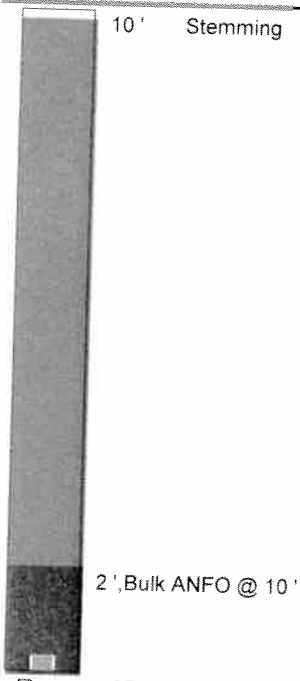
Blast Number E50  
Blast Type Production

Date 6/25/2010  
Time 4:11 PM

### Hole Cross Section

Depth (ft) 12      Angle (deg) 0  
B X S (ft) 18 X 18      Bench Ht. 12  
Hole dia. (in) 6.750      Stem (ft) 10  
PF: 0.18 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern



PRIMER TYPE (S)      UNIT WT. QTY.  
1/2 LB CAST BOOSTER      0.5      1.0

Holes loaded the same: 120

Nearest Protected Structure: Ball residence

Distance and Direction: 3,475 ft S, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 6/25/2010 4:11 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Richard Cope ~~5-506-08~~

*VOID*

Apogee Coal, LLC.  
S-5007-01

Blast Type                      Production  
Blast / Ticket Number      E50 /E50

Date 6/25/2010  
Time 4:11 PM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-120	12		12	12	1 NEBCO	Bulk ANFO	0.85	26.37	1 Orica	1/2 LB Cast	1
<b>Burden (FT)</b>	<b>Spacing (FT)</b>	<b>Stemming (FT)</b>	<b>Angle (Deg)</b>		2				2		
18	18	10	0		3					<b>Total Primer QTY / Hole</b>	1
					4					<b>Total Primer LBS / Hole</b>	.5
					5						
					6						
					7						
					8						
						<b>Total Expl lbs. / hole</b>		26.37		<b>Expl-Primer LBS / Hole</b>	26.87
<b>Similar Holes -</b>	120		120 Primers	60.00 LBS		<b>Total Expl lbs. / Blast</b>		3164.86		<b>Similar Hole LBS</b>	3225.00

Total Holes Loaded this blast

**120**

Grand Total Explosives Weight

**3224.86**

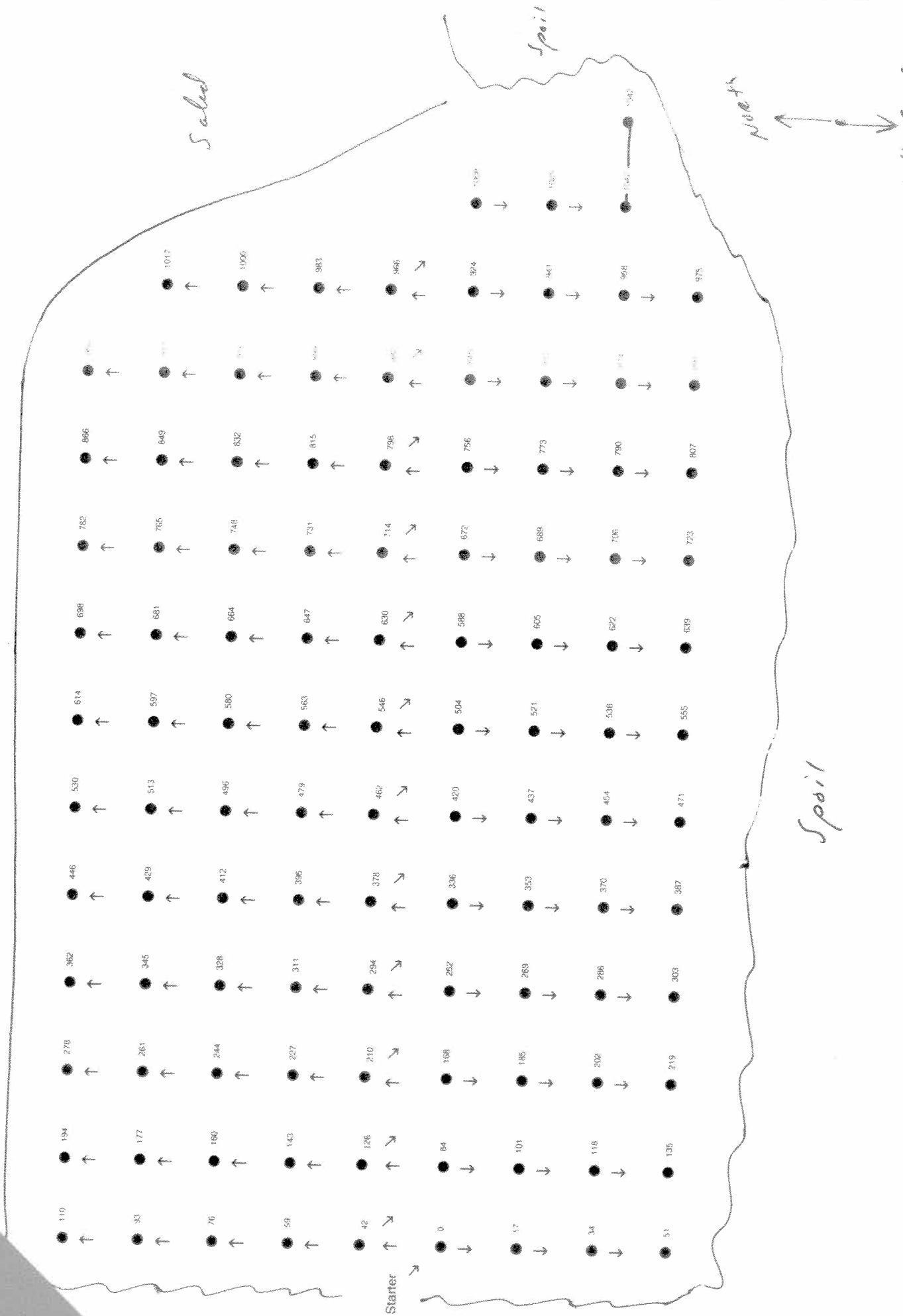
Solid

Solid

Spoil

North

Spoil



Spoil

# BLASTING LOG

GENERAL INFORMATION



Blast Number **E49** Ticket Number **E49**

**Permittee** Apogee Coal, LLC. **Date / Time** 6/25/2010 4:01 PM  
**Customer / Operator** Apogee Coal, LLC. **Permit No.** S-5006-05  
**Location of Blast** Ridge 1&2 **Lat** ° ' ' N 301154 - X  
**Blasting Company** APOGEE COAL LLC **Long** ° ' ' W 1769565 - Y  
**Nearest Protected Structure** Cline residence **Method** Handheld GPS - NAD83  
**Distance and Direction** 7,696 ft S, ?° **SD to nearest protected** 345  
**Nearest Other Structure** Jackson Well  
**Distance and Direction** 5,052 ft SW, ?°  
**Weather Conditions** Clear / Calm 90°F, **Wind out of the** W @ 0-5 mph  
**Type of Material Blasted** Sandstone **Blast Type** BREAKDOWN  
**Matts or Protection Used** None used **Total Tons** 0 **Total YD<sup>3</sup>** 10,800  
**Powder Factor:** tons/lb 0.00 **lbs/yd<sup>3</sup>** 1.38

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	30 Primers	Total Weight
	11,174.76 lbs.	3,724.92 lbs.	0.00 lbs.	22.50 lbs.	14,922.18 lbs.
<b>Total Holes</b>	30	<b>Angle</b> 0°			
<b>Face Height (ft)</b>	30	<b>Burden (ft)</b>	18	<b>Backfill (ft)</b>	
<b>Depth (ft)</b>	30	<b>Spacing (ft)</b>	18	<b>Stemming (ft)</b>	9
<b>Sub Drill (ft)</b>		<b>Diameter (in)</b>	7.875	<b>Stemming Material</b>	Cuttings
<b>Maximum Weight of Explosives Allowed per 8ms Period (lbs) :</b> 6042 as determined by SD of : 65					
<b>Maximum Weight of Explosives detonated per 8ms (lbs) :</b> 497 in 1.0 Holes					

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	Lead line 493' Roll	2						
Orica	EXCEL 40 FT - 20	36						
Orica	S. EXCEL 40 FT- 42	4						
Orica	S. EXCEL 40 FT-100	32						

**Method of Firing :** Non Electric **Timer (ms) :** NA **Circuit Type :** Row by Row  
**Initiated by :** Non-Electric **Blasting Unit :** Handi Blaster **No. of Circuits :** 0

COMMENTS



Operation Apogee Coal, LLC.

Blast Number E49

Date 6/25/2010

Permit Number S-5006-05

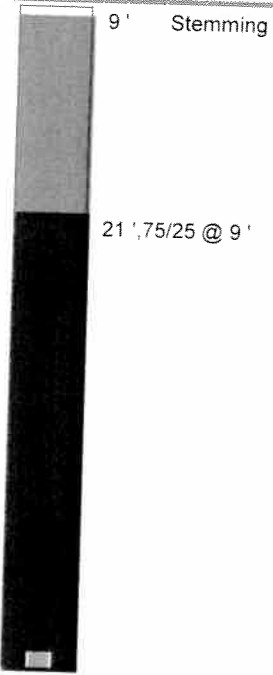
Blast Type BREAKDOWN

Time 4:01 PM

### Hole Cross Section

Depth (ft) 30      Angle (deg) 0  
 B X S (ft) 18 X 18      Bench Ht. 30  
 Hole dia. (in) 7.875      Stem (ft) 9  
 PR: 1.38 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern



PRIMER TYPE (S)	UNIT WT.	QTY.
3/4 LB CAST PRIMER	0.8	1.0

Holes loaded the same: 30

Nearest Protected Structure: Cline residence

Distance and Direction: 7,696 ft S, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 6/25/2010 4:01 PM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Richard Cope - 5-506-08

*VOID*

Apogee Coal, LLC.  
S-5006-05

Blast Type **BREAKDOWN**  
Blast / Ticket Number **E49 /E49**

Date **6/25/2010**  
Time **4:01 PM**

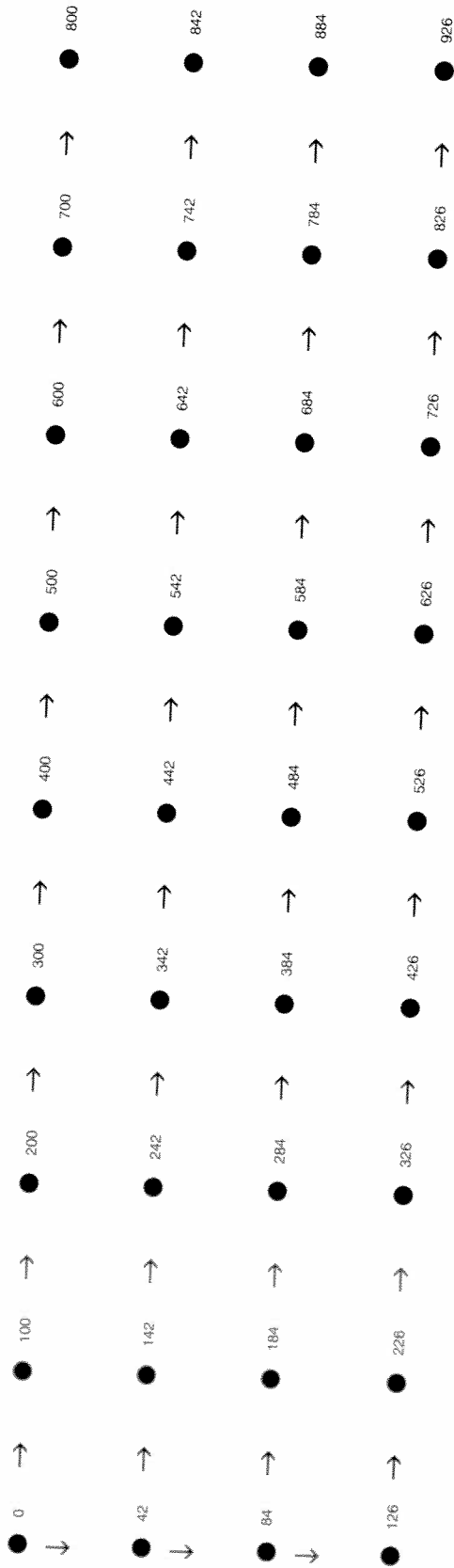
Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-36	30		30	30	1 Nelson	75/25	1.12	496.66	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	9	0		3					Total Primer QTY / Hole	1
					4					Total Primer LBS / Hole	.75
					5						
					6						
					7						
					8						

Total Expl lbs. / hole 496.66      Expl-Primer LBS / Hole 497.41

Similar Holes - 30      30 Primers 22.50 LBS      Total Expl lbs. / Blast 14899.68      Similar Hole LBS 14923.00

Total Holes Loaded this blast **30**      Grand Total Explosives Weight **14922.18**

Starter →



# BLASTING LOG



GENERAL INFORMATION

Blast Number E48 Ticket Number E48

*MAIT*

Permittee Apogee Coal, LLC.  
 Customer / Operator Apogee Coal, LLC.  
 Location of Blast Guyan Mine  
 Blasting Company APOGEE COAL LLC  
 Nearest Protected Structure Ball residence  
 Distance and Direction 3,442 ft S, ?°  
 Nearest Other Structure Dominion Well 1089  
 Distance and Direction 7,169 ft NE, ?°  
 Weather Conditions Partly Cloudy  
 Type of Material Blasted Sandstone  
 Matts or Protection Used

Date / Time 6/25/2010 9:20 AM  
 Permit No. S-5007-01  
 Lat ° ' N 292091 - X  
 Long ° ' W 1775203 - Y  
 Method Handheld GPS - NAD83  
 SD to nearest protected 116

75°F, Wind out of the N @ 0-2 mph  
 Blast Type Production  
 Total Tons 0 Total YD<sup>3</sup> 15,120  
 Powder Factor: tons/lb 0.00 lbs/yd<sup>3</sup> 1.19

BLAST INFORMATION

Total Weight and Type(s) of Explosives used: see attachment

	ANFO	Emulsion	Packaged	28 Primers	Total Weight
	13,500.93 lbs.	4,500.31 lbs.	0.00 lbs.	21.00 lbs.	18,022.24 lbs.
Total Holes	21	Angle °			
Face Height (ft)	60	Burden (ft)	18	Backfill (ft)	
Depth (ft)	60	Spacing (ft)	18	Stemming (ft)	9
Sub Drill (ft)		Diameter (in)	6.75	Stemming Material	Cuttings
Maximum Weight of Explosives Allowed per 8ms Period (lbs) : 3917 as determined by SD of : 55					
Maximum Weight of Explosives detonated per 8ms (lbs) : 887 in 1.0 Holes					

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	80 ft unitronics	21						
Orica	50 ft unitronics	7						

Method of Firing : Electric Timer (ms) : NA Circuit Type :  
 Initiated by : Electronic Blasting Unit : E B M No. of Circuits :

COMMENTS

[Empty box for comments]

Operation Apogee Coal, LLC.  
Permit Number S-5007-01

Blast Number E48  
Blast Type Production

Date 6/25/2010  
Time 9:20 AM

### Hole Cross Section

Depth (ft) 60      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 60  
Hole dia. (in) 6.750      Stem (ft) 9  
PF: 1.23 lbs/YD<sup>3</sup>      Tons/Lb.

### Timing Pattern

9' Stemming

51', 75/25 @ 9'

PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      1.0

Holes loaded the same: 14

Nearest Protected Structure: Ball residence

Distance and Direction: 3,442 ft S, ?°

### SEISMOGRAPH INFORMATION

Date and Time of Recording(s) 6/25/2010 9:20 AM

Seis SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
---------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

### BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Crew:

Todd Keffer - 5-645-05



Operation Apogee Coal, LLC.  
Permit Number S-5007-01

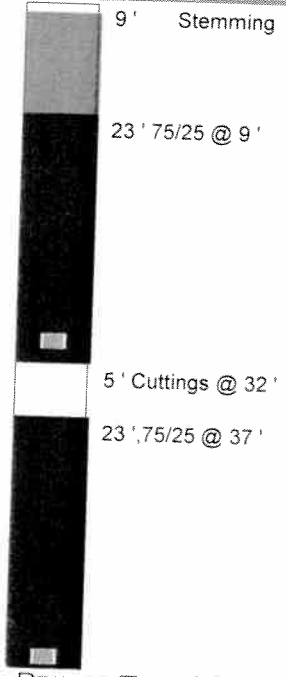
Blast Number E48  
Blast Type Production

Date 6/25/2010  
Time 9:20 AM

**Hole Cross Section**

Depth (ft) 60      Angle (deg)  
B X S (ft) 18 X 18      Bench Ht. 60  
Hole dia. (in) 6.750      Stem (ft) 9  
PF: 1.11 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      2.0

Holes loaded the same: 7

Nearest Protected Structure: Ball residence  
Distance and Direction: 3,442 ft S, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 6/25/2010 9:20 AM

Seis. SN	Location	Dist (ft)	Dir.	SD	T PPV	T Hz	V PPV	V Hz	L PPV	L Hz	Air dB	Air Hz
----------	----------	-----------	------	----	-------	------	-------	------	-------	------	--------	--------

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:  
Todd Keffer - 5-645-05

Crew:

Apogee Coal, LLC.

S-5007-01

Blast Type

Production

Date 6/25/2010

Blast / Ticket Number

E48 /E48

Time 9:20 AM

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
1-14	60		60	60	1 Nelson	75/25	1.12	886.16	1	3/4 LB Cast	1
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2				2		
18	18	9			3						
					4						
					5						
					6						
					7						
					8						

Total Expl lbs. / hole 886.16

Expl-Primer LBS / Hole 886.91

Similar Holes - 14 14 Primers 10.50 LBS

Total Expl lbs. / Blast 12406.26

Similar Hole LBS 12417.00

Hole Number	Bench Height	Sub Drill	Design Depth	Loaded Depth	Mfr.	Explosive Name	g/cc	Pounds	Mfr.	Primer Name	Qty
15-21	60		60	60	1 Nelson	75/25	1.12	399.64	1	3/4 LB Cast	2
Burden (FT)	Spacing (FT)	Stemming (FT)	Angle (Deg)		2 Nelson	75/25	1.12	399.64	2		
18	18	9			3						
					4						
					5						
					6						
					7						
					8						

Total Expl lbs. / hole 799.28

Expl-Primer LBS / Hole 800.78

Similar Holes - 7 14 Primers 10.50 LBS

Total Expl lbs. / Blast 5594.98

Similar Hole LBS 5606.00

Total Holes Loaded this blast

21

Grand Total Explosives Weight

18022.24

# BLASTING LOG

GENERAL INFORMATION



Blast Number E47 Ticket Number E47

**Permittee** Apogee Coal, LLC. **Date / Time** 6/24/2010 3:48 PM  
**Customer / Operator** Apogee Coal, LLC. **Permit No.** S-5006-05  
**Location of Blast** Ridge 1&2 **Lat** ° ' ' N 301493 - X  
**Blasting Company** APOGEE COAL LLC **Long** ° ' ' W 1768745 - Y  
**Nearest Protected Structure** Cline residence **Method** Handheld GPS - NAD83  
**Distance and Direction** 7,976 ft S, ?° **SD to nearest protected** 118  
**Nearest Other Structure** Dominion Well  
**Distance and Direction** 4,808 ft N, ?°  
**Weather Conditions** Light Rain 90°F, **Wind out of the** E @ 5-8 mph  
**Type of Material Blasted** Sandstone **Blast Type** Production  
**Matts or Protection Used** **Total Tons** 0 **Total YD<sup>3</sup>** 331,200  
**Powder Factor:** tons/lb 0.00 **lbs/yd<sup>3</sup>** 1.49

BLAST INFORMATION

**Total Weight and Type(s) of Explosives used:** see attachment

	ANFO	Emulsion	Packaged	432 Primers	Total Weight
	393,351.44 lbs.	98,337.86 lbs.	0.00 lbs.	324.00 lbs.	492,013.30 lbs.
<b>Total Holes</b>	216	<b>Angle</b> °			
<b>Face Height (ft)</b>	115	<b>Burden (ft)</b>	18	<b>Backfill (ft)</b>	2
<b>Depth (ft)</b>	115	<b>Spacing (ft)</b>	20	<b>Stemming (ft)</b>	10
<b>Sub Drill (ft)</b>		<b>Diameter (in)</b>	7.875	<b>Stemming Material</b>	Cuttings
<b>Maximum Weight of Explosives Allowed per 8ms Period (lbs) :</b> 7642 as determined by SD of : 55					
<b>Maximum Weight of Explosives detonated per 8ms (lbs) :</b> 4556 in 2.0 Holes					

INITIATION PRODUCT INFORMATION

Mfr	Delay Type	Qty	Mfr	Delay Type	Qty	Mfr	Delay Type	Qty
Orica	120 ft unitronics	216						
Orica	50 ft unitronics	216						

**Method of Firing :** Electric **Timer (ms) :** NA **Circuit Type :**  
**Initiated by :** Electronic **Blasting Unit :** E B M **No. of Circuits :**

COMMENTS



Operation Apogee Coal, LLC.

Blast Number E47

Date 6/24/2010

Permit Number S-5006-05

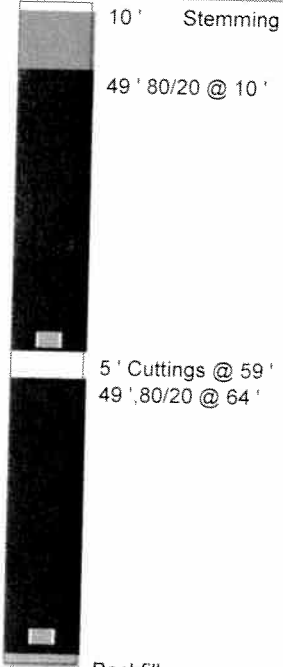
Blast Type Production

Time 3:48 PM

**Hole Cross Section**

Depth (ft) 115      Angle (deg)  
B X S (ft) 18 X 20      Bench Ht. 115  
Hole dia. (in) 7.875      Stem (ft) 10  
PF: 1.48 lbs/YD<sup>3</sup>      Tons/Lb.

**Timing Pattern**



PRIMER TYPE (S)      UNIT WT. QTY.  
3/4 LB CAST PRIMER      0.8      2.0

Holes loaded the same: 216

Nearest Protected Structure: Cline residence

Distance and Direction: 7,976 ft S, ?°

**SEISMOGRAPH INFORMATION**

Date and Time of Recording(s) 6/24/2010 3:48 PM

Seis SN    Location    Dist (ft)    Dir.    SD    T PPV    T Hz    V PPV    V Hz    L PPV    L Hz    Air dB    Air Hz

Reading(s) taken by : SAULS

Analyzed by : SAULS

**BLASTER INFORMATION**

Name of Surface Blaster and Certification Number:

Crew:

Todd Keffer - 5-645-05

*Todd Keffer*