Appendix A

Blasting Logs

2011

And

2010
**Blasting Log**

**Apogee Coal Company**
Logan WV

**General Information**
- **Permittee**: Apogee Coal, LLC.
- **Customer / Operator**: Apogee Coal, LLC.
- **Location of Blast**: Ridge 1 & 2
- **Blasting Company**: APOGEE COAL LLC
- **Nearest Protected Structure**: #5 Bill Joann Lambert
- **Method**: Handheld GPS - NAD83
- **Date / Time**: 6/22/2011 3:17 PM
- **Permit No.**: S-5006-05
- **Lat**: N 306625
- **Lon**: W 1788593

**Blast Information**
- **Distance and Direction**: 3,645 ft NW, ?°
- **Distance and Direction**: 8,027 ft SE, ?°
- **Weather Conditions**: Sunny
- **Weather Conditions**: Wind out of the SW @ 0-5 mph
- **Type of Material Blasted**: Sandstone
- **Blast Type**: BREAKDOWN
- **Matts or Protection Used**: None used
- **Total Tons**: 0
- **Total YD³**: 5,940
- **Powder Factor**: tons/lb 0.00 lbs/yd³ 1.00

**Total Weight and Type(s) of Explosives used**

<table>
<thead>
<tr>
<th>Type</th>
<th>ANFO</th>
<th>Emulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Weight</td>
<td>5,923.13 lbs.</td>
<td>0.00 lbs.</td>
</tr>
<tr>
<td>Packaged</td>
<td>0.00 lbs.</td>
<td>5.50 lbs.</td>
</tr>
<tr>
<td>Total Holes</td>
<td>11</td>
<td>Angle</td>
</tr>
<tr>
<td>Face Height (ft)</td>
<td>45</td>
<td>Depth (ft)</td>
</tr>
<tr>
<td>Burden (ft)</td>
<td>18</td>
<td>Spacing (ft)</td>
</tr>
<tr>
<td>Backfill (ft)</td>
<td>15</td>
<td>Stemming (ft)</td>
</tr>
<tr>
<td>Sub Drill (ft)</td>
<td>45</td>
<td>Diameter (in)</td>
</tr>
<tr>
<td>Diameter (in)</td>
<td>7.875</td>
<td>Stemming Material</td>
</tr>
<tr>
<td>Maximum Weight of Explosives Allowed per 8ms Period (lbs):</td>
<td>4392</td>
<td></td>
</tr>
<tr>
<td>Maximum Weight of Explosives detonated per 8ms (lbs):</td>
<td>1078</td>
<td></td>
</tr>
</tbody>
</table>

**Initiation Product Information**
- **Mfr**: Orica
  - **Delay Type**: 50 ft untronics
  - **Quantity**: 11
- **Mfr**: Orica
  - **Delay Type**: 1 Roll - Lead in Line
  - **Quantity**: 2

**Method of Firing**: Electric
- **Timer (ms)**: NA
- **Circuit Type**: Row by Row
- **Initiated by**: Electronic
- **Blasting Unit**: E B M
- **No. of Circuits**: 2

**Comments**
- **Signature**
- **Holes**: UK

**Page**: 172
**Operation**: Apogee Coal, LLC.

**Permit Number**: S-5006-05

**Blast Number**: S64

**Date**: 6/22/2011

**Blast Type**: BREAKDOWN

**Time**: 3:17 PM

### Hole Cross Section

- **Depth (ft)**: 45
- **Angle (deg)**
- **B X S (ft)**: 18 X 18
- **Bench Ht.**
- **Hole dia. (in)**: 7.875
- **Stem (ft)**: 15
- **PF**: 1,000 lbs/YD³
- **Tons/Lb.**

- **15' Stemming**

- **30' Bulk ANFO @ 15'**

### Timing Pattern

- **See Attached**

### Nearest Protected Structure

- **#5 Bill Joann Lambert**

### Distance and Direction

- **3,845 ft NW, ?°**

### SEISMOGRAPH INFORMATION

- **Date and Time of Recording(s)**: 8/22/2011 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

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

### Crew:

- **Brad Gregory**
<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Bench Height</th>
<th>Sub Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-11</td>
<td>18</td>
<td>18</td>
<td>15</td>
<td></td>
<td>NEBCO</td>
<td>Bulk ANFO</td>
<td>0.85</td>
<td>538.47</td>
<td>1/2 LB Cast</td>
<td>Orca</td>
<td>1</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Expl lbs. / hole</th>
<th>538.47</th>
<th>Expl-Primer LBS / Hole</th>
<th>538.97</th>
</tr>
</thead>
<tbody>
<tr>
<td>Similar Holes - 11</td>
<td></td>
<td>Total Expl LBS / Blast</td>
<td>5923.13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Similar Hole LBS</td>
<td>5929.00</td>
</tr>
</tbody>
</table>

Total Holes Loaded this blast: 11

Grand Total Explosives Weight: 5928.83
5 - 489 \rightarrow ③

503 \rightarrow ④
- 506 \rightarrow \text{Isolate line.}
- 3 holes

8 - 550 \rightarrow 10\sim11\text{ holes}
- 587

\begin{align*}
534 \\
978 \\
55
\end{align*}
Apogee Coal Company
Logan WV

BLASTING LOG

GENERAL INFORMATION

Permittee: Apogee Coal, LLC.
Customer / Operator: Apogee Coal, LLC.
Location of Blast: Ridge 1&2
Blasting Company: Apogee Coal LLC
Nearest Protected Structure: #5 Bill Joann Lambert
Distance and Direction: 3,581 ft NW, ?°
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

Powder Factor: tons/lb 0.00 lbs/yard³ 2.36
Total Weight and Type(s) of Explosives used: see attachment

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>26 Primers</th>
<th>Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>13,242.47 lbs.</td>
<td>8,828.31 lbs.</td>
<td>0.00 lbs.</td>
<td>19.50 lbs.</td>
<td>22,090.28 lbs.</td>
</tr>
</tbody>
</table>

Total Holes: 26
Face Height (ft): 30
Depth (ft): 30
Sub Drill (ft): 7.875
Burden (ft): 18
Spacing (ft): 18
Diameter (ln): 7.875
Stemming (ft): 10
Backfill (ft): 

Maximum Weight of Explosives Allowed per 8ms Period (lbs): 4193
as determined by SD of: 55
Maximum Weight of Explosives detonated per 8ms (lbs): 1659 in 2.0 Holes

INITIATION PRODUCT INFORMATION

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orica</td>
<td>50 ft unitronics</td>
<td>26</td>
<td>Orica</td>
<td>1 Roll - Lead in Line</td>
<td>1</td>
</tr>
</tbody>
</table>

Firing: Electric
Timer (ms): NA
Circuit Type: Row by Row
Blasting Unit: EBM

No. of Circuits:
### 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
- **Depth (ft):** 30
- **Angle (deg):**
- **B X S (ft):** 18 X 18
- **Bench Ht. (ft):** 30
- **Hole dia. (in):** 7.875
- **Stem (ft):** 10
- **PF:** 2.36 lbs/Yd³
- **Tons/Lb.:**

<table>
<thead>
<tr>
<th>Primer Type (s)</th>
<th>Unit Wt. Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4 Lb Cast Primer</td>
<td>0.8 1.0</td>
</tr>
</tbody>
</table>

**Holes loaded the same:** 26

#### Timing Pattern

See Attached

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

**Distance and Direction:** 3,561 ft NW, 7°

#### Seismograph Information
- **Date and Time of Recording(s):** 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

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

**Analyzed by:** SAULS

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

**Crew:** [Signature]

---

178
### Apogee Coal, LLC.

**Blast Type**

**BREAKDOWN**

**S-5008-05**

**Blast / Ticket Number**

**S69 / S69**

**Date** 6/23/2011

**Time** 3:27 PM

<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Burden (FT)</th>
<th>Bench Height</th>
<th>Sub Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-28</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td></td>
<td>1</td>
<td>Nelson</td>
<td>80/40</td>
<td>1.34</td>
<td>648.88</td>
<td>3/4 LB Cast</td>
<td>1</td>
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</tbody>
</table>

Total Expl. lbs./hole 848.88

Expl-Primer LBS / Hole 849.63

Similar Holes - 26

26 Primmers 19.50 LBS

Total Expl. lbs./Blast 22070.78

Similar Hole LBS 22091.00

Total Holes Loaded this blast 26

Grand Total Explosives Weight 22090.28
Apogee Coal Company

BLASTING LOG

GENERAL INFORMATION

Permittee: Apogee Coal, LLC.
Customer / Operator: Apogee Coal, LLC.
Location of Blast: Ridge 1 & 2
Blasting Company: APOGEE COAL LLC
Nearest Protected Structure: #5 Bill Joann Lambert
Distance and Direction: 3,285 ft NW, 0°
Nearest Other Structure: Consol Well 10844
Distance and Direction: 8,396 ft SE, 0°
Weather Conditions: Sunny, 85°F, Wind out of the E @ 0-5 mph
Type of Material Blasted: Sandstone
Matt's or Protection Used: None used
Total Tons: 0
Total YD³: 15,680
Powder Factor: tons/lb 0.00 lbs/yd³ 1.55

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

Blast Information

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged lbs</th>
<th>29 Primers</th>
<th>Total Weight lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>19,369.99 lbs.</td>
<td>4,860.00 lbs.</td>
<td>0.00 lbs.</td>
<td>21.75 lbs.</td>
<td>24,271.73 lbs.</td>
</tr>
</tbody>
</table>

Total Holes: 28
Angle: 0°

Face Height (ft): 45
Burden (ft): 18
Backfill (ft):
Depth (ft): 45
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): 3568 as determined by SD of: 55
Maximum Weight of Explosives detonated per 8ms (lbs): 837 in 1.0 Holes

INITIATION PRODUCT INFORMATION

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orica</td>
<td>60 ft unitronics</td>
<td>.29</td>
<td></td>
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</tr>
</tbody>
</table>

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

COMMENTS
Satisfaction for UK
Operation: Apogee Coal, LLC.
Blast Number: S71
Date: 6/24/2011
Permit Number: S-5006-05
Blast Type: Production
Time: 3:20 PM

Hole Cross Section
Depth (ft): 45
Angle (deg): 0
BX S (ft): 18 X 18
Bench Ht. (in): 45
Hole dia. (in): 7.875
Stern (ft): 9
PF: 1.55 lbs/YD^3
Tons/Lb.

Timing Pattern

Nearest Protected Structure: #5 Bill Joann Lambert
Distance and Direction: 3.285 ft NW, 0°

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:

Signature:

Page: 183
<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Bench Height</th>
<th>Sub Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-29</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td></td>
<td>1</td>
<td>Nelson</td>
<td>1.10</td>
<td>836.21</td>
<td>1</td>
<td>3/4 LB Cast</td>
<td>1</td>
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</tbody>
</table>

Total Expl lbs. / Hole 836.21
Expl-Primer LBS / Hole 836.99

Similar Holes - 29 Primera 21.75 LBS Total Expl lbs. / Blast 2424.98
Similar Hole LBS 2427.00

Grand Total Explosives Weight 24271.73
Apogee Coal Company
Logan WV

BLASTING LOG

General Information

<table>
<thead>
<tr>
<th>Permittee</th>
<th>Apogee Coal, LLC.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer / Operator</td>
<td>Apogee Coal, LLC.</td>
</tr>
<tr>
<td>Location of Blast</td>
<td>Ridge 1 &amp; 2</td>
</tr>
<tr>
<td>Blasting Company</td>
<td>APOGEE COAL LLC</td>
</tr>
<tr>
<td>Nearest Protected Structure</td>
<td>#5 Bill Joann Lambert</td>
</tr>
<tr>
<td>Distance and Direction</td>
<td>3,311 ft NW, 9°</td>
</tr>
<tr>
<td>Nearest Other Structure</td>
<td>Consol Well 10844</td>
</tr>
<tr>
<td>Distance and Direction</td>
<td>8,403 ft SE, 9°</td>
</tr>
<tr>
<td>Weather Conditions</td>
<td>Sunny</td>
</tr>
<tr>
<td>Wind out of the</td>
<td>W @ 0-2 mph</td>
</tr>
<tr>
<td>Type of Material Blasted</td>
<td>Sandstone</td>
</tr>
<tr>
<td>Blast Type</td>
<td>BREAKDOWN</td>
</tr>
<tr>
<td>Mats or Protection Used</td>
<td></td>
</tr>
<tr>
<td>Powder Factor</td>
<td>tons/lb 0.00</td>
</tr>
<tr>
<td>Total Tons</td>
<td>0</td>
</tr>
<tr>
<td>Total YD³</td>
<td>17,280</td>
</tr>
<tr>
<td>Total Weight</td>
<td>26,039.31 lbs.</td>
</tr>
</tbody>
</table>

Blast Information

<table>
<thead>
<tr>
<th>Total Weight and Type(s) of Explosives used</th>
<th>see attachment</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANFO</td>
<td>20,812.25 lbs.</td>
</tr>
<tr>
<td>Emulsion</td>
<td>5,203.06 lbs.</td>
</tr>
<tr>
<td>Packaged</td>
<td>0.00 lbs.</td>
</tr>
<tr>
<td>32 Primers</td>
<td>24.00 lbs.</td>
</tr>
<tr>
<td>Total Weight</td>
<td>26,039.31 lbs.</td>
</tr>
</tbody>
</table>

Sub Drill (ft)          Diameter (in) | 7.875 |
Depth (ft)               Stemming Material | Cuttings |
Face Height (ft)         Burden (ft) | 18 |
Angle (°)                Backfill (ft) |

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

<table>
<thead>
<tr>
<th>Mfr Delay Type</th>
<th>Qty</th>
<th>Mfr Delay Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onca</td>
<td>50 ft unitronics</td>
<td>32</td>
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</tr>
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</table>

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

Comments

Signature: UK Schreiter
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**
- Depth (ft): 45
- B X S (ft): 18 x 18
- Bench Ht.: 96
- Hole dia. (in): 7.875
- Stem (ft): 10
- PF: 1.51 lbs/YD³
- Tons/Lb:

10' Stemming

35° 30' 30" @ 10'

**Timing Pattern**
- See Attached

**Nearest Protected Structure:** #5 Bill Joann Lambert
- Distance and Direction: 3,311 ft NW, 7°

**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:
<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Bench Height (FT)</th>
<th>Sub Drill Spacing (FT)</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<tr>
<td>1-32</td>
<td>95</td>
<td>45</td>
<td>45</td>
<td></td>
<td>1</td>
<td>Nelson 80/20</td>
<td>1.10</td>
<td>812.98</td>
<td>1/4</td>
<td>LB Cast</td>
<td>1</td>
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<td>3/4</td>
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</table>

**Total Expl. lbs. / hole**: 812.98
**Expl. Primer LBS / Hole**: 813.73

**Similar Holes**: 32
**Similar Primers**: 32
**Total Expl. lbs. / Blast**: 26015.31
**Similar Hole LBS**: 28040.00

**Total Holes Loaded this blast**: 32

**Grand Total Explosives Weight**: 26039.31
Apogee Coal Company
Logan WV

BLASTING LOG

Permittee: Apogee Coal, LLC.
Customer / Operator: Apogee Coal, LLC.
Location of Blast: Ridge 1 & 2
Blasting Company: APOGEE COAL LLC
Nearest Protected Structure: #5 Bill Joann Lambert
Method: Handheld GPS - NAD83

Date / Time: 6/29/2011 3:33 PM
Permit No.: S-5006-05
Lat: 30°08'12" N
Long: 87°34'44" W
SD to nearest protected: 77

Distance and Direction: 3,188 ft NW, 7°
Nearest Other Structure: Consol Well 10844
Distance and Direction: 8,499 ft SE, 7°
Weather Conditions: Sunny, 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 YD³: 18,900
Powder Factor: tons/lb 0.00 lbs/yd³ 1.59

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>35 Primers</th>
<th>Total Weight</th>
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<tbody>
<tr>
<td>24,064.16 lbs.</td>
<td>6,016.04 lbs.</td>
<td>0.00 lbs.</td>
<td>26.25 lbs.</td>
<td>30,106.45 lbs.</td>
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</table>

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

<table>
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<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
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<tr>
<td>Orica</td>
<td>1 Roll - Lead in Line</td>
<td>1</td>
<td>Orica</td>
<td>EXCEL 80 FT - 20</td>
<td>35</td>
<td>Orica</td>
<td>S. EXCEL 40 FT- 42</td>
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</table>

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: [Signature]
**Operation** Apogee Coal, LLC.  
**Blast Number** S82  
**Date** 6/29/2011  
**Permit Number** S-5006-05  
**Blast Type** BREAKDOWN  
**Time** 3:33 PM

### Hole Cross Section
- **Depth (ft)**: 45
- **B X S (ft)**: 18 X 18
- **Bench Ht.**: 45
- **Hole dia. (in)**: 7.87
- **Stem (ft)**: 8
- **PF**: 1.59 lbs/YD³
- **Tons/Lb.**

### Timing Pattern
See Attached

### Seismograph Information
**Date and Time of Recording(s)**: 6/29/2011 3:33 PM
- **Seis SN**: Location
- **Dist (ft)**: 300000
- **Dir. SD**: 0
- **T PPV**: 0
- **T Hz**: 0
- **V PPV**: 0
- **V Hz**: 0
- **L PPV**: 0
- **L Hz**: 0
- **Air dB**: 0
- **Air Hz**: 0

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

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

**Crew**: Todd Keffer

**Nearest Protected Structure**: #5 Bill Joann Lambert  
**Distance and Direction**: 3.188 ft NW, ?°
<table>
<thead>
<tr>
<th>Hole</th>
<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Stemming (FT)</th>
<th>Angle (Deg)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<td>1-35</td>
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<td>45</td>
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<td>Nelson 80/20</td>
<td>1.10</td>
<td>859.43</td>
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<td>3/4 LB Cast</td>
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<td>8</td>
<td>0</td>
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<td>Total Expl lbs / hole</td>
<td>859.43</td>
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<td></td>
<td>Expl-Primer LBS / Hole</td>
<td>850.18</td>
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</table>

**Similar Holes**

- 35 Holes
- 35 Primers
- 26.25 LBS
- Total Expl lbs / Blast: 30080.20
- Similar Hole LBS: 30107.00

**Total Holes Loaded this blast:** 35

**Grand Total Explosives Weight:** 30106.45
Apogee Coal Company
Logan WV

BLASTING LOG
GENERAL INFORMATION

Date / Time 6/29/2011 6:45 PM
Permit No. S-5008-05
Permittee Apogee Coal, LLC.
Customer / Operator Apogee Coal, LLC.
Blasting Company APOGEE COAL LLC
Nearest Protected Structure #5 Bill Joann Lambert
Distance and Direction 3,179 ft NW, 7° SD to nearest protected 78
Nearest Other Structure Consol Well 10844
Distance and Direction 8,485 ft SE, 7°
Weather Conditions Sunny 92°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 YD³ 21,600
Powder Factor: tons/lb 0.00 lbs/yd³ 1.55

BLAST INFORMATION

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td>28,758.60 lbs.</td>
<td>6,689.65 lbs.</td>
</tr>
</tbody>
</table>

Packaged 40 Primers Total Weight

0.00 lbs. 30.00 lbs. 33,478.25 lbs.

Total Holes 40 Angle 0°
Face Height (ft) 45 Burden (ft) 18 Backfill (ft)
Depth (ft) 45 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) 3340 as determined by SD of : 55
Maximum Weight of Explosives detonated per 8ms (lbs) 1674 in 2.0 Holes

INITIATION PRODUCT INFORMATION

Orica 50 ft unitrronics

<table>
<thead>
<tr>
<th>Qty</th>
<th>Mfr Delay Type Qty</th>
<th>Mfr Delay Type Qty</th>
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</thead>
<tbody>
<tr>
<td>40</td>
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</tbody>
</table>

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

COMMENTS

UK SREF
<table>
<thead>
<tr>
<th>Operation</th>
<th>Apogee Coal, LLC.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permit Number</td>
<td>S-5006-05</td>
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<tr>
<td>Blast Number</td>
<td>S85</td>
</tr>
<tr>
<td>Date</td>
<td>6/29/2011</td>
</tr>
<tr>
<td>Time</td>
<td>6:45 PM</td>
</tr>
</tbody>
</table>

### Hole Cross Section
- Depth (ft): 45
- B X S (ft): 18 X 18
- Bench Ht: 45
- Hole dia. (in): 7.875
- Stem (ft): 9
- PF: 1.55 lbs/yd³ Tons/Lb.
- Stemming
- 36.89/20 @ 9°

### Timing Pattern
- Sign: See Attached

### Nearest Protected Structure
- #5 Bill Joann Lambert
- Distance and Direction: 3.179 ft NW, 7°

### 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.

**Blast Type**: BREAKDOWN  
**Blast / Ticket Number**: S85 / S85  
**Date**: 6/29/2011  
**Time**: 6:45 PM

<table>
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<tr>
<th>Hole Number</th>
<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Stemming (FT)</th>
<th>Angle (Deg)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<td>1-40</td>
<td>18</td>
<td>18</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>Nelson 80/20</td>
<td>1.10</td>
<td>836.21</td>
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<td>34 LB Cast</td>
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</table>

**Total Expl. lbs. / Hole**: 836.21  
**Expl. Primer LBS / Hole**: 836.96

**Similar Holes - 40 Primmers 30.00 LBS**  
**Total Expl. lbs. / Blast**: 33446.25  
**Similar Hole LBS**: 33479.00

**Total Holes Loaded this Blast**: 40  
**Grand Total Explosives Weight**: 33478.25
### GENERAL INFORMATION

- **Permittee**: Apogee Coal, LLC.
- **Customer / Operator**: Apogee Coal, LLC.
- **Location of Blast**: Ridge 1 & 2
- **Blasting Company**: APOGEE COAL LLC
- **Nearest Protected Structure**: Cline residence
- **Distance and Direction**: 7,689 ft S, ?º
- **Nearest Other Structure**: Jackson Well
- **Distance and Direction**: 5,101 ft SW, ?º
- **Weather Conditions**: Partly Cloudy
- **Wind out of the**: N @ 5-10 mph
- **Type of Material Blasted**: Sandstone
- **Blast Type**: Production
- **Matts or Protection Used**: None used
- **Powder Factor**: tons/lb 0.00, lbs/yd³ 1.21
- **Date / Time**: 6/16/2010 12:15 PM
- **Permit No.**: S-5006-05
- **SD to nearest protected**: 325
- **Handheld GPS - NAD83**

### TOTAL WEIGHT AND TYPE(S) OF EXPLOSIVES USED:

<table>
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<tr>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>48 Primers</th>
<th>Total Weight</th>
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<tbody>
<tr>
<td>15,887.92 lbs</td>
<td>3,971.98 lbs</td>
<td>0.00 lbs.</td>
<td>36.00 lbs.</td>
<td>19,895.90 lbs</td>
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</tbody>
</table>

- **Total Holes**: 39
- **Angle**: 0º
- **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

### INITIATION PRODUCT INFORMATION

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
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<tbody>
<tr>
<td>Orica</td>
<td>1 Roll - Lead in Line</td>
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<td>Orica</td>
<td>EXCEL 40 FT - 20</td>
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<td>Orica</td>
<td>S. EXCEL 40 FT - 42</td>
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<td></td>
<td>Orica</td>
<td>S. EXCEL 40 FT-100</td>
<td>30</td>
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</table>

- **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
Hole Cross Section

- Bench (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/YD³
- Tons/Lb.

9' Stemming

24' 80/20 @ 9'

Backfill

PRIMER TYPE (s) UNI 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, ?°

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:

[Signature]
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  
- Y S (ft): 18  
- Bench Ht.: 35  
- Hole dia. (in): 7.875  
- Stem (ft): 9  
- PF: 1.33 lbs/YD^3  
- Tons/Lb.

Timing Pattern

9' Stemming
24.80/20 @ 9'

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:
**Blast Type**  
**Production**

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<th>Hole Number</th>
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<th>Sub-Drill</th>
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<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
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</tbody>
</table>

**Total Expl. Lbs./hole** 557.47

<table>
<thead>
<tr>
<th>Similar Holes</th>
<th>30</th>
<th>30 Primers</th>
<th>22.50 LBS</th>
<th>Total Expl. Lbs./Blast</th>
<th>Similar Hole LBS</th>
</tr>
</thead>
<tbody>
<tr>
<td>31-39</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>1 Nelson 80/20 1.10</td>
<td>3/4 LB Cast 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 Nelson 80/20 1.10</td>
<td></td>
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<tr>
<td></td>
<td>18</td>
<td>18</td>
<td>12</td>
<td></td>
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</tr>
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</table>

**Total Expl. Lbs./hole** 348.42

<table>
<thead>
<tr>
<th>Similar Holes</th>
<th>9</th>
<th>18 Primers</th>
<th>13.50 LBS</th>
<th>Total Expl. Lbs./Blast</th>
</tr>
</thead>
</table>

**Total Holes Loaded this blast** 39

**Grand Total Explosives Weight** 19895.90
**BLASTING LOG**

**GENERAL INFORMATION**

**Permittee** Apogee Coal, LLC.

**Customer / Operator** Apogee Coal, LLC.

**Location of Blast** Guyan Mine

**Blasting Company** APOGEE COAL LLC

**Nearest Protected Structure** Ball residence

**Method** Handheld GPS - NAD83

**Weather Conditions** Partly Cloudy

**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$^3$** 35,880

**Powder Factor**

<table>
<thead>
<tr>
<th>Tons/lb</th>
<th>lbs/yd$^3$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>1.13</td>
</tr>
</tbody>
</table>

**BLAST INFORMATION**

**Total Weight and Type(s) of Explosives used**

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>65 Primers</th>
<th>Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>30,494.38 lbs.</td>
<td>10,164.79 lbs.</td>
<td>0.00 lbs.</td>
<td>48.75 lbs.</td>
<td>40,707.92 lbs.</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orica</td>
<td>60 ft unitronics</td>
<td>65</td>
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</tbody>
</table>

**Method of Firing**

| Digital |

**Timer (ms)**

| NA |

**Circuit Type**

| Row by Row |

**Initiated by**

| Electronic |

**Blasting Unit**

| EBM |

**No. of Circuits**

| 1 |

**COMMENTS**

BlastData G4 V2.61 - Surface Mine Blast Report 1
Hole Cross Section

- Depth (ft): 46
- Angle (deg): 0
- Bench Ht. (ft): 46
- Hole dia. (in): 6.750
- Stem (ft): 8
- Tons/Yd^3: 1.13
- lbs/Lb:

8' Stemming

38' 75/25 @ 8'

Backfill

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

Holes loaded the same: 65

Timing Pattern

Nearest Protected Structure: Ball residence

Distance and Direction: 3,783 ft S, 90°

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

Reading(s) taken by: SAULS

Analyzed by: SAULS

BLASTER INFORMATION

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

Crew:

BlastData G4 V2.61 - Surface Mine Blast Report Page 2
<table>
<thead>
<tr>
<th>Holes</th>
<th>Bench Height</th>
<th>Sub Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-65</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>1</td>
<td>Nelson</td>
<td>75/25</td>
<td>1.12</td>
<td>625.53</td>
<td>3/4 LB Cast</td>
<td>1</td>
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<tr>
<td></td>
<td>3/4 LB Cast</td>
<td>1</td>
<td></td>
<td></td>
<td>2</td>
<td>3/4 LB Cast</td>
<td>1.12</td>
<td>625.53</td>
<td>2</td>
<td>3/4 LB Cast</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Primer QTY / Hole: 1
Total Primer LBS / Hole: 0.75

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
**Apogee Coal Company**

**Logan WV**

<table>
<thead>
<tr>
<th>Blast Number</th>
<th>H18</th>
<th>Ticket Number</th>
<th>H18</th>
</tr>
</thead>
</table>

**Permittee**: Apogee Coal, LLC.

**Customer / Operator**: Apogee Coal, LLC.

**Location of Blast**: Ridge 1 & 2

**Blasting Company**: APOGEE COAL LLC

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

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

**Weather Conditions**: Partly Cloudy

**Type of Material Blasted**: Sandstone

**Blast Type**: Production

**Total Tons**: 0

**Total YD^3**: 258,667

**Powder Factor**: tons/lb 0.00 lbs/yd^3 1.33

**Date / Time**: 9/15/2010 4:06 PM

**Permit No.**: S-5006-05

**Lat**: N 302100 - X

**Long**: W 1768464 - Y

**Method**: Handheld GPS - NAD83

**SD to nearest protected**: 129

**Distance and Direction**: 4,143 ft N, 7°

**Wind out of the**: SE @ 0-2 mph

**Face Height (ft)**: 90

**Burden (ft)**: 20

**Backfill (ft)**: 20

**Spacing (ft)**: 20

**Stemming (ft)**: 9

**Sub Drill (ft)**: 7.875

**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**

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<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
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<tbody>
<tr>
<td>Orica</td>
<td>120 ft unitrinetics</td>
<td>194</td>
<td>Orica</td>
<td>50 ft unitrinetics</td>
<td>120</td>
</tr>
<tr>
<td>Orica</td>
<td>80 ft unitrinetics</td>
<td>74</td>
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</tbody>
</table>

**Method of Firing**: Electric

**Timer (ms)**: NA

**Circuit Type**: 

**Initiated by**: Electronic

**Blasting Unit**: E BM

**No. of Circuits**: 

**COMMENTS**

BlastData G4 V2.61 - Surface Mine Blast Report 1
Operation: Apogee Coal, LLC.

Permit Number: S-5006-05

Blast Number: H18

Blast Type: Production

Date: 9/15/2010

Time: 4:06 PM

### Hole Cross Section
- Depth (ft): 90
- Angle (deg):
- B X S (ft): 20 x 20
- Bench Ht. (ft): 90
- Hole dia. (in): 7.875
- Stem (ft): 9
- PF: 1.32 lbs/YD³
- Tons/Lb.

### Timing Pattern

### 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:
<table>
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<tr>
<th>Hole Number</th>
<th>Burden (FT)</th>
<th>Height</th>
<th>Spacing (FT)</th>
<th>Stemming (FT)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<tr>
<td>1-194</td>
<td>20</td>
<td>90</td>
<td>20</td>
<td>9</td>
<td>1 Nelson</td>
<td>80/20</td>
<td>1.10</td>
<td>882.66</td>
<td>2</td>
<td>3/4 LB Cast</td>
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<td>2 Nelson</td>
<td>80/20</td>
<td>1.10</td>
<td>882.66</td>
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</table>

Total Expl lbs. / hole: 1765.32

Expl-Primer LBS / Hole: ?

Similar Holes - 194 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
| 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 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 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 | 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 |

2 charges, 1 in bucket.

1st hole (Signature Hole)
Top charge & 0ms for the bottom.
2000ms for the top charges, 2000ms for the bottom.
EACH HOLE HAD 2 charges, 1 in top of hole & 1 in bottom.
For instance the First hole (Signature Hole) was @ 0ms for the top charge & 3ms for the bottom.
The 2nd hole was @ 2000ms for the top charge & 2002ms for the bottom.
Blasting Log

**General Information**

- **Permittee**: Apogee Coal, LLC.
- **Customer / Operator**: Apogee Coal, LLC.
- **Location of Blast**: Ridge 1 & 2
- **Blasting Company**: APOGEE COAL LLC
- **Nearest Protected Structure**: #5 Bill Joann Lambert
- **Distance and Direction**: 7,901 ft N, 99°
- **Distance and Direction**: 4,415 ft NW, 99°
- **Type of Material Blasted**: Sandstone
- **Weather Conditions**: Partly Cloudy
- **Wind out of the**: E @ 0-2 mph
- **Method**: Handheld GPS - NAD83
- **Method**: SD to nearest protected
- **Date / Time**: 9/16/2010 3:58 PM
- **Permit No.**: S-5006-05
- **Volume of Material Blasted**: Total Tons 0, Total YD³ 44,978
- **Powder Factor**: tons/lb 0.00, lbs/yd³ 1.22

**Blast Information**

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>69 Primers</th>
<th>Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>54,998.28 lbs</td>
<td>0.00 lbs</td>
<td>0.00 lbs</td>
<td>51.75 lbs</td>
<td>55,050.03 lbs</td>
</tr>
</tbody>
</table>

- **Total Holes**: 69
- **Angle**: 9°
- **Face Height (ft)**: 44
- **Burden (ft)**: 20
- **Spacing (ft)**: 20
- **Sub Drill (ft)**: 44
- **Diameter (in)**: 9
- **Backfill (ft)**: 10
- **Stemming Material**: Cuttings

- **Maximum Weight of Explosives Allowed per 8ms Period (lbs)**: 6444 as determined by SD of: 55
- **Maximum Weight of Explosives detonated per 8ms (lbs)**: 6383 in 8.0 Holes

**Initiation Product Information**

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
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</thead>
<tbody>
<tr>
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<td>50 ft unitronics</td>
<td>69</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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

**Comments**

Signature Hole Shot: This is the one that John timed out.
Hole Cross Section
Depth (ft) 44
B x S (ft) 20 x 20
Hole dia. (in) 9.000
PF: 1.22 lbs/Yd³

Timing Pattern
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:

BlastData G4 V2.61 - Surface Mine Blast Report Page 2
<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Design Depth (FT)</th>
<th>Loaded Depth (FT)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Primer Name</th>
<th>Qty</th>
</tr>
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<tbody>
<tr>
<td>1-69</td>
<td>44</td>
<td>44</td>
<td>44</td>
<td>44</td>
<td>1</td>
<td>NEBCO</td>
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<td>797.08</td>
<td>3/4 LB Cast</td>
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</tbody>
</table>

**Total Expl lbs / hole**: 797.08

**Expl-Primer LBS / Hole**: 797.83

**Similar Holes**: 69

**69 Primers**: 51.75 LBS

**Total Expls / Blast**: 54998.28

**Total Holes Loaded this blast**: 69

**Grand Total Explosives Weight**: 55050.03
<table>
<thead>
<tr>
<th>UNI Tronics</th>
<th>Blast Map</th>
</tr>
</thead>
<tbody>
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<td>Blast Map</td>
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<tr>
<td>Shot-Time: 18:58 PM</td>
<td>69 = Hols 37.8 = Def 5 08.1 = 1945</td>
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</tbody>
</table>

**Nelson Brothers LLC**

- Shot-Time: 18:58 PM
- 69 = Hols
- 37.8 = Def 5
- 08.1 = 1945
BLASTING LOG

GENERAL INFORMATION

Ogee Coal Company

Date / Time 7/7/2010 4:09 PM

Permit No. S-5007-01

Location of Blast Guyan 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

Wind out of the E @ 0-2 mph

95°F,

Type of Material Blasted Shale

Blast Type Production

Total Tons 0

Total YB³ 16,020

lbs/yd³ 0.23

Powder Factor: tons/lb 0.00

ANFO Emulsion

Packaged 3,520.91 lbs. 0.00 lbs.

267 Primers 200.25 lbs.

Total Weight 3,721.16 lbs.

Total Holes 267

Face Height (ft) 5

Depth (ft) 5

Sub Drill (ft)

Burden (ft) 18

Spacing (ft) 18

Diameter (in) 6.75

Backfill (ft)

Stemming (ft) 4

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

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

Timer (ms): NA

Circuit Type:

Initiated by: Non-Electric

Blasting Unit: Handi Blaster

No. of Circuits:
### Hole Cross Section

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<th>Depth (ft)</th>
<th>Angle (deg)</th>
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**B X S (ft)** 18 X 18  
**Bench Ht.** 5  
**Hole dia. (in)** 6.750  
**Stem (ft)** 4  
**PF:** 0.22 lbs/YD³ Tons/Lb.

### Timing Pattern

- **4′ Stemming**

1′ Bulk ANFO @ 4′

### 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

### Reading(s) taken by: SAULS

### Analyzed by: SAULS

### BLASTER INFORMATION

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

- **Crew:**
  

---

Toddl Keffer

---

(BlastData G4 V2 R1 - Surface Mine Blast Report)
# Blast Details

**Apogee Coal, LLC.**

**S-5007-01**

**Blast Type**

**Production**

**Date** 7/7/2010

**Time** 4:09 PM

<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Bench Height (FT)</th>
<th>Sub Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<td>NEBCO</td>
<td>Bulk ANFO</td>
<td>0.85</td>
<td>13.19</td>
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<td>3/4 LB Cast</td>
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<td>Total Primer QTY / Hole</td>
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<td>Total Primer LBS / Hole</td>
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</table>

**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

**Grand Total Explosives Weight** 3721.16
Apogee Coal Company
Logan WV

BLASTING LOG
GENERAL INFORMATION

Blast Number F8 Ticket Number F8

Permittee Apogee Coal, LLC.
Customer / Operator Apogee Coal, LLC.
Location of Blast Ridge 1 & 2
Blasting Company APOGEE COAL LLC
Nearest Protected Structure #5 Bill Joann Lambert
Distance and Direction 7,884 ft N, ?°
Nearest Other Structure Dominion Well
Distance and Direction 4,656 ft N, ?°
Weather Conditions Sunny / Hot
Type of Material Blasted Sandstone
Matts or Protection Used
Powder Factor: tons/lb 0.00 lbs/yard³ 1.21

BLAST INFORMATION

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

<table>
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<tr>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>66 Primers</th>
<th>Total Weight</th>
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<tr>
<td>14,615.87 lbs.</td>
<td>4,871.96 lbs.</td>
<td>0.00 lbs.</td>
<td>49.50 lbs.</td>
<td>19,537.33 lbs.</td>
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</table>

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

BlastData G4 V2.61 - Surface Mine Blast Report 1
Hole Cross Section

Depth (ft): 45
B X S (ft): 18 X 18
Hole dia. (in): 7.875
PF: 1.58 lbs/YD^3

Timing Pattern

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
Reading(s) taken 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
BX S (ft): 18 X 18
Hole dia. (in): 7.875
PF: 1.18 lbs/YD³

Timing Pattern

8' Stemming
9'75/25 @ 8'
5' Cuttings @ 17'
9'75/25 @ 22'
5' Cuttings @ 31'
9'75/25 @ 36'

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: 7,884 ft N, ?°
Holes loaded the same: 9

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 Cross Section

Depth (ft) 45  Angle (deg)  
B X S (ft) 18 X 18  
Hole dia. (in) 7.875  
PF: 0.88 lbs/YD$^3$  
Tons/Lb.

Timing Pattern

15' Stemming

5' 75/25 @ 15'
5' Cuttings @ 20'
7' 75/25 @ 25'
5' Cuttings @ 32'
8' 75/25 @ 37'

Nearest Protected Structure: #5 Bill Joann Lambert

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

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 Cross Section

- Depth (ft): 45
- B X S (ft): 18 X 18
- Bench Ht.: 95
- Hole dia. (in): 7.875
- Stem (ft): 40
- PF: 0.22 lbs/YD³
- Tons/Lb.

### Timing Pattern

- Nearest Protected Structure: #5 Bill Joann Lambert
- Distance and Direction: 7,884 ft N, 0°

### SEISMOGRAPH INFORMATION

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- 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**

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<th>Hole Number</th>
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<th>Design Depth (FT)</th>
<th>Loaded Depth (FT)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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**Total Expl lbs. / hole:** 851.41

**Expl-Primer LBS / Hole:** 852.16

**Similar Holes - 11 Primers**

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**Total Expl lbs. / hole:** 638.56

**Expl-Primer LBS / Hole:** 640.81

**Similar Holes - 9 Primers**

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**Total Expl lbs. / hole:** 473.01

**Expl-Primer LBS / Hole:** 475.26

**Similar Holes - 9 Primers**

<table>
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**Total Expl lbs. / hole:** 473.01

**Expl-Primer LBS / Hole:** 475.26

**Similar Holes - 9 Primers**

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<th>Burden (FT)</th>
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</table>

**Total Expl lbs. / hole:** 473.01

**Expl-Primer LBS / Hole:** 475.26

**Similar Holes LBS:**

- 9374.00
- 5768.00
- 4278.00
<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Bench Height (FT)</th>
<th>Sub Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
</tr>
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<tr>
<td>30</td>
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<td>45</td>
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<td>45</td>
<td>1</td>
<td>Nelson</td>
<td>1.12</td>
<td>118.25</td>
<td>1</td>
<td>3/4 LB Cast</td>
<td>1</td>
</tr>
<tr>
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<td>Total Expl lbs. / hole</td>
<td>118.25</td>
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<td></td>
<td>Expl-Primer LBS / Hole</td>
<td>119.00</td>
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<td></td>
<td></td>
<td></td>
<td>Similar Hole LBS</td>
<td>120.00</td>
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<td></td>
<td>Grand Total Explosives Weight</td>
<td>19537.33</td>
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</tbody>
</table>

Similar Holes - 1 / 1 Primers

Total Holes Loaded this blast: 30
Apogee Coal Company  
Logan WV

BLASTING LOG  
GENERAL INFORMATION

Blast Number  F7  Ticket Number  F7

Permittee  Apogee Coal, LLC.
Customer / Operator  Apogee Coal, LLC.
Location of Blast  Ridge 1 & 2  
Blasting Company  APOGEE COAL LLC
Nearest Protected Structure  #5 Bill Joann Lambert  
Distance and Direction  7,893 ft N , ?°  
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  Production  
Matts or Protection Used  
Total Tons  0  
Total YD³  107,667  
Powder Factor:  tons/lb  0.00  lbs/yard³  1.38

BLAST INFORMATION

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td>111,747.57 lbs.</td>
<td>37,249.19 lbs.</td>
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</table>

Packaged  0.00 lbs.  
160 Primers  120.00 lbs.  
Total Weight  149,116.76 lbs.

Total Holes  85  
Face Height (ft)  95  
Burden (ft)  18  
Backfill (ft)  3  
Depth (ft)  95  
Spacing (ft)  20  
Stemming (ft)  10 - 32  
Sub Drill (ft)  
Diameter (in)  7.875  
Stemming Material  Cuttings

Maximum Weight of Explosives Allowed per 8ms Period (lbs): 7166 as determined by SD of: 55

Maximum Weight of Explosives detonated per 8ms (lbs): 1799 in 1.0 Holes

INITIATION PRODUCT INFORMATION

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
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<tbody>
<tr>
<td>120'EXCELE-20</td>
<td>85</td>
<td>Orica</td>
<td>160 FT-20</td>
<td>75</td>
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<tr>
<td>Orica</td>
<td>4</td>
<td>Orica</td>
<td>160 FT-100</td>
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Method of Firing: Non Electric  
Timer (ms): NA  
Circuit Type:

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

COMMENTS

BlastData G4 V2.61 - Surface Mine Blast Report
Hole Cross Section

- Depth (ft): 95
- B X S (ft): 18 X 20
- Hole dia. (in): 7.875
- PF: 1.42 lbs/YD³
- Angle (deg): 95
- Bench Ht: 95
- Stem (ft): 10
- Tons/Lb.

Timing Pattern

- 10' Stemming
- 38' 75/25 @ 10'
- 6' Cuttings @ 48'
- 38',75/25 @ 54'

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

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: F7
Date: 7/6/2010
Time: 4:07 PM
Blast Type: Production

Hole Cross Section

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Angle (deg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>95</td>
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</tr>
<tr>
<td>B X S (ft)</td>
<td>18 X 20</td>
</tr>
<tr>
<td>Hole dia. (in)</td>
<td>7.875</td>
</tr>
<tr>
<td>Stem (ft)</td>
<td>32</td>
</tr>
<tr>
<td>PF:</td>
<td>1.12 lbs/YD³</td>
</tr>
<tr>
<td></td>
<td>Tons/Lb.</td>
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Timing Pattern

32' Stemming
60',75/25 @ 32'

Seismograph Information

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

Reading(s) taken by: SAULS

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

Nearest Protected Structure: #5 Bill Joann Lambert
Distance and Direction: 7,893 ft N, ?°

Holes loaded the same: 10

Blaster Information

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

Crew:
<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Bench Height</th>
<th>Sub Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr</th>
<th>Primer Name</th>
<th>Qty</th>
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<tbody>
<tr>
<td>1-10</td>
<td>95</td>
<td>95</td>
<td>95</td>
<td>95</td>
<td>Nelson</td>
<td>75/25</td>
<td>1.12</td>
<td>1419.02</td>
<td>3/4</td>
<td>LB Cast</td>
<td>1</td>
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<tr>
<td>TotalExpl lbs. / hole</td>
<td>1419.02</td>
<td>Expl-Primer LBS / Hole</td>
<td>?</td>
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</table>

**Similar Holes - 10 Primers**

<table>
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<tr>
<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Stemming (FT)</th>
<th>Angle (Deg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>95</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nelson</td>
<td>75/25</td>
<td>1.12</td>
<td>898.71</td>
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<tr>
<td>Nelson</td>
<td>75/25</td>
<td>1.12</td>
<td>898.71</td>
</tr>
</tbody>
</table>

| TotalExpl lbs. / hole | 1797.42 | Expl-Primer LBS / Hole | ?   |     |

**Similar Holes - 75 Primers 112.50 LBS**

<table>
<thead>
<tr>
<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Stemming (FT)</th>
<th>Angle (Deg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Total Expl lbs. / Blast | 134806.59 | Similar Hole LBS | 134920.00 |

**Total Holes Loaded this blast**

| 85 |

**Grand Total Explosives Weight**

| 149116.76 |
**Apogee Coal Company**  
Logan WV

**BLASTING LOG**  
**GENERAL INFORMATION**

Blast Number F6  
Ticket Number F6

<table>
<thead>
<tr>
<th>Permittee</th>
<th>Apogee Coal, LLC.</th>
<th>Date / Time</th>
<th>7/6/2010 4:07 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer / Operator</td>
<td>Apogee Coal, LLC.</td>
<td>Permit No.</td>
<td>S-5006-05</td>
</tr>
<tr>
<td>Location of Blast</td>
<td>Ridge 1 &amp; 2</td>
<td>Permits</td>
<td>Lat: N 301410 X, Long: W 1765735 Y</td>
</tr>
<tr>
<td>Blasting Company</td>
<td>APOGEE COAL LLC</td>
<td>Method</td>
<td>Handheld GPS - NAD83</td>
</tr>
<tr>
<td>Nearest Protected Structure</td>
<td>#5 Bill Joann Lambert</td>
<td>SD to nearest protected</td>
<td>281</td>
</tr>
<tr>
<td>Distance and Direction</td>
<td>8,083 ft N, 90°</td>
<td>Weather Conditions</td>
<td>Sunny / Hot 95°F, Wind out of the SE @ 0-2 mph</td>
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<tr>
<td>Nearest Other Structure</td>
<td>Jackson Well</td>
<td>Type of Material Blasted</td>
<td>Sandstone</td>
</tr>
<tr>
<td>Distance and Direction</td>
<td>4,494 ft S, 90°</td>
<td>Blast Type</td>
<td>BREAKDOWN</td>
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<tr>
<td>Weather Conditions</td>
<td>Sunny / Hot</td>
<td>95°F, Wind out of the SE @ 0-2 mph</td>
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<tr>
<td>Type of Material Blasted</td>
<td>Sandstone</td>
<td>Blast Type</td>
<td>BREAKDOWN</td>
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<tr>
<td>Powder Factor: tons/lb</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Powder Factor: lbs/yard³</td>
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**BLAST INFORMATION**

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<thead>
<tr>
<th>Total Weight and Type(s) of Explosives used: see attachment</th>
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</thead>
<tbody>
<tr>
<td>ANFO</td>
</tr>
<tr>
<td>18,021.51 lbs.</td>
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</table>

| Total Holes | 32 |
| Face Height (ft) | 95 |
| Burden (ft) | 18 |
| Depth (ft) | 45 |
| Spacing (ft) | 18 |
| 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**

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
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<tbody>
<tr>
<td>Orica</td>
<td>EXCEL 40 FT - 20</td>
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<td>S. EXCEL 40 FT - 42</td>
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<td>Orica</td>
<td>S. EXCEL 40 FT-100</td>
<td>28</td>
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Method of Firing: Non Electric  
Timer (ms): NA  
Circuit Type:  
Initiated by: Non-Electric  
Blasting Unit: Handi Blaster  
No. of Circuits:
Hole Cross Section

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Angle (deg)</th>
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<table>
<thead>
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<th>B X S (ft)</th>
<th>Bench Ht</th>
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<td>18 X 18</td>
<td>95</td>
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<table>
<thead>
<tr>
<th>Hole dia. (in)</th>
<th>Stem (ft)</th>
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<tr>
<td>7.875</td>
<td>10</td>
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<table>
<thead>
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<th>PF:</th>
<th>Tons/Lb.</th>
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<tbody>
<tr>
<td>1.53 lbs/YD³</td>
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Timing Pattern

10' Stemming

35°, 75/25 @ 10'

Nearest Protected Structure: #5 Bill Joann Lambert

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

Holes loaded the same: 24

SEISMOGRAPH INFORMATION

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


Reading(s) taken by : SAULS

BLASTER INFORMATION

Name of Surface Blaster and Certification Number:

Brad Gregory - 3-299-88

Crew:
Hole Cross Section

Depth (ft) 45
B X S (ft) 18 X 18
Hole dia. (in) 7.875
PF: 0.96 lbs/YD³

Timing Pattern

15’ Stemming
7’ 75/25 @ 15’
8’ Cuttings @ 22’
15’ 75/25 @ 30’

Nearest Protected Structure: #5 Bill Joann Lambert

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

SEISMOGRAPH INFORMATION

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

Reading(s) taken by: SAULS

BLASTER INFORMATION

Name of Surface Blaster and Certification Number:
Brad Gregory - 3-299-88
### Apogee Coal, LLC.

**Blast Type**: F6 / F6  
**Blast / Ticket Number**: S-5006-05  
**Date**: 7/6/2010  
**Time**: 4:07 PM

<table>
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<tr>
<th>Hole Number</th>
<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Sub Drill</th>
<th>Stemming (FT)</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<td>10</td>
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<td>Nelson 75/25</td>
<td>1.12</td>
<td>827.76</td>
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<td>3/4 LB Cast</td>
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<td>Total Primer QTY / Hole</td>
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<td>Total Primer LBS / Hole</td>
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**Total Expl lbs. / hole**: 827.76  
**Expl-Primer LBS / Hole**: 828.51

<table>
<thead>
<tr>
<th>Similar Holes</th>
<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Sub Drill</th>
<th>Stemming (FT)</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<tbody>
<tr>
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**Total Expl lbs. / hole**: 520.31  
**Expl-Primer LBS / Hole**: 521.81

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<tr>
<th>Similar Holes</th>
<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Sub Drill</th>
<th>Stemming (FT)</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<td>16 Primers</td>
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<td>Nelson 75/25</td>
<td>1.12</td>
<td>4162.45</td>
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<td>3/4 LB Cast</td>
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<td>Total Primer LBS / Hole</td>
<td>1.5</td>
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**Total Expl lbs. / Blast**: 4162.45  
**Similar Hole LBS**: 4175.00  
**Grand Total Explosives Weight**: 24058.68

**Total Holes Loaded this blast**: 32
<table>
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<tr>
<th>Permittee</th>
<th>Apogee Coal, LLC.</th>
<th>Date / Time</th>
<th>7/6/2010 1:28 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer / Operator</td>
<td>Apogee Coal, LLC.</td>
<td>Permit No.</td>
<td>S-5006-05</td>
</tr>
<tr>
<td>Location of Blast</td>
<td>Ridge 1 &amp; 2</td>
<td>Lat</td>
<td>N 301483</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long</td>
<td>W 1769485</td>
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<td>Blasting Company</td>
<td>APOGEE COAL LLC</td>
<td>Method</td>
<td>Handheld GPS - NAD83</td>
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<tr>
<td>Nearest Protected Structure</td>
<td>Cline residence</td>
<td>SD to nearest protected</td>
<td>368</td>
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<tr>
<td>Distance and Direction</td>
<td>8,014 ft S, 90°</td>
<td>Weather Conditions</td>
<td>Sunny / Hot</td>
</tr>
<tr>
<td>Nearest Other Structure</td>
<td>Dominion Well</td>
<td>Wind out of the</td>
<td>N @ 0-2 mph</td>
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<tr>
<td>Distance and Direction</td>
<td>5,108 ft NW, 90°</td>
<td>Type of Material Blasted</td>
<td>Sandstone</td>
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<tr>
<td>Powder Factor:</td>
<td>tons/lb 0.00</td>
<td>Blast Type</td>
<td>BARRIER</td>
</tr>
<tr>
<td>Total Tons</td>
<td>0</td>
<td>Total YD³</td>
<td>21,240</td>
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<tr>
<td>Powder Factor:</td>
<td>lbs/yd³ 1.32</td>
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### Total Weight and Type(s) of Explosives used:

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>59 Primers</th>
<th>Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>20,930.50 lbs.</td>
<td>6,976.83 lbs.</td>
<td>0.00 lbs.</td>
<td>44.25 lbs.</td>
<td>27,951.58 lbs.</td>
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</table>

| 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

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orica</td>
<td>50 ft unitrinics</td>
<td>59</td>
</tr>
<tr>
<td>Hole Cross Section</td>
<td>Timing Pattern</td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td>Depth (ft)</td>
<td>Nearest Protected Structure: Cline residence</td>
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</tr>
<tr>
<td>30</td>
<td>Distance and Direction: 8,014 ft S, ?°</td>
<td></td>
</tr>
<tr>
<td>B X S (ft)</td>
<td>18 X 18</td>
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</tr>
<tr>
<td>7.875</td>
<td>Stem Ht. 30</td>
<td></td>
</tr>
<tr>
<td>Hole dia. (in)</td>
<td>10</td>
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<tr>
<td>1.31 lbs/YD³</td>
<td>Tons/Lb.</td>
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<tr>
<td>PF:</td>
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<td>3/4 LB Cast Primer</td>
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<td>0.8</td>
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**Seismograph Information**

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

Reading(s) taken by: SAULS

Analyzed by: SAULS

**Blaster Information**

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

Crew:
<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Stemming (FT)</th>
<th>Angle (Deg)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<td>1-59</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>1</td>
<td>Nelson 75/25</td>
<td>1.12</td>
<td>473.01</td>
<td>3/4 LB Cast</td>
<td>1</td>
<td></td>
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<td>2</td>
<td>3</td>
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<td>Total Primer QTY / Hole</td>
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</table>

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 59

Grand Total Explosives Weight 27951.58
**Blasting Log**

**General Information**

- **Permittee**: Apogee Coal, LLC.
- **Customer / Operator**: Apogee Coal, LLC.
- **Location of Blast**: Ridge 1 & 2
- **Blasting Company**: APOGEE COAL LLC
- **Nearest Protected Structure**: Cline residence
- **Distance and Direction**: 8,074 ft S, 9°
- **Nearest Other Structure**: Dominion Well
- **Distance and Direction**: 4,849 ft NW, 9°
- **Weather Conditions**: Sunny / Hot 95°F, Wind out of the N @ 0-2 mph
- **Type of Material Blasted**: Sandstone
- **Blast Type**: Production
- **Total Tons**: 0
- **Total YD**: 290,963
- **Powder Factor**: tons/lb 0.00, lbs/yard³ 1.31

**Blast Information**

- **Total Weight and Type(s) of Explosives used**: see attachment
  - ANFO: 296,591.39 lbs.
  - Emulsion: 83,061.05 lbs.
  - Packaged: 0.00 lbs.
  - 357 Primers: 267.75 lbs.
  - Total Weight: 379,920.18 lbs.

- **Total Holes**: 317
- **Angle**: 9°
- **Face Height (ft)**: 30 - 100
- **Burden (ft)**: 20
- **Backfill (ft)**: 20
- **Depth (ft)**: 30 - 100
- **Spacing (ft)**: 20
- **Stemming (ft)**: 10
- **Sub Drill (ft)**: Diameter (in) 7.875
- **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**

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<tr>
<th>Mfr</th>
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<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
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<td>173</td>
<td>Orica</td>
<td>50 ft unitronics</td>
<td>149</td>
<td>Orica</td>
<td>120 ft unitronics</td>
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**Method of Firing**: Electric

**Timer (ms)**: NA

**Circuit Type**: 

Initiated by: Electronic
Blasting Unit: EBM

**No. of Circuits**: 

**Comments**: 

---

BlastData G4 V2.81 - Surface Mine Blast Report
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) 30
BX S (ft) 20 X 20
Hole dia. (in) 7.875
PF: 1.06 lbs/YD³

Timing Pattern

Nearest Protected Structure: Cline residence
Distance and Direction: 8,074 ft S, 0°

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:
Richard Cope - 5 506 08

Crew:
Hole Cross Section
- Depth (ft): 40
- B X S (ft): 20 X 20
- Hole dia. (in): 7.875
- Stem (ft): 10
- PF: 1.20 lbs/YD³
- Tons/Lb.

Timing Pattern

Nearest Protected Structure: Cline residence
Distance and Direction: 8,074 ft S, 7°

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: Richard Cope - 5 506 08
Crew:
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): 60
- Angle (deg): 10°
- B X S (ft): 20 X 20
- Bench Ht.: 60
- Hole dia. (in): 7.875
- Stem (ft): 10
- PF: 1.33 lbs/YD³

Timing Pattern:

Nearest Protected Structure: Cline residence
Distance and Direction: 8,074 ft S, 7°

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: Richard Cope - 550608
Crew:
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): 70
- Angle (deg): 10°
- B X S (ft): 20 x 20
- Bench Ht: 70
- Hole dia. (in): 7.875
- Stem (ft): 10
- PF: 1.34 lbs/YD³
- Tons/Lb.

Timing Pattern

Nearest Protected Structure: Cline residence
Distance and Direction: 8,074 ft S, 0°

Holes loaded the same: 79

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:
Richard Cope - 5 506 08

Crew:

BlastData G4 V2.61 - Surface Mine Blast Report Page 2
Hole Cross Section
Depth (ft) 85 Angle (deg) 85
B X S (ft) 20 X 20 Bench Ht. 85
Hole dia. (in) 7.875 Stem (ft) 10
PF: 1.29 lbs/YD³ Tons/Lb.

Timing Pattern

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: Richard Cope - 5 506 08
Crew:
Hole Cross Section

- Depth (ft): 85
- Angle (deg): 85
- B & S (ft): 20 X 20
- Bench Ht. (ft): 85
- Hole dia. (in): 7.875
- Stem (ft): 10
- PF: 1.38 lbs/YD³
- Tons/Lb.

Timing Pattern

10' Stemming
75'.80/20 @ 10'

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: Richard Cope - 5 506 08
- Crew:
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/YD³
- Tons/Lb.

Timing Pattern

- Nearest Protected Structure: Cline residence
- Distance and Direction: 8,074 ft  S, 2°

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: Richard Cope  5 506 08
- Crew:
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<th>Design (FT)</th>
<th>Loaded (FT)</th>
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<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<td>Nelson</td>
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<td>473.01</td>
<td>3/4 LB Cast</td>
<td>1</td>
</tr>
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TotalExpl lbs. / hole: 473.01
Expl-Primer LBS / Hole: 473.76
Train LBS: 11352.13
Train LBS: 11371.00

Similar Holes - 60 | 60 | 60 | 60 | 60 | 1 | Nelson | 80/20 | 1.10 | 1393.68 | 3/4 LB Cast | 1 |
|             |             |          |             |             | 2    |                |      |        |      |              |     |
|             |             |          |             |             | 3    |                |      |        |      |              |     |
|             |             |          |             |             | 4    |                |      |        |      |              |     |
|             |             |          |             |             | 5    |                |      |        |      |              |     |
|             |             |          |             |             | 6    |                |      |        |      |              |     |
|             |             |          |             |             | 7    |                |      |        |      |              |     |
|             |             |          |             |             | 8    |                |      |        |      |              |     |

TotalExpl lbs. / hole: 1182.51
Expl-Primer LBS / Hole: ?
Train LBS: 70950.84
Train LBS: 70996.00

Similar Holes - 79 | 79 | 79 | 79 | 79 | 1 | Nelson | 80/20 | 1.10 | 1393.68 | 3/4 LB Cast | 1 |
|             |             |          |             |             | 2    |                |      |        |      |              |     |
|             |             |          |             |             | 3    |                |      |        |      |              |     |
|             |             |          |             |             | 4    |                |      |        |      |              |     |
|             |             |          |             |             | 5    |                |      |        |      |              |     |
|             |             |          |             |             | 6    |                |      |        |      |              |     |
|             |             |          |             |             | 7    |                |      |        |      |              |     |
|             |             |          |             |             | 8    |                |      |        |      |              |     |

TotalExpl lbs. / hole: 1393.68
Expl-Primer LBS / Hole: ?
Train LBS: 110100.49
Train LBS: 110160.00
## Blast / Ticket Number: F4 / F4

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<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Stemming (FT)</th>
<th>Loaded Angle (Deg)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
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<th>Qty</th>
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Total Expl lbs / hole  1625.96

Similar Holes - 5  10 Primers  7.50 LBS

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<th>Angle (Deg)</th>
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Total Expl lbs / hole  709.51
Expl-Primer LBS / Hole  710.26

Similar Holes - 85  85 Primers  63.75 LBS

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Total Expl lbs / hole  1742.10
Expl-Primer LBS / Hole  710.26

Similar Holes - 29  29 Primers  21.75 LBS

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<th>g/cc</th>
<th>Total Expl lbs / Blast</th>
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Total Expl lbs / hole  50520.80

7/7/2010
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<th>Pounds</th>
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Total Expl lbs. / hole: 1951.15

Similar Holes: 35 Primers 52.50 LBS
Total Expl lbs. / Blast: 68290.18

Total Holes Loaded this blast: 317

Grand Total Explosives Weight: 379920.18
Apogee Coal Company
Logan WV

BLASTING LOG

GENERAL INFORMATION

Blast Number: F3  Ticket Number: F3

Permittee: Apogee Coal, LLC.
Customer / Operator: Apogee Coal, LLC.
Location of Blast: Ridge 1 & 2
Blasting Company: APOGEE COAL LLC
Nearest Protected Structure: #5 Bill Joann Lambert
Distance and Direction: 8,141 ft N, ?°
Nearest Other Structure: Jackson Well
Distance and Direction: 4,418 ft S, ?°
Weather Conditions: Sunny / Hot
Type of Material Blasted: Sandstone
Blast Type: Production
Powder Factor: tons/lb 0.00  lbs/yd³ 1.59

Date / Time: 7/3/2010 4:02 PM
Permit No.: S-5006-05
Lat: N 301347
Long: W 1765806
Method: Handheld GPS - NAD83
SD to nearest protected: 121

BLAST INFORMATION

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

<table>
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<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>169 Primers</th>
<th>Total Weight</th>
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<tr>
<td>139,217.54 lbs.</td>
<td>34,804.38 lbs.</td>
<td>0.00 lbs.</td>
<td>126.75 lbs.</td>
<td>174,148.67 lbs.</td>
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Angle: 82°

Total Holes: 82
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

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<th>Qty</th>
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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

BlastData G4 V2.61 - Surface Mine Blast Report
Hole Cross Section

Depth (ft) 90  
B X S (ft) 20 X 20  
Hole dia. (in) 9.000  
PF: 1.68 lbs/YD^3

Timing Pattern

Nearest Protected Structure: #5 Bill Joann Lambert
Distance and Direction: 8,141 ft N 7°

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:
Hole Cross Section

Depth (ft) 90  
B X S (ft) 20 X 20  
Hole dia. (in) 9.000  
PF: 0.68 lbs/YD³

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  
Analysis by: SAULS

BLASTER INFORMATION

Name of Surface Blaster and Certification Number: Richard Cope - 5 506 08  
Crew:
Hole Cross Section

Depth (ft) 90
B XS (ft) 20 X 20
Hole dia. (in) 9.000
PF: 1.32 lbs/YD³

Stemming

18' 80/20 @ 25'
7' Cuttings @ 43'
40' 80/20 @ 50'

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

BLASTER INFORMATION

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

Crew:
### Hole Cross Section

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Angle (deg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B X S (ft)</th>
<th>Bench Ht.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hole dia. (in)</th>
<th>Stem (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.000</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PF</th>
<th>Tons/Lb.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.50 lbs/YD³</td>
<td></td>
</tr>
</tbody>
</table>

### Timing Pattern

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

### Nearest Protected Structure

- #5 Bill Joann Lambert
- Distance and Direction: 8,141 ft N, 7°

### 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

### Name of Surface Blaster and Certification Number

- Richard Cope - 5 506 08
<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Bench Height</th>
<th>Sub Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>77-82</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nelson</td>
<td>80/20</td>
<td>1.10</td>
<td>1</td>
<td>3/4 LB Cast</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Nelson</td>
<td>80/20</td>
<td>1.10</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Nelson</td>
<td>80/20</td>
<td>1.10</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Primer QTY / Hole 3
Total Primer LBS / Hole 2.25

Similar Holes - 6
18 Primers 13.50 LBS
Total Expl lbs / hole 2002.34
Expl-Primer LBS / Hole ?

Similar Hole LBS 12028.00

Total Holes Loaded this blast 82

Grand Total Explosives Weight 174148.67
**BLASTING LOG**

**GENERAL INFORMATION**

**Permittee:** Apogee Coal, LLC.

**Customer / Operator:** Apogee Coal, LLC.

**Location of Blast:** Ridge 1 & 2

**Blasting Company:** APOGEE COAL LLC

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

**Distance and Direction:** 8,240 ft N, 301840 - X

**Nearest Other Structure:** Dominion Well

**Distance and Direction:** 4,763 ft NW, 1769424 - Y

**Weather Conditions:** Sunny / Hot 80°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 YD³:** 25,200

**Powder Factor:** tons/lb 0.00 lbs/yd³ 1.32

### BLAST INFORMATION

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td>24,832.79 lbs.</td>
<td>8,277.60 lbs.</td>
</tr>
</tbody>
</table>

**Packaged:** 0.00 lbs.

**70 Primers:** 52.50 lbs.

**Total Weight:** 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

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

**as determined by SD of:** 55

**in 1.0 Holes**

### INITIATION PRODUCT INFORMATION

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orica</td>
<td>EXCEL 40 FT - 20</td>
<td>70</td>
<td>Orica</td>
<td>S. EXCEL 40 FT - 42</td>
<td>7</td>
</tr>
<tr>
<td>Orica</td>
<td>S. EXCEL 40 FT-100</td>
<td>63</td>
<td>Orica</td>
<td>0.5 Roll - Lead in Line</td>
<td>1</td>
</tr>
</tbody>
</table>

**Method of Firing:** Non Electric

**Timer (ms):** NA

**Circuit Type:** Row by Row

**Initiated by:** Non-Electric

**Blasting Unit:** RFD

**No. of Circuits:** 0

**COMMENTS**
Operation: Apogee Coal, LLC.  
Blast Number: F2  
Blast Type: BREAKDOWN  
Date: 7/2/2010  
Time: 10:06 AM

**Hole Cross Section**

- Depth (ft): 30
- B X S (ft): 18 X 18
- Hole dia. (in): 7.875
- Bench Ht.: 105
- Stem (ft): 10
- PF: 1.31 lbs/YD³
- Tons/Lb.

**Timing Pattern**

- 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: Todd Keffer - 5-645-05  
- Crew:
## Apogee Coal, LLC.

**Blast Type**  
F2 / F2

**Blast / Ticket Number**  
S-5006-05

**Date**  
7/2/2010  
**Time**  
10:06 AM

<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Burden (FT)</th>
<th>Height (FT)</th>
<th>Sub Drill (FT)</th>
<th>Design Depth (FT)</th>
<th>Loaded Depth (FT)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-70</td>
<td>18</td>
<td>105</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>1</td>
<td>Nelson 75/25</td>
<td>1.12</td>
<td>473.01</td>
<td>1</td>
<td>3/4 LB Cast</td>
<td>1</td>
</tr>
</tbody>
</table>

**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

**Grand Total Explosives Weight**: 33162.89

**Total Holes Loaded this Blast**: 70

---

7/6/2010
Apogee Coal Company
Logan WV

Blast Number E62  Ticket Number E62

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: 3,573 ft S, 0°
Nearest Other Structure: Dominion Well 1089
Distance and Direction: 7,029 ft NE, 0°
Weather Conditions: Sunny / Hot
Type of Material Blasted: Sandstone
Mats or Protection Used: None used

Date / Time: 7/1/2010 8:32 AM
Permit No.: S-5007-01
Lat: 29° 22' 02"
Long: 77° 15' 28"
Method: Handheld GPS - NAD83 SD to nearest protected 1

Blast Type: Production
Total Tons: 0
Total YD³: 31,200
Powder Factor: tons/lb 0.00 lbs/yd³ 1.23

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>Total Tons</th>
<th>Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>28,826.31 lbs.</td>
<td>9,608.77 lbs.</td>
<td>0.00 lbs.</td>
<td>43.50 lbs.</td>
<td>38,478.58 lbs.</td>
</tr>
</tbody>
</table>

Total Holes: 47  Angle: 0°
Face Height (ft): 5 - 60
Depth (ft): 5 - 60
Burden (ft): 18
Spacing (ft): 18
Diameter (in): 6.75
Backfill (ft):
Stemming (ft): 5 - 8
Stemming Material: Cuttings

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

INITIATION PRODUCT INFORMATION

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: EB M
Circuit Type: Row by Row
No. of Circuits: 1

COMMENTS
**Operation**: Apogee Coal, LLC  
**Blast Number**: E62  
**Date**: 7/1/2010  
**Blast Type**: Production  
**Time**: 8:32 AM

### Hole Cross Section
- **Depth (ft)**: 60  
- **B X S (ft)**: 18 X 18  
- **Bench Ht. (ft)**: 60  
- **Hole dia. (in)**: 6.750  
- **Stem (ft)**: 8  
- **PF**: 1.25 lbs/YD$^3$  
- **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**: Richard Cope - 5-506-08  
  - **Todd Keffer**: 5-645-05

---

BlastData G4 V2.61 - Surface Mine Blast Report  
Page 2
Hole Cross Section

Depth (ft) 60
B X S (ft) 18 X 18
Hole dia. (in) 6.750
PF: 0.87 lbs/YD^3

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:
Richard Cope - 5 508 68

Crew:
Hole Cross Section

- Depth (ft): 5
- Angle (deg): 0
- B X S (ft): 18 X 18
- Bench Ht. (ft): 5
- Hole dia. (in): 6.750
- Stem (ft): 5
- PF: 0.00 lbs/YD³

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

Reading(s) taken by: SAULS

BLASTER INFORMATION

Name of Surface Blaster and Certification Number:
Richard Cope 5.506.08

BlastData G4 V2.61 - Surface Mine Blast Report
### Hole Cross Section

- **Depth (ft):** 60
- **Angle (deg):** 0
- **B X S (ft):** 18 X 18
- **Bench Ht. (ft):** 60
- **Hole dia. (in):** 6.750
- **Stem (ft):** 8
- **PF:** 1.06 lbs/YD³
- **Tons/Lb.:**

#### Timing Pattern

- **Nearest Protected Structure:** Ball residence
- **Distance and Direction:** 3,573 ft S, 7°

### SEISMOGRAPH INFORMATION

<table>
<thead>
<tr>
<th>Date and Time of Recording(s)</th>
<th>7/1/2010</th>
<th>8:32 AM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seis SN</td>
<td>Location</td>
<td>Dist (ft)</td>
</tr>
</tbody>
</table>

### Reading(s) taken by:

**SAULS**

### Analyzed by:

**SAULS**

### BLASTER INFORMATION

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

### Crew:

**BLASTDATA G4 V2.61 - Surface Mine Blast Report**

Page 2
Apogee Coal Company
Logan WV

**BLASTING LOG**

**GENERAL INFORMATION**

<table>
<thead>
<tr>
<th>Permittee</th>
<th>Apogee Coal, LLC.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer / Operator</td>
<td>Apogee Coal, LLC.</td>
</tr>
<tr>
<td>Location of Blast</td>
<td>Ridge 1 &amp; 2</td>
</tr>
<tr>
<td>Blasting Company</td>
<td>APOGEE COAL LLC</td>
</tr>
<tr>
<td>Nearest Protected Structure</td>
<td>#5 Bill Joann Lambert</td>
</tr>
<tr>
<td>Distance and Direction</td>
<td>8,141 ft N, 9°</td>
</tr>
<tr>
<td>Nearest Other Structure</td>
<td>Jackson Well</td>
</tr>
<tr>
<td>Distance and Direction</td>
<td>4,418 ft S, 9°</td>
</tr>
<tr>
<td>Weather Conditions</td>
<td>Sunny / Hot</td>
</tr>
<tr>
<td>Type of Material Blasted</td>
<td>Sandstone</td>
</tr>
<tr>
<td>Mats or Protection Used</td>
<td></td>
</tr>
<tr>
<td>Powder Factor</td>
<td>tons/lb 0.00 lbs/yd^3 1.59</td>
</tr>
</tbody>
</table>

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

**Permit No.** S-5006-05

**Lat** N 301347 X
**Long** W 1765806 Y

**Method** Handheld GPS - NAD83
**SD to nearest protected** 121

**Blast Type** Production

| Total Tons | 0 |
| Total YD^3 | 109,333 |

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td>139,217.54 lbs</td>
<td>34,804.38 lbs</td>
</tr>
</tbody>
</table>

| Total Holes | 82 | Angle | 15° |
| Face Height (ft) | 90 | Burden (ft) | 20 |
| Depth (ft) | 90 | Spacing (ft) | 20 |
| Sub Drill (ft) | 9 | Diameter (in) | 9 |
| Stemming (ft) | 9 | Backfill (ft) | 9 - 60 |

**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**

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
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</thead>
<tbody>
<tr>
<td>Orica</td>
<td>1 Roll - Lead in Line</td>
<td>1</td>
<td>Orica</td>
<td>S. EXCEL 40 FT-100</td>
<td>62</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orica</td>
<td>EXCEL 120 FT - 24</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orica</td>
<td>EXCEL 10 FT - 20</td>
<td>87</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Orica</td>
<td>S. EXCEL 40 FT-42</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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**
<table>
<thead>
<tr>
<th>Hole Cross Section</th>
<th>Timing Pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth (ft) 90</td>
<td></td>
</tr>
<tr>
<td>Angle (deg) 15</td>
<td></td>
</tr>
<tr>
<td>B X S (ft) 20 X 20</td>
<td>Bench Ht. 90</td>
</tr>
<tr>
<td>Hole dia. (in) 9</td>
<td>Stem (ft) 60</td>
</tr>
<tr>
<td>000</td>
<td></td>
</tr>
<tr>
<td>PF: 0.68 lbs/YD³</td>
<td>Tons/Lb.</td>
</tr>
</tbody>
</table>

Starter Hole

<table>
<thead>
<tr>
<th>60'</th>
</tr>
</thead>
<tbody>
<tr>
<td>60'</td>
</tr>
<tr>
<td>30' 80/20 @ 60'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PRIMER TYPE (s)</th>
<th>UNIT WT. QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4 LB CAST PRIMER</td>
<td>0.8 1.0</td>
</tr>
</tbody>
</table>

Nearest Protected Structure: #5 Bill Joann Lambert
Distance and Direction: 8,141 ft N 0°

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 Cape 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): 15
- B X S (ft): 20 x 20
- Bench Ht. (ft): 90
- Hole dia. (in): 9.000
- Stem (ft): 25
- PF: 1.32 lbs/YD³

**Timing Pattern**
- Face Row Hole(s)
- 25° Stemming
- 18' 80/20 @ 25°
- 7' Cuttings @ 43°
- 40' 80/20 @ 50°

**Nearest Protected Structure:** #5 Bill Joann Lambert
Distance and Direction: 8.141 ft N 0°

**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

**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
B X S (ft): 20 x 20
Hole dia. (in): 9.000
PF: 1.68 lbs/YD^3

Timing Pattern

Typical Hole

9' Stemming
14' 80/20 @ 9'
7' Cuttings @ 23'
60' 80/20 @ 30'

Nearest Protected Structure: #5 Bill Joann Lambert
Distance and Direction: 8,141 ft N 0°

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:
Hole Cross Section

Depth (ft) 90
B X S (ft) 20 X 20
Hole dia. (in) 9 000
PF: 1.50 lbs/YD^3

Timing Pattern

Back Row Hole(s)

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

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:
<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Bench Height</th>
<th>Sub Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<td>Angle (Deg)</td>
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<td>910.16</td>
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<td>Mfr.</td>
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<td>g/cc</td>
<td>Pounds</td>
<td>Mfr.</td>
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</table>

| Back Row Hole(s) | 20 | 20 | 10 | 0 |

| Similar Holes - | 6  | 18 Primers | 13.50 LBS | Total Expl lbs / hole | 2002.34 | Expl-Primer LBS / Hole | ? |
| Total Holes Loaded this blast | 82 | | | | | |

| Total Expl lbs / Blast | 12014.07 | Similar Hole LBS | 12028.00 | Grand Total Explosives Weight | 174148.67 |
Permittee: Apogee Coal, LLC.

Customer / Operator: Apogee Coal, LLC.

Location of Blast: Ridge 1 & 2

Blasting Company: APOGEE COAL LLC

Nearest Protected Structure: Cline residence

Distance and Direction: 8,218 ft S, 0°

Nearest Other Structure: Dominion Well

Distance and Direction: 4,847 ft NW, 0°

Weather Conditions: Sunny / Hot, 90°F, Wind out of the N @ 0-2 mph

Type of Material Blasted: Sandstone

Blast Type: Production

Total Tons: 0

Total YD³: 15,407

Powder Factor: tons/lb 0.00 lbs/yd³ 1.77

ANFO: 20,387.51 lbs.

Emulsion: 6,795.84 lbs.

Packaged: 0.00 lbs.

16 Primers: 12.00 lbs.

Total Weight: 27,195.34 lbs.

- Total Holes: 16

- Angle: 0°

- Face Height (ft): 65

- Burden (ft): 20

- Backfill (ft): 0

- 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

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: E61
Blast Type: Production
Date: 6/30/2010
Time: 3:56 PM

Hole Cross Section
Depth (ft): 65
B X S (ft): 20 x 20
Hole dia. (in): 9.000
PF: 1.76 lbs/YD³

Timing Pattern
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
Reading(s) taken by: SAULS
Analyzed by: SAULS

BLASTER INFORMATION
Name of Surface Blaster and Certification Number:
Brad Gregory - 3-299-88
Crew:
<table>
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<tr>
<th>Hole Number</th>
<th>Bench Height</th>
<th>Sub Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<tbody>
<tr>
<td>1-16</td>
<td>65</td>
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<td>65</td>
<td>65</td>
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<td>Nelson</td>
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<td>1698.96</td>
<td>3/4 LB Cast</td>
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</table>

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: 16

Grand Total Explosives Weight: 27195.34
Apogee Coal Company
Logan WV

BLASTING LOG
GENERAL INFORMATION

Blast Number: E60
Ticket Number: E60

Permittee: Apogee Coal, LLC.
Customer / Operator: Apogee Coal, LLC.
Location of Blast: Ridge 1 & 2
Blasting Company: APOGEE COAL LLC
Nearest Protected Structure: #5 Bill Jo Ann Lambert
Nearest Other Structure: Dominion Well
Distance and Direction: 8,174 ft N, ?°
Distance and Direction: 4,655 ft N, ?°
Weather Conditions: Sunny / Hot
Type of Material Blasted: Sandstone
Method: Handheld GPS - NAD83

Date / Time: 6/30/2010 1:09 PM
Permit No.: S-5006-05
SD to nearest protected: 376

Blast Type: Production
Total Tons: 0
Total YD^3: 12.960

Powder Factor:
 tons/lb 0.00
 lbs/yard^3 1.32

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
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</thead>
<tbody>
<tr>
<td>12,771.15 lbs.</td>
<td>4,257.05 lbs.</td>
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</tbody>
</table>

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: Apogée Coal, LLC.
 Permit Number: S-5006-05
Blast Number: E60
Blast Type: Production
Date: 6/30/2010
Time: 1:09 PM

Hole Cross Section

<table>
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<tr>
<th>Depth (ft)</th>
<th>Angle (deg)</th>
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<tbody>
<tr>
<td>30</td>
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</table>

<table>
<thead>
<tr>
<th>B X S (ft)</th>
<th>Bench Ht</th>
<th>Hole dia. (in)</th>
<th>Stem (ft)</th>
<th>Tons/Lb.</th>
<th>PF</th>
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<tbody>
<tr>
<td>18 X 18</td>
<td>30</td>
<td>7.875</td>
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<td></td>
<td>1.31 lbs/YD³</td>
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10' Stemming

20'.75/25 @ 10'

PRIMER TYPE (s) UNIT WT. QTY.
3/4 LB CAST PRIMER 0.6 1.0

Nearest Protected Structure: #5 Bill Joann Lambert
Distance and Direction: 8,174 ft N 0°

Holes loaded the same: 36

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:
Todd Keffer - 5-645-05
Crew:
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<th>Loaded Depth (FT)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
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<td>30</td>
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<td>3/4 LB Cast</td>
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**Total Expl lbs. / hole**: 473.01

**Expl-Primer LBS / Hole**: 473.76

**Similar Holes**:

- **1-36**: 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
Permittee: Apogee Coal, LLC.  
Customer / Operator: Apogee Coal, LLC.  
Location of Blast: Ridge 1 & 2  
Blasting Company: APOGEE COAL LLC  
Nearest Protected Structure: Cline residence  
Distance and Direction: 8,178 ft S, 0°  
Nearest Other Structure: Dominion Well  
Distance and Direction: 4,926 ft NW, 0°  
Weather Conditions: Sunny / Hot  
Type of Material Blasted: Sandstone  
Blast Type: Production  
Mats or Protection Used:  
Powder Factor: tons/lb 0.00 lbs/yd³ 1.36  

Date / Time: 6/29/2010 4:03 PM  
Permit No.: S-5006-05  
Lat: N 301655  
Long: W 1769422  
Method: Handheld GPS - NAD83  
SD to nearest protected: 227  

Total Weight and Type(s) of Explosives used: see attachment  
ANFO: 53,390.50 lbs.  
Emulsion: 17,796.83 lbs.  
Packaged: 0.00 lbs.  
85 Primers: 63.75 lbs.  
Total Weight: 71,251.09 lbs.  

Total Holes: 67  
Face Height (ft): 65  
Sub Drill (ft): Diameter (in) 7.875  
Final (ft): 65  
Burden (ft): 18  
Spacing (ft): 18  
Diameter (in): 7.875  
Backfill (ft):  
Stemming (ft): 9 - 10  
Stemming Material: Cuttings  

Maximum Weight of Explosives Allowed per 8ms Period (lbs): 8021  
Maximum Weight of Explosives detonated per 8ms (lbs): 1302  

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:
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
B X S (ft) 18 X 18
Bench Ht. 65
Hole dia. (in) 7.875
Stem (ft) 10
PF: 1.67 lbs/YD³
Tons/Lb.

Timing Pattern

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:

See Attached
<table>
<thead>
<tr>
<th>Hole Cross Section</th>
<th>Timing Pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth (ft)</td>
<td>65</td>
</tr>
<tr>
<td>B X S (ft)</td>
<td>18 X 18</td>
</tr>
<tr>
<td>Hole dia. (in)</td>
<td>7.875</td>
</tr>
<tr>
<td>PF: 0.61 lbs/YD³</td>
<td>Tons/Lb.</td>
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</tbody>
</table>

- Stemming
- 10'
- 20'; 75/25 @ 45'

**Primer Type (s)**

- 3/4 LB CAST PRIMER 0.8 1.0

**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.

Blast Number: E59

Date: 6/29/2010

Blast Type: Production

Time: 4:03 PM

**Hole Cross Section**

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Angle (deg)</th>
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<tr>
<td>65</td>
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<table>
<thead>
<tr>
<th>B XS (ft)</th>
<th>Bench Ht.</th>
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<td>18 X 18</td>
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</table>

<table>
<thead>
<tr>
<th>Hole dia. (in)</th>
<th>Stem (ft)</th>
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<tr>
<td>7.875</td>
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<th>PF: 0.45 lbs/YD³</th>
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**Timing Pattern**

<table>
<thead>
<tr>
<th>9' Stemming</th>
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</thead>
</table>

| 5' 75/25 @ 44' |
|                |

| 3' Cuttings @ 49' |
|                   |

| 5' 75/25 @ 52' |
|                |

| 3' Cuttings @ 57' |
|                   |

| 5' 75/25 @ 60' |
|                |

**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

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

**Analyzed by:** SAULS

**BLASTER INFORMATION**

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

Todd Keffer - 5-645-05

**Crew:**

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<th>Bench Height</th>
<th>Sub Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
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<td>Nelson</td>
<td>75/25</td>
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<td>3/4 LB Cast</td>
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<td>Expl-Primer LBS / Hole</td>
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<td>Total Holes Loaded this blast</td>
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<td>Grand Total Explosives Weight</td>
<td>71251.09</td>
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</table>
Apogee Coal Company
Logan WV

BLASTING LOG

Genera Information

Blast Number: E58
Ticket Number: E58

Permittee: Apogee Coal, LLC.
Customer / Operator: Apogee Coal, LLC.
Location of Blast: Ridge 1 & 2
Blasting Company: APOGEE COAL LLC
Nearest Protected Structure: Cline residence
Distance and Direction: 7,836 ft S, ?°
Nearest Other Structure: Jackson Well
Distance and Direction: 5,176 ft SW, ?°
Weather Conditions: Sunny / Hot

Date / Time: 6/29/2010 4:03 PM
Permit No.: S-5006-05
Method: Handheld GPS - NAD83
SD to nearest protected: 294

Type of Material Blasted: Sandstone
Blast Type: Production
Total Tons: 0
Total YD³: 11,400
Powder Factor: tons/lb 0.00 lbs/yd³ 1.18

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,110.49 lbs.</td>
<td>3,370.16 lbs.</td>
</tr>
</tbody>
</table>

Packaged: 0.00 lbs.
38 Primers: 19.00 lbs.
Total Weight: 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
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

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Angle (deg)</th>
<th>B X S (ft)</th>
<th>Bench Ht.</th>
<th>Hole dia. (in)</th>
<th>Stem (ft)</th>
<th>PF</th>
<th>Tons/Lb.</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td></td>
<td>18 X 18</td>
<td>25</td>
<td>7.875</td>
<td>10</td>
<td>1.18 lbs/YD³</td>
<td>Tons/Lb.</td>
</tr>
</tbody>
</table>

**Stemming**

**Primer Type (s)**  
1/2 LB Cast Booster 0.5 1.0

**Nearest Protected Structure:** Cline residence  
**Distance and Direction:** 7,836 ft S, 90°

**Holes loaded the same:** 38

### 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:**

---

BlastData G4 V2.61 - Surface Mine Blast Report
<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Stemming (FT)</th>
<th>Angle (Deg)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<tbody>
<tr>
<td>1-38</td>
<td>18</td>
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<td>1 Nelson 75/25</td>
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</tbody>
</table>

Total Expl lbs. / hole 354.75
Expl-Primer LBS / Hole 355.25

Similar Holes - 38 Primers 19.00 LBS
Total Expl lbs. / Blast 13480.66
Similar Hole LBS 13500.00

Total Holes Loaded this blast 38

Grand Total Explosives Weight 13499.66
BLASTING LOG

PERMITTEApogee Coal, LLC.

CUSTOMER / OPERATORApogee Coal, LLC.

LOCATION OF BLASTGuyan Mine

BLASTING COMPANYAPOGEE COAL LLC

NEAREST PROTECTED STRUCTUREBall residence

DISTANCE AND DIRECTION3,893 ft S, ?°

NEAREST OTHER STRUCTUREDominion Well 1089

DISTANCE AND DIRECTION8,024 ft NE, ?°

WEATHER CONDITIONSClear / Calm

Type of Material BlastedShale

Blast TypeProduction

Total Tons0

Total YD³21.888

Powder Factor: tons/lb 0.00 lbs/yd³ 0.82

BLAST INFORMATION

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td>13,480.66 lbs.</td>
<td>4,493.55 lbs.</td>
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</table>

Packaged 0.00 lbs. 152 Primers 76.00 lbs. Total Weight 18,050.21 lbs.

Total Holes 152

Face Height (ft) 18

Burden (ft) 12

Spacing (ft) 18

Sub Drill (ft) 7.875

Diameter (in) 7.875

Backfill (ft) 

Stemming (ft) 7

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

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<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
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<td>152</td>
<td>Orica</td>
<td>S. EXCEL 40 FT-17</td>
<td>143</td>
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<td>Orica</td>
<td>S. EXCEL 40 FT- 42</td>
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</table>

Method of Firing: Non Electric

Timer (ms): NA

Circuit Type:

Initiated by: Non-Electric

Blasting Unit: Handi Blaster

No. of Circuits:

COMMENTS

BlastData G4 V2.61 - Surface Mine Blast Report
Hole Cross Section

| Depth (ft) | 12 |
| B X S (ft) | 18 X 18 |
| Hole dia. (in) | 7.875 |
| Stem (ft) | 7 |
| PF: | 0.82 lbs/YD³ |
| Tons/Lb. | |

Timing Pattern

Nearest Protected Structure: Ball residence
Distance and Direction: 3.893 ft S, 7°

SEISMOGRAPH INFORMATION

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

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

BLASTER INFORMATION

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

Crew:
<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Bench Height (FT)</th>
<th>Sub Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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</thead>
<tbody>
<tr>
<td>1-152</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>1</td>
<td>Nelson</td>
<td>75/25</td>
<td>1.12</td>
<td>118.25</td>
<td>Orica</td>
<td>1</td>
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<td>1/2 LB Cast</td>
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<td>Total Primer QTY / Hole</td>
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<td>Total Primer LBS / Hole</td>
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</tr>
<tr>
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<td>Total Expl lbs. / hole</td>
<td>118.25</td>
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<td></td>
<td>Expl-Primer LBS / Hole</td>
<td>118.75</td>
</tr>
<tr>
<td>Similar Holes - 152</td>
<td>152 Primers</td>
<td>76.00 LBS</td>
<td>Total Expl lbs. / Blast</td>
<td>17974.21</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Grand Total Explosives Weight</td>
<td>18050.21</td>
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<td></td>
</tr>
</tbody>
</table>

Total Holes Loaded this blast: 152
BLASTING LOG

GENERAL INFORMATION

Permittee: Apogee Coal, LLC.
Customer / Operator: Apogee Coal, LLC.
Location of Blast: Ridge 1 & 2
Blasting Company: APOGEE COAL LLC
Nearest Protected Structure: Cline residence

Date / Time: 6/28/2010 4:00 PM

 Permit No.: S-5006-05
User: J0707

Lat: 301198 - X
Long: 1765851 - Y

Method: Handheld GPS - NAD83
SD to nearest protected: 131

Distance and Direction: 8,158 ft S, ?°
Nearest Other Structure: Jackson Well
Distance and Direction: 4,263 ft S, ?°
Weather Conditions: Light Rain
Wind out of the: E @ 5-10 mph

Type of Material Blasted: Sandstone
Blast Type: Production

Total Tons: 0
Total YD³: 120,213

Powder Factor: tons/lb 0.00
lbs/yd³ 1.46

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>131,933.08 lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emulsion</td>
<td>43,977.69 lbs.</td>
</tr>
</tbody>
</table>

Packaged: 0.00 lbs.
Total Weight: 144.00 lbs.
176,054.77 lbs.

Total Holes: 92
Face Height (ft): 98
Depth (ft): 98
Burden (ft): 18
Spacing (ft): 20
Sub Drill (ft): 7.875
Diameter (in): 3
Backfill (ft): 8 - 10
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

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>120'EXCEL-20</td>
<td>99</td>
<td>Orica</td>
<td>EXCEL 40 FT - 20</td>
<td>93</td>
<td>Orica</td>
<td>S. EXCEL 40 FT- 42</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Orica</td>
<td>S. EXCEL 40 FT-100</td>
<td>84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Method of Firing: Non Electric

Timer (ms): NA

Circuit Type:

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

COMMENTS
### Hole Cross Section

- **Depth (ft):** 98
- **B X S (ft):** 18 X 20
- **Hole dia. (in):** 7.875
- **PF:** 1.38 lbs/YD³
- **Bench Ht.:** 98
- **Stem (ft):** 10
- **Tons/Lb.:**

### Timing Pattern

- 10 ' Stemming
- 08 ' 520.390 @ 11'
- 8 ' Cuttings @ 49'
- 38 ' 75/25 @ 57'

### 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

### Reading(s) taken by: SAULS

### Analyzed by: SAULS

### BLASTER INFORMATION

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

---

BlastData G4 V2.61 - Surface Mine Blast Report
### Hole Cross Section

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Angle (deg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>98</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B X S (ft)</th>
<th>Bench Ht. (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 X 20</td>
<td>98</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hole dia. (in)</th>
<th>Stem (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.875</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PF:</th>
<th>Tons/Lb.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.30 lbs/YD³</td>
<td></td>
</tr>
</tbody>
</table>

### Timing Pattern

#### Nearest Protected Structure:
- Cline residence

#### Distance and Direction:
- 8,158 ft S, 7°

### 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:
Apogee Coal Company
Logan WV

BLASTING LOG
GENERAL INFORMATION

Blast Number: E45  Ticket Number: E45

Permittee: Apogee Coal, LLC.
Customer / Operator: Apogee Coal, LLC.
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  Wind out of the N @ 0-2 mph
Type of Material Blasted: Sandstone
Blast Type: Production
Matts or Protection Used:
Total Tons: 0  Total YD³: 25,344
Powder Factor: tons/lb 0.00  lbs/ft³ 1.22

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>35 Primers</th>
<th>Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>23,118.39 lbs.</td>
<td>7,706.13 lbs.</td>
<td>0.00 lbs.</td>
<td>26.25 lbs.</td>
<td>30,850.77 lbs.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Holes</th>
<th>Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>°</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Face Height (ft)</th>
<th>Burden (ft)</th>
<th>Backfill (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>66</td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Spacing (ft)</th>
<th>Stemming (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>66</td>
<td>18</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sub Drill (ft)</th>
<th>Diameter (in)</th>
<th>Stemming Material</th>
<th>Cutting</th>
</tr>
</thead>
<tbody>
<tr>
<td>66</td>
<td>6.75</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
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</thead>
<tbody>
<tr>
<td>Orica</td>
<td>50 ft unitronics</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

COMMENTS

BlastData G4 V2.61 - Surface Mine Blast Report
### Hole Cross Section

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Angle (deg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>66</td>
<td></td>
</tr>
<tr>
<td>B X S (ft)</td>
<td>18 X 18</td>
</tr>
<tr>
<td>Hole dia. (in)</td>
<td>6.750</td>
</tr>
<tr>
<td>PF: 1.23 lbs/YD³</td>
<td>Tons/Lb.</td>
</tr>
</tbody>
</table>

### Timing Pattern

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

Nearest Protected Structure: Cline residence

Holes loaded the same: 29

### 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:
Todd Keffer - 5-645-05

Crew:
Operation: Apogee Coal, LLC.
Permit Number: S-5006-05
Blast Number: E45
Blast Type: Production
Date: 6/22/2010
Time: 4:14 PM

Hole Cross Section
Depth (ft) 66
B X S (ft) 18 X 18
Hole dia. (in) 6.750
PF: 1.10 lbs/YD³

Timing Pattern

Nearest Protected Structure: Cline residence
Distance and Direction: 7.888 ft S, \( \theta \)°

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: Todd Keffer - 5-645-05
Crew:
<table>
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<tr>
<th>Hole Number</th>
<th>Bench Height (FT)</th>
<th>Sub Drill (FT)</th>
<th>Design Depth (FT)</th>
<th>Loaded Depth (FT)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
</tr>
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<tbody>
<tr>
<td>1-29</td>
<td>66</td>
<td>66</td>
<td>66</td>
<td>66</td>
<td>1</td>
<td>Nelson</td>
<td>1.12</td>
<td>973.04</td>
<td>1</td>
<td>3/4 LB Cast</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
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<td>2</td>
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<td>Total Primer QTY / Hole</td>
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</tr>
<tr>
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<td></td>
<td></td>
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<td>Total Primer LBS / Hole</td>
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</tr>
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</table>

Total Expl lbs. / hole 973.04
Expl-Primer LBS / Hole 973.79

Similar Holes - 29 Primers 21.75 LBS Total Expl lbs. / Blast 28218.16

<table>
<thead>
<tr>
<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Stemming (FT)</th>
<th>Angle (Deg)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<tbody>
<tr>
<td>30-32</td>
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<td>66</td>
<td>66</td>
<td>1</td>
<td>Nelson</td>
<td>1.12</td>
<td>434.39</td>
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<td>3/4 LB Cast</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>75/25</td>
<td>11</td>
<td>1.5</td>
<td>2</td>
<td>75/25</td>
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<td></td>
<td>Total Primer QTY / Hole</td>
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</tr>
<tr>
<td>3</td>
<td>75/25</td>
<td>11</td>
<td>1.5</td>
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<td>75/25</td>
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<td></td>
<td></td>
<td>Total Primer LBS / Hole</td>
<td>1.5</td>
</tr>
<tr>
<td>4</td>
<td>75/25</td>
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<td>75/25</td>
<td>11</td>
<td>1.5</td>
<td>6</td>
<td>75/25</td>
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<td>7</td>
<td>75/25</td>
<td>11</td>
<td>1.5</td>
<td>7</td>
<td>75/25</td>
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<td></td>
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<tr>
<td>8</td>
<td>75/25</td>
<td>11</td>
<td>1.5</td>
<td>8</td>
<td>75/25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Expl lbs. / hole 868.79
Expl-Primer LBS / Hole 870.29

Similar Holes - 6 Primers 4.50 LBS Total Expl lbs. / Blast 2606.36

Total Holes Loaded this blast 32
Grand Total Explosives Weight 30850.77
Permittee: Apogee Coal, LLC.
Customer / Operator: Apogee Coal, LLC.
Location of Blast: Ridge 1 & 2
Blasting Company: APOGEE COAL LLC
Nearest Protected Structure: #5 Bill Joann Lambert
Distance and Direction: 7,259 ft N, ?°
Nearest Other Structure: Dominion Well
Distance and Direction: 4,027 ft N, ?°
Weather Conditions: Clear / Calm
Type of Material Blasted: Sandstone
Matts or Protection Used:

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

<table>
<thead>
<tr>
<th>Name</th>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>84 Primers</th>
<th>Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4,278.34 lbs.</td>
<td>2,852.22 lbs.</td>
<td>0.00 lbs.</td>
<td>58.75 lbs.</td>
<td>7,189.31 lbs.</td>
</tr>
</tbody>
</table>

Total Holes: 84
Face Height (ft): 95
Depth (ft): 95
Sub Drill (ft): 
Diameter (in): 7.875

Maximum Weight of Explosives Allowed per 8ms Period (lbs): 5362
Maximum Weight of Explosives detonated per 8ms (lbs): 1456

INITIATION PRODUCT INFORMATION

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orica</td>
<td>120 ft unitronics</td>
<td>84</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Method of Firing: Electric
Timer (ms): NA
Initiated by: Electronic
Blasting Unit: E B M

Comments:
Seismograph Data

Date and Time of Recording from the Seismograph: _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: [Location]

_Trigger Levels: Ground: _05_ ips, Air: _120_ dB, Length of Recording Time: _10_ sec.

Vibrations Recorded: Longitudinal: _ 500 Hz, Transverse: _ 500 Hz, Vertical: _ 500 Hz, Air Blast: _ 500 Hz.

Frequency: Longitudinal: _ 500 Hz, Transverse: _ 500 Hz, Vertical: _ 500 Hz, Air Blast: _ 500 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) (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: Greg Ball residence
(Specify owner's name and structure number from the blast map, including distance from blast)
Trigger Levels: Ground: 0.05 ips Air: 120 dB Length of Recording Time: 10 sec.
Vibrations Recorded: Longitudinal: Transverse: Vertical: Air Blast:
Blasting Log

General Information

Permittee: Apogee Coal, LLC.
Customer / Operator: Apogee Coal, LLC.
Location of Blast: Ridge 1 & 2
Blasting Company: Apogee Coal LLC
Nearest Protected Structure: #5 Bill Joann Lambert
Distance and Direction: 7,259 ft N, ?°
Nearest Other Structure: Dominion Well
Distance and Direction: 4,027 ft N, ?°
Weather Conditions: Clear / Calm
Type of Material Blasted: Sandstone
Matts or Protection Used: None used

Blast Information

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

<table>
<thead>
<tr>
<th></th>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>358 Primers</th>
<th>Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>254,003.99 lbs</td>
<td>84,668.00 lbs</td>
<td>0.00 lbs</td>
<td>268.50 lbs</td>
<td>338,940.49 lbs</td>
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</tbody>
</table>

Total Holes: 179
Face Height (ft): Burden (ft): 0 - 20
Depth (ft): Spacing (ft): 0 - 20
Sub Drill (ft): Diameter (in): 7.875

Maximum Weight of Explosives Allowed per 8ms Period (lbs): 5362
Maximum Weight of Explosives detonated per 8ms (lbs): 3787 in 2.0 Holes

Initiation Product Information

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orica</td>
<td>50 ft unitronics</td>
<td>179</td>
</tr>
<tr>
<td>Orica</td>
<td>120 ft unitronics</td>
<td>263</td>
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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
Hole Cross Section
Depth (ft) 95
B X S (ft) 20 X 20
Hole dia. (in) 7.875
PF: 1.34 lbs/YD³

STEMMING
9' Stemming
40'75/25 @ 9'
4' Cuttings @ 49'
40'75/25 @ 53'
Backfill

UNIT WT.QTY.
3/4 LB CAST PRIMER 0.8 2.0

Holes loaded the same: 179

Timing Pattern

Nearest Protected Structure: #5 Bill Joann Lambert
Distance and Direction: 7,259 ft N, °

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

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

BLASTER INFORMATION
Name of Surface Blaster and Certification Number:
Richard Cope - 550608

Crew:
<table>
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<tr>
<th>Hole Number</th>
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<th>Stemming (FT)</th>
<th>Loaded Depth (Deg)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<td>NEBCO</td>
<td>Bulk ANFO</td>
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<td>Orica</td>
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Total Expl lbs. / hole: 0.00
Expl-Primer LBS / Hole: 0.00

Similar Holes - 0 0 Primers
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<th>Mfr.</th>
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<th>Pounds</th>
<th>Mfr.</th>
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<th>Qty</th>
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Total Expl lbs. / hole: 0.00
Expl-Primer LBS / Hole: 0.00

Similar Holes - 0 0 Primers
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<th>g/cc</th>
<th>Pounds</th>
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<th>Qty</th>
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<td>Nelson</td>
<td>75/25</td>
<td>1.12</td>
<td>946.01</td>
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</table>

Total Expl lbs. / hole: 1892.02
Expl-Primer LBS / Hole: ?

Similar Holes - 179 358 Primers 268.50 LBS
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<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Stemming (FT)</th>
<th>Angle (Deg)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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</table>

Total Expl lbs. / Blast: 338671.99

Grand Total Explosives Weight: 338940.49

Total Holes Loaded this blast: 179
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
(Signature of Person Analyzing Readings:)
Location of Seismograph:

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

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
(Signature of Person Analyzing Readings:)
Location of Seismograph: Cline residence

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

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
(Signature of Person Analyzing Readings:)
Location of Seismograph: Gas well #1089

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

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
(Signature of Person Analyzing Readings:)
Location of Seismograph: Gas well # 9930 (Dixie Hess Rum Well)

Trigger Levels: Ground: 05 ips Air: N dB Length of Recording Time: 10 sec.
<table>
<thead>
<tr>
<th><strong>Seismograph Data</strong></th>
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<tbody>
<tr>
<td><strong>Date and Time of Recording from the Seismogram:</strong> NO TRIGGERS</td>
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<td><strong>Type (Brand and Model Number) of Instrument:</strong> Nomis 5400 Sensitivity 2-400 Hz</td>
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<td><strong>Person and Company Who Installed Seismograph:</strong> Travis Farmer/Sauls Seismic</td>
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<td><strong>Person and Firm Taking Readings:</strong> Travis Farmer/Sauls Seismic</td>
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<td><strong>Person and Firm Analyzing Readings:</strong> Travis Farmer/Sauls Seismic</td>
</tr>
<tr>
<td>Attach full waveform seismograms for all seismograph recordings for the blast. Include calibration signal even if no trigger.</td>
</tr>
<tr>
<td><strong>Signature of Person Analyzing Readings:</strong> [Signature]</td>
</tr>
<tr>
<td><strong>Location of Seismograph:</strong> Greg Ball residence</td>
</tr>
<tr>
<td>Specify owner's name and structure number from the blast map, including distance from blast.</td>
</tr>
<tr>
<td><strong>Trigger Levels:</strong> Ground: 0.05 ips Air: 120 dB Length of Recording Time: 10 sec</td>
</tr>
<tr>
<td><strong>Vibrations Recorded:</strong> Longitudinal: Transverse: Vertical: Air Blast:</td>
</tr>
<tr>
<td><strong>Frequency:</strong> Longitudinal: Hz Transverse: Hz Vertical: Hz Air Blast: Hz</td>
</tr>
</tbody>
</table>
Blasting Log

General Information

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: 3,817 ft S, ?°
Nearest Other Structure: Dominion Well 1089
Distance and Direction: 6,843 ft NE, ?°
Weather Conditions: Light Rain
Temperature: 80°F
Wind: N @ 0-2 mph
Method: Handheld GPS - NAD83
SD to nearest protected: 129

Total Weight and Type(s) of Explosives used:

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>62 Primers</th>
<th>Total Weight</th>
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<tbody>
<tr>
<td>40,398.54 lbs.</td>
<td>13,466.18 lbs.</td>
<td>0.00 lbs.</td>
<td>46.50 lbs.</td>
<td>53,911.22 lbs.</td>
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</table>

Total Holes: 62
Angle: ?°
Face Height (ft): 0 - 60
Burden (ft): 0 - 18
Backfill (ft): 0 - 18
Depth (ft): 0 - 60
Spacing (ft): 0 - 18
Stemming (ft): 0 - 10
Sub Drill (ft): 6.75
Diameter (in): 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
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:

BlastData G4 V2.61 - Surface Mine Blast Report
Hole Cross Section
Depth (ft) 60
B X S (ft) 18 X 18
Hole dia. (in) 6.750
PF: 1.21 lbs/YD³

Timing Pattern
Nearest Protected Structure: Ball residence
Distance and Direction: 3.817 ft S, 0°

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

Name of Surface Blaster and Certification Number:
Todd Keffer - 5-645-05
<table>
<thead>
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<th>Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
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<td>Nelson</td>
<td>75/25</td>
<td>1.12</td>
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</table>

**Total Expl lbs. / hole**

**Expl-Primer LBS / Hole**

**Similar Hole LBS**

<table>
<thead>
<tr>
<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Stemming (FT)</th>
<th>Angle (Deg)</th>
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**Total Primer Qty / Hole**

**Total Primer LBS / Hole**

**Similar Holes - 62**

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**Total Expl lbs. / hole**

**Expl-Primer LBS / Hole**

**Similar Hole LBS**

**Total Holes Loaded this blast**

**Total Holes** - 62

**Grand Total Explosives Weight**

53911.22
Apogee Coal Company
Logan WV

BLASTING LOG
GENERAL INFORMATION

Date / Time 6/21/2010 3:58 PM
Permit No. S-5006-05

Blast Number E44 Ticket Number E44

Permittee Apogee Coal, LLC.
Customer / Operator Apogee Coal, LLC.
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 Wind out of the N @ 0-2 mph
Type of Material Blasted Sandstone Blast Type BREAKDOWN
Matts or Protection Used

Powder Factor: tons/lb 0.00 Total Tons 0 Total YD³ 12,240 lbs/yd³ 1.22

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

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<thead>
<tr>
<th></th>
<th>ANFO</th>
<th>Emulsion</th>
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<tr>
<td>Weight</td>
<td>11,174.76 lbs.</td>
<td>3,724.92 lbs.</td>
</tr>
</tbody>
</table>

Packaged Total Weight

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

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orica</td>
<td>EXCEL 40 FT - 20</td>
<td>34</td>
<td>Orica</td>
<td>S. EXCEL 40 FT - 42</td>
<td>7</td>
</tr>
<tr>
<td>Orica</td>
<td>S. EXCEL 40 FT -100</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

COMMENTS

BlastData G4 V2.61 - Surface Mine Blast Report
**Hole Cross Section**
- Depth (ft): 30
- B X S (ft): 18 X 18
- Bench Ht. (in): 105
- Hole dia. (in): 7.875
- Stem (ft): 10
- PF: 1.31 lbs/YD³
- Tons/Lb.

**Timing Pattern**

**NEAREST PROTECTED STRUCTURE:**
- #5 Bill Joann Lambert

**DISTANCE AND DIRECTION:**
- 7,917 ft NW , 7°

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

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

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

**Crew:**

![Signature]

BlastData G4 V2.61 - Surface Mine Blast Report
**Hole Cross Section**
- Depth (ft): 30
- B X S (ft): 18 x 18
- Hole dia. (in): 7.875
- PF: 0.99 lbs/YD³
- Angle (deg): 105
- Stem (ft): 15

**Timing Pattern**
- Nearest Protected Structure: #5 Bill Joann Lambert
- Distance and Direction: 7,917 ft NW, 7°

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

**BLASTER INFORMATION**
- Name of Surface Blaster and Certification Number: Todd Keffer - 5-645-05
- Crew: SAULS

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

**Analyzed by:** SAULS
### Apogee Coal, LLC.
#### S-5006-05

**Blast Type** 
E44 / E44

**Date** 
6/21/2010

**Time** 
3:58 PM

<table>
<thead>
<tr>
<th>#</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nelson</td>
<td>75/25</td>
<td>1.12</td>
<td>473.01</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Primer Name** 
3/4 LB Cast

**Qty** 
1

**Total Primer QTY / Hole** 
1

**Total Primer LBS / Hole** 
0.75

---

<table>
<thead>
<tr>
<th>#</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>3/4 LB Cast</td>
<td>1</td>
</tr>
</tbody>
</table>

---

**Total Expl lbs. / hole** 
473.01

**Expl-Primer LBS / Hole** 
473.76

---

**Similar Holes** 
24 24 Primers

<table>
<thead>
<tr>
<th>#</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nelson</td>
<td>75/25</td>
<td>1.12</td>
<td>354.75</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Expl lbs. / Blast** 
11352.13

**Similar Hole LBS** 
11371.00

---

<table>
<thead>
<tr>
<th>#</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>3/4 LB Cast</td>
<td>1</td>
</tr>
</tbody>
</table>

---

**Total Expl lbs. / hole** 
354.75

**Expl-Primer LBS / Hole** 
355.50

---

**Similar Holes** 
10 10 Primers

<table>
<thead>
<tr>
<th>#</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nelson</td>
<td>75/25</td>
<td>1.12</td>
<td>354.75</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Expl lbs. / Blast** 
3547.54

**Similar Hole LBS** 
3556.00

---

**Grand Total Explosives Weight** 
14925.18

---

**Total Holes Loaded this blast** 
34
Blasting Log

General Information

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
Lat: N 292542
Long: W 1775262
Method: SD to nearest protected 126

Blast Information

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td>41,860.99 lbs.</td>
<td>13,953.66 lbs.</td>
</tr>
</tbody>
</table>

Packaged 0.00 lbs.
Total Tons 0
Total YD³ 35,400
Powder Factor: tons/lb 0.00 lbs/yd³ 1.58

Total Holes: 59
Face Height (ft): 50
Burden (ft): 18
Depth (ft): 50
Spacing (ft): 18
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

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orica</td>
<td>50 ft unitronics</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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
B x S (ft): 18 x 18
Hole dia. (in): 7.875
PF: 1.58 lbs/YD³

Timing Pattern

Timing Pattern

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
Analysed by: SAULS

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

BlastData G4 V2.61 - Surface Mine Blast Report
<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Bench Height (FT)</th>
<th>Sub Drill</th>
<th>Design Depth (FT)</th>
<th>Loaded Depth (FT)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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</thead>
<tbody>
<tr>
<td>1-59</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>1</td>
<td>Nelson</td>
<td>75/25</td>
<td>1.12</td>
<td>946.01</td>
<td>3/4 LB Cast</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>3</td>
<td></td>
<td>5</td>
<td>3/4 LB Cast</td>
<td>1</td>
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<tr>
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<td></td>
<td></td>
<td>4</td>
<td>4</td>
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<td>6</td>
<td>1</td>
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<td></td>
<td></td>
<td></td>
<td>5</td>
<td>5</td>
<td></td>
<td>7</td>
<td>7/4 LB Cast</td>
<td>1</td>
<td></td>
</tr>
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<td>6</td>
<td></td>
<td>8</td>
<td>6/4 LB Cast</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Total Expl lbs / hole 946.01 Expl-Primer LBS / Hole 946.76

Similar Holes - 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
Apogee Coal Company
Logan WV

BLASTING LOG

GENERAL INFORMATION

Blast Number E42 Ticket Number E42

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 3,585 ft S, ?°
Nearest Other Structure Dominion Well 1089
Distance and Direction 7,073 ft NE, ?°
Weather Conditions Partly Cloudy
78°F, Wind out of the N @ 2-5 mph
Type of Material Blasted Sandstone
Blast Type Production
Matts or Protection Used

Powder Factor: tons/lb 0.00 lbs/yd³ 1.16

Date / Time 6/21/2010 10:20 AM
Permit No. S-5007-01
Method Handheld GPS - NAD83
SD to nearest protected 136

BLAST INFORMATION

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td>22,935.94 lbs.</td>
<td>7,645.31 lbs.</td>
</tr>
</tbody>
</table>

Packaged 0.00 lbs. 44 Primers 33.00 lbs. Total Weight 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

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orica</td>
<td>50 ft unitronics</td>
<td>44</td>
</tr>
</tbody>
</table>

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
- B X S (ft): 18 X 18
- Hole dia. (in): 6.750
- PF: 1.16 lbs/YD³

**Timing Pattern**
- Stemming 10'
- 40'.75/25 @ 10'

**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:
<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Bench Height</th>
<th>Sub Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-44</td>
<td></td>
<td>50</td>
<td>50</td>
<td></td>
<td>1</td>
<td>Nelson</td>
<td>75/25</td>
<td>1.12</td>
<td>695.03</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>18</td>
<td>10</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3/4 LB Cast</td>
<td></td>
</tr>
</tbody>
</table>

| Similar Holes | 44 | 44 Primers | 33.00 LBS | Total Expl lbs. / Blast | 30581.26 |

| Total Holes Loaded this blast | 44 |

| Total Expl lbs. / hole | 695.03 |
| Total Primer QTY / Hole | 1 |
| Total Primer LBS / Hole | .75 |

| Grand Total Explosives Weight | 30614.26 |
| Expl-Primer LBS / Hole | 695.78 |
| Similar Hole LBS | 30615.00 |
Apogee Coal Company
Logan WV

BLASTING LOG

GENERAL INFORMATION

Blast Number E54   Ticket Number E54

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 3,686 ft S, °
Nearest Other Structure Jackson Well
Distance and Direction 7,965 ft NW, °
Weather Conditions Partly Cloudy
Type of Material Blasted Sandstone

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

Blast Type Production
Total Tons 0  Total YD³ 30,240
Powder Factor: tons/lb 0.00  lbs/yd³ 0.82

BLAST INFORMATION

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>210 Primers</th>
<th>Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>18,624.59 lbs.</td>
<td>6,208.20 lbs.</td>
<td>0.00 lbs.</td>
<td>105.00 lbs.</td>
<td>24,937.79 lbs.</td>
</tr>
</tbody>
</table>

Total Holes 210  Angle °
Face Height (ft) 12  Burden (ft) 18
Depth (ft) 12  Spacing (ft) 18
Sub Drill (ft)  7
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

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orica</td>
<td>EXCEL 40 FT - 20</td>
<td>210</td>
<td>Orica</td>
<td>S. EXCEL 40 FT-17</td>
<td>196</td>
<td>Orica</td>
<td>S. EXCEL 40 FT- 42</td>
<td>14</td>
</tr>
</tbody>
</table>

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

COMMENTS
Apogee Coal Company
Logan WV

Blasting Log

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:

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

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>282 Primers</th>
<th>Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>18,374.82 lbs</td>
<td>6,124.94 lbs</td>
<td>0.00 lbs</td>
<td>141.00 lbs</td>
<td>24,640.76 lbs</td>
</tr>
</tbody>
</table>

Total Holes: 282

Face Height (ft): 12
Burden (ft): 18
Depth (ft): 12
Spacing (ft): 18
Sub Drill (ft): 6.75
Diameter (in): Stemming Material: Cuttings

Maximum Weight of Explosives Allowed per 8ms Period (lbs): 4369
Maximum Weight of Explosives detonated per 8ms (lbs): 524

Initiation Product Information

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
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<tbody>
<tr>
<td>Orica</td>
<td>EXCEL 40 FT - 20</td>
<td>280</td>
</tr>
<tr>
<td>Orica</td>
<td>S. EXCEL 40 FT - 42</td>
<td>21</td>
</tr>
<tr>
<td>Orica</td>
<td>S. EXCEL 40 FT - 17</td>
<td>259</td>
</tr>
</tbody>
</table>

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

Comments:

BlastData G4 V2.61 - Surface Mine Blast Report
**Operation**  Apogee Coal, LLC.  
**Blast Number**  E55  
**Date**  6/28/2010

**Blast Type**  Production  
**Time**  11:24 AM

---

**Hole Cross Section**

- **Depth (ft)** 12
- **B X S (ft)** 18 x 18
- **Hole dia. (in)** 6.750
- **PF** 0.60 lbs/YD³

**Timing Pattern**

- **Angle (deg)** 12
- **Bench Ht** 12
- **Stem (ft)** 7
- **Tons/Lb.**

---

**Nearest Protected Structure:** Ball residence  
**Distance and Direction:** 3,635 ft S  
**Units:** °

---

**SEISMOGRAPH INFORMATION**

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

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

---

**BLASTER INFORMATION**

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

**Crew:**
**Apogee Coal Company**
Logan WV

**BLASTING LOG**
GENERAL INFORMATION

<table>
<thead>
<tr>
<th>Permittee</th>
<th>Apogee Coal, LLC.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer / Operator</td>
<td>Apogee Coal, LLC.</td>
</tr>
<tr>
<td>Location of Blast</td>
<td>Ridge 1 &amp; 2</td>
</tr>
<tr>
<td>Blasting Company</td>
<td>APOGEE COAL LLC</td>
</tr>
<tr>
<td>Nearest Protected Structure</td>
<td>Cline residence</td>
</tr>
<tr>
<td>Distance and Direction</td>
<td>7,193 ft S, ?°</td>
</tr>
<tr>
<td>Nearest Other Structure</td>
<td>Jackson Well</td>
</tr>
<tr>
<td>Distance and Direction</td>
<td>4,317 ft SW, ?°</td>
</tr>
<tr>
<td>Weather Conditions</td>
<td>Sunny / Hot</td>
</tr>
<tr>
<td>Type of Material Blasted</td>
<td>Sandstone</td>
</tr>
<tr>
<td>Mats or Protection Used</td>
<td>None used</td>
</tr>
</tbody>
</table>

**Date / Time**  6/19/2010 3:57 PM
**Permit No.**   S-5006-05
**Method**       Handheld GPS - NAD83
**SD to nearest protected** 88

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td>428,968.76 lbs.</td>
<td>142,989.59 lbs.</td>
</tr>
</tbody>
</table>

| Total Holes | 256 | Angle | 15°   |
| Face Height (ft) | 110 | Burden (ft) | 20 |
| Depth (ft)       | 110 - 115 | Spacing (ft) | 20 |
| Sub Drill (ft)   |                  | Diameter (in) | 7.875 |

**Blast Type** Production
**Total Tons** 0
**Total YD³** 434,889
**Powder Factor:**
- tons/lb 0.00
- lbs/yd³ 1.32

**INITIATION PRODUCT INFORMATION**

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
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<tbody>
<tr>
<td>Orica</td>
<td>EXCEL 40 FT - 20</td>
<td>256</td>
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<td>S.EXCEL 40 FT-100</td>
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<td>Lead line 493' Roll</td>
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<td>EXCEL 120 FT - 24</td>
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<td>Orica</td>
<td>S. EXCEL 40 FT-17</td>
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**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) | 115 |
| B X S (ft) | 20 X 20 |
| Hole dia. (in) | 7.875 |
| PF | 1.32 lbs/YD³ |

Timing Pattern

Nearest Protected Structure: Cline residence
Distance and Direction: 7.193 ft S, 0°

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 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/YD³

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, ?°

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:
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<th>Burden (FT)</th>
<th>Height (FT)</th>
<th>Sub Drill</th>
<th>Design Depth (FT)</th>
<th>Loaded Depth (FT)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<td>20</td>
<td>110</td>
<td>115</td>
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<td>1</td>
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<td>3/4 LB Cast</td>
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<td>9</td>
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**Total Expl lbs / Hole**: 2246.78

**Expl- Primer LBS / Hole**: ?

**Similar Holes** - 239 x 478 Primers = 358.50 LBS

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<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Stemming (FT)</th>
<th>Angle (Deg)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
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<td>Expl- Primer LBS / Hole</td>
<td>?</td>
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</tbody>
</table>

**Total Expl lbs / Hole**: 2057.57

**Expl- Primer LBS / Hole**: ?

**Similar Holes** - 17 x 34 Primers = 25.50 LBS

**Total Holes Loaded this blast**: 256

**Total Expl lbs / Blast**: 34978.76

**Grand Total Explosives Weight**: 572342.34
Apogee Coal Company
Logan WV

BLASTING LOG

GENERAL INFORMATION

Blast Number: E53
Ticket Number: E53

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: 3,543 ft S, 90°
Nearest Other Structure: Jackson Well
Distance and Direction: 8,254 ft NW, 90°
Weather Conditions: Sunny / Hot
Type of Material Blasted: Shale
Matts or Protection Used: None used

Date / Time: 6/26/2010 1:41 PM
Lat: 292226
Long: 1773392
Method: Handheld GPS - NAD83
SD to nearest protected: 3 ft

Blast Type: Production
Wind out of the: NE @ 0-5 mph
Blast Type: Production

Powder Factor: tons/lb 0.00
Total YD³: 14,832
Total Tons: 0
lbs/yd³: 0.38

Total Weight and Type(s) of Explosives used:

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,546.20 lbs.</td>
<td>0.00 lbs.</td>
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</tbody>
</table>

Packaged

- 103 Primers
- 51.50 lbs.

Total Weight
- 5,597.70 lbs.

Total Holes: 103
Angle: 0°
Face Height (ft): 12
Depth (ft): 12
Burden (ft): 18
Spacing (ft): 18
Diameter (in): 7.875
Backfill (ft): 9
Stemming Material: Cuttings

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

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
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</thead>
<tbody>
<tr>
<td>Orica</td>
<td>Lead line 493' Roll</td>
<td>1</td>
<td>Orica</td>
<td>EXCEL 40 FT - 20</td>
</tr>
<tr>
<td>Orica</td>
<td>S. EXCEL 40 FT- 42</td>
<td>8</td>
<td>Orica</td>
<td>S. EXCEL 40 FT- 17</td>
</tr>
</tbody>
</table>

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
** Permit Number** S-5007-01
** Blast Number** E53
** Blast Type** Production
** Date** 6/26/2010
** 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/Yd³
- **Tons/Lb.**

### Timing Pattern

### Nearest Protected Structure
- **Ball residence**
- **Distance and Direction**: 3,543 ft S, 0°

### Record Information
**Date and Time of Recording(s)**
- **Date**: 6/26/2010
- **Time**: 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**
- **Richard Cope**: 5 506 08

**Crew**

---

*Note: The image includes a diagram of a hole section with markings for stemming and bulk ANFO at 9 feet.*
Apogee Coal Company  
Logan WV

**BLASTING LOG**

<table>
<thead>
<tr>
<th>Permittee</th>
<th>Apogee Coal, LLC.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer / Operator</td>
<td>Apogee Coal, LLC.</td>
</tr>
<tr>
<td>Location of Blast</td>
<td>Guyan Mine</td>
</tr>
<tr>
<td>Blasting Company</td>
<td>APOGEE COAL LLC</td>
</tr>
<tr>
<td>Nearest Protected Structure</td>
<td>Ball residence</td>
</tr>
<tr>
<td>Distance and Direction</td>
<td>3,690 ft S , ?°</td>
</tr>
<tr>
<td>Nearest Other Structure</td>
<td>Jackson Well</td>
</tr>
<tr>
<td>Distance and Direction</td>
<td>7,868 ft NW , ?°</td>
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<td>Weather Conditions</td>
<td>Sunny / Hot</td>
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<td>Type of Material Blasted</td>
<td>Shale</td>
</tr>
<tr>
<td>Powder Factor:</td>
<td>tons/lb 0.00</td>
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<td>Total Tons:</td>
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<tr>
<td>Total YD³:</td>
<td>21,600</td>
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<td>Blast Type</td>
<td>Production</td>
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<tr>
<td>Method</td>
<td>Handheld GPS - NAD83</td>
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<tr>
<td>Date / Time</td>
<td>6/26/2010 10:17 AM</td>
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<td>Permit No.</td>
<td>S-5007-01</td>
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<tr>
<td>Lat</td>
<td>N 292230 - X</td>
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<td>Long</td>
<td>W 1772915 - Y</td>
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<td>SD to nearest protected</td>
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</table>

**BLAST INFORMATION**

- **Total Weight and Type(s) of Explosives used:** see attachment
- ANFO: 12,923.19 lbs.  Emulsion: 0.00 lbs.
- Packaged: 0.00 lbs.  120 Primers: 60.00 lbs.  Total Weight: 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):** 7.875  **Diameter (in):**
- **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**

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
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<th>Delay Type</th>
<th>Qty</th>
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</thead>
<tbody>
<tr>
<td>Orica</td>
<td>Lead line 493' Roll</td>
<td>1</td>
<td>Orica</td>
<td>EXCEL 40 FT - 20</td>
<td>120</td>
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<td>S. EXCEL 40 FT - 42</td>
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<td>S. EXCEL 40 FT - 17</td>
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</table>

- **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**
Hole Cross Section
Depth (ft) 15
B X S (ft) 18 X 18
Hole dia. (in) 7.875
PF: 0.60 lbs/YD³

Timing Pattern

Nearest Protected Structure: Ball residence
Distance and Direction: 3.690 ft S, ?°

Primer Type (s) Unit Wt. Qty
1/2 LB Cast Booster 0.5 1.0

Holes loaded the same: 120

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:
Richard Cope - 5 500 08

Crew:
<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Bench Height</th>
<th>Sub Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
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<th>g/cc</th>
<th>Pounds</th>
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<td>15</td>
<td>15</td>
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**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
Apogee Coal Company
Logan WV

Blast Number: E51
Ticket Number: E51

Date / Time: 6/26/2010 9:35 AM
Permit No.: S-5007-01
Method: Handheld GPS - NAD83
SD to nearest protected: 561
GPS Location: Lat N 292109 - X
Long W 1772983 - Y

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: 3,553 ft S, ?°
Nearest Other Structure: Jackson Well
Distance and Direction: 7,995 ft NW, ?°
Weather Conditions: Sunny / Hot 85°F, Wind out of the N @ 0-5 mph
Type of Material Blasted: Shale
Blast Type: Production
Total Tons: 0
Total YD³: 18,432
Powder Factor: tons/lb 0.00 lbs/yd³ 0.28

Total Weight and Type(s) of Explosives used: see attachment
<table>
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<th>Emulsion</th>
<th>Package</th>
<th>128 Primers</th>
<th>Total Weight</th>
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<tbody>
<tr>
<td>5,063.78 lbs.</td>
<td>0.00 lbs.</td>
<td>0.00 lbs.</td>
<td>64.00 lbs.</td>
<td>5,127.78 lbs.</td>
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Total Holes: 128 Angle: 0°
Face Height (ft): 12
Burden (ft): 18
Backfill (ft): 9
Depth (ft): 12
Spacing (ft): 18
Stemming (ft): 
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

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
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<tbody>
<tr>
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<td>1 Roll - Lead in Line</td>
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<td>Orica</td>
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<td>29</td>
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<td>S. EXCEL 40 FT-17</td>
<td>99</td>
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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-5007-01

Blast Number: E51
Blast Type: Production

Date: 6/26/2010
Time: 9:35 AM

Hole Cross Section
Depth (ft): 12
Angle (deg): 0
B X S (ft): 18 X 18
Bench Ht. (ft): 12
Hole dia. (in): 6.750
Stem (ft): 9
PF: 0.27 lbs/YD³
Tons/Lb.

Timing Pattern

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

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

Name of Surface Blaster and Certification Number:
Richard Cope - 550608

Crew:

BlastData G4 V2.61 - Surface Mine Blast Report
<table>
<thead>
<tr>
<th>Date</th>
<th>6/26/2010</th>
<th>Time</th>
<th>9:35 AM</th>
</tr>
</thead>
</table>

**Blast Type**

<table>
<thead>
<tr>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>E51 / E51</td>
</tr>
</tbody>
</table>

**Blast / Ticket Number**

<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Bench Height</th>
<th>Sub Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-128</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

**Explosive Name**

- NEBCO Bulk ANFO

**g/cc**

- 0.85

**Pounds**

- 39.56

**Mfr.**

- Orica

**Primer Name**

- 1/2 LB Cast

**Qty**

- 1

**Total Primer QTY / Hole**

- 1

**Total Primer LBS / Hole**

- 3.5

**Similar Holes**

- 128

**Total Expl lbs / hole**

- 39.56

**Expl-Primer LBS / Hole**

- 40.06

**Similar Hole LBS**

- 5128.00

**Total Holes Loaded this blast**

- 128

**Grand Total Explosives Weight**

- 5127.78
Apogee Coal Company
Logan WV

BLASTING LOG

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
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: 29°20'15" N
Long: 17°72'57" W
Method: Handheld GPS - NAD83
SD to nearest protected: 474
Wind out of the: W @ 0-5 mph
Weather Conditions: 90°F

Total Tons: 0
Total YD³: 17,280
Powder Factor: tons/lb 0.00 lbs/yd³ 0.19

BLAST INFORMATION

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>120 Primers</th>
<th>Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,164.86 lbs.</td>
<td>0.00 lbs.</td>
<td>0.00 lbs.</td>
<td>60.00 lbs.</td>
<td>3,224.86 lbs.</td>
</tr>
</tbody>
</table>

Total Holes: 120
Angle: 0°

Face Height (ft): 12
Depth (ft): 12
Sub Drill (ft): 6.75

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

Backfill (ft): 10
Stemming (ft): 10
Stemming Material: Cuttings

Maximum Weight of Explosives Allowed per 8ms Period (lbs): 3,992
as determined by SD of: 55

Maximum Weight of Explosives detonated per 8ms (lbs): 54 in 2.0 Holes

INITIATION PRODUCT INFORMATION

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orica</td>
<td>EXCEL 40 FT-20</td>
<td>120</td>
<td>Orica</td>
<td>S. EXCEL 40 FT-42</td>
<td>25</td>
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<tr>
<td>Orica</td>
<td>S. EXCEL 40 FT-17</td>
<td>94</td>
<td>Orica</td>
<td>1 Roll - Lead in Line</td>
<td>1</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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.
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/YD³
- Tons/Lb.

Timing Pattern:

Timing Pattern:

Nearest Protected Structure: Ball residence
Distance and Direction: 3,475 ft S., 0°

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:
Richard Cope S 500-08
Crew:

BlastData G4 V2.61 - Surface Mine Blast Report
<table>
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<tr>
<th>Hole Number</th>
<th>Bench Height (FT)</th>
<th>Sub Drill (FT)</th>
<th>Design Depth (FT)</th>
<th>Loaded Depth (FT)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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</thead>
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<tr>
<td>1-120</td>
<td>12</td>
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<td>12</td>
<td>12</td>
<td>1 NEBCO</td>
<td>Bulk ANFO</td>
<td>0.85</td>
<td>26.37</td>
<td>1 Orica</td>
<td>1/2 LB Cast</td>
<td>1</td>
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<tr>
<td></td>
<td>18</td>
<td>18</td>
<td>10</td>
<td>0</td>
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</table>

Total Expl lbs./hole 26.37

Expl-Primer LBS/Hole 26.87

Similar Holes - 120 120 Primers 60.00 LBS

Total Expl lbs./Blast 3164.86

Similar Hole LBS 3225.00

Grand Total Explosives Weight 3224.86

Total Holes Loaded this blast 120
**Apogee Coal Company**  
Logan WV

<table>
<thead>
<tr>
<th><strong>BLASTING LOG</strong></th>
<th><strong>E49</strong></th>
<th><strong>E49</strong></th>
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<tr>
<td><strong>Permittee</strong></td>
<td>Apogee Coal, LLC.</td>
<td></td>
</tr>
<tr>
<td><strong>Customer / Operator</strong></td>
<td>Apogee Coal, LLC.</td>
<td></td>
</tr>
<tr>
<td><strong>Location of Blast</strong></td>
<td>Ridge 1 &amp; 2</td>
<td></td>
</tr>
<tr>
<td><strong>Blasting Company</strong></td>
<td>APOGEE COAL LLC</td>
<td></td>
</tr>
<tr>
<td><strong>Nearest Protected Structure</strong></td>
<td>Cline residence</td>
<td></td>
</tr>
<tr>
<td><strong>Distance and Direction</strong></td>
<td>7,696 ft S, 0°</td>
<td></td>
</tr>
<tr>
<td><strong>Nearest Other Structure</strong></td>
<td>Jackson Well</td>
<td></td>
</tr>
<tr>
<td><strong>Distance and Direction</strong></td>
<td>5,052 ft SW, 0°</td>
<td></td>
</tr>
<tr>
<td><strong>Weather Conditions</strong></td>
<td>Clear / Calm</td>
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</tr>
<tr>
<td><strong>Type of Material Blasted</strong></td>
<td>Sandstone</td>
<td></td>
</tr>
<tr>
<td><strong>Blast Type</strong></td>
<td>BREAKDOWN</td>
<td></td>
</tr>
<tr>
<td><strong>Date / Time</strong></td>
<td>6/25/2010 4:01 PM</td>
<td></td>
</tr>
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<td><strong>Permit No.</strong></td>
<td>S-5006-05</td>
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</tr>
<tr>
<td><strong>Lat</strong></td>
<td>N 301154 X</td>
<td></td>
</tr>
<tr>
<td><strong>Long</strong></td>
<td>W 1769565 Y</td>
<td></td>
</tr>
<tr>
<td><strong>Method</strong></td>
<td>Handheld GPS - NAD83 SD to nearest protected 345</td>
<td></td>
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<tr>
<td><strong>Wind out of the</strong></td>
<td>W @ 0-5 mph</td>
<td></td>
</tr>
<tr>
<td><strong>Powder Factor:</strong></td>
<td>tons/lb 0.00 lbs/yd³ 1.38</td>
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</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th><strong>ANFO</strong></th>
<th><strong>Emulsion</strong></th>
<th><strong>Packaged</strong></th>
<th><strong>30 Primers</strong></th>
<th><strong>Total Weight</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>11,174.76 lbs.</td>
<td>3,724.92 lbs.</td>
<td>0.00 lbs.</td>
<td>22.50 lbs.</td>
<td>14,922.18 lbs.</td>
</tr>
</tbody>
</table>

**Total Holes:** 30  
**Angle:** 0°  
**Face Height (ft):** 30  
**Burden (ft):** 18  
**Depth (ft):** 30  
**Spacing (ft):** 18  
**Sub Drill (ft):** 7.875  
**Diameter (in):**  
**Stemming Material:** Cuttings

**Maximum Weight of Explosives Allowed per 8ms Period (lbs):** 6042 as determined by SD of : 65  
**Maximum Weight of Explosives detonated per 8ms (lbs):** 497 in 1.0 Holes

**INITIATION PRODUCT INFORMATION**

<table>
<thead>
<tr>
<th><strong>Mfr</strong></th>
<th><strong>Delay Type</strong></th>
<th><strong>Qty</strong></th>
<th><strong>Mfr</strong></th>
<th><strong>Delay Type</strong></th>
<th><strong>Qty</strong></th>
<th><strong>Mfr</strong></th>
<th><strong>Delay Type</strong></th>
<th><strong>Qty</strong></th>
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<tbody>
<tr>
<td>Orica</td>
<td>Lead line 493' Roll</td>
<td>2</td>
<td>Orica</td>
<td>EXCEL 40 FT - 20</td>
<td>36</td>
<td>Orica</td>
<td>S. EXCEL 40 FT-42</td>
<td>4</td>
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<td></td>
<td></td>
<td>Orica</td>
<td>S. EXCEL 40 FT-100</td>
<td>32</td>
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</table>

**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: E49
Blast Type: BREAKDOWN
Date: 6/25/2010
Time: 4:01 PM

Hole Cross Section
Depth (ft): 30
B X S (ft): 18 X 18
Hole dia. (in): 7.875
Pf: 1.38 lbs/YD³

Timing Pattern

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

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

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

VOID
<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Sub Drill</th>
<th>Design Depth</th>
<th>Loaded Depth</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<td>1-36</td>
<td>30</td>
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<td>30</td>
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<td>1</td>
<td>Nelson</td>
<td>75/25</td>
<td>1.12</td>
<td>496.66</td>
<td>3/4 LB Cast</td>
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<td></td>
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</tr>
</tbody>
</table>

Total Expl. lbs. / hole: 496.66

Similar Holes: 30 Primers 22.50 LBS

Total Holes Loaded this blast: 30

Total Expl. lbs. / Blast: 14899.68

Expl-Primer LBS / Hole: 497.41

Similar Hole LBS: 14923.00

Grand Total Explosives Weight: 14922.18
Apogee Coal Company
Logan WV

BLASTING LOG

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
Mats or Protection Used: 

Date / Time: 6/25/2010 9:20 AM
Lat: 292091 - X
Long: 1775203 - Y
Method: Handheld GPS - NAD83
SD to nearest protected: 116

Blast Type: Production
Total Tons: 0
Total YD³: 15,120
Powder Factor: tons/lb 0.00 lbs/yd³ 1.19

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>28 Primers</th>
<th>Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>13,500.93 lbs.</td>
<td>4,500.31 lbs.</td>
<td>0.00 lbs.</td>
<td>21.00 lbs.</td>
<td>18,022.24 lbs.</td>
</tr>
</tbody>
</table>

Total Holes: 21
Face Height (ft): 60
Depth (ft): 60
Sub Drill (ft): 
Burden (ft): 18
Spacing (ft): 18
Backfill (ft): 
Stemming (ft): 9
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

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orica</td>
<td>80 ft unitronics</td>
<td>21</td>
<td>Orica</td>
<td>50 ft unitronics</td>
<td>7</td>
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</tr>
</tbody>
</table>

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

COMMENTS

BlastData G4 V2.61 - Surface Mine Blast Report
**Hole Cross Section**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Depth (ft)</td>
<td>60</td>
</tr>
<tr>
<td>B X S (ft)</td>
<td>18 X 18</td>
</tr>
<tr>
<td>Hole dia. (in)</td>
<td>6.750</td>
</tr>
<tr>
<td>PF</td>
<td>1.23 lbs/YD³</td>
</tr>
<tr>
<td>Angle (deg)</td>
<td></td>
</tr>
<tr>
<td>Bench Ht. (ft)</td>
<td>60</td>
</tr>
<tr>
<td>Stem (ft)</td>
<td>9</td>
</tr>
<tr>
<td>Tons/Lb.</td>
<td></td>
</tr>
</tbody>
</table>

**Timing Pattern**

- Stemming: 9'
- 51', 75/25 @ 9'

**Primer Type (s)**
- 3/4 LB CAST PRIMER

**Unit Wt.**
- QTY

**Nearest Protected Structure:** Ball residence

**Distance and Direction:** 3,442 ft S 7°

**Date and Time of Recording(s)**
- 6/25/2010 9:20 AM

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

**Analyzed by:** SAULS

**BLASTER INFORMATION**

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

**Crew:**

---

BlastData G4 V2.61 - Surface Mine Blast Report
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
B X S (ft): 18 x 18
Hole dia. (in): 6.750
PF: 1.11 lbs/YD³

Timing Pattern

9’ Stemming
23’ 75/25 @ 9’
5’ Cuttings @ 32’
23’ 75/25 @ 37’

Nearest Protected Structure: Ball residence
Distance and Direction: 3,442 ft S 90°

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:
<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Burden (FT)</th>
<th>Spacing (FT)</th>
<th>Stemming (FT)</th>
<th>Angle (Deg)</th>
<th>Mfr.</th>
<th>Explosive Name</th>
<th>g/cc</th>
<th>Pounds</th>
<th>Mfr.</th>
<th>Primer Name</th>
<th>Qty</th>
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<td>60</td>
<td>60</td>
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<td>Nelson</td>
<td>75/25</td>
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<td></td>
<td>3/4 LB Cast</td>
<td>1</td>
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<tr>
<td>Total Expl. lbs. / hole</td>
<td>886.16</td>
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<tr>
<td>Expl-Primer LBS / Hole</td>
<td>886.91</td>
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</tbody>
</table>

**Similar Holes - 14**

<table>
<thead>
<tr>
<th>Similar Holes - 14 Primers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burden (FT)</td>
</tr>
<tr>
<td>Spacing (FT)</td>
</tr>
<tr>
<td>Stemming (FT)</td>
</tr>
<tr>
<td>Angle (Deg)</td>
</tr>
<tr>
<td>15-21</td>
</tr>
<tr>
<td>18</td>
</tr>
</tbody>
</table>

| 1 | 1 Nelson | 75/25 | 1.12 | 399.64 |
| 2 | 2 Nelson | 75/25 | 1.12 | 399.64 |
| 3 |              |      |      |        |
| 4 |              |      |      |        |
| 5 |              |      |      |        |
| 6 |              |      |      |        |
| 7 |              |      |      |        |
| 8 |              |      |      |        |
| Total Expl. lbs. / hole | 799.28 |

**Expl-Primer LBS / Hole** 800.78

**Similar Hole LBS** 5606.00

**Grand Total Explosives Weight** 18022.24
Apogee Coal Company
Logan WV

BLASTING LOG
GENERAL INFORMATION

Blast Number: E47  Ticket Number: E47

Permittee: Apogee Coal, LLC.
Customer / Operator: Apogee Coal, LLC.
Location of Blast: Ridge 1 & 2
Blasting Company: APOGEE COAL LLC
Nearest Protected Structure: Cline residence
Distance and Direction: 7,976 ft S, °
Nearest Other Structure: Dominion Well
Distance and Direction: 4,808 ft N, °
Weather Conditions: Light Rain
Type of Material Blasted: Sandstone

Date / Time: 6/24/2010 3:48 PM
Permit No.: S-5006-05
Lat: N 301493 - X
Long: W 1768745 - Y
Method: Handheld GPS - NAD83
SD to nearest protected: 118

Wind out of the: E @ 5-8 mph
90°F,

Total Tons: 0  Total YD³: 331,200
Powder Factor: tons/lb 0.00  lbs/yd³ 1.49

BLAST INFORMATION

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

<table>
<thead>
<tr>
<th>ANFO</th>
<th>Emulsion</th>
<th>Packaged</th>
<th>432 Primers</th>
<th>Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>393,351.44 lbs.</td>
<td>98,337.86 lbs.</td>
<td>0.00 lbs.</td>
<td>324.00 lbs.</td>
<td>492,013.30 lbs.</td>
</tr>
</tbody>
</table>

Total Holes: 216  Angle: °
Face Height (ft): 115  Burden (ft): 18  Backfill (ft): 2
Depth (ft): 115  Spacing (ft): 20  Stemming (ft): 10

Maximum Weight of Explosives Allowed per 8ms Period (lbs): 7642 as determined by SD of: 55
Maximum Weight of Explosives detonated per 8ms (lbs): 4556 in 2.0 Holes

INITIATION PRODUCT INFORMATION

<table>
<thead>
<tr>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
<th>Mfr</th>
<th>Delay Type</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orica</td>
<td>120 ft unitronics</td>
<td>216</td>
<td>Orica</td>
<td>50 ft unitronics</td>
<td>216</td>
</tr>
</tbody>
</table>

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)**: 115
- **Angle (deg)**: 18 X 20
- **Bench Ht. (ft)**: 115
- **Hole dia. (in)**: 7.875
- **Stem (ft)**: 10
- **PF**: 1.48 lbs/YD³
- **Tons/Lb.**: 10

### Timing Pattern

- **Stemming**: 10’
- **Cuttings @ 59’**: 49’ 80/20 @ 64’

### Nearest Protected Structure
- **Cline residence**

### Distance and Direction
- **Distance**: 7,976 ft
- **Direction**: S, ?°

### SEISMOGRAPH INFORMATION

**Date and Time of Recording(s)**: 6/24/2010, 3:48 PM

<table>
<thead>
<tr>
<th>Seis SN</th>
<th>Location</th>
<th>Dist (ft)</th>
<th>Dir.</th>
<th>SD</th>
<th>T</th>
<th>PPV</th>
<th>T Hz</th>
<th>V</th>
<th>PPV</th>
<th>V Hz</th>
<th>L</th>
<th>PPV</th>
<th>L Hz</th>
<th>Air dB</th>
<th>Air Hz</th>
</tr>
</thead>
</table>

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

**Analyzed by**: SAULS

### BLASTER INFORMATION

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

**Crew**: [Signature]