

Buckley Powder Co.**BLAST REPORT**SERVICE SITE LOCATION: Louviers ORDER NO.: D7403826BLAST NUMBER: #3-04-2018 BLAST TIME: 12:36 pm BLAST DATE: 04/03/2018CUSTOMER: MARTIN MARIETTA MINE: RED CANYON ADDRESS: Colorado Springs, COROCK TYPE: Granite Tons/Yd3: 2.20 EXPECTED VIBRATION: 0.000 IPS**LOCATION OF BLAST**LOCATION OF BLAST IN MINE: North BENCH: Bench 6BLAST GPS POINTS: N 038 36 29.22000 & W -104 56 45.18000**WEATHER**WEATHER: Clear CEILING: High TEMPERATURE: 33 F WIND DIRECTION & SPEED: North 5 MPH**NEAREST NON-OWNED STRUCTURE**NAME: North Hillside GPS Points: N 038 36 22.41000 & W -104 56 31.21980DISTANCE: 1,304 (FT) DIRECTION: 121°**SEISMOGRAPH DATA**

| LOCATION | | DISTANCE | | GPS POINTS | | CALIBRATION DATE | |
|----------|----------------|------------|-----------|--|----------------|------------------|--|
| 1 | North Hillside | 1,304 (FT) | | N 038 36 22.41000 & W -104 56 31.21980 | | 09/02/2017 | |
| | L (F) T (F) | V (F) | AIR (db) | SEISMOGRAPH | SERIAL | OPERATOR | |
| 1 | 0.025 11.6 | 0.025 8.9 | 0.018 9.6 | 114 | VibraTech 7816 | 7816 | |

BLAST DATA

| NUMBER OF HOLES (EA) | | EXPLOSIVES SIZE, TYPE & WEIGHT | | |
|---------------------------|---------|--------------------------------|---------------|--------|
| HOLE DIAMETER (IN) | 4.5 | SIZE | TYPE | WEIGHT |
| HOLE DEPTH (FT) | 35.5 | 0.75 | SPARTAN 350SR | 132 |
| FACE HEIGHT (FT) | 32.5 | BULK | TITAN 1000 XL | 17,360 |
| SUB DRILLING (FT) | 3 | | | |
| AVG. STEM FACE HOLES (FT) | 13.889 | | | |
| STEM OTHER HOLES (FT) | 12.476 | | | |
| BURDEN FRONT ROW (FT) | 13 - 15 | | | |
| BURDEN OTHER ROWS (FT) | 13 | | | |
| SPACING FRONT ROW (FT) | 13 - 15 | | | |
| SPACING OTHER ROWS (FT) | 15 | | | |
| TOTAL WEIGHT (LB): | | | | 17,492 |

DETONATORS USED IN BLAST: Electronic MATS USED: No STEM TYPE: 3/4 x 1/2 CRUSHED TOTAL DRILL DEPTH: 3,195 (FT)

| TYPE | MFG | DATE CODE | USED | TYPE | MFG | DATE CODE | USED |
|-------------------------|-------------------|-----------|------|---------------|-------------------|-----------|------|
| DIGISHOT DETONATOR 50FT | Dyno Nobel Global | 26FE18 | 180 | SPARTAN 350SR | Dyno Nobel Global | 13AU17 | 180 |

CU YDS IN SHOT: 21,125 SCALED DISTANCE FACTOR: 46 % OF ANFO: 0TONS IN SHOT: 46,475 HOLES/DELAY: 4 FUEL OIL % (BULK): 0MAX LBS/DELAY: 780 AVERAGE LBS/HOLE: 195POWDER FACTOR (TONS/LB): 2.66 POWDER FACTOR POUNDS/YD3: 0.83BLASTERS NAME: Farmer, Jimmie BLASTERS NUMBER & STATE: 1-035-0748 ColoradoBLASTERS SIGNATURE: [Signature] SITE SAFETY INSPECTION PERFORMED: YesNUMBER OF PERSONNEL ON SITE: 5

REMARKS : We had one hole blocked after it was primed we got both boosters out and tried to knock the rock down with loading poles but it would not move. Row 8 hole 11 this is on the back row. The shot looked very good. nice breakage

| START TIME | END TIME | TOTAL TIME | TRUCK NUMBERS |
|------------|----------|------------|---------------|
| 8:45 AM | 10:45 AM | 02:00 | 5013 |

APPENDIX A

Date: 4-3-2018

Location: mm Red Canyon

shot #: 3



BLASTER'S CHECKLIST

Must be filled out as you go!

PRE-TRIP CHECKLIST

| | |
|-------------------------------------|-------------------------------|
| <input checked="" type="checkbox"/> | Measuring Tapes and lead ends |
| <input checked="" type="checkbox"/> | Burden pole Tape/ Profiler |
| <input checked="" type="checkbox"/> | Loading Poles |
| <input checked="" type="checkbox"/> | Marking Paint |
| <input checked="" type="checkbox"/> | Starter and primers |
| <input checked="" type="checkbox"/> | Blasting Signs & cones |
| <input checked="" type="checkbox"/> | Sirens in working order |
| <input checked="" type="checkbox"/> | Set back stakes |
| <input checked="" type="checkbox"/> | Digital video camera & Tripod |

yes / no / NA

| | |
|-------------------------------------|-------------------------|
| <input checked="" type="checkbox"/> | Scientific Calculator |
| <input checked="" type="checkbox"/> | Pocket Mirror |
| <input checked="" type="checkbox"/> | Empty Shot bags |
| <input checked="" type="checkbox"/> | Powder Punch |
| <input checked="" type="checkbox"/> | GPS |
| <input checked="" type="checkbox"/> | Non sparking Knife |
| <input checked="" type="checkbox"/> | Wire strippers |
| <input checked="" type="checkbox"/> | Splices |
| <input checked="" type="checkbox"/> | Flash Light & Batteries |

yes / no / NA

| | |
|-------------------------------------|------------------------------|
| <input checked="" type="checkbox"/> | Drill Logs |
| <input checked="" type="checkbox"/> | Shot reports |
| <input checked="" type="checkbox"/> | Hold Harmlesses |
| <input checked="" type="checkbox"/> | Seismographs |
| <input checked="" type="checkbox"/> | Density Cup and Scales |
| <input checked="" type="checkbox"/> | Two Way Radios / fully |
| <input checked="" type="checkbox"/> | Wheel Chocks |
| <input checked="" type="checkbox"/> | Harness & Lanyard / "T" post |
| <input checked="" type="checkbox"/> | First Aid Kits |

PRESHIFT CHECKLIST

| | |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | Inspect blast area for Unsafe Working Conditions (including face) for voids, cracks, caves, etc.. |
| <input checked="" type="checkbox"/> | Ensure all employees have their site specific training. |
| <input checked="" type="checkbox"/> | Secure blast site with warning signs and cones (including floor in front of face) |
| <input checked="" type="checkbox"/> | Check shot access including traffic activity |
| <input checked="" type="checkbox"/> | Pre shift inspections on all equipment -OK and safe to operate (includes back up alarms, brakes, horns, etc..) |
| <input checked="" type="checkbox"/> | Mark fall zone area at least six(6) feet from the crest |
| <input checked="" type="checkbox"/> | Inspect Harness/ Lanyard <i>before each use</i> if needed for fall zone or on top of trucks |
| <input checked="" type="checkbox"/> | Insure all needed products are present-enough boosters, detonators etc |
| <input checked="" type="checkbox"/> | Calculate Minimum Burden and Measure front row burden with burden pole or profiler (Document) |
| <input checked="" type="checkbox"/> | Check drill log and all holes for proper depth and blockage |
| <input checked="" type="checkbox"/> | Insure blast design is consistent with closest structures requirements |
| <input checked="" type="checkbox"/> | Any need for calling assistance (Hold Harmless, equipment to close, drilling problems, etc..) |
| <input checked="" type="checkbox"/> | Conduct pre-blast safety meeting with blast crew. <i>If there is not a timing diagram, detonator tie-in must be discussed at the</i> |
| | Calculate pounds per delay: Expl density x expl diam ² x .3405 = _____ lbs/ ft x avg powder column= _____ |
| | lbs/hole x expected _____ holes / delay = _____ lbs/delay |
| | Calculate scale distance: 1) Distance _____ 2) divided by lbs/delay _____ 3) hit square root then equals _____ =S.D. (4) |
| | Calculate expected vibration: S.D.(4) _____ Push 1/x on calculator. Push (yx) key then 1.6 hit equals x 160 = _____ exp. vib. |

TIE-IN CHECKLIST

| | |
|-------------------------------------|---|
| <input checked="" type="checkbox"/> | Shot tie inspected and signed off by two persons prior to shot including lead line <i>(include names below)</i> |
| <input checked="" type="checkbox"/> | <u>JA</u> <u>Luke Towsy</u> |
| <input checked="" type="checkbox"/> | Blast area is cleared and blocked before attaching starter cap and lead line |
| <input checked="" type="checkbox"/> | Blaster in charge in communication with all guards at this time |
| <input checked="" type="checkbox"/> | Blaster in charge will insure blast area has been cleared and guarded before the siren is sounded |
| <input checked="" type="checkbox"/> | After proper waiting time blaster in charge will contact all guards before firing blast |
| <input checked="" type="checkbox"/> | Seismograph located at nearest off site structure or at the Property Line related to nearest off-site |
| <input checked="" type="checkbox"/> | Video Recording Made of Shot |

POST BLAST CHECKLIST

| | |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | Maintain guards until shot is cleared and "all clear" is sounded |
| <input checked="" type="checkbox"/> | Check for misfires, undetonated explosives or burning product and other dangers |
| <input checked="" type="checkbox"/> | Sound all clear that is audible to all parties |
| <input checked="" type="checkbox"/> | Dispose of lead line in approved manner |
| <input checked="" type="checkbox"/> | Dispose of empty boxes in approved methods only |
| <input checked="" type="checkbox"/> | Complete all required paper work prior to leaving customer location- shipping Papers, delivery ticket, Blaster's |
| <input checked="" type="checkbox"/> | Make one final check of blast site before leaving property to insure no materials have been left |
| <input checked="" type="checkbox"/> | and that no hazards are present that may have been missed during clearing process |

Must completed and turned in daily- end of shift

Blaster In Charge

JD Farmer

Seismic Analysis

Velocity Waveform Analysis

Serial Number: 7816
 Firmware Version: 0C-06.05
 Event Date: 04/03/2018 12:36:37 (UTC -06:00)
 Event number: 7
 Recording Time: 5 s
 Client: Martin Marietta
 Operation: Red Canyon Quarry
 Location: North Hill Side
 Distance:
 Operator: Vibra Tech
 Comment: Pueblo, Colorado
 Seismic Trigger: 0.02 in/s
 Sound Trigger: 133 dB

Additional Info:

j-GEO-16060
 N38 36 22 W104 56 31

Summary Data

| | L | T | V |
|-------------|-------|-------|-------|
| PPV (in/s): | 0.025 | 0.025 | 0.018 |
| FREQ (HZ): | 11.6 | 8.9 | 9.6 |
| PD (.001"): | 0.38 | 0.47 | 0.34 |
| PPA (g): | 0.013 | 0.013 | 0.013 |

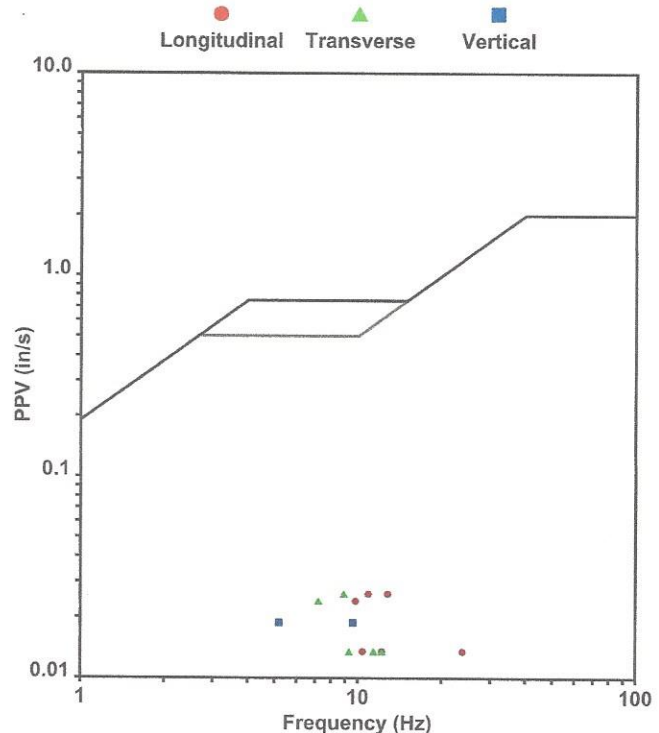
Peak Vector Sum: 0.035 in/s
 Peak Air Pressure: 114 dB
 0.0016 psi @ 8.8 HZ

Shaketable Calibrated

On: 09/02/2017 (UTC -06:00)
 By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

USBM Safe Blasting Levels

SSN: 7816 Event: 7



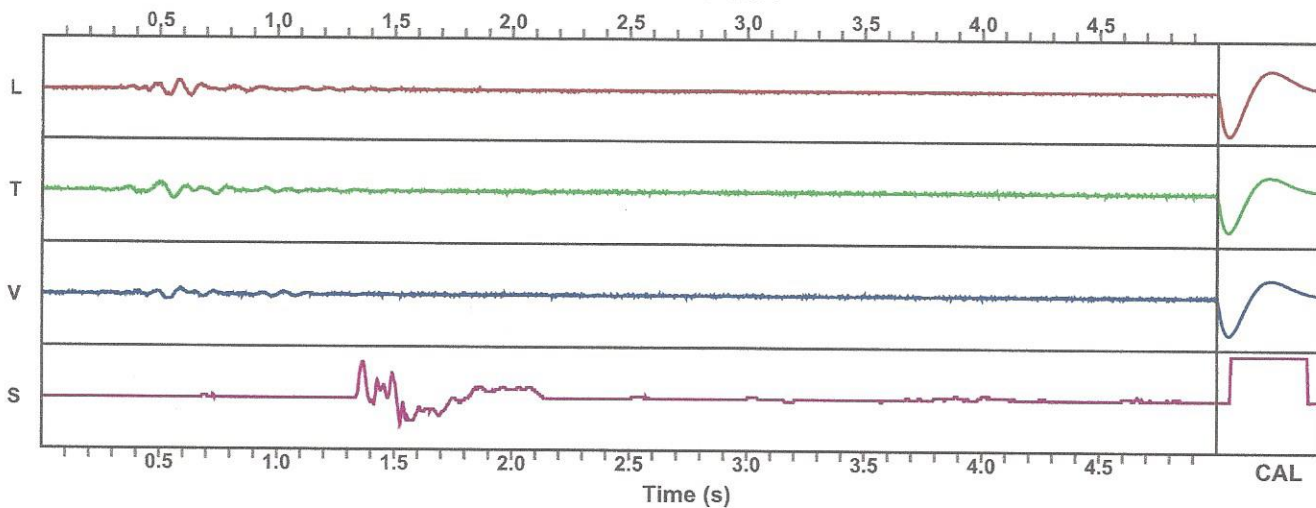
Zero Crossing Half-Wave Frequency Analysis

Waveform Graph Scale

Time Scale: 0.1 s
 Seismic Scale: +/- 0.16 in/s
 Sound Scale: +/- 0.0023 psi

Velocity Waveform

SSN: 7816 Event: 7

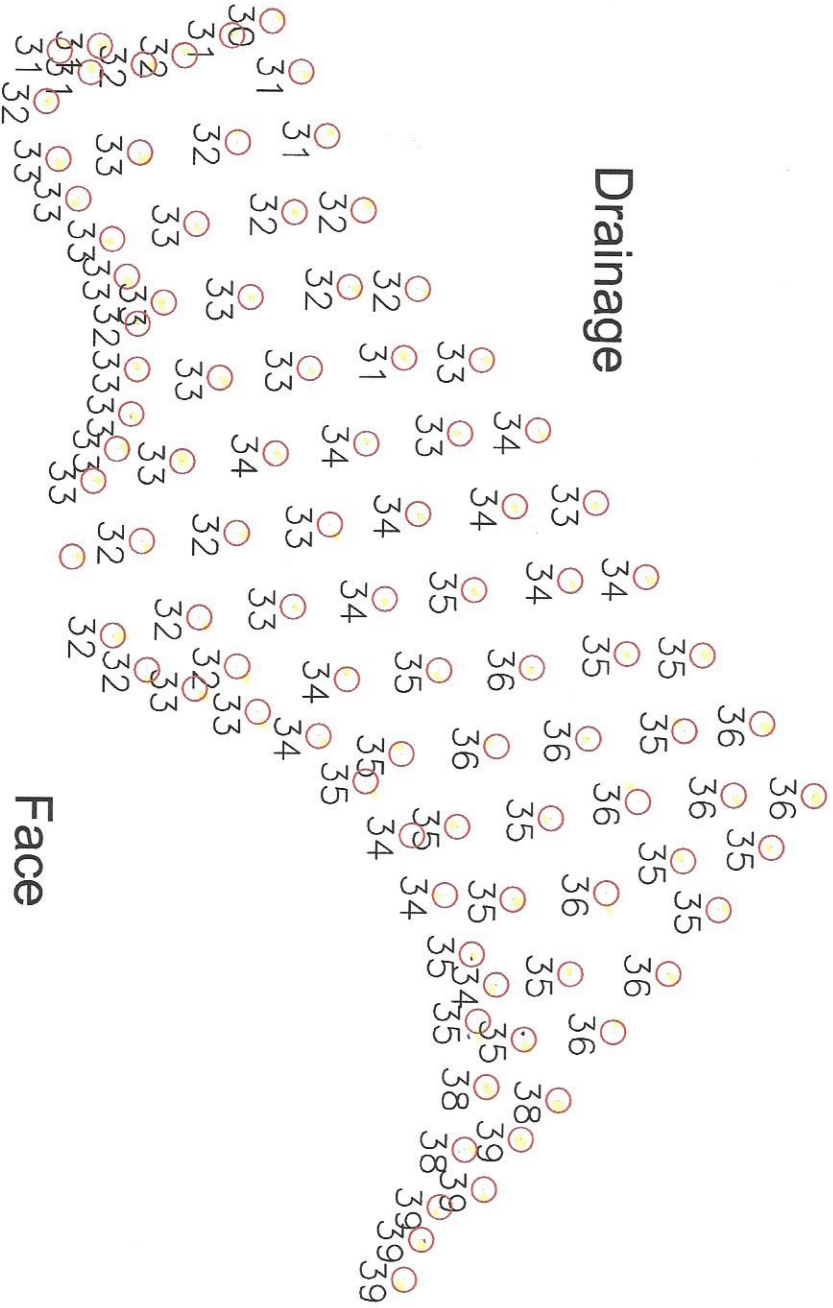


90 Holes

Martin Martin Red Canyon
#3 - 04 - 2018

13 X 15

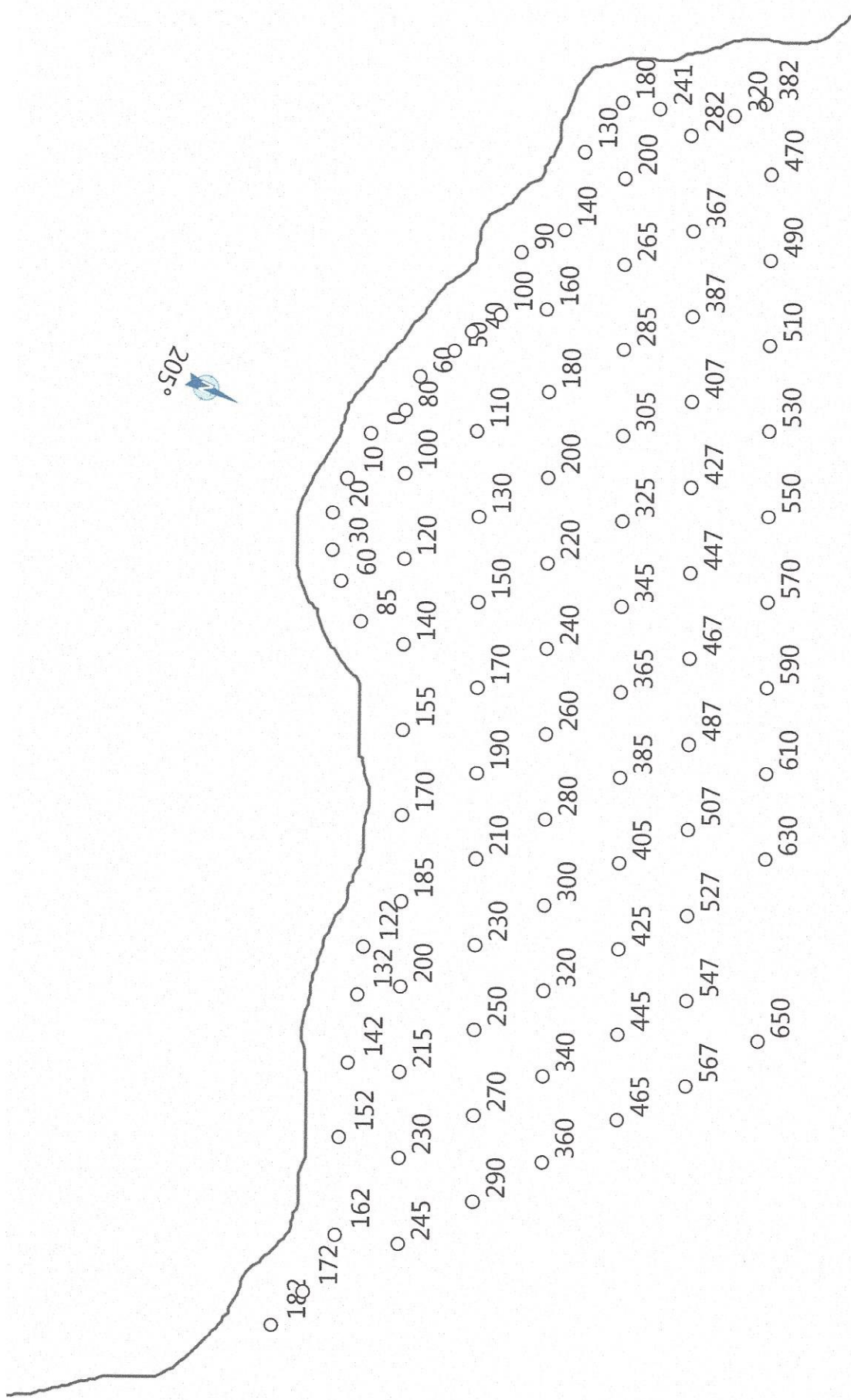
Drainage



Buckley Powder Co.
CUSTOMER NAME: RED CANYON
BENCH: Bench 6
BLASTER'S NAME: Farmer, Jimmie

DIAGRAM

BLAST DATE: 04/03/2018
BLAST NUMBER: #3-04-2018



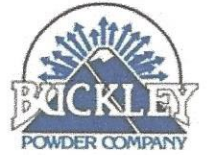
Shot: #3-04-2018

Bench: Bench 6

Customer: MARTIN MARIETTA

Site: Louviers

Load Sheet Report



| | | | |
|---|----------------------------------|-----------------------------|-------------------------|
| Mine: RED CANYON | Shot: #3-04-2018 | Date: 4/3/2018 | Time: 12:36PM |
| Blaster: Farmer, Jimmie | License: 1-035-0748 | Material: Granite | Holes: 90 |
| Diameter: 4.5 (IN) | Burden: 13 (FT) | Spacing: 15 (FT) | Primers: 176 |
| Exp. Vibration: 0.00 IPS | Fr. Burden: 13 (FT) | Fr. Spacing: 15 (FT) | Total Exp.: 17,492 (LB) |
| Fuel: 0 (LB) | AN: 0 (LB) | ANFO: 0 (LB) | Emulsion: 17,360 (LB) |
| Depth: 35.5 (FT) | YD3: 21,125 | Tons: 46,475 | Tons/Lb: 2.66 |
| | | | Gallons of Fuel: 0 |
| Max Lbs/Delay: 780 (LB) | Holes / 8ms: 4 | Location: N 038 36 29.22000 | & W-104 56 45.1800 |
| Temperature: 33° F | Wind Dir: North | Wind Speed: 5 MPH | Ceiling: High |
| Conditions: Clear | Method of Detonation: Electronic | | |
| Pre-Blast Inspection Performed: <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No | | Initiation: Remote | |
| Load Started: 8:45 AM | Load Ended: 10:45 AM | Total Load Time: 02:00 | |
| Comments: We had one hole blocked after it was primed we got both boosters out and tried to knock the rock down with loading poles but it would not move. Row 8 hole 11 this is on the back row. The shot looked very good. nice breakage | | | |

Crew

| Name | Hours | Name | Hours |
|-------------------|-------|----------------|-------|
| Anthony Archuleta | 4 | Garry McCulley | 4 |
| Luke Reel | 4 | Rod Schuch | 4 |
| Thomas Stocker | 4 | | |

Trucks Used: 5013

Inventory

| Description | Date Code | Out | Description | Date Code | Out |
|---------------|-----------|-----|-------------------------|-----------|-----|
| SPARTAN 350SR | 13AU17 | 180 | DIGISHOT DETONATOR 50FT | 26FE18 | 180 |

Services

| Service | Quantity | Service | Quantity |
|---------|----------|---------|----------|
|---------|----------|---------|----------|

Product Totals

| Product | Total (LB) |
|---------------|------------|
| SPARTAN 350SR | 132 |
| TITAN 1000 XL | 17,360 |

| Row | Col | Depth | Rise | Stem | Wet? | Product | Hole Total (LB) |
|-----|-----|-------|------|------|------|---------------|-----------------|
| A | 1 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| A | 1 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| A | 2 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| A | 2 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| A | 3 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| A | 3 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| A | 4 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| A | 4 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| A | 5 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| A | 5 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| A | 6 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| A | 6 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| B | 1 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| B | 1 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| B | 2 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| B | 2 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| B | 3 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| B | 3 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| B | 4 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| B | 4 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| B | 5 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| B | 5 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| B | 6 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| B | 6 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| B | 7 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| B | 7 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| C | 1 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| C | 1 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| C | 2 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| C | 2 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| C | 3 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| C | 3 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| C | 4 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| C | 4 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| C | 5 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| C | 5 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| C | 6 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| C | 6 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| C | 7 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| C | 7 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| C | 8 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |

| | | | | | | | |
|---|----|------|------|----|----|---------------|---------|
| C | 8 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| C | 9 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| C | 9 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| C | 10 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| C | 10 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| C | 11 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| C | 11 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| C | 12 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| C | 12 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| C | 13 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| C | 13 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| C | 14 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| C | 14 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| D | 1 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| D | 1 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| D | 2 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| D | 2 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| D | 3 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| D | 3 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| D | 4 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| D | 4 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| D | 5 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| D | 5 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| D | 6 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| D | 6 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| D | 7 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| D | 7 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| D | 8 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| D | 8 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| D | 9 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| D | 9 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| D | 10 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| D | 10 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| D | 11 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| D | 11 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| D | 12 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| D | 12 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| E | 1 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| E | 1 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| E | 2 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| E | 2 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| E | 3 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| E | 3 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |

| | | | | | | | |
|---|----|------|------|----|----|---------------|---------|
| E | 4 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| E | 4 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| E | 5 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| E | 5 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| E | 6 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| E | 6 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| E | 7 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| E | 7 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| E | 8 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| E | 8 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| E | 9 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| E | 9 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| E | 10 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| E | 10 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| E | 11 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| E | 11 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| E | 12 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| E | 12 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| E | 13 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| E | 13 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| F | 1 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| F | 1 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| F | 2 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| F | 2 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| F | 3 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| F | 3 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| F | 4 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| F | 4 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| F | 5 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| F | 5 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| F | 6 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| F | 6 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| F | 7 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| F | 7 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| F | 8 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| F | 8 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| F | 9 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| F | 9 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| F | 10 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| F | 10 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| F | 11 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| F | 11 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| F | 12 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |

| | | | | | | | |
|---|----|------|------|----|----|---------------|---------|
| F | 12 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| F | 13 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| F | 13 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| G | 1 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| G | 1 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| G | 2 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| G | 2 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| G | 3 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| G | 3 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| G | 4 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| G | 4 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| G | 5 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| G | 5 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| G | 6 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| G | 6 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| G | 7 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| G | 7 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| G | 8 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| G | 8 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| G | 9 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| G | 9 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| G | 10 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| G | 10 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| G | 11 | 35.5 | 23.5 | 12 | No | SPARTAN 350SR | 1.5 |
| G | 11 | 35.5 | 23.5 | 12 | No | TITAN 1000 XL | 211.981 |
| G | 12 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| G | 12 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| H | 1 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| H | 1 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| H | 2 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| H | 2 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| H | 3 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| H | 3 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| H | 4 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| H | 4 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| H | 5 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| H | 5 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| H | 6 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| H | 6 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| H | 7 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| H | 7 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| H | 8 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| H | 8 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |

| | | | | | | | |
|---|----|------|------|----|----|---------------|-----|
| H | 9 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| H | 9 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| H | 10 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| H | 10 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| H | 11 | 35.5 | 20.5 | 15 | No | SPARTAN 350SR | 1.5 |
| H | 11 | 35.5 | 20.5 | 15 | No | TITAN 1000 XL | 175 |
| I | 1 | 35.5 | 35.5 | 0 | No | | 0 |
| I | 2 | 35.5 | 35.5 | 0 | No | | 0 |

Seismic Analysis Stop Event Report

Serial Number: 10696 0C-06.05
Client: Martin Marietta
Operation: Red Canyon Quarry
Location: Front Entrance
Operator: Vibra Tech
Comment:

Begin Date: 04/03/2018 05:00:58 (UTC -06:00)
End Date: 04/03/2018 22:00:00 (UTC -06:00)
Events Over Trigger: 0
Record Time: 5 s
Seismic Trigger: 0.02 in/s
Sound Trigger: 133 dB
Battery: 8.3 volts

Additional Info:
j-GEO-16222
N38 36 04 W104 56 59

Shaketable Calibrated:
On: 04/13/2017 (UTC -06:00)
By: Vibra-Tech, Inc.
2700 Holloway Road - Suite 113
Louisville, KY 40203 U.S.A.

Dynamic Calibration Graph:



**STATE OF
COLORADO****Cazier - DNR, Tim** <tim.cazier@state.co.us>

Blasting Report for shot #3 / 4-2018

1 message

Wayne Stoughton <Wayne.Stoughton@martinmarietta.com>
To: "Cazier - DNR, Tim" <tim.cazier@state.co.us>

Wed, Apr 4, 2018 at 7:16 AM

Good Morning Tim,

Here is the Blast Report for the shot we put off yesterday at the North end of the pit. We had one Seismograph trigger on this shot. It was the one on the hill side below Mr. Bishop's home. I included the Trigger report for the seismograph that didn't trigger at the entrance to the quarry for your records. Any questions please feel free to give me a call.

Wayne Stoughton

Manager, Red Canyon Quarry| Rocky Mountain Agg District

Martin Marietta

3131 Barrett Road, Colorado Springs, CO 80926

t. (719) 629-8372

e. wayne.stoughton@martinmarietta.com

www.martinmarietta.com

2 attachments



Blast Report for shot #3 4-2018.pdf
5021K



pd11_uCUCtU.pdf
5K