

Buckley Powder Co.**BLAST REPORT**SERVICE SITE LOCATION: LouviersORDER NO.: D7403840BLAST NUMBER: #4-04-20018 BLAST TIME: 11:49 am BLAST DATE: 04/11/2018CUSTOMER: 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 4BLAST GPS POINTS: N 038 36 25.86000 & W -104 56 48.18000**WEATHER**WEATHER: Clear CEILING: High TEMPERATURE: 71 F WIND DIRECTION & SPEED: Northwest 20 MPH**NEAREST NON-OWNED STRUCTURE**NAME: North Hillside GPS Points: N 038 36 22.41000 & W -104 56 31.21980DISTANCE: 1,389 (FT) DIRECTION: 104°**SEISMOGRAPH DATA**

LOCATION		DISTANCE		GPS POINTS		CALIBRATION DATE	
1	North Hillside	1,389 (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	0.045 9.8	0.030 35.7	0.055 31.3	122	VibraTech 7816	7816	

BLAST DATA

NUMBER OF HOLES (EA)		EXPLOSIVES SIZE, TYPE & WEIGHT		
HOLE DIAMETER (IN)		SIZE	TYPE	WEIGHT
HOLE DEPTH (FT)		0.44	SPARTAN 200	67.760
FACE HEIGHT (FT)		BULK	TITAN 1000 XL	28,720
SUB DRILLING (FT)				
AVG. STEM FACE HOLES (FT)				
STEM OTHER HOLES (FT)				
BURDEN FRONT ROW (FT)				
BURDEN OTHER ROWS (FT)				
SPACING FRONT ROW (FT)				
SPACING OTHER ROWS (FT)				
		TOTAL WEIGHT (LB):		28,787.76

DETONATORS USED IN BLAST: Electronic MATS USED: No STEM TYPE: 3/4 x 1/2 CRUSHED TOTAL DRILL DEPTH: 4,125 (FT)

TYPE	MFG	DATE CODE	USED	TYPE	MFG	DATE CODE	USED
DIGISHOT DETONATOR 50FT	Dyno Nobel Global	26FE18	75	DIGISHOT DETONATOR 60FT	Dyno Nobel Global	20NO17	79
SPARTAN 200	Dyno Nobel Global	08DE17	154				

CU YDS IN SHOT: 28,679 SCALED DISTANCE FACTOR: 40 % OF ANFO: 0TONS IN SHOT: 63,095 HOLES/DELAY: 3 FUEL OIL % (BULK): 0MAX LBS/DELAY: 1,159 AVERAGE LBS/HOLE: 374POWDER FACTOR (TONS/LB): 2.19 POWDER FACTOR POUNDS/YD3: 1.00BLASTER'S NAME: Farmer, Jimmie BLASTER'S NUMBER & STATE: 1-035-0748 ColoradoBLASTER'S SIGNATURE: Jimmie A. Farmer SITE SAFETY INSPECTION PERFORMED: YesNUMBER OF PERSONNEL ON SITE: 5

REMARKS : The north 1/4 of the shot is soft rock and the other 3/4 is good hard rock. The shot went very good all dry holes. Breakage is a lot better throughout the entire shot but still several 4' to 5' boulders on the middle surface area. The Seismograph on the North Hill Side Reading is a 122 dB .

START TIME	END TIME	TOTAL TIME	TRUCK NUMBERS
7:30 AM	10:30 AM	03:00	5013, 5092

APPENDIX A

Date: 4-11-18

Location: my Red Cray

shot #: 4



BLASTER'S CHECKLIST

Must be filled out as you go!

PRE-TRIP CHECKLIST

☒	Measuring Tapes and lead ends
☒	Burden pole Tape/ Profiler
☒	Loading Poles
☒	Marking Paint
☒	Starter and primers
☒	Blasting Signs & cones
☒	Sirens in working order
☒	Set back stakes
☒	Digital video camera & Tripod

☒	Scientific Calculator
☒	Pocket Mirror
☒	Empty Shot bags
☒	Powder Punch
☒	GPS
☒	Non sparking Knife
☒	Wire strippers
☒	Splices
☒	Flash Light & Batteries

☒	Drill Logs
☒	Shot reports
☒	Hold Harnesses
☒	Seismographs
☒	Density Cup and Scales
☒	Two Way Radios / fully
☒	Wheel Chocks
☒	Harness & Lanyard / "T" post
☒	First Aid Kits

PRESHIFT CHECKLIST

☒	Inspect blast area for Unsafe Working Conditions (including face) for voids, cracks, caves, etc..
☒	Ensure all employees have their site specific training.
☒	Secure blast site with warning signs and cones (including floor in front of face)
☒	Check shot access including traffic activity
☒	Pre shift inspections on all equipment -OK and safe to operate (includes back up alarms, brakes, horns, etc..)
☒	Mark fall zone area at least six(6) feet from the crest
☒	Inspect Harness/ Lanyard before each use if needed for fall zone or on top of trucks
☒	Insure all needed products are present-enough boosters, detonators etc
☒	Calculate Minimum Burden and Measure front row burden with burden pole or profiler (Document)
☒	Check drill log and all holes for proper depth and blockage
☒	Insure blast design is consistent with closest structures requirements
☒	Any need for calling assistance (Hold Harmless, equipment to close, drilling problems, etc...)
☒	Conduct pre-blast safety meeting with blast crew. If there is not a timing diagram, detonator tie-in must be discussed at the
	Calculate pounds per delay: Expl density x expl diam ² x .3405 = _____ lbs/ ft x avg powder column= _____
	lbs/ft 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 180 = _____ exp. vib.

TIE-IN CHECKLIST

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

POST BLAST CHECKLIST

☒	Maintain guards until shot is cleared and "all clear" is sounded
☒	Check for misfires, undetonated explosives or burning product and other dangers
☒	Sound all clear that is audible to all parties
☒	Dispose of lead line in approved manner
☒	Dispose of empty boxes in approved methods only
☒	Complete all required paper work prior to leaving customer location- shipping Papers, delivery ticket, Blaster's
☒	Make one final check of blast site before leaving property to insure no materials have been left
	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 Farnaz

Seismic Analysis

Velocity Waveform Analysis

Serial Number: 7816
 Firmware Version: 0C-06.05
 Event Date: 04/11/2018 11:49:53 (UTC -06:00)
 Event number: 8
 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):	0.045	0.03	0.055
FREQ (HZ):	9.8	35.7	31.3
PD (.001"):	0.66	0.39	0.42
PPA (g):	0.033	0.026	0.033

Peak Vector Sum: 0.07 in/s
 Peak Air Pressure: 122 dB
 0.0038 psi @ 1.7 HZ

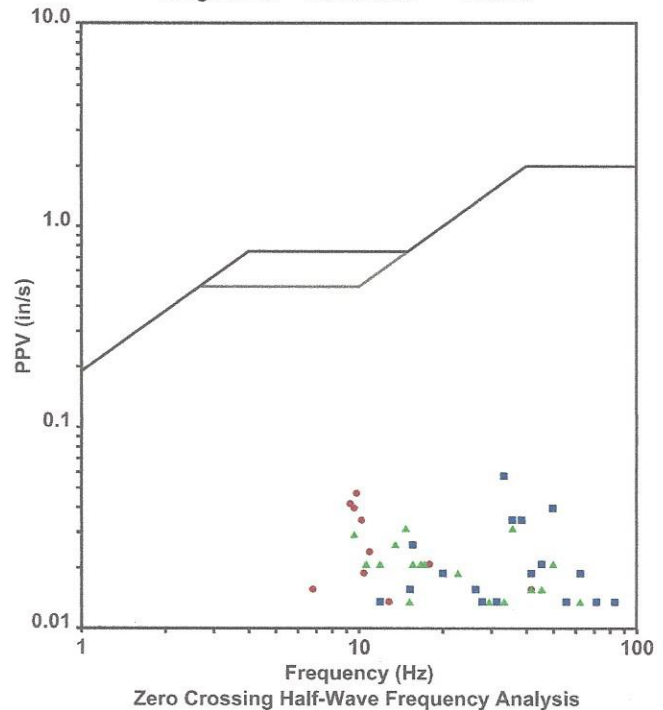
Shaketable Calibrated

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: 8

● Longitudinal ▲ Transverse ■ Vertical

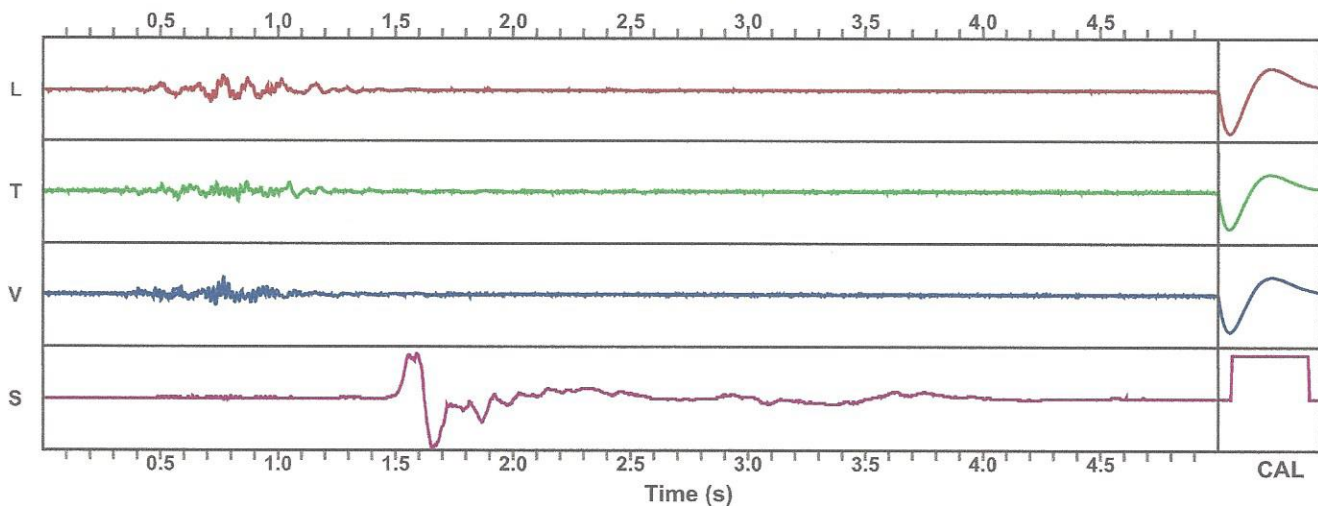


Waveform Graph Scale

Time Scale: 0.1 s
 Seismic Scale: +/- 0.16 in/s
 Sound Scale: +/- 0.0037 psi

Velocity Waveform

SSN: 7816 Event: 8



Seismic Analysis

Velocity Waveform Analysis

Serial Number: 7229
 Firmware Version: 0C-06.05
 Event Date: 04/11/2018 11:49:57 (UTC -06:00)
 Event number: 4
 Recording Time: 5 s
 Client: Martin Marietta
 Operation: Red Canyon Quarry
 Location: Front Entrance
 Distance:
 Operator: Vibra Tech
 Comment:
 Seismic Trigger: 0.02 in/s
 Sound Trigger: 133 dB

Additional Info:

j-GEO-16222
 N38 36 04 W104 56 59

Summary Data

	L	T	V
PPV (in/s):	0.023	0.025	0.01
FREQ (HZ):	6.8	7.5	25
PD (.001"):	0.46	0.56	0.24
PPA (g):	0.013	0.013	0.013

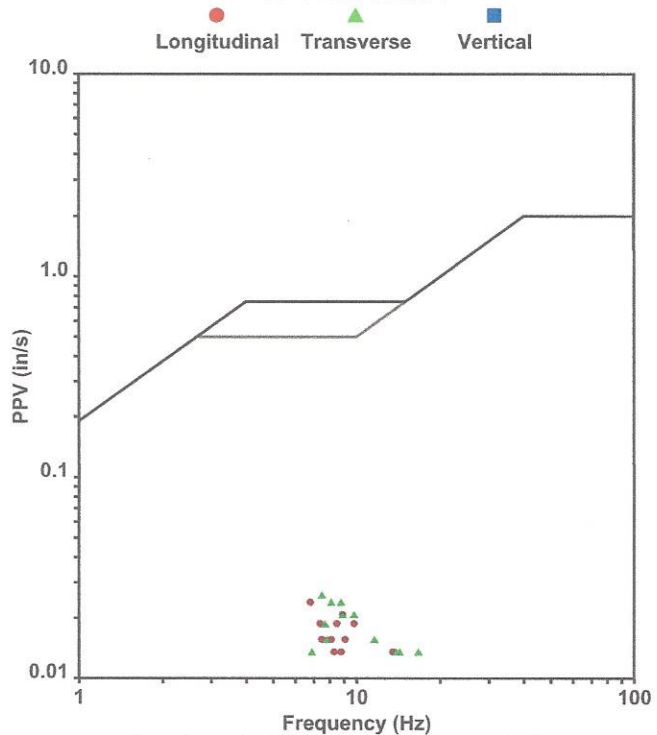
Peak Vector Sum: 0.03 in/s
 Peak Air Pressure: 114 dB
 0.0016 psi @ 7.7 HZ

Shaketable Calibrated

On: 01/24/2018 (UTC -06:00)
 By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

USBM Safe Blasting Levels

SSN: 7229 Event: 4



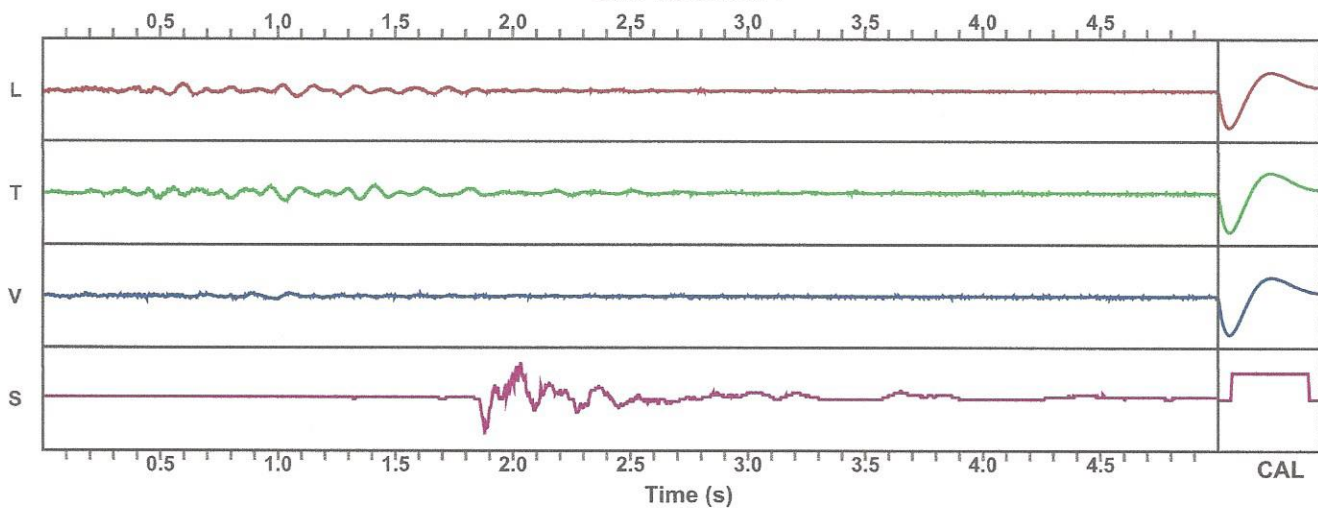
Zero Crossing Half-Wave Frequency Analysis

Waveform Graph Scale

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

Velocity Waveform

SSN: 7229 Event: 4



Buckley Powder Co.

CUSTOMER NAME: RED CANYON

BENCH: Bench 4

BLASTER'S NAME: Farmer, Jimmie

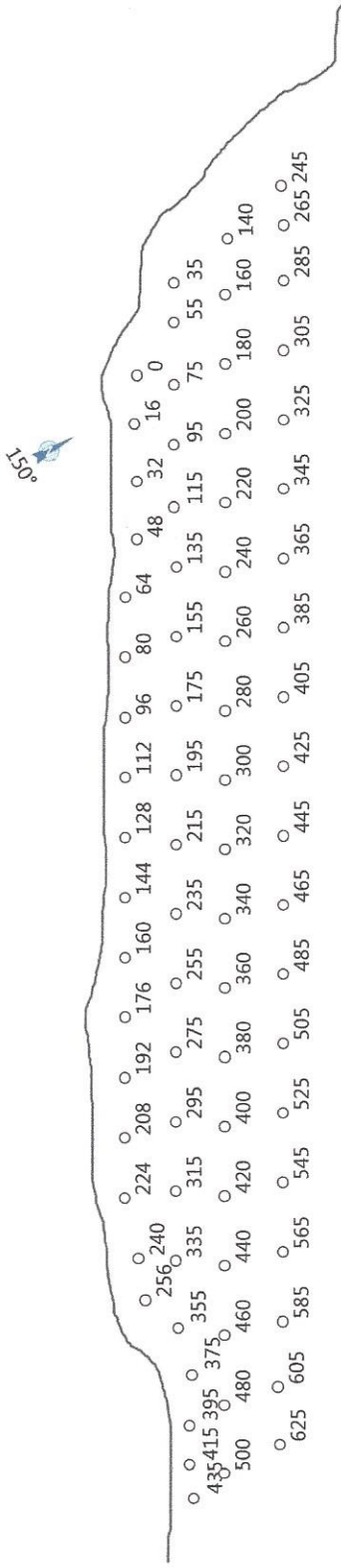
DIAGRAM

BLAST DATE: 04/11/2018

BLAST NUMBER: #4-04-20018



PORTABLE CRUSHER



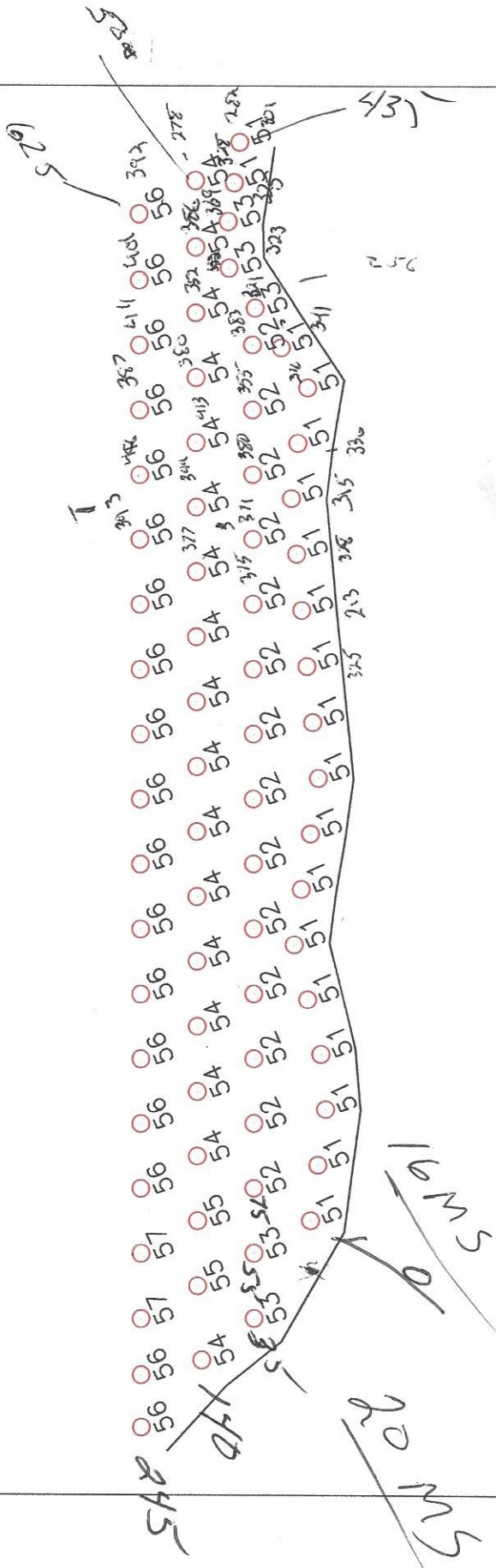
77 hole

28720

F	17	-	51'	=	5830
2	21	-	52'	=	7005
3	19	-	54'	=	7105
4	20	-	57'	=	8780

28720

15' 5 36
10' 5 42
10' 5 44
10' 5 47



Lake
592

Shot: #4-04-20018

Bench: Bench 4

Customer: MARTIN MARIETTA

Site: Louviers

Load Sheet Report



Mine: RED CANYON	Shot: #4-04-20018	Date: 4/11/2018	Time: 11:49AM
Blaster: Farmer, Jimmie	License: 1-035-0748	Material: Granite	Holes: 77
Diameter: 4.5 (IN)	Burden: 13 (FT)	Spacing: 15 (FT)	Primers: 154
Exp. Vibration: 0.00 IPS	Fr. Burden: 14 (FT)	Fr. Spacing: 14 (FT)	Total Exp.: 28,788 (LB)
Fuel: 0 (LB)	AN: 0 (LB)	ANFO: 0 (LB)	Emulsion: 28,720 (LB)
Depth: 51 - 57 (FT)	YD3: 28,679	Tons: 63,095	Tons/Lb: 2.19
Max Lbs/Delay: 1,159 (LB)	Holes / 8ms: 3	Location: N 038 36 25.86000	& W-104 56 48.1800
Temperature: 71° F	Wind Dir: Northwest	Wind Speed: 20 MPH	Ceiling: High
Conditions: Clear	Method of Detonation: Electronic		
Pre-Blast Inspection Performed: ☒ Yes / ☐ No	Initiation: Remote		
Load Started: 7:30 AM	Load Ended: 10:30 AM	Total Load Time: 03:00	
Comments: The north 1/4 of the shot is soft rock and the other 3/4 is good hard rock. The shot went very good all dry holes. Breakage is a lot better throughout the entire shot but still several 4' to 5' boulders on the middle surface area. The Seismograph on the North Hill Side Reading is a 122 dB .			

Crew

Name	Hours	Name	Hours
Garry McCulley	5	Jerry Wright	5
Luke Reel	5	Matt Klepfer	6
Thomas Stocker	5		

Trucks Used: 5013, 5092

Inventory

Description	Date Code	Out	Description	Date Code	Out
SPARTAN 200	08DE17	154	DIGISHOT DETONATOR 50FT	26FE18	75
DIGISHOT DETONATOR 60FT	20NO17	79			

Services

Service	Quantity	Service	Quantity
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Product Totals

Product	Total (LB)
SPARTAN 200	67,760
TITAN 1000 XL	28,720

Row	Col	Depth	Rise	Stem	Wet?	Product	Hole Total (LB)
A	1	51	35	16	No	SPARTAN 200	0.88
A	1	51	35	16	No	TITAN 1000 XL	342.941
A	2	51	35	16	No	SPARTAN 200	0.88
A	2	51	35	16	No	TITAN 1000 XL	342.941
A	3	51	35	16	No	SPARTAN 200	0.88
A	3	51	35	16	No	TITAN 1000 XL	342.941
A	4	51	35	16	No	SPARTAN 200	0.88
A	4	51	35	16	No	TITAN 1000 XL	342.941
A	5	51	35	16	No	SPARTAN 200	0.88
A	5	51	35	16	No	TITAN 1000 XL	342.941
A	6	51	35	16	No	SPARTAN 200	0.88
A	6	51	35	16	No	TITAN 1000 XL	342.941
A	7	51	35	16	No	SPARTAN 200	0.88
A	7	51	35	16	No	TITAN 1000 XL	342.941
A	8	51	35	16	No	SPARTAN 200	0.88
A	8	51	35	16	No	TITAN 1000 XL	342.941
A	9	51	35	16	No	SPARTAN 200	0.88
A	9	51	35	16	No	TITAN 1000 XL	342.941
A	10	51	35	16	No	SPARTAN 200	0.88
A	10	51	35	16	No	TITAN 1000 XL	342.941
A	11	51	35	16	No	SPARTAN 200	0.88
A	11	51	35	16	No	TITAN 1000 XL	342.941
A	12	51	35	16	No	SPARTAN 200	0.88
A	12	51	35	16	No	TITAN 1000 XL	342.941
A	13	51	35	16	No	SPARTAN 200	0.88
A	13	51	35	16	No	TITAN 1000 XL	342.941
A	14	51	35	16	No	SPARTAN 200	0.88
A	14	51	35	16	No	TITAN 1000 XL	342.941
A	15	51	35	16	No	SPARTAN 200	0.88
A	15	51	35	16	No	TITAN 1000 XL	342.941
A	16	51	35	16	No	SPARTAN 200	0.88
A	16	51	35	16	No	TITAN 1000 XL	342.941
A	17	51	35	16	No	SPARTAN 200	0.88
A	17	51	35	16	No	TITAN 1000 XL	342.941
B	1	52	41.5	10.5	No	SPARTAN 200	0.88
B	1	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	2	52	41.5	10.5	No	SPARTAN 200	0.88
B	2	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	3	52	41.5	10.5	No	SPARTAN 200	0.88
B	3	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	4	52	41.5	10.5	No	SPARTAN 200	0.88

B	4	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	5	52	41.5	10.5	No	SPARTAN 200	0.88
B	5	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	6	52	41.5	10.5	No	SPARTAN 200	0.88
B	6	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	7	52	41.5	10.5	No	SPARTAN 200	0.88
B	7	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	8	52	41.5	10.5	No	SPARTAN 200	0.88
B	8	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	9	52	41.5	10.5	No	SPARTAN 200	0.88
B	9	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	10	52	41.5	10.5	No	SPARTAN 200	0.88
B	10	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	11	52	41.5	10.5	No	SPARTAN 200	0.88
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B	12	52	41.5	10.5	No	SPARTAN 200	0.88
B	12	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	13	52	41.5	10.5	No	SPARTAN 200	0.88
B	13	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	14	52	41.5	10.5	No	SPARTAN 200	0.88
B	14	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	15	52	41.5	10.5	No	SPARTAN 200	0.88
B	15	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	16	52	41.5	10.5	No	SPARTAN 200	0.88
B	16	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	17	52	41.5	10.5	No	SPARTAN 200	0.88
B	17	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	18	52	41.5	10.5	No	SPARTAN 200	0.88
B	18	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	19	52	41.5	10.5	No	SPARTAN 200	0.88
B	19	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	20	52	41.5	10.5	No	SPARTAN 200	0.88
B	20	52	41.5	10.5	No	TITAN 1000 XL	333.571
B	21	52	41.5	10.5	No	SPARTAN 200	0.88
B	21	52	41.5	10.5	No	TITAN 1000 XL	333.571
C	1	54	43.5	10.5	No	SPARTAN 200	0.88
C	1	54	43.5	10.5	No	TITAN 1000 XL	373.947
C	2	54	43.5	10.5	No	SPARTAN 200	0.88
C	2	54	43.5	10.5	No	TITAN 1000 XL	373.947
C	3	54	43.5	10.5	No	SPARTAN 200	0.88
C	3	54	43.5	10.5	No	TITAN 1000 XL	373.947
C	4	54	43.5	10.5	No	SPARTAN 200	0.88
C	4	54	43.5	10.5	No	TITAN 1000 XL	373.947

C	5	54	43.5	10.5	No	SPARTAN 200	0.88
C	5	54	43.5	10.5	No	TITAN 1000 XL	373.947
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C	6	54	43.5	10.5	No	TITAN 1000 XL	373.947
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C	7	54	43.5	10.5	No	TITAN 1000 XL	373.947
C	8	54	43.5	10.5	No	SPARTAN 200	0.88
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C	11	54	43.5	10.5	No	SPARTAN 200	0.88
C	11	54	43.5	10.5	No	TITAN 1000 XL	373.947
C	12	54	43.5	10.5	No	SPARTAN 200	0.88
C	12	54	43.5	10.5	No	TITAN 1000 XL	373.947
C	13	54	43.5	10.5	No	SPARTAN 200	0.88
C	13	54	43.5	10.5	No	TITAN 1000 XL	373.947
C	14	54	43.5	10.5	No	SPARTAN 200	0.88
C	14	54	43.5	10.5	No	TITAN 1000 XL	373.947
C	15	54	43.5	10.5	No	SPARTAN 200	0.88
C	15	54	43.5	10.5	No	TITAN 1000 XL	373.947
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C	16	54	43.5	10.5	No	TITAN 1000 XL	373.947
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C	18	54	43.5	10.5	No	SPARTAN 200	0.88
C	18	54	43.5	10.5	No	TITAN 1000 XL	373.947
C	19	54	43.5	10.5	No	SPARTAN 200	0.88
C	19	54	43.5	10.5	No	TITAN 1000 XL	373.947
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D	5	57	46.5	10.5	No	TITAN 1000 XL	439
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D	6	57	46.5	10.5	No	TITAN 1000 XL	439
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D	7	57	46.5	10.5	No	TITAN 1000 XL	439
D	8	57	46.5	10.5	No	SPARTAN 200	0.88
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D	17	57	46.5	10.5	No	SPARTAN 200	0.88
D	17	57	46.5	10.5	No	TITAN 1000 XL	439
D	18	57	46.5	10.5	No	SPARTAN 200	0.88
D	18	57	46.5	10.5	No	TITAN 1000 XL	439
D	19	57	46.5	10.5	No	SPARTAN 200	0.88
D	19	57	46.5	10.5	No	TITAN 1000 XL	439
D	20	57	46.5	10.5	No	SPARTAN 200	0.88
D	20	57	46.5	10.5	No	TITAN 1000 XL	439



STATE OF
COLORADO

Cazier - DNR, Tim <tim.cazier@state.co.us>

Shot #4 / 4-2018 Blast Report

1 message

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

Thu, Apr 12, 2018 at 5:39 AM

Good Morning Tim,

Here is the shot report for yesterday's blast. Any questions please feel free to contact me. Have a great weekend, Sir.

Wayne Stoughton

Manager, Red Canyon Quarry| Rocky Mountain Agg District

Martin Marietta

3131 Barrett Road, Colorado Springs, CO 80926

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Shot #4 4-2018.pdf
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