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January 23, 2015

Daniel Shane
Federal On-Scene Coordinator
United States Environmental Protection Agency
Region 9, Emergency Response Section
75 Hawthorne Street
San Francisco, CA 94105

Subject: Argonaut Mine Tailings Area Geotechnical Sampling
City of Jackson, Amador County, California
TDD No.: 0002/1302-T2-R9-14-06-0002
Document Control No.: 0004-08-AADQ
Work Order No.: 20409.012.002.0004.00

Dear Mr. Shane:

Under TDD No. 0002/1302-T2-R9-14-06-0002 the U.S. Environmental Protection Agency (EPA) tasked Weston Solutions, Inc. (WESTON®) Superfund Technical Assessment and Response Team (START) to collect geotechnical data from the Argonaut Mine Tailing Area Site (Site). The Site location is shown on **Figure 1** in **Attachment A**. The data collected during this investigation will be used by the U.S. Army Corps of Engineers (Corps) to perform hydraulic and structural evaluations of mine tailings and other materials impounded by the Lower Earthen Tailings Dam and the Eastwood Multiple-Arch Dam (EMAD) located at the Site. The study is intended to evaluate the potential for liquefaction and mass movement of the mine tailings in the event of the failure of one or more tailing dams at the Site, and to evaluate the potential impact to downstream populations and resources as a result of such failure(s).

Additionally, the data are able to be used in more detailed models to predict downstream impacts, if necessary. The modeling will potentially be performed by the EPA Office of Research and Development, and may include the use of Flo-2D Modeling software to predict the downstream impacts from debris flows. START has made no interpretations of the collected data.

This letter report discusses the Site description and historical activities conducted at the Site. **Attachment A** provides the figures for this letter report. **Attachment B** contains the energy measurement for dynamic penetrometer testing. **Attachment C** provides boring logs and piezometer construction details. **Attachment D** contains the laboratory analytical data reports.



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SITE DESCRIPTION AND HISTORY

The Site is located in the western portion of the City of Jackson, Amador County, California (**Attachment A - Figures 1 and 2**). The Site is an approximately 65-acre area in an alluvial canyon on an unnamed tributary to the North Fork of Jackson Creek that trends from northwest to southeast. Between the late 1800s and the early 1940s, the Site was used to process and store ore, middlings (partially processed ore), and tailings from the Argonaut Mine. The Argonaut Mine and former mill areas are located approximately 0.5 mile north and topographically upgradient from the site. Currently, the alluvial canyon is partially to mostly filled with mine tailings that range from 25 feet to approximately 80 feet in thickness. Elevations at the Site range from approximately 1,560 feet above mean sea level (amsl) in the northwestern portion of the site to approximately 1,300 feet amsl in the southeastern portion of the site. In approximately 1916, the EMAD was constructed on the site to impound spent tailings after they were processed. The EMAD was constructed of concrete reinforced with steel cable and is approximately 46 feet high at its tallest point. Two other large earthen tailings dams, the Upper Earthen Tailings Dam and the Lower Earthen Tailings Dam are also present at the Site. The exact nature and time of their construction is unknown, but presumably occurred between 1916 and 1942, before the mine operations ceased at the start of World War II. The three dams impound a total of approximately 1,000,000 cubic yards of tailings.

At the request of the California Environmental Protection Agency Department of Toxic Substances Control, and due to concerns regarding the stability of the EMAD and earthen tailings dams at the site, in addition to the relatively high levels of arsenic and lead present in the tailings, the EPA initiated an assessment of the Site in 2013. As part of the assessment work, the EPA requested the assistance of the Corps in evaluating the dams located at the Site.

After brush removal operations were completed near the EMAD in November 2013, the Corps preformed a preliminary inspection of the EMAD and the tailings dams. At the time of the inspection, portions of the concrete EMAD were noted to be cracked or spalling, and sections of the cable wire used to strengthen the structure during construction were exposed and rusted. Additionally, large sinkholes were present upstream from the Lower Earthen Tailings Dam, suggesting that material was eroding from beneath the dam. Based on the preliminary investigation, the Corps submitted to EPA the *Argonaut Dam Stability and Retrofit Alternative Investigation - Phase I Technical Report*, and the EMAD was subsequently determined to be unsafe.

Several conditions were identified that could cause the collapse of the dam structure. The dam could fail due to earthquakes, or due to the pressure of the water and tailings impounded behind the dam, or due to a combination of both. Preliminary calculations indicated the potential to impact downstream human and environmental resources. The downtown section of Jackson is located approximately 1,200 feet east and topographically downgradient from the EMAD. The



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Corps recommended further hazard impact studies, including a geotechnical assessment of the EMAD and the earthen materials impounded behind the dams.

DATA COLLECTION ACTIVITIES

Between September 22 and 26, 2014, START subcontracted Cascade Drilling to advance four geotechnical borings. The borings were drilled using a limited-access hollow stem auger (HSA) drill rig at locations selected by the Corps. The work was conducted in accordance with the START Quality Assurance and Sampling Plan for the Argonaut Mine Tailing Area Assessment prepared in September 2014. Two borings (2F-14-01 and 2F-14-02) were drilled through the tailings behind the EMAD and were completed with the installation of piezometers. Boring 2F-14-03 was drilled through the Lower Earthen Tailings Dam, and boring 2F-14-04 was drilled behind the Lower Earthen Tailings Dam and completed with the installation of a piezometer. The boring and piezometer locations are shown on **Figure 2 in Attachment A**.

The borings were advanced using a standard 8-inch outside diameter and 4.5-inch inside diameter HSA and sampled for blow counts to obtain an N-value using a standard penetrometer, and a splitspoon sampler in accordance with American Society for Testing and Materials (ASTM) Method D1586 Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils. Energy testing was performed by Taber Drilling in accordance with ASTM Method D4633 Standard Test Method for Energy Measurement for Dynamic Penetrometers while advancing the first two borings (2F-14-01 and 2F-14-02). The energy testing was performed to measure the energy that enters the penetrometer drill rod string during dynamic penetrometer testing of soil due to the hammer impact to more correctly interpret the SPT blow counts. The energy measurement for dynamic penetrometers testing results are provided in **Attachment B**.

Soil collected from the borings was logged by a START California-registered professional geologist in accordance with ASTM Method D2488, and soil cores from the borings were placed in labeled core boxes and provided to the Corps for archiving. Soil samples for geotechnical analyses were collected from intervals selected in consultation with the Corps and placed in plastic bags for submittal to Ninyo & Moore, subcontracted by START for geotechnical analyses. Additionally, undisturbed samples were collected using 30-inch long by 3-inch diameter steel Shelby Tube samplers for laboratory analyses. Boring 2F-14-03 was tremmie-grouted using neat cement mixed with water. Piezometers were constructed in borings 2F-14-01, 2F-14-02, and 2F-14-04 using 2-inch diameter flush threaded, Schedule 40 polyvinyl chloride (PVC) well casing and well screen, with a threaded end cap. Ten feet of well screen with a slot size of 0.010-inch and a filter pack comprised of washed Number 2/12 sand was installed through the HSA. The piezometers were completed with a locking above ground steel stovepipe installed in concrete and surrounded with three bollards. Boring logs and piezometer completion diagrams are provided in **Attachment C**.



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Soil samples were hand delivered to Ninyo & Moore, Oakland, California, under chain-of-custody control for the following geotechnical analysis: Soil Gradation by ASTM Method D422 (Test Method for Particle-Size Analysis of Soil, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils using ASTM Method D4318); Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass using ASTM Method D2216; and, Standard Test Method for Consolidated Undrained Triaxial Compression Test for Cohesive Soils using ASTM D4767. Laboratory analytical reports are provided in **Attachment D**.

On October 7, 2014, START collected depth to groundwater measurements (see Table 3 in Conclusions section) from the undeveloped piezometers using a using an electronic water level indicator capable of measuring the static water level to within 0.01-foot and supervised Cascade Drilling in the development of the newly installed piezometers. The piezometers were developed with a Pulstar P12,000 Series Pump Hoist by surging (swabbing), bailing, and pumping. Surging was conducted using a mechanical surge block and was conducted in short intervals throughout the screened interval followed by bailing to remove sediment entrained in the piezometer. The wells were then purged using a submersible pump until the well water was relatively clear to the unaided eye and the sediment thickness remaining in the well was less than 1% of the screen length, and a minimum of 10 well casing volumes had been purged.

On December 19, 2014, START measured the depth to water in the piezometers shortly after a series of moderate to heavy precipitation events had occurred (see Table 3 in Conclusions section).

CONCLUSIONS

The data collected during this Geotechnical Investigation will be used by the Corps to perform hydraulic and structural calculations for determining the potential for liquefaction and mass movement of mine tailings in the event one or more of the tailings dams fail, and to evaluate potential impacts to downstream populations and resources. START has made no interpretations of the collected data.

Table 1 on the following page provides a summary of the quantity, locations, and depths of geotechnical samples collected from the borings:



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January 23, 2015

Table 1 - Summary of Sampling Information

Boring Number	Sample Depth (feet)	ASTM D422 Gradation	ASTM D422 Hydrometer	ASTM D4318 Plasticity	ASTM D2216 Moisture	ASTM D4767 Triaxial Shear Test
2F-14-01 Behind EMAD	17	--	--	--	1	1
	18.5	1	1	1	1	--
	25.5	1	1	1	1	--
	39	1	1	--	1	1
2F-14-02 Behind EMAD	16	1	1	1	1	--
	27	1	1	1	1	--
2F-14-03 Lower Earthen Tailings Dam	15	1	1	1	1	--
	45	1	1	1	1	--
	57.5	1	1	--	1	1
2F-14-04 Behind Lower Earthen Tailings Dam	16	1	1	1	1	--
	28	1	1	1	1	--
	40.5	1	1	1	1	--
	57	1	1	1	1	--
	58	1	1	--	1	1
Total		13	13	10	14	4

Table 2 provides a summary of boring and piezometer information. The boring and piezometers locations were surveyed using a Trimble GeoExplorer® 6000 GeoXT Global Positioning System receiver. Northing and Easting coordinates are provided using North American Datum 1983 (NAD83) and State Plane California Zone 2 U.S. Survey Feet. Elevations of the borings and piezometers were estimated from an EPA topographic survey using North American Vertical Datum of 1988 (NAVD88).

Table 2 - Summary of Boring/Piezometer Location Information

Boring Number	State Plane, NAD83 CA Zone 2 U.S. Feet		Geographic, NAD83		Estimated using NAVD88, Feet	
	Northing	Easting	Latitude	Longitude	Ground Surface Elevation	Top of Casing Elevation
2F-14-01	1892663.732	6910733.506	38.352860901 N	120.782753601 W	1,367.0	1,369.5
2F-14-02	1892615.544	6910732.328	38.352728637 N	120.782759959 W	1,366.5	1,368.5
2F-14-03	1892938.841	6910094.275	38.353639739 N	120.784969600 W	1,442.5	NA
2F-14-04	1892866.382	6909972.432	38.353445265 N	120.785397815 W	1,432.5	1,435.5



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January 23, 2015

Table 3 provides a summary of groundwater elevations and piezometer construction details. Groundwater measurements were collected from the piezometer's top of casing on two events to an accuracy of 0.01 foot; however, the casing elevations were not surveyed and are estimated from an EPA topographic survey using NAVD88. A piezometer was not planned for the boring location (2F-14-03) located on top of the Lower Earthen Tailings Dam, and no groundwater was observed during the drilling of the boring.

Table 3 - Summary of Piezometer Groundwater Elevations

Piezometer Number	Top of Casing Elevation (feet amsl)	Depth to Water (10/07/14) (feet)	Groundwater Elevation (10/07/14) (feet amsl)	Depth to Water (12/19/14) (feet)	Groundwater Elevation (12/19/14) (feet amsl)	Top of Screen Elevation (feet amsl)	Bottom of Screen Elevation (feet amsl)
2F-14-01	1,369.5	29.95	1,339.55	29.05	1,340.45	1,337.3	1,327.3
2F-14-02	1,368.5	26.55	1,341.95	23.40	1,345.10	1,342.3	1,332.3
2F-14-04	1,435.5	52.53	1,382.97	50.45	1,385.05	1,382.5	1,372.5

Should you have any questions regarding the information presented in this letter report, please contact me at (925) 948-2655, or at Thomas.Fortner@westonsolutions.com.

Respectfully submitted,

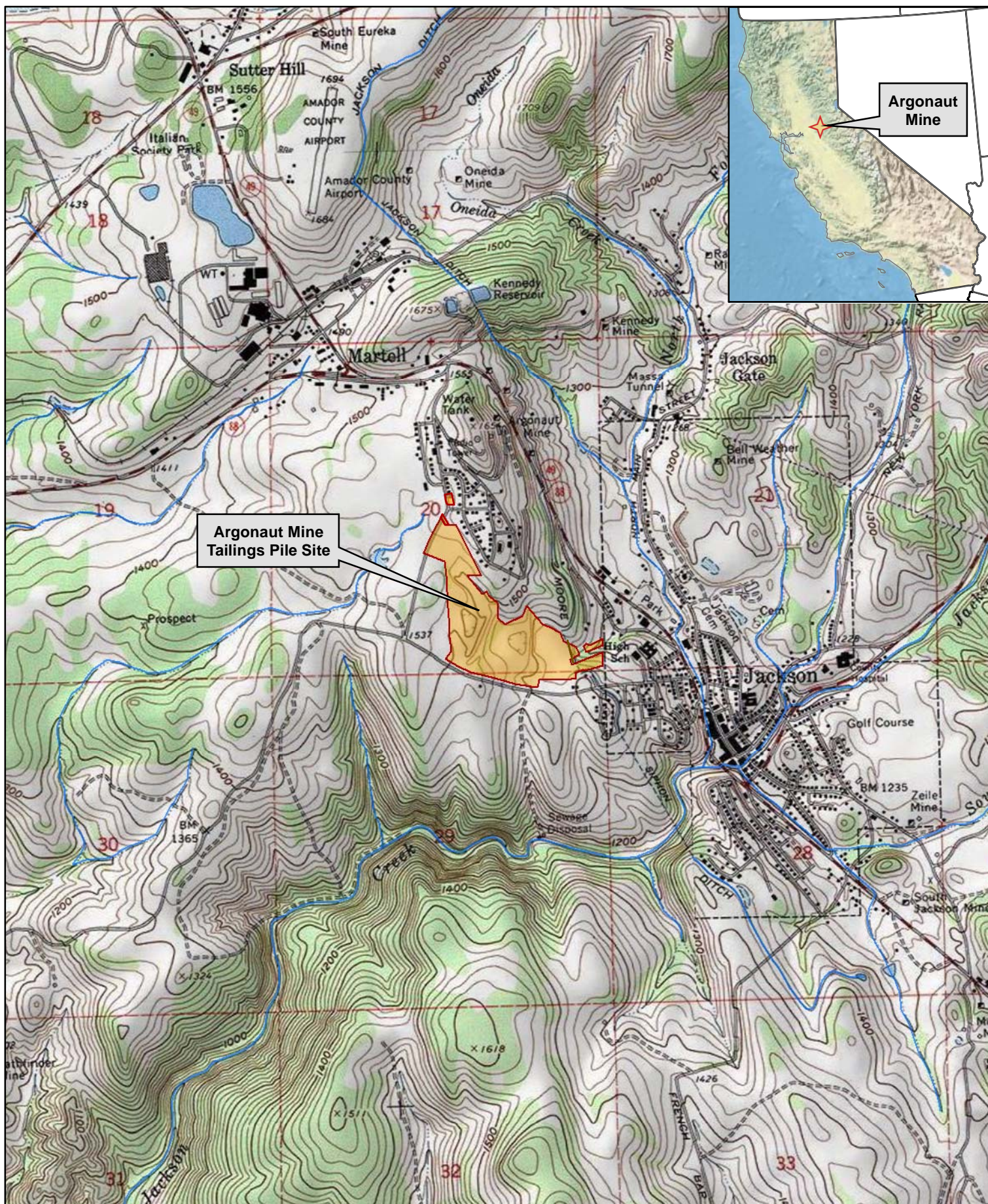
Thomas Fortner
START, Project Manager

cc: WESTON START Project File

ATTACHMENTS:

- A - Figures
- B - Dynamic Penetrometers Testing Results
- C - Boring Logs and Piezometer Construction Details
- D - Laboratory Analytical Data Reports

ATTACHMENT A
FIGURES

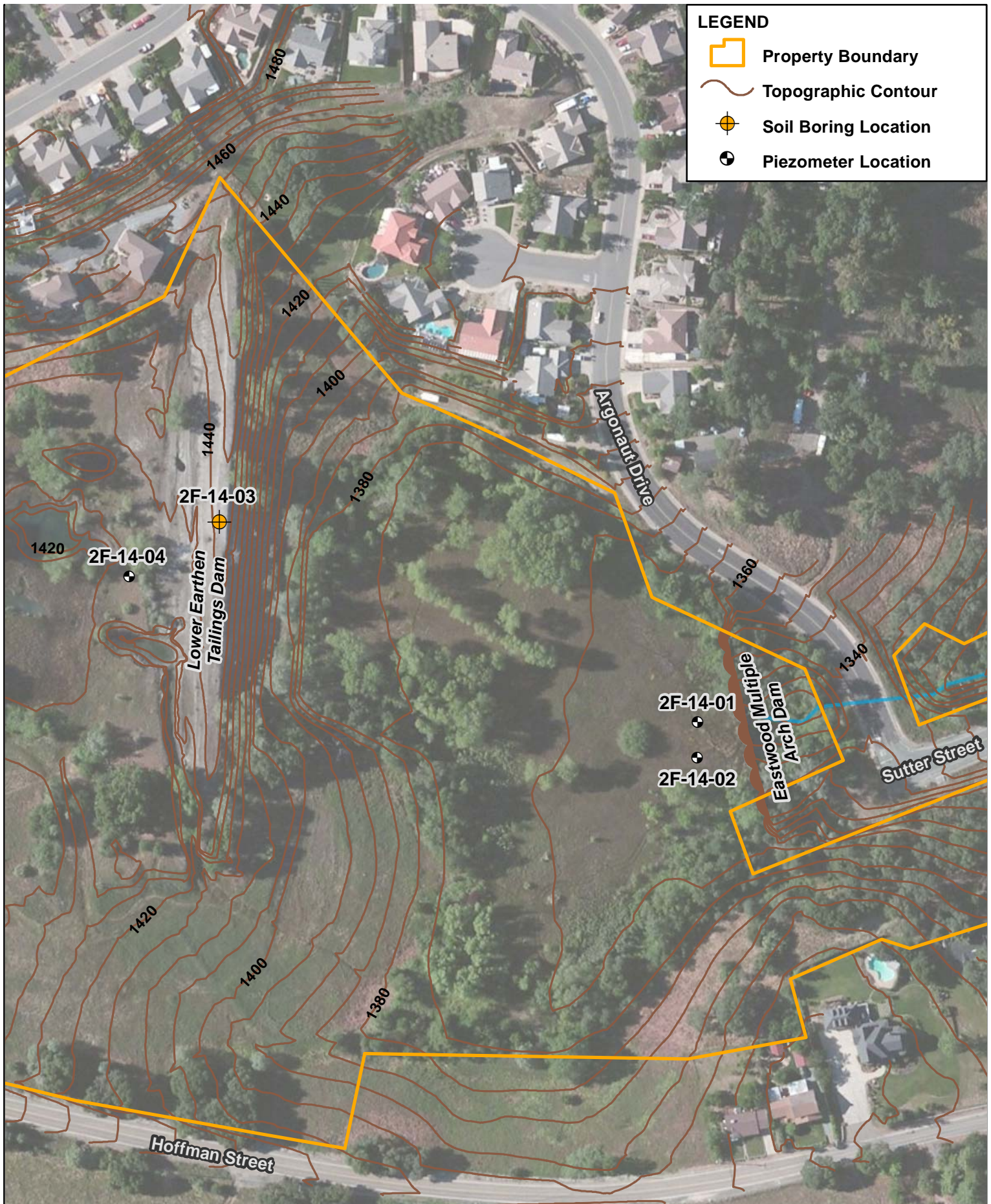






PREPARED BY:
Region 9 START
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PREPARED FOR:
EPA Region 9
Emergency
Response
Section



FIGURE 1
SITE LOCATION MAP
Argonaut Mine Tailings Area
Jackson, Amador County, California



   <p>0 Scale in Feet 200</p>	<p>PREPARED BY: Region 9, START Weston Solutions, Inc. 1340 Treat Blvd, Ste 210 Walnut Creek, CA 94597</p>	<p>PREPARED FOR: EPA Region 9 Emergency Response Section</p> 	<p>FIGURE 2 Geotechnical Borings and Piezometers Argonaut Mine Tailings Area Jackson, Amador County, California</p>
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ATTACHMENT B
DYNAMIC PENETROMETERS TESTING RESULTS



3911 West Capitol Avenue
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November 3, 2014

Mr. Tony Jaramillo
Cascade Drilling L.P.
3000 Duluth Street
West Sacramento, CA 95691

Subject: SPT – Hammer Energy Measurements
Argonaut Tailings Area
Boring 2F-1
Jackson, California

D14-0215

Dear Mr. Jaramillo:

This letter transmits the Standard Penetration Test (SPT) hammer energy efficiency to be used for Boring 2F-1 for your Argonaut Tailings Area Project sampled on September 22, 2014, using your all-terrain CME 1050 drill rig equipped with an automatic hammer. Energy measurements for this hammer were obtained in a manner consistent with ASTM D4633-10 using an SPT Analyzer manufactured by Pile Dynamics, Inc. on September 22, 2014. The purpose was to obtain hammer energy measurements and determine hammer efficiency (normalized for 60% efficiency) during sampling.


Dynamic strain and acceleration measurements were obtained through two strain bridge pairs and two accelerometers affixed on a 2-foot long section of NWJ rod. The NWJ rod was mounted on top of the string of rods and below the hammer. Strain and acceleration signals were conditioned and converted to force and velocity measurements using the SPT Analyzer.

The dynamic force and velocity data was converted to maximum transferred energy using the EFV method: $EFV = \int F(t) \bullet V(t) \bullet dt$. The integration is performed from when energy transfer begins to when the maximum energy occurs. This method is theoretically appropriate regardless of rod length, wave travel time, and the number of non-uniform rod connections. Energy transfer is then calculated as $ETR = EFV/PE$, where ETR is the energy transfer ratio, EVF is the energy transferred to the sampling rods, and PE is the theoretical potential energy.

The average hammer efficiency (ETR) on September 22, 2014, was **87%** (based on an EFV of 305 ft-lbs). The results via the SPT Analyzer are presented in the attached table (Summary of Field Results, SPT Energy Measurements), graphical data plots, and data sheets.

We appreciate the opportunity to be of service.

Very Truly Yours,
TABER CONSULTANTS


Ronald E. Loutzenhiser
R.C.E. 64089



Attachments: Summary of Field Results, SPT Energy Measurements
SPT Analyzer data, per drive depth

Taber Consultants
Engineers and Geologists



Summary of Field Results SPT Energy Measurements

Project Name	Argonaut Talings Site
Boring No.	2F-1
Client Proj. No.	
Date	9/22/14
Drill Rig	CME L1241
Hammer Type	Auto
SPT Analyzer Operator	Tim d'Arcy
Taber Project No.	D14-0215

Sampler Depth (ft)	Number of Blows Analyzed	Average Energy Transfer* ft-lbs	Hammer Operating Rate bpm	Average Transfer Efficiency* %
5-6.5	5	268	44	77
27.5-29	2	328	57	94
29-30.5	5	310	38	89
32.5-34	8	320	54	91
35-36.5	13	308	50	88
36.5-37.5	60	295	41	84
37.5-39	70	307	43	88
	Ave	305	47	87
	Max	320	54	91
	Min	295	41	84
	Std Dev	10	6	3

Note:

Transfer Efficiency is based on 350 ft-lbs, 140# hammer with a nominal 30-inch drop.



Taber Consultants
Case Method & iCAP® Results

Page 1 of 1
PDILOT Ver. 2014.1 - Printed: 1-Oct-2014

ARGONAUNT TAILINGS AREA - 2F.1.05
OP: TAD

Test date: 22-Sep-2014

AR: 1.40 in²
LE: 131.50 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

FMX: Maximum Force
VMX: Maximum Velocity
EMX: Max Transferred Energy

BPM: Blows per Minute
ETR: Energy Transfer Ratio

BL#	depth ft	FMX kips	VMX f/s	EMX k-ft	BPM **	ETR (%)
2	5.00	41	17.2	0.244	58.1	69.7
3	5.00	41	17.3	0.311	48.8	88.7
4	5.00	43	18.4	0.287	48.4	81.9
5	5.00	40	17.3	0.249	15.2	71.0
6	5.00	40	17.0	0.250	48.9	71.3
Average		41	17.4	0.268	43.9	76.5
Std. Dev.		1	0.5	0.026	14.8	7.5
Maximum		43	18.4	0.311	58.1	88.7
@ Blow#		4	4	3	2	3
Minimum		40	17.0	0.244	15.2	69.7

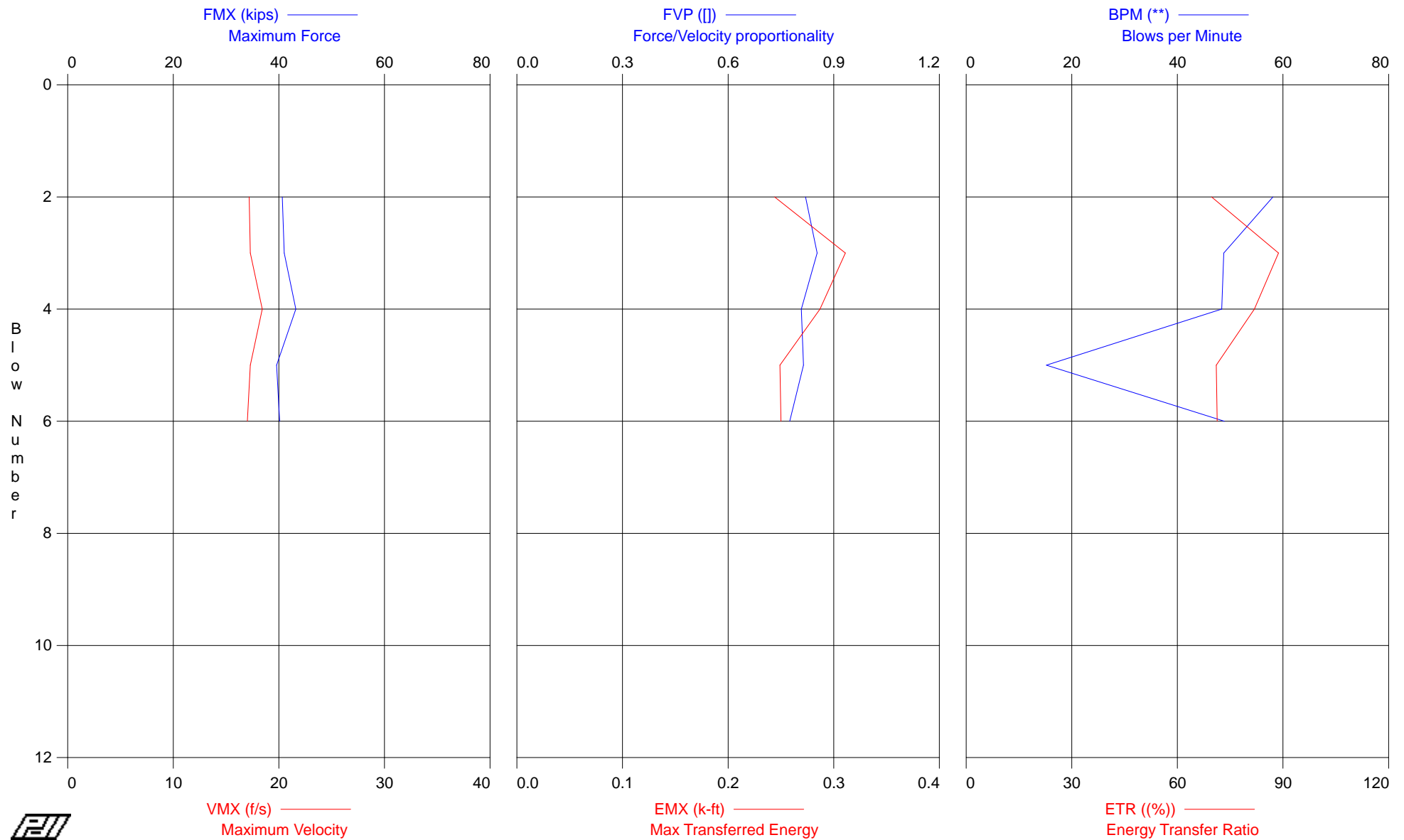
Total number of blows analyzed: 5

Time Summary

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ARGONAUNT TAILINGS AREA - 2F.1.05





Taber Consultants
Case Method & iCAP® Results

Page 1 of 1
PDILOT Ver. 2014.1 - Printed: 1-Oct-2014

ARGONAUNT TAILINGS AREA - 2F.1.27.5
OP: TAD

Test date: 22-Sep-2014

AR: 1.40 in^2
LE: 27.50 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

FMX: Maximum Force
VMX: Maximum Velocity
EMX: Max Transferred Energy

BPM: Blows per Minute
ETR: Energy Transfer Ratio

BL#	depth ft	FMX kips	VMX f/s	EMX k-ft	BPM **	ETR (%)
3	27.50	42	17.0	0.324	58.1	92.5
4	27.50	42	17.3	0.332	56.4	94.8
	Average	42	17.1	0.328	57.3	93.7
	Std. Dev.	0	0.1	0.004	0.9	1.2
	Maximum	42	17.3	0.332	58.1	94.8
	@ Blow#	4	4	4	3	4
	Minimum	42	17.0	0.324	56.4	92.5

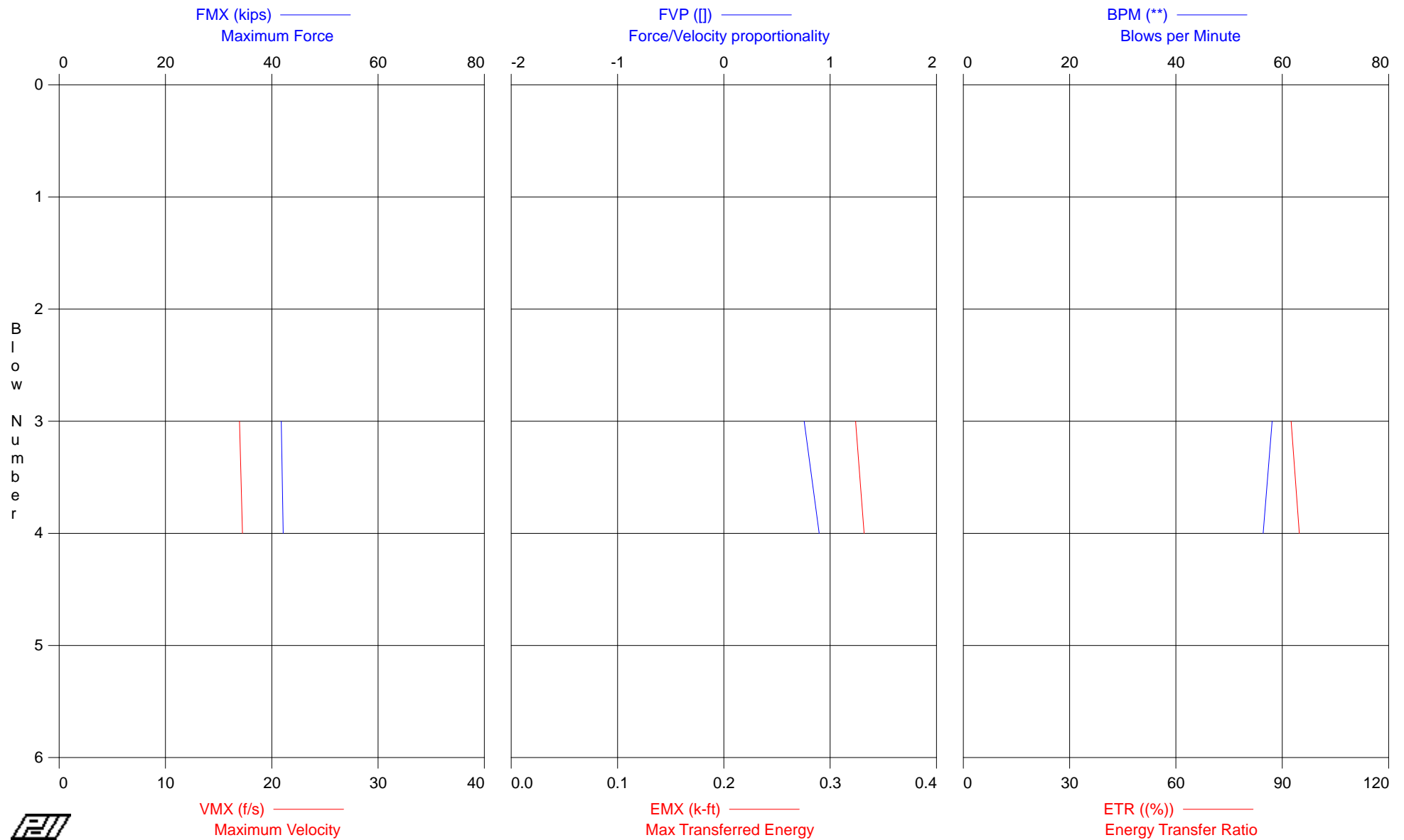
Total number of blows analyzed: 2

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ARGONAUNT TAILINGS AREA - 2F.1.27.5





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Case Method & iCAP® Results

Page 1 of 1
PDILOT Ver. 2014.1 - Printed: 1-Oct-2014

ARGONAUNT TAILINGS AREA - 2F.1.29
OP: TAD

Test date: 22-Sep-2014

AR: 1.40 in²
LE: 29.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

FMX: Maximum Force
VMX: Maximum Velocity
EMX: Max Transferred Energy

BPM: Blows per Minute
ETR: Energy Transfer Ratio

BL#	depth ft	FMX kips	VMX f/s	EMX k-ft	BPM **	ETR (%)
1	29.00	41	16.5	0.313	1.9	89.4
2	29.00	43	16.7	0.317	47.2	90.6
3	29.00	42	16.7	0.316	47.4	90.4
4	29.00	42	16.7	0.306	47.5	87.4
5	29.00	40	16.7	0.299	47.5	85.3
Average		42	16.7	0.310	38.3	88.6
Std. Dev.		1	0.1	0.007	18.2	2.0
Maximum		43	16.7	0.317	47.5	90.6
@ Blow#		2	3	2	4	2
Minimum		40	16.5	0.299	1.9	85.3

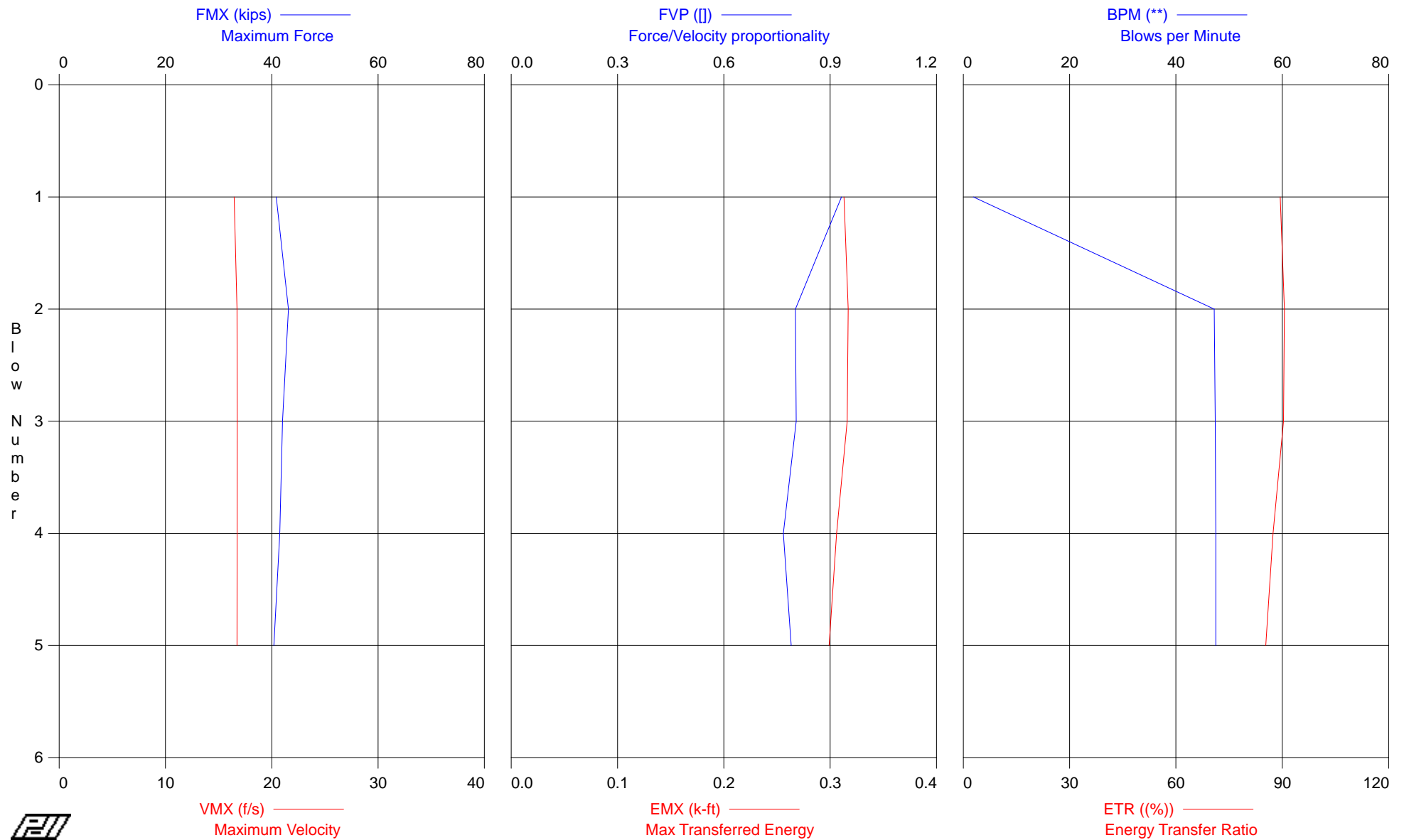
Total number of blows analyzed: 5

Time Summary

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ARGONAUNT TAILINGS AREA - 2F.1.29





Taber Consultants
Case Method & iCAP® Results

Page 1 of 1
PDILOT Ver. 2014.1 - Printed: 1-Oct-2014

ARGONAUNT TAILINGS AREA - 2F.1.32.5
OP: TAD

Test date: 22-Sep-2014

AR: 1.40 in^2
LE: 32.50 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

FMX: Maximum Force
VMX: Maximum Velocity
EMX: Max Transferred Energy

BPM: Blows per Minute
ETR: Energy Transfer Ratio

BL#	depth ft	FMX kips	VMX f/s	EMX k-ft	BPM **	ETR (%)
2	32.50	41	16.8	0.327	59.3	93.3
3	32.50	41	16.9	0.323	53.3	92.2
4	32.50	45	16.9	0.325	53.3	92.8
5	32.50	42	16.6	0.319	53.6	91.2
6	32.50	42	16.7	0.313	53.4	89.5
7	32.50	41	16.5	0.319	53.5	91.2
8	32.50	44	16.8	0.319	53.2	91.0
9	32.50	41	16.6	0.314	53.4	89.8
Average		42	16.7	0.320	54.1	91.4
Std. Dev.		1	0.1	0.005	2.0	1.3
Maximum		45	16.9	0.327	59.3	93.3
@ Blow#		4	3	2	2	2
Minimum		41	16.5	0.313	53.2	89.5

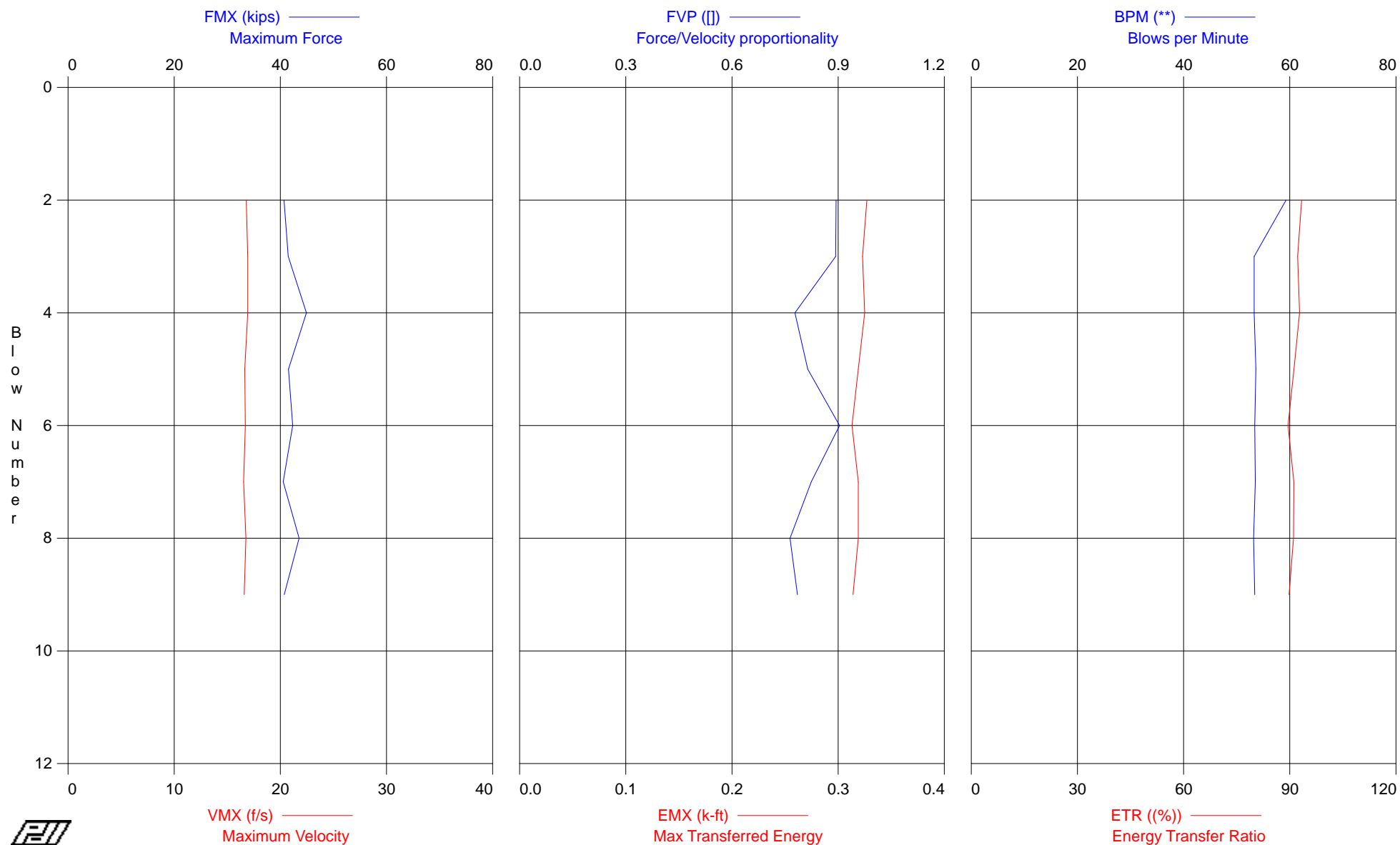
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ARGONAUNT TAILINGS AREA - 2F.1.32.5





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Case Method & iCAP® Results

Page 1 of 1
PDILOT Ver. 2014.1 - Printed: 1-Oct-2014

ARGONAUNT TAILINGS AREA - 2F.1.35
OP: TAD

Test date: 22-Sep-2014

AR: 1.40 in^2
LE: 35.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft3
EM: 30,000 ksi
JC: 0.00

FMX: Maximum Force
VMX: Maximum Velocity
EMX: Max Transferred Energy

BPM: Blows per Minute
ETR: Energy Transfer Ratio

BL#	depth ft	FMX kips	VMX f/s	EMX k-ft	BPM **	ETR (%)
2	35.00	37	17.4	0.316	59.3	90.4
3	35.00	37	16.5	0.310	53.1	88.6
4	35.00	39	16.5	0.315	52.7	90.0
5	35.00	40	16.6	0.312	52.9	89.1
6	35.00	41	16.5	0.311	53.0	88.7
7	35.00	39	16.0	0.300	53.0	85.8
8	35.00	40	16.3	0.304	45.2	86.8
9	35.00	39	16.2	0.306	47.2	87.4
10	35.00	39	16.3	0.304	47.3	86.9
11	35.00	41	16.3	0.306	47.1	87.5
12	35.00	40	16.3	0.305	47.4	87.1
13	35.00	41	16.3	0.304	47.2	86.8
14	35.00	40	16.3	0.305	47.5	87.2
Average		39	16.4	0.308	50.2	87.9
Std. Dev.		1	0.3	0.005	3.9	1.3
Maximum		41	17.4	0.316	59.3	90.4
@ Blow#		11	2	2	2	2
Minimum		37	16.0	0.300	45.2	85.8

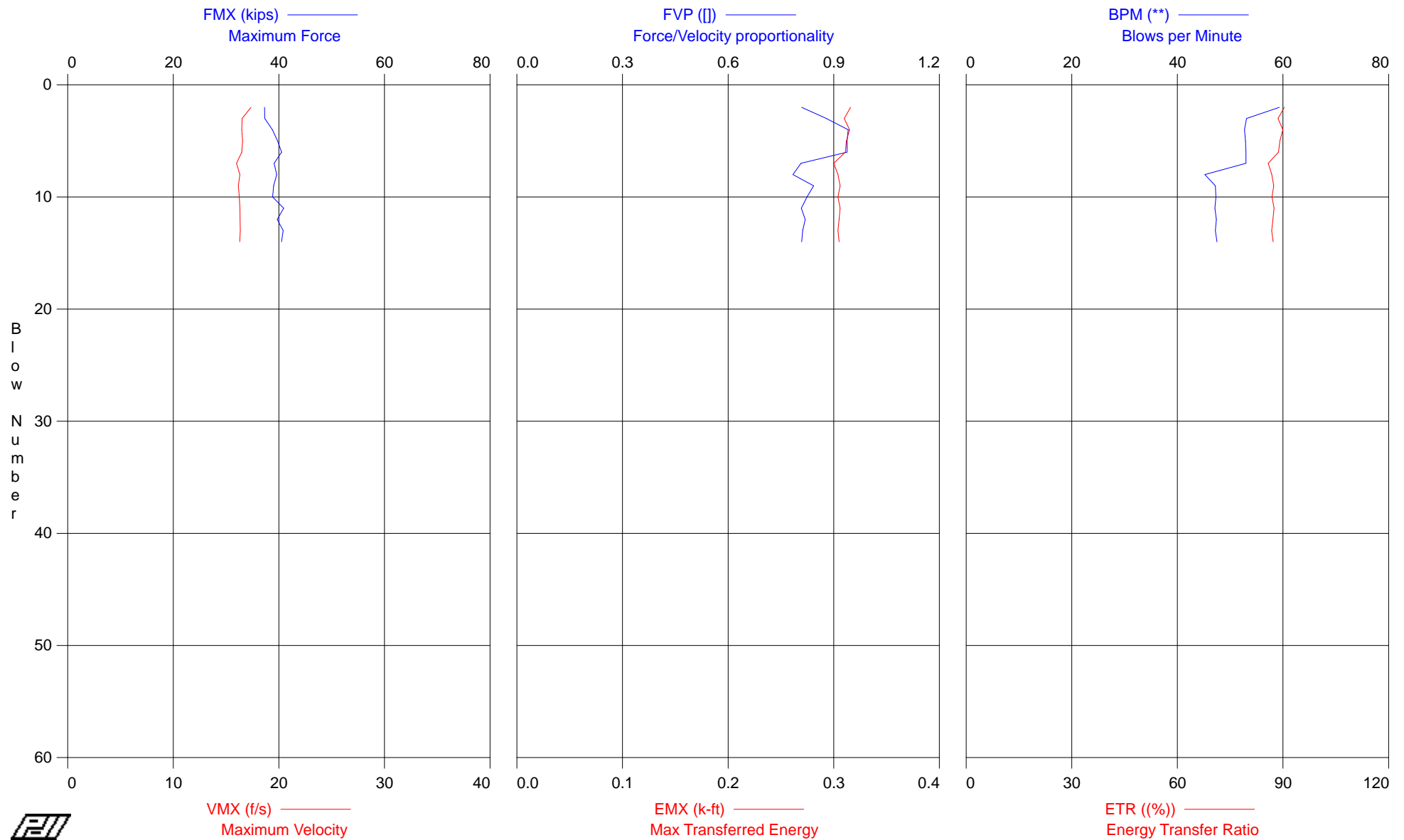
Total number of blows analyzed: 13

Time Summary

Drive 17 seconds

3:00:57 PM - 3:01:14 PM (9/22/2014) BN 1 - 15

ARGONAUNT TAILINGS AREA - 2F.1.35



ARGONAUNT TAILINGS AREA - 2F.1.36.5
OP: TAD

Test date: 22-Sep-2014

AR: 1.40 in²
LE: 36.50 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

FMX: Maximum Force
VMX: Maximum Velocity
EMX: Max Transferred Energy

BPM: Blows per Minute
ETR: Energy Transfer Ratio

BL#	depth ft	FMX kips	VMX f/s	EMX k-ft	BPM **	ETR (%)
5	36.50	41	16.2	0.304	58.7	86.9
6	36.50	42	16.3	0.306	48.3	87.5
7	36.50	42	16.4	0.312	48.7	89.1
8	36.50	43	16.4	0.309	48.8	88.4
9	36.50	42	16.3	0.310	48.9	88.4
10	36.50	43	16.5	0.311	48.6	88.9
11	36.50	42	16.3	0.309	48.7	88.4
12	36.50	42	15.9	0.290	46.1	82.8
13	36.50	41	16.2	0.297	38.2	84.7
14	36.50	40	15.9	0.297	40.8	85.0
15	36.50	40	16.0	0.299	40.9	85.5
16	36.50	41	16.0	0.302	43.3	86.2
17	36.50	41	16.1	0.305	43.7	87.2
18	36.50	41	16.1	0.306	43.9	87.6
19	36.50	41	16.2	0.309	43.6	88.3
20	36.50	41	16.0	0.303	41.8	86.6
21	36.50	42	16.2	0.294	39.3	84.1
22	36.50	41	16.1	0.295	39.6	84.4
23	36.50	42	16.1	0.289	39.3	82.7
24	36.50	41	16.1	0.292	39.2	83.4
25	36.50	42	16.3	0.293	39.3	83.8
26	36.50	42	16.2	0.289	39.3	82.7
27	36.50	41	16.2	0.288	39.4	82.3
28	36.50	42	16.2	0.292	39.2	83.4
29	36.50	41	16.2	0.291	39.2	83.2
30	36.50	41	16.3	0.290	39.3	82.9
31	36.50	41	16.3	0.291	39.3	83.0
32	36.50	41	16.3	0.290	39.3	82.8
33	36.50	41	16.2	0.291	39.3	83.3
34	36.50	42	16.4	0.290	39.2	83.0
35	36.50	42	16.3	0.290	39.2	82.8
36	36.50	41	16.2	0.288	39.3	82.3
37	36.50	42	16.3	0.289	39.1	82.7
38	36.50	41	16.1	0.287	39.5	81.9
39	36.50	42	16.3	0.289	39.1	82.7
40	36.50	41	16.3	0.289	39.3	82.7
41	36.50	42	16.3	0.292	39.3	83.5
42	36.50	42	16.3	0.288	39.2	82.3
43	36.50	42	16.3	0.288	39.3	82.2
44	36.50	42	16.3	0.289	39.2	82.7
45	36.50	42	16.3	0.290	39.4	82.9
46	36.50	42	16.2	0.290	39.2	83.0
47	36.50	41	16.2	0.287	39.3	82.1
48	36.50	40	16.2	0.291	39.3	83.1
49	36.50	41	16.2	0.291	39.3	83.1
50	36.50	41	16.2	0.292	39.3	83.4
51	36.50	41	16.2	0.294	39.3	84.0
52	36.50	40	16.2	0.292	39.3	83.6
53	36.50	40	16.2	0.293	39.2	83.7
54	36.50	40	16.2	0.293	39.2	83.7
55	36.50	40	16.2	0.296	39.3	84.6
56	36.50	39	16.2	0.296	39.2	84.5
57	36.50	39	16.1	0.292	39.3	83.4
58	36.50	39	16.2	0.293	39.4	83.7
59	36.50	40	16.2	0.294	39.2	83.9
60	36.50	40	16.1	0.296	39.3	84.5
61	36.50	39	16.2	0.293	39.2	83.6
62	36.50	40	16.1	0.292	39.2	83.5
63	36.50	40	16.3	0.293	39.3	83.8
64	36.50	41	16.2	0.295	39.3	84.2
Average		41	16.2	0.295	41.0	84.2
Std. Dev.		1	0.1	0.007	3.8	2.0
Maximum		43	16.5	0.312	58.7	89.1
@ Blow#		10	10	7	5	7
Minimum		39	15.9	0.287	38.2	81.9

Total number of blows analyzed: 60



Taber Consultants

Case Method & iCAP® Results

ARGONAUNT TAILINGS AREA - 2F.1.36.5

OP: TAD

Page 2 of 2

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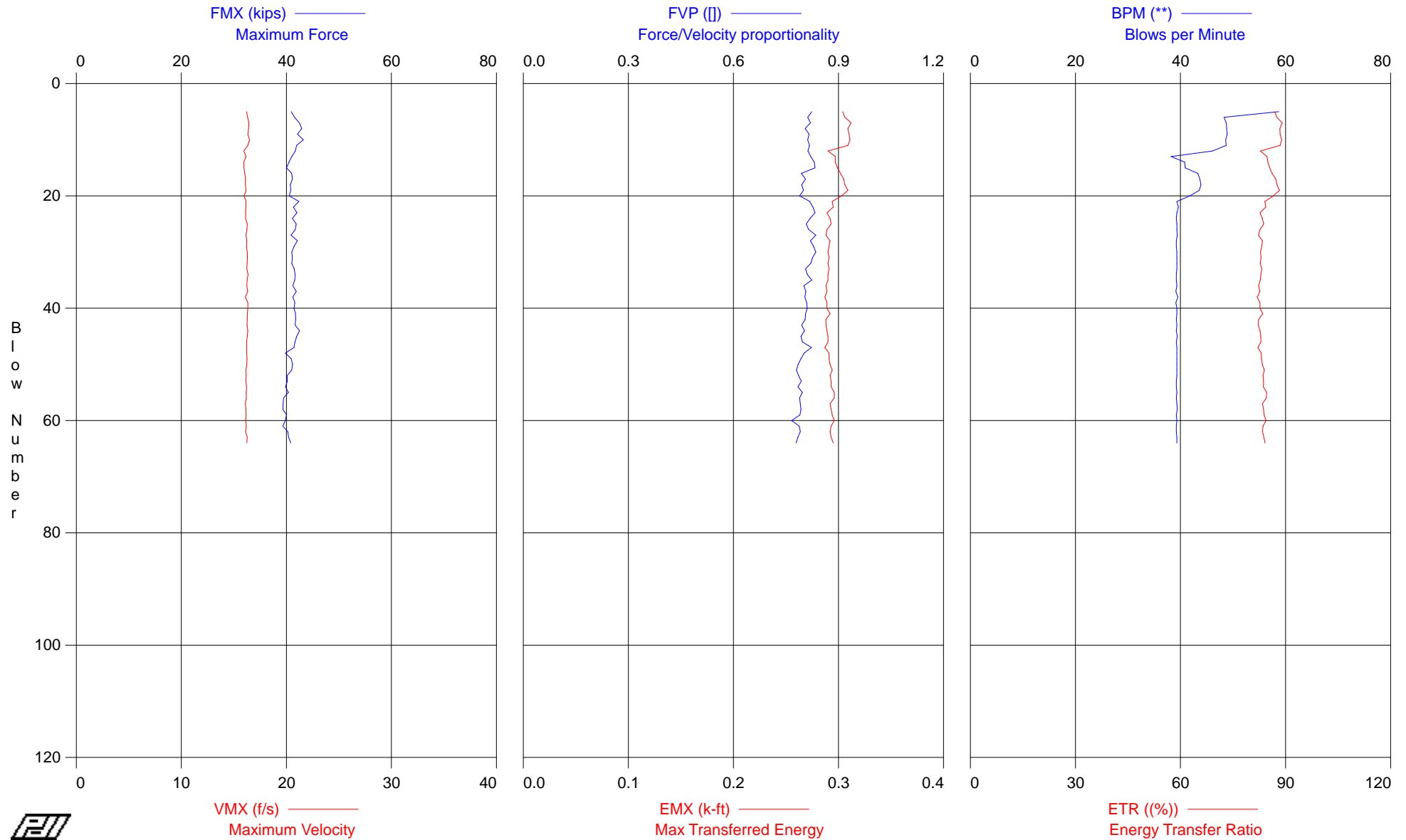
Test date: 22-Sep-2014

Time Summary

Drive 1 minute 45 seconds

3:12:23 PM - 3:14:08 PM (9/22/2014) BN 1 - 64

ARGONAUNT TAILINGS AREA - 2F.1.36.5



ARGONAUNT TAILINGS AREA - 2F.1.37.5
OP: TAD

Test date: 22-Sep-2014

AR: 1.40 in²
LE: 37.50 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

FMX: Maximum Force
VMX: Maximum Velocity
EMX: Max Transferred Energy

BPM: Blows per Minute
ETR: Energy Transfer Ratio

BL#	depth ft	FMX kips	VMX f/s	EMX k-ft	BPM **	ETR (%)
1	37.50	41	16.0	0.301	1.9	85.9
2	37.50	42	16.2	0.307	43.0	87.6
3	37.50	42	16.3	0.306	43.4	87.5
4	37.50	42	16.4	0.310	43.2	88.6
5	37.50	41	16.3	0.304	43.5	86.8
6	37.50	42	16.5	0.310	43.3	88.5
7	37.50	42	16.5	0.307	43.3	87.8
8	37.50	43	16.5	0.306	43.7	87.4
9	37.50	42	16.7	0.307	43.2	87.8
10	37.50	42	16.6	0.309	43.6	88.2
11	37.50	42	16.5	0.307	43.3	87.6
12	37.50	43	16.6	0.307	43.5	87.8
13	37.50	43	16.7	0.308	43.5	88.0
14	37.50	43	16.5	0.306	43.4	87.4
15	37.50	41	16.4	0.305	43.4	87.1
16	37.50	43	16.7	0.312	43.3	89.2
17	37.50	43	16.6	0.310	43.6	88.7
18	37.50	44	16.6	0.309	43.5	88.4
19	37.50	43	16.5	0.306	43.5	87.4
20	37.50	44	16.6	0.309	43.4	88.3
21	37.50	44	16.4	0.308	43.5	87.9
22	37.50	43	16.4	0.307	43.4	87.6
23	37.50	43	16.4	0.310	43.4	88.5
24	37.50	43	16.4	0.309	43.4	88.3
25	37.50	44	16.6	0.311	43.3	88.8
26	37.50	41	16.2	0.305	43.6	87.3
27	37.50	44	16.5	0.311	43.2	88.8
28	37.50	41	16.5	0.304	43.5	86.8
29	37.50	43	16.5	0.311	43.4	88.7
30	37.50	41	16.2	0.301	43.7	86.1
31	37.50	42	16.4	0.305	43.2	87.1
32	37.50	43	16.6	0.308	43.5	88.0
33	37.50	42	16.5	0.304	43.6	86.9
34	37.50	43	16.4	0.308	43.3	88.1
35	37.50	42	16.4	0.307	43.6	87.7
36	37.50	43	16.7	0.312	43.2	89.1
37	37.50	40	16.5	0.306	43.6	87.4
38	37.50	42	16.5	0.309	43.4	88.3
39	37.50	40	16.3	0.301	43.7	86.0
40	37.50	42	16.6	0.311	43.4	88.9
41	37.50	41	16.4	0.306	43.5	87.4
42	37.50	40	16.4	0.305	43.5	87.1
43	37.50	42	16.6	0.307	43.3	87.8
44	37.50	41	16.5	0.311	43.4	88.8
45	37.50	43	16.5	0.307	43.5	87.9
46	37.50	42	16.5	0.310	43.4	88.5
47	37.50	43	16.4	0.307	43.3	87.7
48	37.50	42	16.5	0.304	43.6	86.8
49	37.50	41	16.6	0.309	43.4	88.1
50	37.50	43	16.6	0.309	43.4	88.4
51	37.50	42	16.5	0.305	43.4	87.1
52	37.50	42	16.5	0.308	43.5	87.9
53	37.50	40	16.6	0.308	43.5	88.1
54	37.50	41	16.5	0.302	43.3	86.3
55	37.50	40	16.4	0.301	43.5	86.1
56	37.50	42	16.6	0.311	43.3	88.8
57	37.50	40	16.4	0.302	43.4	86.2
58	37.50	40	16.5	0.300	43.4	85.8
59	37.50	41	16.4	0.306	43.2	87.4
60	37.50	41	16.5	0.302	43.6	86.4
61	37.50	41	16.4	0.302	43.3	86.1
62	37.50	42	16.5	0.304	43.3	86.9
63	37.50	40	16.4	0.300	43.4	85.6
64	37.50	40	16.6	0.309	43.4	88.2
65	37.50	41	16.5	0.300	43.3	85.6
66	37.50	42	16.6	0.309	43.4	88.3
67	37.50	40	16.6	0.305	43.5	87.2



Taber Consultants
Case Method & iCAP® Results

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ARGONAUNT TAILINGS AREA - 2F.1.37.5
OP: TAD

Test date: 22-Sep-2014

BL#	depth ft	FMX kips	VMX f/s	EMX k-ft	BPM **	ETR (%)
68	37.50	42	16.5	0.308	43.4	88.1
69	37.50	40	16.5	0.304	43.3	86.8
70	37.50	41	16.6	0.307	43.4	87.6
Average		42	16.5	0.307	42.8	87.6
Std. Dev.		1	0.1	0.003	4.9	0.9
Maximum		44	16.7	0.312	43.7	89.2
@ Blow#		20	36	16	8	16
Minimum		40	16.0	0.300	1.9	85.6

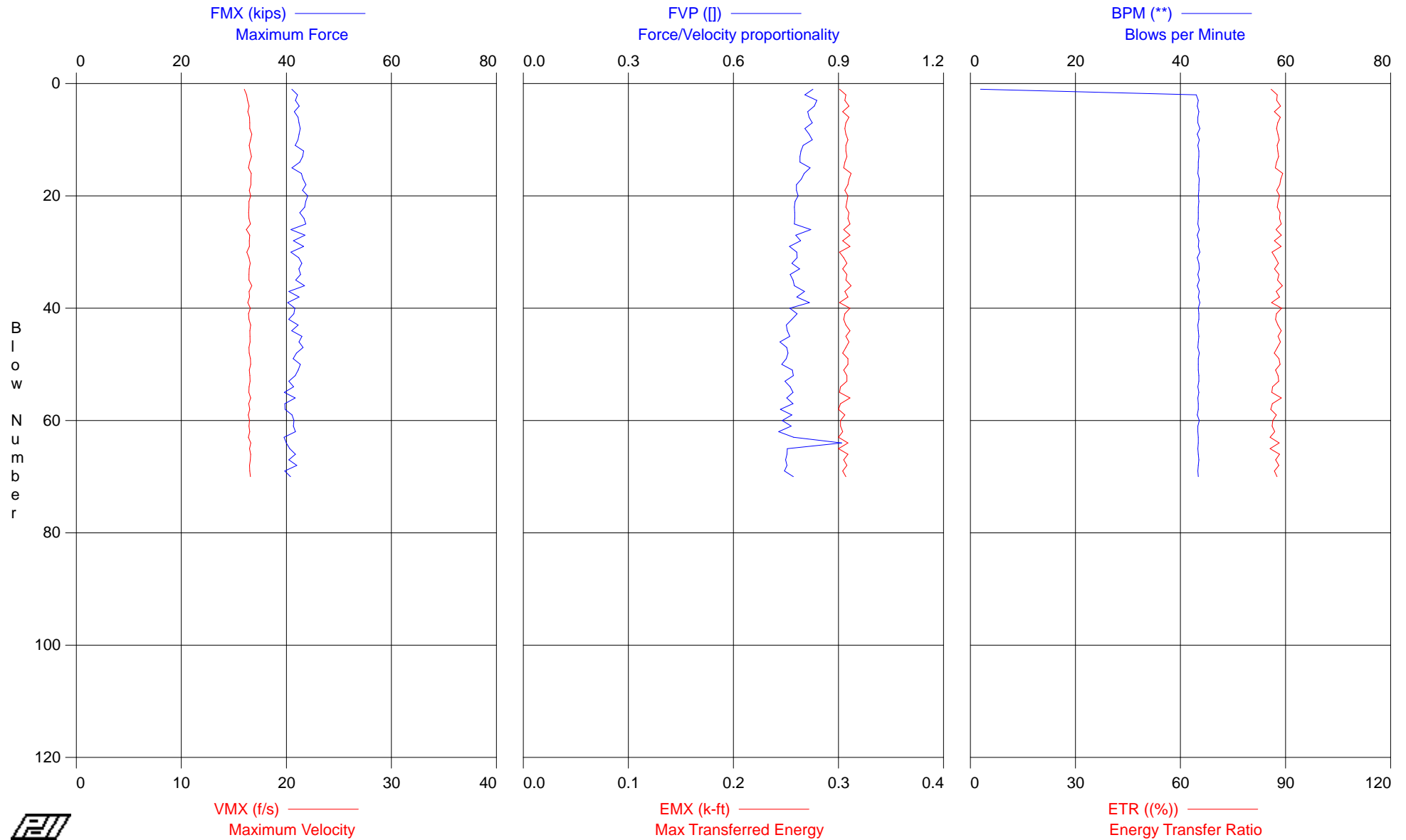
Total number of blows analyzed: 70

Time Summary

Drive 1 minute 36 seconds

3:51:34 PM - 3:53:10 PM (9/22/2014) BN 1 - 70

ARGONAUNT TAILINGS AREA - 2F.1.37.5





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West Sacramento, CA 95691-2116
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November 3, 2014

Mr. Tony Jaramillo
Cascade Drilling L.P.
3000 Duluth Street
West Sacramento, CA 95691

Subject: SPT – Hammer Energy Measurements
Argonaut Tailings Area
Boring 2F-2
Jackson, California

D14-0215

Dear Mr. Jaramillo:


This letter transmits the Standard Penetration Test (SPT) hammer energy efficiency to be used for Boring 2F-2 for your Argonaut Tailings Area Project sampled on September 23, 2014, using your all-terrain CME 1050 drill rig equipped with an automatic hammer. Energy measurements for this hammer were obtained in a manner consistent with ASTM D4633-10 using an SPT Analyzer manufactured by Pile Dynamics, Inc. on September 23, 2014. The purpose was to obtain hammer energy measurements and determine hammer efficiency (normalized for 60% efficiency) during sampling.

Dynamic strain and acceleration measurements were obtained through two strain bridge pairs and two accelerometers affixed on a 2-foot long section of NWJ rod. The NWJ rod was mounted on top of the string of rods and below the hammer. Strain and acceleration signals were conditioned and converted to force and velocity measurements using the SPT Analyzer.

The dynamic force and velocity data was converted to maximum transferred energy using the EFV method: $EFV = \int F(t) \bullet V(t) \bullet dt$. The integration is performed from when energy transfer begins to when the maximum energy occurs. This method is theoretically appropriate regardless of rod length, wave travel time, and the number of non-uniform rod connections. Energy transfer is then calculated as $ETR = EFV/PE$, where ETR is the energy transfer ratio, EVF is the energy transferred to the sampling rods, and PE is the theoretical potential energy.

The average hammer efficiency (ETR) on September 22, 2014, was **84%** (based on an EFV of 296 ft-lbs). The results via the SPT Analyzer are presented in the attached table (Summary of Field Results, SPT Energy Measurements), graphical data plots, and data sheets.

We appreciate the opportunity to be of service.

Very Truly Yours,
TABER CONSULTANTS

Ronald E. Loutzenhiser
R.C.E. 64089



Attachments: Summary of Field Results, SPT Energy Measurements
SPT Analyzer data, per drive depth

Taber Consultants
Engineers and Geologists



Summary of Field Results SPT Energy Measurements

Project Name	Argonaut Talings Site
Boring No.	2F-2
Client Proj. No.	
Date	9/23/14
Drill Rig	CME L1241
Hammer Type	Auto
SPT Analyzer Operator	Tim d'Arcy
Taber Project No.	D14-0215

Sampler Depth (ft)	Number of Blows Analyzed	Average Energy Transfer* ft-lbs	Hammer Operating Rate bpm	Average Transfer Efficiency* %
27.5-29	58	301	45	86
29-30.5	51	293	41	84
30.8-32.3	161	299	40	85
35-36.5	82	289	36	83
	Ave	296	40	84
	Max	301	45	86
	Min	289	36	83
	Std Dev	6	4	2

Note:

Transfer Efficiency is based on 350 ft-lbs, 140# hammer with a nominal 30-inch drop.

ARGONAUNT TAILINGS AREA - 2F.2.27.5
OP: TAD

Test date: 23-Sep-2014

AR: 1.40 in²
LE: 27.50 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

FMX: Maximum Force
VMX: Maximum Velocity
EMX: Max Transferred Energy

BPM: Blows per Minute
ETR: Energy Transfer Ratio

BL#	depth ft	FMX kips	VMX f/s	EMX k-ft	BPM **	ETR (%)
1	27.50	43	15.1	0.294	1.9	84.1
2	27.50	44	15.4	0.303	45.0	86.6
3	27.50	44	15.4	0.301	45.4	86.0
4	27.50	42	15.2	0.298	45.1	85.0
5	27.50	42	15.2	0.297	45.3	85.0
6	27.50	42	15.3	0.301	45.4	85.9
7	27.50	43	15.3	0.302	45.1	86.2
8	27.50	43	15.6	0.304	45.3	86.8
9	27.50	43	15.3	0.304	45.2	86.7
10	27.50	43	15.7	0.306	45.5	87.5
11	27.50	42	15.4	0.303	45.0	86.6
12	27.50	43	15.5	0.303	45.5	86.6
13	27.50	43	15.7	0.306	45.1	87.5
14	27.50	42	15.4	0.299	45.4	85.5
15	27.50	42	15.4	0.300	45.4	85.8
16	27.50	42	15.4	0.299	45.2	85.4
17	27.50	44	15.7	0.303	45.4	86.5
18	27.50	42	15.6	0.299	45.2	85.4
19	27.50	42	15.5	0.298	45.3	85.2
20	27.50	42	15.6	0.306	45.2	87.4
21	27.50	42	15.5	0.302	45.4	86.1
22	27.50	42	15.6	0.302	45.3	86.1
23	27.50	42	15.5	0.298	45.4	85.3
24	27.50	42	15.5	0.299	45.3	85.4
25	27.50	42	15.5	0.300	45.3	85.7
26	27.50	43	15.7	0.302	45.2	86.4
27	27.50	42	15.6	0.300	45.3	85.8
28	27.50	42	15.5	0.299	45.5	85.5
29	27.50	42	15.4	0.298	45.1	85.1
30	27.50	43	15.5	0.300	45.5	85.7
31	27.50	42	15.6	0.299	45.3	85.4
32	27.50	42	15.7	0.302	45.1	86.3
33	27.50	42	15.5	0.299	45.4	85.3
34	27.50	43	15.7	0.300	45.2	85.7
35	27.50	42	15.6	0.299	45.4	85.4
36	27.50	41	15.5	0.296	45.1	84.7
37	27.50	42	15.6	0.300	45.4	85.6
38	27.50	43	15.7	0.304	45.2	87.0
39	27.50	42	15.6	0.302	45.5	86.3
40	27.50	43	15.8	0.305	45.3	87.2
41	27.50	41	15.6	0.298	45.5	85.1
42	27.50	41	15.6	0.296	45.2	84.6
43	27.50	43	15.8	0.304	45.2	86.9
44	27.50	43	15.8	0.303	45.4	86.5
45	27.50	42	15.7	0.303	45.3	86.4
46	27.50	41	15.4	0.296	45.5	84.7
47	27.50	41	15.7	0.302	45.0	86.2
48	27.50	43	15.8	0.304	45.5	86.8
49	27.50	42	15.7	0.304	45.1	86.9
50	27.50	42	15.7	0.305	45.4	87.1
51	27.50	43	15.8	0.307	45.3	87.8
52	27.50	42	15.6	0.299	45.6	85.5
53	27.50	43	15.7	0.303	45.2	86.6
54	27.50	42	15.7	0.303	45.2	86.5
55	27.50	43	15.7	0.306	45.4	87.5
56	27.50	43	15.7	0.303	45.2	86.6
57	27.50	41	15.4	0.298	45.5	85.0
58	27.50	43	15.7	0.304	45.2	86.7
Average		42	15.6	0.301	44.5	86.1
Std. Dev.		1	0.2	0.003	5.7	0.8
Maximum		44	15.8	0.307	45.6	87.8
@ Blow#		2	48	51	52	51
Minimum		41	15.1	0.294	1.9	84.1

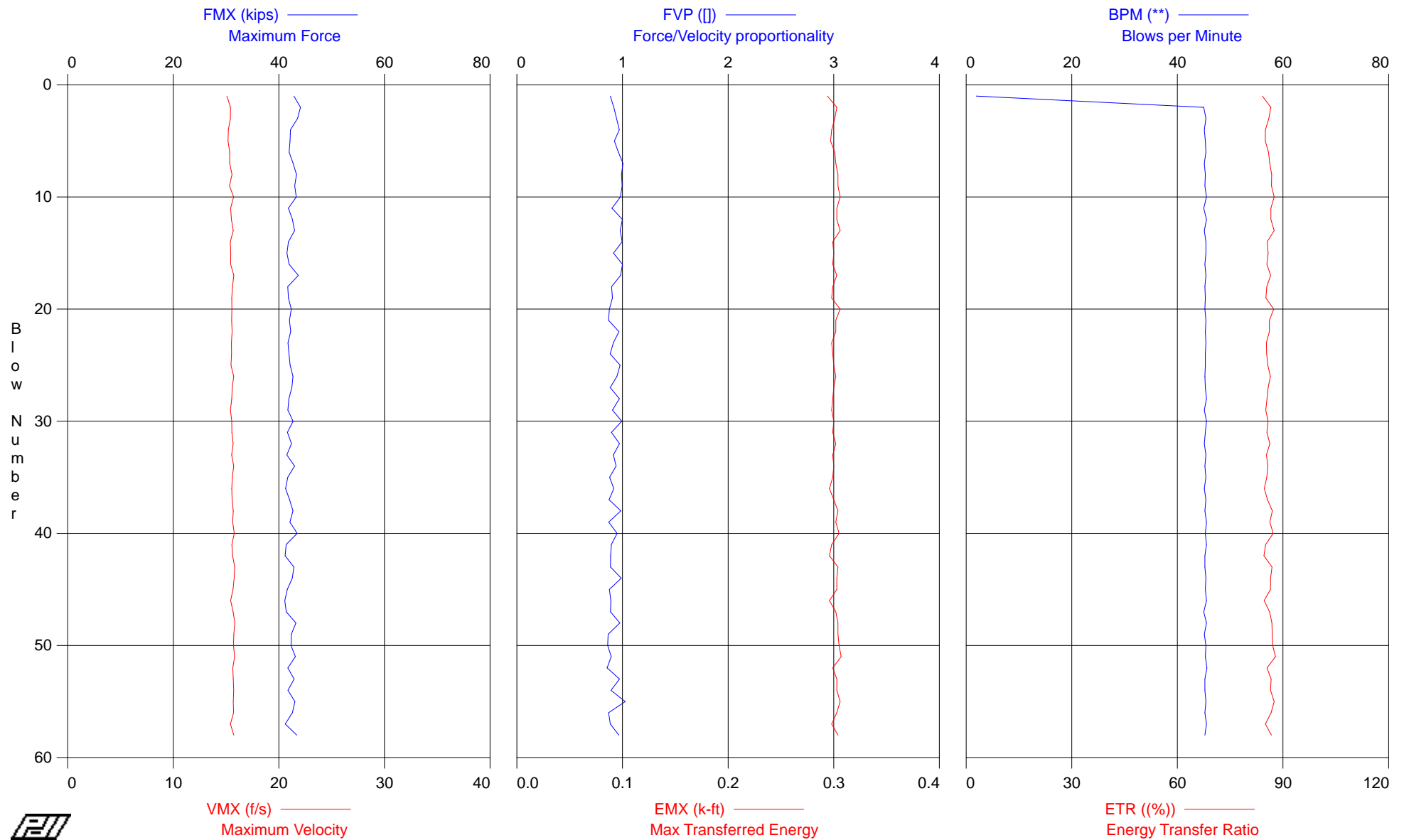
Total number of blows analyzed: 58

Time Summary

Drive 1 minute 15 seconds

10:38:17 AM - 10:39:32 AM (9/23/2014) BN 1 - 58

ARGONAUNT TAILINGS AREA - 2F.2.27.5



ARGONAUNT TAILINGS AREA - 2F.2.29
OP: TAD

Test date: 23-Sep-2014

AR: 1.40 in²
LE: 29.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

FMX: Maximum Force
VMX: Maximum Velocity
EMX: Max Transferred Energy

BPM: Blows per Minute
ETR: Energy Transfer Ratio

BL#	depth ft	FMX kips	VMX f/s	EMX k-ft	BPM **	ETR (%)
1	29.00	40	15.3	0.304	1.9	86.9
2	29.00	43	15.6	0.304	47.7	86.7
3	29.00	43	15.6	0.303	47.7	86.5
4	29.00	42	15.7	0.298	47.9	85.2
5	29.00	43	15.7	0.305	47.5	87.0
6	29.00	44	15.7	0.300	47.8	85.6
7	29.00	42	15.3	0.286	45.9	81.8
8	29.00	42	15.3	0.285	38.4	81.3
9	29.00	43	15.4	0.292	38.1	83.3
10	29.00	42	15.5	0.289	41.3	82.6
11	29.00	44	15.5	0.292	41.5	83.5
12	29.00	43	15.5	0.291	41.5	83.0
13	29.00	44	15.7	0.292	41.4	83.4
14	29.00	43	15.5	0.289	41.7	82.5
15	29.00	42	15.4	0.290	41.4	82.8
16	29.00	43	15.7	0.292	41.5	83.4
17	29.00	44	15.6	0.298	41.5	85.3
18	29.00	43	15.5	0.293	41.4	83.8
19	29.00	43	15.6	0.291	41.6	83.2
20	29.00	42	15.6	0.291	41.6	83.2
21	29.00	44	15.6	0.291	41.3	83.2
22	29.00	43	15.6	0.291	41.7	83.2
23	29.00	44	15.7	0.297	41.5	84.8
24	29.00	43	15.6	0.295	41.6	84.3
25	29.00	42	15.6	0.294	41.7	83.9
26	29.00	42	15.6	0.289	41.6	82.7
27	29.00	42	15.5	0.291	41.5	83.1
28	29.00	42	15.6	0.290	41.5	82.8
29	29.00	42	15.5	0.292	41.5	83.4
30	29.00	42	15.6	0.294	41.4	84.1
31	29.00	42	15.6	0.291	41.6	83.1
32	29.00	42	15.6	0.292	41.4	83.3
33	29.00	42	15.6	0.291	41.7	83.1
34	29.00	43	15.6	0.291	41.6	83.3
35	29.00	42	15.5	0.290	41.6	83.0
36	29.00	43	15.7	0.295	41.5	84.3
37	29.00	43	15.6	0.291	41.6	83.2
38	29.00	43	15.6	0.292	41.5	83.3
39	29.00	42	15.6	0.292	41.6	83.4
40	29.00	42	15.6	0.292	41.5	83.4
41	29.00	42	15.6	0.292	41.5	83.5
42	29.00	42	15.6	0.292	41.6	83.3
43	29.00	42	15.5	0.291	41.6	83.2
44	29.00	43	15.5	0.291	41.5	83.2
45	29.00	42	15.6	0.290	41.6	82.8
46	29.00	42	15.6	0.291	41.5	83.1
47	29.00	43	15.6	0.293	41.6	83.8
48	29.00	43	15.6	0.292	41.4	83.6
49	29.00	45	15.8	0.299	41.5	85.5
50	29.00	43	15.7	0.296	41.5	84.5
51	29.00	42	15.6	0.292	41.5	83.4
Average		43	15.6	0.293	41.3	83.7
Std. Dev.		1	0.1	0.004	5.9	1.2
Maximum		45	15.8	0.305	47.9	87.0
@ Blow#		49	49	5	4	5
Minimum		40	15.3	0.285	1.9	81.3

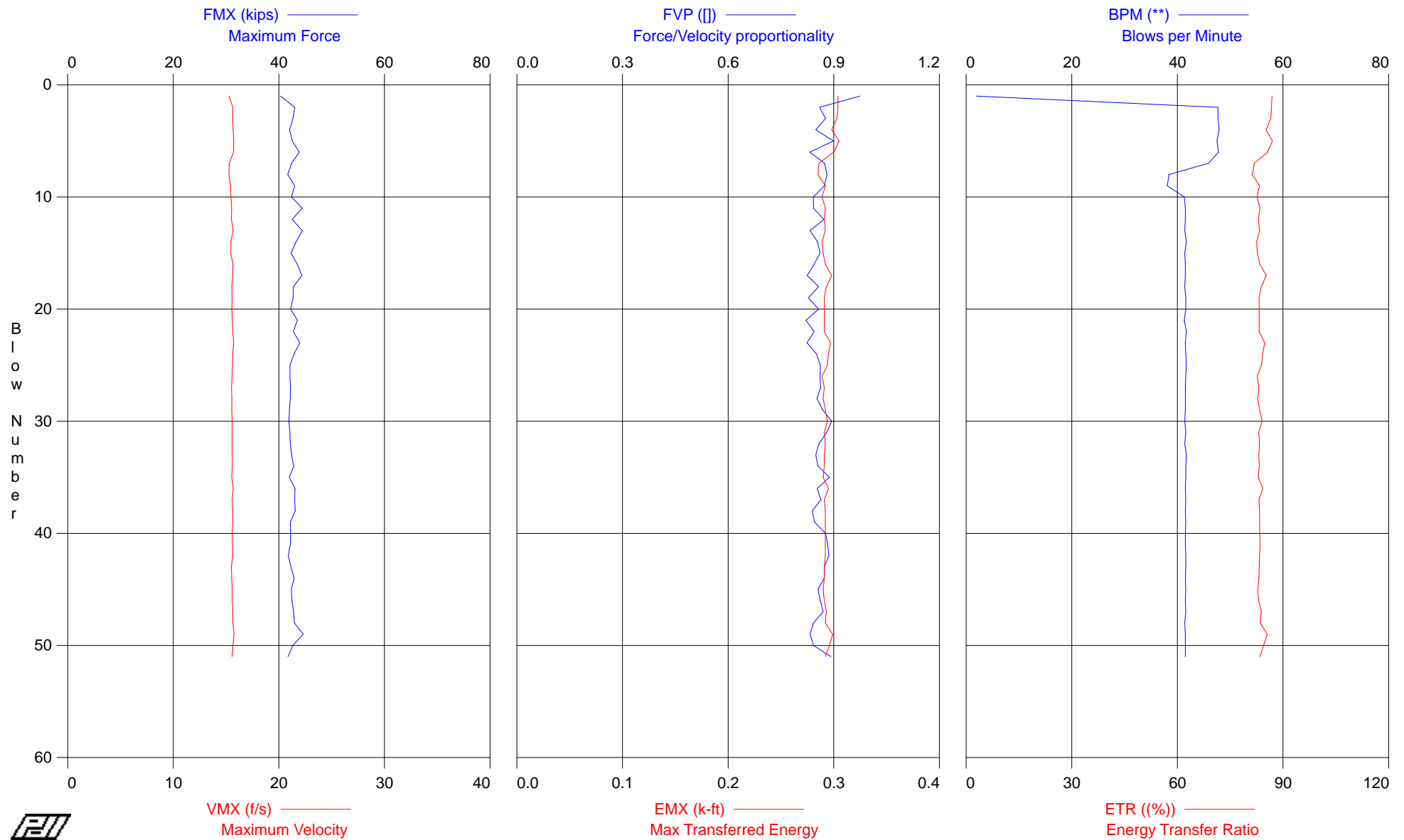
Total number of blows analyzed: 51

Time Summary

Drive 1 minute 12 seconds

10:47:03 AM - 10:48:15 AM (9/23/2014) BN 1 - 51

ARGONAUNT TAILINGS AREA - 2F.2.29



ARGONAUNT TAILINGS AREA - 2F.2.30.8
OP: TAD

Test date: 23-Sep-2014

AR: 1.40 in²
LE: 30.80 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

FMX: Maximum Force
VMX: Maximum Velocity
EMX: Max Transferred Energy

BPM: Blows per Minute
ETR: Energy Transfer Ratio

BL#	depth ft	FMX kips	VMX f/s	EMX k-ft	BPM **	ETR (%)
2	30.80	45	16.5	0.318	58.7	90.8
3	30.80	43	16.8	0.315	50.4	89.9
4	30.80	46	16.7	0.321	50.4	91.6
5	30.80	45	16.9	0.320	50.6	91.5
6	30.80	43	16.8	0.312	50.4	89.2
7	30.80	43	16.6	0.311	50.4	88.8
8	30.80	43	16.9	0.314	50.5	89.8
9	30.80	45	16.9	0.317	50.5	90.6
10	30.80	43	16.8	0.313	50.5	89.5
11	30.80	45	17.1	0.316	50.5	90.4
12	30.80	45	17.0	0.318	50.3	90.9
13	30.80	43	16.7	0.306	51.3	87.4
14	30.80	43	16.7	0.305	43.9	87.2
15	30.80	43	16.6	0.303	45.2	86.6
16	30.80	44	16.7	0.306	44.9	87.3
17	30.80	43	16.5	0.306	44.8	87.4
18	30.80	43	16.5	0.300	43.6	85.7
19	30.80	44	16.6	0.301	41.6	86.1
20	30.80	43	16.4	0.299	41.5	85.4
21	30.80	42	16.4	0.297	41.4	85.0
22	30.80	43	16.6	0.300	41.4	85.8
23	30.80	43	16.4	0.297	41.6	85.0
24	30.80	42	16.1	0.287	34.9	82.0
25	30.80	43	16.1	0.286	32.2	81.8
26	30.80	43	16.2	0.290	32.3	82.8
27	30.80	43	16.2	0.289	33.0	82.7
28	30.80	42	16.2	0.290	34.3	82.9
29	30.80	43	16.2	0.291	34.4	83.3
30	30.80	42	16.2	0.288	34.4	82.4
31	30.80	43	16.4	0.296	38.7	84.6
32	30.80	44	16.5	0.300	39.3	85.6
33	30.80	43	16.3	0.295	39.4	84.4
34	30.80	42	16.4	0.297	39.2	84.7
35	30.80	44	16.4	0.295	39.4	84.4
36	30.80	44	16.5	0.299	39.3	85.4
37	30.80	42	16.4	0.296	39.3	84.7
38	30.80	41	16.3	0.292	39.1	83.5
39	30.80	43	16.4	0.298	39.4	85.0
40	30.80	42	16.4	0.295	39.4	84.4
41	30.80	42	16.4	0.297	39.3	84.9
42	30.80	45	16.5	0.297	39.2	84.9
43	30.80	43	16.6	0.296	39.3	84.6
44	30.80	41	16.5	0.295	39.2	84.2
45	30.80	44	16.5	0.300	39.3	85.8
46	30.80	43	16.5	0.299	39.2	85.5
47	30.80	43	16.4	0.296	39.3	84.4
48	30.80	41	16.3	0.293	39.2	83.8
49	30.80	41	16.3	0.293	39.4	83.6
50	30.80	42	16.5	0.296	39.2	84.6
51	30.80	44	16.7	0.298	39.4	85.0
52	30.80	43	16.5	0.300	39.2	85.7
53	30.80	42	16.5	0.295	39.2	84.4
54	30.80	41	16.5	0.295	39.1	84.3
55	30.80	41	16.4	0.295	39.3	84.3
56	30.80	44	16.5	0.300	39.3	85.7
57	30.80	42	16.4	0.296	39.3	84.7
58	30.80	42	16.5	0.297	39.3	84.7
59	30.80	42	16.4	0.299	39.3	85.4
60	30.80	41	16.3	0.294	39.2	84.1
61	30.80	42	16.3	0.299	39.3	85.4
62	30.80	43	16.5	0.301	39.3	85.9
63	30.80	43	16.4	0.300	39.2	85.8
64	30.80	42	16.5	0.299	39.3	85.5
65	30.80	42	16.4	0.300	39.3	85.6
66	30.80	41	16.2	0.294	39.2	83.9
67	30.80	41	16.2	0.295	39.4	84.3
68	30.80	43	16.4	0.298	39.2	85.2

ARGONAUNT TAILINGS AREA - 2F.2.30.8
OP: TAD

Test date: 23-Sep-2014

BL#	depth ft	FMX kips	VMX f/s	EMX k-ft	BPM **	ETR (%)
69	30.80	42	16.3	0.297	39.3	84.9
70	30.80	42	16.4	0.296	39.2	84.6
71	30.80	41	16.3	0.294	39.2	84.1
72	30.80	42	16.4	0.297	39.4	84.9
73	30.80	40	16.2	0.295	39.2	84.2
74	30.80	42	16.4	0.298	39.3	85.0
75	30.80	42	16.5	0.298	39.3	85.2
76	30.80	42	16.3	0.300	39.3	85.6
77	30.80	42	16.4	0.299	39.3	85.6
78	30.80	42	16.4	0.299	39.2	85.5
79	30.80	41	16.3	0.297	39.3	84.8
80	30.80	44	16.4	0.301	39.2	86.1
81	30.80	42	16.3	0.296	39.3	84.7
82	30.80	42	16.3	0.295	39.3	84.3
83	30.80	40	16.3	0.295	39.4	84.3
84	30.80	41	16.3	0.296	39.2	84.5
85	30.80	42	16.3	0.296	39.3	84.5
86	30.80	44	16.5	0.301	39.2	85.9
87	30.80	44	16.5	0.304	39.4	86.7
88	30.80	44	16.4	0.302	39.3	86.4
89	30.80	43	16.3	0.298	39.2	85.2
90	30.80	43	16.4	0.300	39.3	85.8
91	30.80	41	16.3	0.298	39.3	85.0
92	30.80	41	16.3	0.294	39.3	84.0
93	30.80	43	16.3	0.300	39.3	85.6
94	30.80	42	16.2	0.297	39.3	84.9
95	30.80	44	16.4	0.301	39.2	85.9
96	30.80	43	16.5	0.299	39.4	85.5
97	30.80	43	16.5	0.300	39.2	85.8
98	30.80	44	16.4	0.301	39.3	85.9
99	30.80	42	16.3	0.297	39.4	84.8
100	30.80	42	16.3	0.298	39.2	85.1
101	30.80	42	16.3	0.295	39.4	84.4
102	30.80	41	16.3	0.290	39.2	82.8
103	30.80	44	16.4	0.303	39.2	86.4
104	30.80	43	16.5	0.298	39.4	85.0
105	30.80	41	16.3	0.293	39.2	83.7
106	30.80	42	16.4	0.294	39.5	84.0
107	30.80	43	16.6	0.299	39.2	85.4
108	30.80	43	16.6	0.296	39.4	84.6
109	30.80	43	16.5	0.297	39.3	84.8
110	30.80	43	16.4	0.294	39.3	84.1
111	30.80	43	16.4	0.300	39.3	85.6
112	30.80	42	16.3	0.298	39.2	85.2
113	30.80	43	16.4	0.301	39.3	86.0
114	30.80	42	16.3	0.295	39.3	84.4
115	30.80	43	16.4	0.299	39.4	85.5
116	30.80	43	16.4	0.299	39.2	85.4
117	30.80	42	16.3	0.296	39.2	84.6
118	30.80	42	16.3	0.295	39.3	84.4
119	30.80	41	16.4	0.293	39.2	83.8
120	30.80	44	16.6	0.300	39.4	85.7
121	30.80	43	16.4	0.300	39.3	85.7
122	30.80	43	16.5	0.302	39.2	86.3
123	30.80	43	16.4	0.299	39.3	85.4
124	30.80	42	16.3	0.297	39.3	84.8
125	30.80	43	16.5	0.298	39.2	85.2
126	30.80	42	16.4	0.300	39.2	85.8
127	30.80	43	16.5	0.303	39.3	86.5
128	30.80	42	16.3	0.297	39.3	84.8
129	30.80	42	16.4	0.300	39.1	85.7
130	30.80	43	16.5	0.301	39.4	85.9
131	30.80	42	16.3	0.297	39.2	84.9
132	30.80	44	16.5	0.300	39.3	85.8
133	30.80	43	16.4	0.297	39.2	84.8
134	30.80	44	16.5	0.302	39.2	86.3
135	30.80	41	16.4	0.300	39.2	85.8
136	30.80	43	16.4	0.301	39.3	85.9
137	30.80	43	16.4	0.301	39.2	85.9
138	30.80	42	16.3	0.296	39.3	84.7
139	30.80	44	16.6	0.301	39.2	86.1
140	30.80	45	16.4	0.300	39.1	85.8
141	30.80	44	16.4	0.301	39.4	85.9
142	30.80	41	16.4	0.299	39.2	85.3

ARGONAUNT TAILINGS AREA - 2F.2.30.8
OP: TAD

Test date: 23-Sep-2014

BL#	depth ft	FMX kips	VMX f/s	EMX k-ft	BPM **	ETR (%)
143	30.80	43	16.4	0.303	39.1	86.5
144	30.80	43	16.3	0.299	39.3	85.4
145	30.80	42	16.3	0.299	39.2	85.5
146	30.80	44	16.5	0.303	39.3	86.5
147	30.80	43	16.4	0.302	39.2	86.3
148	30.80	43	16.4	0.303	39.3	86.7
149	30.80	43	16.4	0.296	39.2	84.5
150	30.80	42	16.5	0.296	39.3	84.7
151	30.80	44	16.5	0.298	39.2	85.2
152	30.80	41	16.2	0.293	39.2	83.8
153	30.80	44	16.4	0.299	39.3	85.5
154	30.80	43	16.3	0.299	39.0	85.4
155	30.80	42	16.3	0.295	39.3	84.4
156	30.80	43	16.4	0.301	39.3	85.9
157	30.80	43	16.4	0.299	39.1	85.4
158	30.80	43	16.5	0.299	39.2	85.6
159	30.80	43	16.4	0.300	39.2	85.7
160	30.80	42	16.3	0.298	39.3	85.2
161	30.80	43	16.5	0.300	39.3	85.7
162	30.80	42	16.5	0.294	39.1	84.1
Average		43	16.4	0.299	40.1	85.4
Std. Dev.		1	0.2	0.006	3.6	1.6
Maximum		46	17.1	0.321	58.7	91.6
@ Blow#		4	11	4	2	4
Minimum		40	16.1	0.286	32.2	81.8

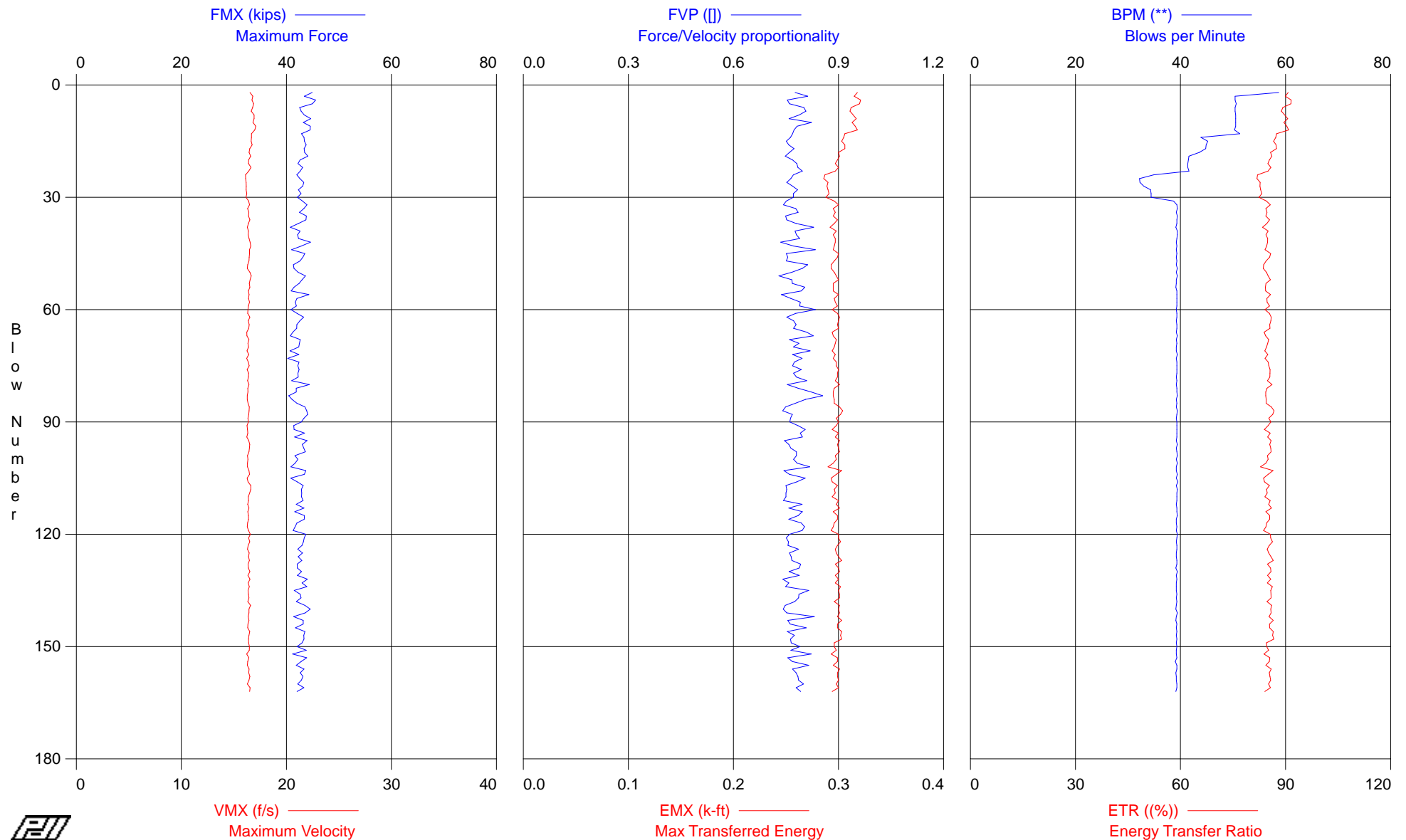
Total number of blows analyzed: 161

Time Summary

Drive 4 minutes 2 seconds

11:17:05 AM - 11:21:07 AM (9/23/2014) BN 1 - 162

ARGONAUNT TAILINGS AREA - 2F.2.30.8



ARGONAUNT TAILINGS AREA - 2F.2.35
OP: TAD

Test date: 23-Sep-2014

AR: 1.40 in²
LE: 35.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

FMX: Maximum Force
VMX: Maximum Velocity
EMX: Max Transferred Energy

BPM: Blows per Minute
ETR: Energy Transfer Ratio

BL#	depth ft	FMX kips	VMX f/s	EMX k-ft	BPM **	ETR (%)
3	35.00	42	15.4	0.295	2.0	84.2
4	35.00	43	15.5	0.294	36.5	83.9
5	35.00	42	15.5	0.294	36.5	84.1
6	35.00	42	15.6	0.292	36.5	83.4
7	35.00	44	15.5	0.297	36.6	84.8
8	35.00	42	15.6	0.295	36.5	84.2
9	35.00	44	15.7	0.295	36.6	84.2
10	35.00	41	15.5	0.290	36.5	82.8
11	35.00	43	15.5	0.287	36.8	81.9
12	35.00	43	15.6	0.291	36.6	83.3
13	35.00	42	15.5	0.291	36.7	83.1
14	35.00	41	15.7	0.291	36.6	83.0
15	35.00	41	15.7	0.290	36.6	82.8
16	35.00	41	15.6	0.288	36.5	82.2
17	35.00	41	15.7	0.289	36.6	82.6
18	35.00	42	15.8	0.287	36.6	81.9
19	35.00	42	15.8	0.289	36.5	82.5
20	35.00	42	15.8	0.287	36.6	82.1
21	35.00	42	15.9	0.287	36.6	82.0
22	35.00	43	15.8	0.288	36.6	82.2
23	35.00	42	15.8	0.285	36.7	81.5
24	35.00	41	15.8	0.285	36.6	81.4
25	35.00	43	15.9	0.288	36.5	82.2
26	35.00	43	15.9	0.288	36.7	82.4
27	35.00	44	15.8	0.292	36.6	83.4
28	35.00	41	15.8	0.290	36.5	82.9
29	35.00	43	15.7	0.287	36.7	82.1
30	35.00	43	15.8	0.287	36.6	82.1
31	35.00	45	15.8	0.293	36.6	83.8
32	35.00	41	15.7	0.286	36.6	81.7
33	35.00	42	15.8	0.292	36.5	83.4
34	35.00	43	15.9	0.290	36.6	83.0
35	35.00	42	15.8	0.288	36.7	82.4
36	35.00	42	15.7	0.287	36.6	81.9
37	35.00	42	15.7	0.289	36.6	82.4
38	35.00	42	15.7	0.291	36.7	83.3
39	35.00	42	15.9	0.290	36.5	82.8
40	35.00	42	15.7	0.287	36.7	82.1
41	35.00	43	15.7	0.289	36.5	82.7
42	35.00	43	15.8	0.289	36.5	82.5
43	35.00	42	15.9	0.290	36.6	82.9
44	35.00	41	15.8	0.287	36.5	82.0
45	35.00	41	15.7	0.287	36.6	82.0
46	35.00	43	16.0	0.290	36.6	82.7
47	35.00	42	15.9	0.289	36.6	82.6
48	35.00	41	15.8	0.288	36.5	82.3
49	35.00	42	15.9	0.292	36.6	83.3
50	35.00	42	15.8	0.291	36.5	83.1
51	35.00	43	15.9	0.292	36.6	83.3
52	35.00	44	15.9	0.292	36.5	83.5
53	35.00	43	15.9	0.291	36.5	83.2
54	35.00	42	15.9	0.292	36.6	83.4
55	35.00	43	15.9	0.289	36.5	82.4
56	35.00	42	15.9	0.289	36.6	82.7
57	35.00	42	15.9	0.287	36.4	82.0
58	35.00	40	15.8	0.283	36.6	80.9
59	35.00	42	16.1	0.290	36.6	83.0
60	35.00	42	15.9	0.290	36.6	83.0
61	35.00	43	16.1	0.294	36.5	83.9
62	35.00	43	16.0	0.293	36.6	83.8
63	35.00	43	16.0	0.293	36.6	83.7
64	35.00	41	15.8	0.288	36.6	82.2
65	35.00	43	16.0	0.292	36.6	83.3
66	35.00	41	15.9	0.287	36.5	82.0
67	35.00	41	15.8	0.287	36.5	82.0
68	35.00	42	15.9	0.288	36.5	82.2
69	35.00	40	15.8	0.283	36.6	80.9



ARGONAUNT TAILINGS AREA - 2F.2.35
OP: TAD

Test date: 23-Sep-2014

BL#	depth ft	FMX kips	VMX f/s	EMX k-ft	BPM **	ETR (%)
70	35.00	42	15.9	0.287	36.5	82.0
71	35.00	42	16.0	0.286	36.6	81.6
72	35.00	41	15.9	0.284	36.6	81.2
73	35.00	43	16.0	0.292	36.4	83.5
74	35.00	41	15.9	0.287	36.7	81.9
75	35.00	42	16.0	0.285	36.6	81.4
76	35.00	41	15.9	0.285	36.5	81.5
77	35.00	42	16.0	0.288	36.5	82.4
78	35.00	41	15.9	0.287	36.5	82.1
79	35.00	42	16.0	0.291	36.5	83.2
80	35.00	43	16.0	0.294	36.5	84.1
81	35.00	43	16.1	0.295	36.5	84.4
82	35.00	42	16.0	0.288	36.6	82.3
83	35.00	43	15.9	0.284	36.5	81.1
84	35.00	43	16.1	0.293	36.6	83.8
Average		42	15.8	0.289	36.1	82.7
Std. Dev.		1	0.2	0.003	3.8	0.9
Maximum		45	16.1	0.297	36.8	84.8
@ Blow#		31	59	7	11	7
Minimum		40	15.4	0.283	2.0	80.9

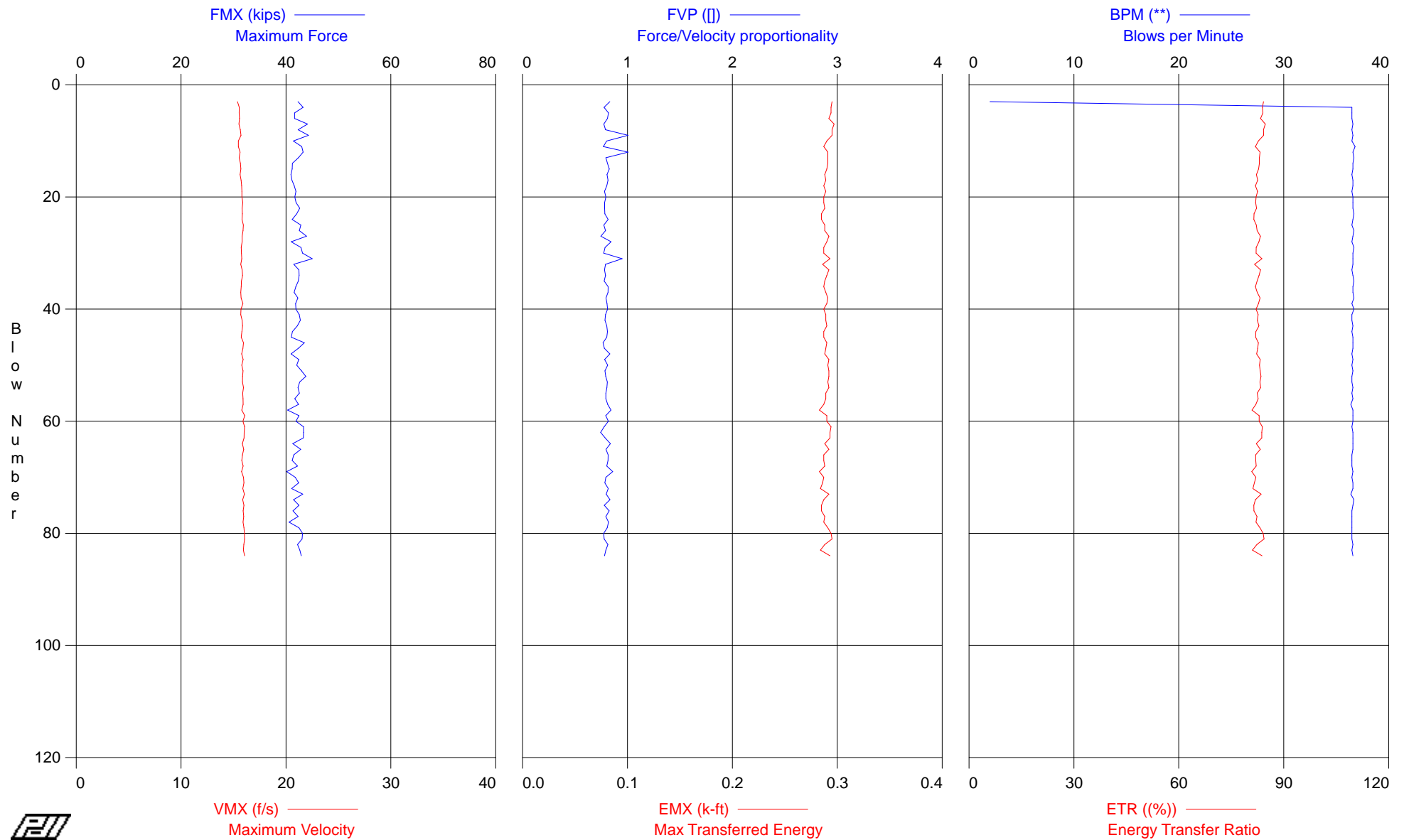
Total number of blows analyzed: 82

Time Summary

Drive 2 minutes 44 seconds

3:14:47 PM - 3:17:31 PM (9/23/2014) BN 1 - 84

ARGONAUNT TAILINGS AREA - 2F.2.35



ATTACHMENT C
BORING LOGS AND PIEZOMETER CONSTRUCTION DETAILS

Station Name: 2F-14-01

Project Name: Argonaut Mine Tailings Area
 Client: U.S. EPA
 Site Location: Jackson, CA
 TDD No.: 1302-T2-R9-14-06-0002
 Geologist: Bill Clarke

Boring Name: 2F-14-01
 Start Date: September 22, 2014
 Completion Date: September 24, 2014
 Driller: Cascade Drilling
 Drilling Method: Hollow Stem Auger (CME 1050)



Weston Solutions, Inc.
 9301 Oakdale Ave., Ste 320
 Chatsworth, CA 91311

SAMPLE				SUBSURFACE PROFILE				Lithologic Description	Comment
Sample	Recovery	PID	Blows	Elevation	Depth	USCS	Lithology		
				1,367'				GROUND SURFACE	
			Post hole dig to 5 ft.			ML		Dark gray (5Y4/1) SILT (<5% sand), rootlets and root casts, oxides, low toughness, rapid dilatancy, non-plastic, moist, medium soft to firm.	Concrete
	0.7'	2,1,1,1			5	SM		Gray (5Y5/1) SILTY VERY FINE SAND (30% silt), very well sorted, slightly moist to moist, medium dense.	
	1.5'	P,P,P				ML		Slightly mottled dark gray to dark grayish brown (2.5Y4/1 to 2.5Y4/2) VERY FINE SANDY SILT (40% sand), non-plastic, slightly moist, soft.	2" diameter Schedule 40 PVC Blank Casing
	1.5'	P,P,P				ML		Very dark gray (5Y3/1) SILT (<10% sand), low toughness, slow dilatancy, low plasticity, medium soft.	
	1.5'	P,P,P			10	ML		Very dark greenish gray (Gley 2 3/1 10G) SILT, trace very fine sand (5% sand), rapid dilatancy, low toughness, low plasticity, wet, very soft.	
	1.5'	P,P,P				ML		Very dark greenish gray (Gley 1 3/1 5G) SILT, trace very fine sand (<5% sand), slow dilatancy, low plasticity, very moist, medium soft.	
	1.5'	P,P,P				ML		Very dark greenish gray SILT, as at 9.5 ft., low dilatancy, low plasticity, very moist, very soft.	Portland Cement Grout
	1.5'	P,P,P				ML		Very dark greenish gray (Gley 1 3/1 5GY) SILT (1% sand), low toughness, slow to rapid dilatancy, low to medium plasticity, sticky, wet, very soft.	
	1.5'	Push Shelby Tube 30"			15				Shelby Tube Sample 2F-1-17-ST Bulk Sample 2F-1-18.5-B
	1.5'	P,P,P				ML		Very dark greenish gray (Gley 1 3/1 5GY) SILT (1% sand), low toughness, medium dry toughness, slow to rapid dilatancy, low to medium plasticity.	
	1.5'	P,P,P			20				
	1.5'	P,P,P				ML		Very dark greenish gray (Gley 1 3/1 5GY) SILT (1% sand), low toughness, rapid dilatancy, low plasticity, wet, very soft.	
	1.5'	P,P,P				ML		Very dark greenish gray CLAYEY SILT, low toughness, medium plasticity, sticky, wet, very soft.	Medium Bentonite Chips, Hydrated
	1.5'	P,P,P				ML		Very dark greenish gray SILT, low toughness, low plasticity, less sticky, wet, very soft.	Bulk Sample 2F-1-25.5-B
	1.5'	P,1,1			25	ML		Very dark greenish gray SILT, similar to 23 ft.	#2/12 Monterey Sand
	1.5'	P,1,1				ML		Very dark greenish gray SILT, similar to 23 ft, except non-plastic interval at 26.5-27 ft.	
	1.5'	P,1,1				ML		Very dark greenish gray SILT, trace very fine sand (to 5% sand), low plasticity to non-plastic, wet, very soft.	2" diameter Schedule 40 PVC Slotted Well Screen 0.010" Slots
	1.5'	2,1,1			30	ML		Very dark greenish gray SILT, trace to little very fine sand (5-10% sand), couple thin intervals without sand, low plasticity to non-plastic, wet, medium soft.	
	1.5'	P,P,1							

Latitude: 38.352860901 N
 Longitude: 120.782753601 W
 Ground Elevation: 1,367.0'
 TOC Elevation: 1369.5'

Borehole Diameter: 8"
 Borehole Total Depth: 40' bgs
 Well Diameter: 2"
 Well Total Depth: 40' bgs

Water Bearing Zone: First
 Static Water Level: Enc. ~32' bgs
 Screen Interval: 29.7-39.7' bgs
 Hammer Weight: 140 lbs.

Sand: 27.6-40'
 Grout/Seal: 0-25.2'/25.2-27.6'
 Screen Slot: 0.010"
 Sheet: 1 of 2

Station Name: 2F-14-01

Project Name: Argonaut Mine Tailings Area
 Client: U.S. EPA
 Site Location: Jackson, CA
 TDD No.: 1302-T2-R9-14-06-0002
 Geologist: Bill Clarke

Boring Name: 2F-14-01
 Start Date: September 22, 2014
 Completion Date: September 24, 2014
 Driller: Cascade Drilling
 Drilling Method: Hollow Stem Auger (CME 1050)



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SAMPLE				SUBSURFACE PROFILE				Lithologic Description	Comment	
Sample	Recovery	PID	Blows	Elevation	Depth	USCS	Lithology			
	1.5'		2,1,1		30	ML		Very dark greenish gray SILT, trace to little very fine sand (5-10% sand), couple thin intervals without sand, low plasticity to non-plastic, wet, medium soft.		
	1.5'		P,P,1			ML		Very dark greenish gray SILT (1% sand), low plasticity, wet to saturated, soft to very soft.		
	1.5'		P,P,P			ML		Very dark greenish gray SILT, trace silt (1-5% sand), low plasticity, wet/saturated, very soft.		
	1.5'		P,2,6		35	SM		Very dark greenish gray SILTY FINE SAND (30% silt), cohesive, very well sorted, wet, medium dense.		
	1.5'		7,3,3			ML		Very dark grayish brown [2.5Y3/2] FINE TO MEDIUM SANDY SILT (10-30% sand), trace clay (5-10% clay), with little angular gravel to 3/4" (10-15% gravel), very moist to wet, firm.		
	1.0'		8,50/6" Push			ML		Black (2.5Y2.5/1) SILT, TRACE VERY FINE SAND (1-5% sand), some rootlets, very moist, soft.		
	1.5'		Shelby Tube 18"			ML		Very dark grayish brown FINE TO MEDIUM SANDY SILT (25% sand), trace clay (5% clay), with little angular gravel to 1/2" (15% gravel), moist, firm.		
	0.7'		17, 50/4"		40	GP/Bedrock		Olive gray and light brownish gray (5Y5/2 and 2.5Y6/2) angular GRAVEL to 3/4", little fine to coarse sand (15% sand), weathered, fractured possible meta-basalt.		
END OF BORING 2F-1 AT 40' BGS										
					45					
					50					
					55					
					60					

Latitude: 38.352860901 N
 Longitude: 120.782753601 W
 Ground Elevation: 1,367.0'
 TOC Elevation: 1369.5'

Borehole Diameter: 8"
 Borehole Total Depth: 40' bgs
 Well Diameter: 2"
 Well Total Depth: 40' bgs

Water Bearing Zone: First
 Static Water Level: Enc. ~32' bgs
 Screen Interval: 29.7-39.7' bgs
 Hammer Weight: 140 lbs.

Sand: 27.6-40'
 Grout/Seal: 0-25.2'/25.2-27.6'
 Screen Slot: 0.010"
 Sheet: 2 of 2

Station Name: 2F-14-02

Project Name: Argonaut Mine Tailings Area
 Client: U.S. EPA
 Site Location: Jackson, CA
 TDD No.: 1302-T2-R9-14-06-0002
 Geologist: Bill Clarke

Boring Name: 2F-14-02
 Start Date: September 23, 2014
 Completion Date: September 24, 2014
 Driller: Cascade Drilling
 Drilling Method: Hollow Stem Auger (CME 1050)



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SAMPLE				SUBSURFACE PROFILE				Lithologic Description	Comment
Sample	Recovery	PID	Blows	Elevation	Depth	USCS	Lithology		
				1,367'				GROUND SURFACE	
			Hand Auger and Post Hole to 5 ft.						
	1.5'	1,1,2			5	ML		Gray (2.5Y5/1 to 2.5Y6/1) VERY FINE SANDY SILT (30% sand), few rootlets, locally weakly laminated, non-plastic to low plasticity.	Concrete
	1.5'	1,1,2				ML		Very dark greenish gray (Gley 1 3/1 5GY) SILT (1% very fine sand), low toughness, rapid dilatancy, low to medium plasticity, weakly laminated to platy, moist, medium soft.	
	1.5'	P,P,P				ML		Very dark greenish gray SILT similar to 3.5 ft., more massive, with one 1/4" layer of light yellowish brown SILTY VERY FINE SAND (40% silt) at 5.5 ft.	2" diameter Schedule 40 PVC Blank Casing
	1.5'	P,P,1			10	ML		Very dark greenish gray (Gley 1 3/1 5GY) SILT, trace rootlets at 7 ft., low plasticity, increasing moisture downward to very moist.	
	1.5'	P,P,P				ML		Very dark greenish gray SILT, low plasticity, very moist, soft to very soft.	
	1.5'	P,P,1				ML		Very dark greenish gray SILT, as at 8 ft., low plasticity, very moist, very soft.	Portland Cement Grout
	1.5'	P,P,P				ML		Very dark greenish gray SILT, as at 9.5 ft., low plasticity, very moist, very soft.	
	1.5'	P,P,P			15	ML		Very dark greenish gray SILT, as at 11 ft., low plasticity, very moist, very soft.	
	1.5'	P,P,P				ML		Very dark greenish gray SILT, as at 12.5 ft., low plasticity, very moist, very soft.	Bulk Sample 2F-2-16-B
	1.5'	P,P,P				ML		Very dark greenish gray SILT, as at 14 ft.	
	1.5'	P,P,P				ML		Very dark greenish gray SILT, as at 15.5 ft., but sticky.	
	1.5'	P,P,P			20	ML		Very dark greenish gray SILT, as at 17 ft., moderately sticky.	Medium Bentonite Chips, Hydrated
	1.5'	P,P,P				ML		Very dark greenish gray SILT, as at 18.5 ft., very moist to wet, very soft.	#2/12 Monterey Sand
	1.5'	P,P,P				ML		Very dark greenish gray (Gley 1 3/1 5GY) SILT, low to medium plasticity (higher plasticity occurs across 1-2" intervals), sticky, very moist to wet, soft to very soft.	
	1.5'	P,P,P				ML		Very dark greenish gray SILT, similar to 21.5 ft., but low plasticity, less sticky, wet.	Centralizer
	1.0'	1,2,2			25	ML		Very dark greenish gray SILT, similar to 23.5 ft.	
	1.0'	P,P,P				SM		Very dark greenish gray (Gley 1 3/1 10GY) SILTY VERY FINE SAND (35-40% silt), very well sorted, cohesive, wet/saturated, medium loose.	Bulk Sample 2F-2-27-B
	1.5'	3,6,50/5"				ML		Very dark greenish gray SILT, similar to 21.5 ft.	
	0.4'	P,P,50/2"			30	GM		Black at top to very dark greenish gray FINE SANDY SILT (40-45% sand), with clay (15% clay), trace to little angular gravel to 3/8" (5-10% gravel), wet. Very dark grayish brown (10YR3/2) weathered to hard angular ROCK FRAGMENTS with CLAYEY TO SANDY SILT, wet.	2" diameter Schedule 40 PVC Slotted Well Screen 0.010" Slots

Latitude: 38.352728637 N
 Longitude: 120.782759959 W
 Ground Elevation: 1,366.5'
 TOC Elevation: 1368.5'

Borehole Diameter: 8"
 Borehole Total Depth: 35.7' bgs
 Well Diameter: 2"
 Well Total Depth: 34.6' bgs

Water Bearing Zone: First
 Static Water Level: Enc. ~25.5' bgs
 Screen Interval: 24.2-34.2' bgs
 Hammer Weight: 140 lbs.

Sand: 22.1-34.6'
 Grout/Seal: 0-19.9'/19.9-22.1'
 Screen Slot: 0.010"
 Sheet: 1 of 2

Station Name: 2F-14-02

Project Name: Argonaut Mine Tailings Area
 Client: U.S. EPA
 Site Location: Jackson, CA
 TDD No.: 1302-T2-R9-14-06-0002
 Geologist: Bill Clarke

Boring Name: 2F-14-02
 Start Date: September 23, 2014
 Completion Date: September 24, 2014
 Driller: Cascade Drilling
 Drilling Method: Hollow Stem Auger (CME 1050)



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SAMPLE				SUBSURFACE PROFILE					Lithologic Description	Comment	
Sample	Recovery	PID	Blows	Elevation	Depth	USCS	Lithology				
	0.4' 0.5'		PP,50/2" 50/6"		30	GM GM		Very dark grayish brown (10YR3/2) weathered to hard angular ROCK FRAGMENTS with CLAYEY TO SANDY SILT, wet. Olive gray to olive brown (5Y4/2 to 2.5Y4/3) ROCK FRAGMENTS with SANDY SILT with clay, wet.	<p>#2/12 Monterey Sand</p> <p>Centralizer</p> <p>2" diameter Schedule 40 PVC Slotted Well Screen 0.010" Slots</p> <p>Slough</p>		
	1.5'		Drilled 49,59,50/5"			GP/ Bedrock		Greenish gray to olive brown ROCK AND ROCK FRAGMENTS, highly weathered, with interstitial SILTY SAND with clay along fractures and in pockets, wet.			
	0.4'		Drilled 28, 53/2"		35	GP/ Bedrock		Olive to olive brown ROCK AND ROCK FRAGMENTS, possible metavolcanics,highly weathered, weakly foliated, with SILTY SAND with clay along fractures and in pockets, wet.			
								END OF BORING 2F-2 AT 35.7' BGS			
					40						
					45						
					50						
					55						
					60						

Latitude: 38.352728637 N
Longitude: 120.782759959 W
Ground Elevation: 1,366.5'
TOC Elevation: 1368.5'

Borehole Diameter: 8"
Borehole Total Depth: 35.7' bgs
Well Diameter: 2"
Well Total Depth: 34.6' bgs

Water Bearing Zone: First
Static Water Level: Enc. ~25.5' bgs
Screen Interval: 24.2-34.2' bgs
Hammer Weight: 140 lbs.

Sand: 22.1-34.6'
Grout/Seal: 0-19.9'/19.9-22.1'
Screen Slot: 0.010"
Sheet: 2 of 2

Latitude: 38.352728637 N
 Longitude: 120.782759959 W
 Ground Elevation: 1,366.5'
 TOC Elevation: 1368.5'

Borehole Diameter: 8"
 Borehole Total Depth: 35.7' bgs
 Well Diameter: 2"
 Well Total Depth: 34.6' bgs

Water Bearing Zone: First
 Static Water Level: Enc. ~25.5' bgs
 Screen Interval: 24.2-34.2' bgs
 Hammer Weight: 140 lbs.

Sand: 22.1-34.6'
 Grout/Seal: 0-19.9'/19.9-22.1'
 Screen Slot: 0.010"
 Sheet: 2 of 2

Station Name: 2F-14-03

Project Name: Argonaut Mine Tailings Area
 Client: U.S. EPA
 Site Location: Jackson, CA
 TDD No.: 1302-T2-R9-14-06-0002
 Geologist: Bill Clarke

Boring Name: 2F-14-03
 Start Date: September 24, 2014
 Completion Date: September 25, 2014
 Driller: Cascade Drilling
 Drilling Method: Hollow Stem Auger (CME 1050)



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SAMPLE				SUBSURFACE PROFILE				Lithologic Description	Comment	Well Completion Details
Sample	Recovery	PID	Blows	Elevation	Depth	USCS	Lithology			
				1,443'				GROUND SURFACE		
	1.1'		1,3,4			SM		Gray (5Y5/1) SILTY VERY FINE TO FINE SAND (25% silt), slightly cohesive to non-cohesive, trace organic material (leaves, twig), slightly moist, medium loose.		
	1.3'		2,2,3			SM		SILTY VERY FINE TO FINE SAND similar to above, with local weak layering, (20% silt), no organic material, slightly moist, medium loose to medium dense.		
	1.5'		2,3,3			SM		Gray (2.5Y5/1) SILTY VERY FINE TO FINE SAND (20% silt), locally laminated, oxides, medium dense.		
	1.5'		3,3,3		5	SM		Dark gray to gray (2.5Y4/1 to 2.5Y6/1) SILTY VERY FINE TO FINE SAND (20% silt), few laminations, moist, medium dense.		
	1.5'		2,2,3			SM		Gray (2.5Y5/1) SILTY VERY FINE TO FINE SAND (20% silt), few laminations to massive, moist, medium dense.		
	1.5'		1,2,2			SM		Grayish brown (2.5Y5/2) SILTY VERY FINE TO FINE SAND (20% silt), mostly laminated, one thin 1/8" SILT interbed, moist, medium dense.		
	1.5'		2,3,3		10	SM		Gray (2.5Y5/1) SILTY VERY FINE TO FINE SAND, increased silt (20-35% silt), scattered laminations, moist, medium dense.		
	1.5'		2,2,3			SM		Gray (2.5Y5/1) changing at 11.5 ft to dark gray to very dark gray (2.54/1 to 2.5Y3/1) SILTY VERY FINE TO FINE SAND, increased silt (20-40% silt), upper 1 ft laminated, massive below.		
	1.3'		2,3,3			SM		Gray (2.5Y5/1) SILTY VERY FINE SAND (30% silt), mostly massive, moist, medium dense.		
	1.1'		2,2,4		15	SM		Gray to dark gray (2.5Y5/1 to 2.5Y4/1) SILTY VERY FINE TO FINE SAND (20% silt), mostly massive, trace laminations.	Bulk Sample 2F-3-15-B	
	1.5'		2,3,3			SM		Gray to dark gray SILTY VERY FINE TO FINE SAND (variable 20-40% silt).		
	1.5'		3,5,5			SM		Dark gray to very dark gray (2.5Y4/1 to 2.5Y3/1) SILTY VERY FINE TO FINE SAND (variable 20-45% silt), few siltier laminations/beds to 1/4" toward top, to moderately cohesive.		
	1.5'		3,4,5			SM		Dark gray (5Y4/1) SILTY VERY FINE SAND (25% silt), trace laminations, to moderately cohesive.		
	1.5'		3,5,6		20	SM		SILTY VERY FINE SAND (variable 20-35% silt), mostly massive, moderately cohesive.		
	1.5'		3,4,4							
	1.4'		1,1,2			SM to SP		VERY FINE SAND with variably trace to little silt (10% silt) to little to some silt (15-20% silt), very well sorted, slightly cohesive to non-cohesive, medium loose.		
	1.5'		2,2,3		25	SM		Dark gray to very dark gray (5Y4/1 to 5Y3/1) SILTY VERY FINE SAND (20% silt), one 2" layer with 40% silt, one 2" layer of VERY FINE SANDY SILT (35% sand), non-plastic.		
	1.5'		3,4,4			SM		Dark gray to dark grayish brown (5Y4/1 to 2.5Y4/2) SILTY VERY FINE TO FINE SAND (mostly 20% silt), few 3" layers with up to 40% silt, slightly cohesive.		
	1.5'		3,2,2			SM		Very dark gray (2.5Y3/1) SILTY VERY FINE TO FINE SAND (mostly 25% silt), few siltier pockets, slightly cohesive.		
	1.5'		2,2,4			SM		Dark grayish brown to dark gray (2.5Y4/2 to 2.5Y4/1) SILTY VERY FINE SAND (25% silt), massive, uniform, slightly to moderately cohesive.		
	1.5'		3,3,5		30	SM		Dark gray SILTY VERY FINE SAND (25% silt), slightly to moderately cohesive, medium dense.	Bulk Sample 2F-3-30-B	

Latitude: 38.353639739 N
 Longitude: 120.784969600 W
 Ground Elevation: 1,442.5'
 TOC Elevation: NA

Borehole Diameter: 8"
 Borehole Total Depth: 63.1' bgs
 Well Diameter: NA
 Well Total Depth: NA

Water Bearing Zone: NA
 Static Water Level: Not encountered
 Screen Interval: NA
 Hammer Weight: 140 lbs.

Sand: NA
 Grout/Seal: 0-63.1'
 Screen Slot: NA
 Sheet: 1 of 2

Station Name: 2F-14-03

Project Name: Argonaut Mine Tailings Area
 Client: U.S. EPA
 Site Location: Jackson, CA
 TDD No.: 1302-T2-R9-14-06-0002
 Geologist: Bill Clarke

Boring Name: 2F-14-03
 Start Date: September 24, 2014
 Completion Date: September 25, 2014
 Driller: Cascade Drilling
 Drilling Method: Hollow Stem Auger (CME 1050)



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 Chatsworth, CA 91311

SAMPLE				SUBSURFACE PROFILE				Lithologic Description	Comment	Well Completion Details
Sample	Recovery	PID	Blows	Elevation	Depth	USCS	Lithology			
	1.5'		2,2,4		30	SM		Dark grayish brown to dark gray (2.5Y4/2 to 2.5Y4/1) SILTY VERY FINE SAND (25% silt), massive, uniform, slightly to moderately cohesive.		
	1.5'		3,3,5			SM		Dark gray (5Y4/1) SILTY VERY FINE SAND (25% silt), slightly to moderately cohesive, medium dense.		
	1.5'		4,5,8			SM		Olive gray to gray (5Y4/2 to 5Y5/1) SILTY VERY FINE SAND (25% silt), uniform, moderately cohesive, medium dense to dense.		
	1.5'		5,6,6					Color varies slightly to dark gray to gray (2.5Y4/1 to 5Y5/1).		
	1.5'		5,8,8		35	SM		Gray to dark gray (5Y5/1 to 5Y3/1) SILTY VERY FINE SAND (25% silt), uniform, moderately cohesive, medium dense.		
	1.5'		5,8,11			SM		Dark gray (5Y3/1) SILTY VERY FINE SAND (25% silt), uniform, cohesive, dense.		
	1.5'		6,7,7					One thin 1/8" VERY FINE SANDY SILT layer at 38.5 ft.		
	1.5'		3,5,6		40	SM		Gray to very dark gray (5Y5/1 to 2.5Y3/1) SILTY VERY FINE SAND (varies 25-35% silt), weak layering with differing silt content, moderately cohesive, moist, medium dense.		
	1.5'		5,5,6			SM		Olive gray (5Y4/2) SILTY VERY FINE SAND (25% silt), uniform, slightly to moderately cohesive, dense.		
	1.5'		4,6,6					Similar to above.		
	1.5'		5,5,6		45			Similar to above.		
	1.5'		5,6,4			SM&ML		Gray and dark grayish brown (5Y5/1 and 2.5Y4/2) SILTY VERY FINE SAND (35% silt), with 1/4" to 1/2" interbeds of FINE SANDY SILT.	Bulk Sample 2F-3-45-B	
	1.5'		4,6,8			ML		Black (2.5Y2.5/1) VERY FINE SANDY SILT (35% sand), non-plastic, moist, firm.		
	1.5'		4,5,6			SM		Gray (5Y5/1) SILTY VERY FINE SAND (25% silt), some weak laminations, slightly to moderately cohesive, moist.		
	1.5'		3,5,6		50	SP		Sharp change to bluish gray (Gley 2.5/1 5PB) VERY FINE SAND with trace silt (5% silt), very well sorted, non-cohesive to slightly cohesive, moist, medium dense.		
	1.5'		5,6,7			SM		Grading downward to gray (5Y5/1) VERY FINE SAND with little silt (1 5% silt).		
	1.5'		5,5,7			SP		VERY FINE SAND similar to 41.5 ft but more silt (5-10% silt), very weakly laminated, moist, medium dense.		
	1.5'		2,2,4		55	SM/SP		Bluish gray VERY FINE SAND to SILTY VERY FINE SAND (variable 5-30% silt), siltier material in pockets or crude layers, medium dense.		
	1.3'		Push Shelby Tube 26"			ML		Greenish black to very dark greenish gray (Gley 2.2.5/1 5BG to Gley 2.3/1 10G) SILT with trace very fine to medium sand (1-5% sand), trace angular gravel to 3/8", rapid dilatancy, low plasticity, moist, medium soft.	Shelby Tube Sample 2F-3-57.5-ST	
	1.4'		23,33,17			ML		Very dark greenish gray CLAYEY SILT, trace very fine to medium sand (5% sand), trace to little angular gravel to 3/8" (10% gravel), low plasticity, medium firm.		
	0.8'		45, 50/4"			CL/Bedrock GP/		Light yellowish brown, pale olive, to light reddish brown with dark brown to orange oxides SILTSTONE or SLATE, highly fractured and weathered; grading to SILTY CLAY with rock fragments texture, medium plasticity.		
	1.5'		34,27,48		60	Bedrock GP/		Becoming olive gray, hard fractured rock fragments with clay, SILTSTONE or SLATE.		
	0.7'		20,50/2"			Bedrock GP/		Yellowish brown (10YR5/6) highly weathered SILTSTONE OR SLATE, consists of angular rock fragments with soil texture material in pockets and along fractures, breaks into small hard chips, some appears foliated and greenish.		
	0.2'		50/2"			Bedrock		END OF BORING 2F-3 AT 63.1' BGS		

Latitude: 38.353639739 N
 Longitude: 120.784969600 W
 Ground Elevation: 1,442.5'
 TOC Elevation: NA

Borehole Diameter: 8"
 Borehole Total Depth: 63.1' bgs
 Well Diameter: NA
 Well Total Depth: NA

Water Bearing Zone: NA
 Static Water Level: Not encountered
 Screen Interval: NA
 Hammer Weight: 140 lbs.

Sand: NA
 Grout/Seal: 0-63.1'
 Screen Slot: NA
 Sheet: 2 of 2

Station Name: 2F-14-04

Project Name: Argonaut Mine Tailings Area
 Client: U.S. EPA
 Site Location: Jackson, CA
 TDD No.: 1302-T2-R9-14-06-0002
 Geologist: Bill Clarke

Boring Name: 2F-14-04
 Start Date: September 25, 2014
 Completion Date: September 26, 2014
 Driller: Cascade Drilling
 Drilling Method: Hollow Stem Auger (CME 1050)



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 Chatsworth, CA 91311

SAMPLE				SUBSURFACE PROFILE				Lithologic Description	Comment	Well Completion Details
Sample	Recovery	PID	Blows	Elevation	Depth	USCS	Lithology			
				1,433'				GROUND SURFACE		
	1.0'	NR				SM		Light brownish gray (2.5Y6/2) SILTY VERY FINE SAND (25% silt), trace rootlets, dry to slightly moist, medium loose.	Concrete	
	1.5'	1,1,4				SM&ML		Light brownish gray SILTY VERY FINE SAND similar to above, with locally interbedded VERY FINE SANDY SILT TO SILT (5-20% sand), laminated, silt layers 2-3", nonplastic.		
	1.5'	NR				SM		Gray to dark gray (2.5Y6/1 to 2.5Y4/1) SILTY VERY FINE SAND, (20-40% silt), few 1/4" to 1.5" very fine sandy silt layers, silt layers laminated, slightly moist to moist, medium loose to medium dense..		
	1.5'	3,3,3			5					
	1.5'	3,3,3								
	1.5'	3,3,3								
	1.5'	3,3,3						Increasing silt (to 45% silt).		
	1.5'	3,3,3			10					
	1.5'	2,2,3				SP-SM		Light bluish gray VERY FINE SAND to SILTY VERY FINE SAND (5-30% silt), two 1" to 1.5" SILT layers, silt low plasticity.		
	1.3'	1,1,1				ML		Very dark greenish gray (Gley 1 3/1 10Y) SILT (1% very fine sand), rapid dilatancy, low plasticity, sticky, wet, very soft.		
	1.1'	1,2,2				SM		Very dark greenish gray to gray (Gley 2 3/1 5BG to 5Y5/1) SILTY VERY FINE SAND (15-40% silt), silt content varies between 1" to 3" intervals, moist, medium loose.		
	1.5'	NR			15	ML		Dark gray SILT to VERY FINE SANDY SILT (1-20 % very fine sand), low plasticity to non-plastic.		
	1.5'	NR				SM&ML		Interbedded SILTY VERY FINE SAND (15-40% silt), cohesive, medium loose to medium dense; and VERY FINE SANDY SILT (30% very fine sand), non-plastic.	Bulk Sample 2F-4-16-B	
	1.0'	1,1,1				ML		Very dark greenish gray (Gley 2 3/1 5BG) SILT to VERY FINE SANDY SILT (varies 1-5% to 15-30% very fine sand), rapid dilatancy, mostly low plasticity to non-plastic, locally sticky, wet, very soft to medium soft; with one 2" bed of silty fine sand at 19 ft..		
	0.8'	1,1,1			20					
	1.5'	P,P,2						Grading to medium plasticity.	Portland Cement Grout	
	1.4'	3,2,2				ML		Very dark greenish gray SILT with very fine sand to VERY FINE SANDY SILT (varies 5-15% to 25% very fine sand), low plasticity to non-plastic.		
	0.6'	P,1,2			25					
	1.1'	P,1,1				ML		Very dark greenish gray SILT and VERY FINE SANDY SILT (varies 1-5% to 30-35% very fine sand in crude layers/zones), low plasticity to non-plastic, locally sticky, wet to saturated, medium soft to soft.	Bulk Sample 2F-4-28-B	
	1.4'	2,2,2								
	0.5'	1,1,1			30					
	1.5'	1,1,1				ML		Very dark greenish gray SILT, to trace very fine sand (1-5% very fine sand), rapid dilatancy, low to medium plasticity, wet, soft.		

Latitude: 38.353445265 N
 Longitude: 120.785397815 W
 Ground Elevation: 1,432.5'
 TOC Elevation: 1435.5'

Borehole Diameter: 8"
 Borehole Total Depth: 62.3' bgs
 Well Diameter: 2"
 Well Total Depth: 60' bgs

Water Bearing Zone: First
 Static Water Level: Enc. ~ <38' bgs
 Screen Interval: 50-60' bgs
 Hammer Weight: 140 lbs.

Sand: 48-61'
 Grout/Seal: 0-44'/44-47'
 Screen Slot: 0.010"
 Sheet: 1 of 2

Station Name: 2F-14-04

Project Name: Argonaut Mine Tailings Area
 Client: U.S. EPA
 Site Location: Jackson, CA
 TDD No.: 1302-T2-R9-14-06-0002
 Geologist: Bill Clarke

Boring Name: 2F-14-04
 Start Date: September 25, 2014
 Completion Date: September 26, 2014
 Driller: Cascade Drilling
 Drilling Method: Hollow Stem Auger (CME 1050)



Weston Solutions, Inc.
 9301 Oakdale Ave., Ste 320
 Chatsworth, CA 91311

SAMPLE				SUBSURFACE PROFILE				Lithologic Description	Comment	Well Completion Details
Sample	Recovery	PID	Blows	Elevation	Depth	USCS	Lithology			
	1.5'		1,1,1		30	ML		Very dark greenish gray VERY FINE SANDY SILT (30% very fine sand), non-plastic.	2" diameter Schedule 40 PVC Blank Casing	
	1.5'		1,1,1			ML		Very dark greenish gray (Gley 2 3/1 5 BG) SILT, to trace very fine sand (1-5% very fine sand), rapid dilatancy, low to medium plasticity, sticky, wet to saturated, soft.		
	1.5'		1,1,4			ML		Very dark greenish gray (Gley 1 3/1 10GY) VERY FINE SANDY SILT (35-40% very fine sand), non-plastic, wet, medium firm.	Portland Cement Grout	
	1.5'	P,1,2				ML		Very dark greenish gray SILT, trace to little very fine sand (varies 1-15% very fine sand), rapid dilatancy, low to medium plasticity, wet to saturated, soft.		
	1.5'		1,4,4		35	ML		VERY FINE SANDY SILT (30% very fine sand), non-plastic, wet to saturated, medium firm.		
	1.0'	2,2,4				ML		SILT, trace very fine sand (1-5% very fine sand), rapid dilatancy, low plasticity, wet to saturated, soft.		
	1.5'	P,1,2				ML		VERY FINE SANDY SILT (20-25% very fine sand), non-plastic, wet, medium soft.	Bulk Sample 2F-4-40.5-B	
	1.5'		1,2,2		40	ML		Very dark greenish gray SILT, with trace to little very fine sand (varies 1-5% to 1-15% very fine sand), rapid dilatancy, low plasticity to non-plastic, wet, medium soft to soft.		
	1.5'		1,2,2							
	1.4'	2,3,5				ML		VERY FINE SANDY SILT (25-35% very fine sand), non-plastic, wet/saturated, medium firm.		
	1.5'	P,3,4			45	ML		SILT, trace very fine sand (1-5% very fine sand), low plasticity, wet, very soft.	Medium Bentonite Chips, Hydrated	
	1.5'	4,6,7				ML		Very dark greenish gray VERY FINE SANDY SILT (25-45% very fine sand increasing downward), non-plastic, wet/saturated, medium firm.		
	1.5'		1,2,2			ML		Softer: Very dark greenish gray SILT, with trace to little very fine sand (varies 1-5% to locally 10-15% very fine sand), low plasticity, wet/saturated, soft.	#2/12 Monterey Sand	
	1.5'	P,P,1								
	1.5'	P,P,1			50			Less sand (1-5%).	Centralizer	
	1.5'	2,4,6				SM		Black to very dark bluish gray SILTY VERY FINE SAND (25-35% silt, decreasing downward), cohesive, wet, medium dense.		
	0.8'	3,3,4						Wood fragment 1.5" x 0.25".	2" diameter Schedule 40 PVC Slotted Well Screen 0.010" Slots	
	1.5'	1,1,4			55	SM/SP		Very dark bluish gray SILTY VERY FINE TO FINE SAND (25% silt) grading to FINE SAND with trace to little silt (5-15% silt), slightly to moderately cohesive, wet/saturated, medium loose to medium dense.		
	1.5'	3,5,7				SM		Black SILTY VERY FINE SAND (40% silt), cohesive, saturated, medium dense.	Bulk Sample 2F-4-57-B	
	0.8'	Push Shelby Tube 12" Drilled to 60'				SM		Very dark grayish brown to very dark gray (2.5Y3/2 to 2.5Y3/1) SILTY FINE TO MEDIUM SAND (20% silt), trace clay (10% clay), trace to little angular gravel to 1" (5-20% gravel, increasing downward), very moist, medium dense.		
					60			Very dark grayish brown SILTY VERY FINE TO MEDIUM SAND (20% silt), trace clay (5% clay), little angular gravel to 1", (1.5% gravel).	Shelby Tube Sample 2F-4-58-ST	
	0.8'	6,13,17				SM		Changing downward to mottled light olive brown, olive brown, olive, and green angular GRAVEL to 1" (80% rock fragments and weathered rock), with SILTY FINE TO COARSE SAND with trace clay fracture filling/matrix, resembles fine grained highly weathered metavolcanics.		
	0.8'	26,50/3"				GP/Bedrock			Slough	
								END OF BORING 2F-4 AT 62.3' BGS		

Latitude: 38.353445265 N
 Longitude: 120.785397815 W
 Ground Elevation: 1,432.5'
 TOC Elevation: 1435.5'

Borehole Diameter: 8"
 Borehole Total Depth: 62.3' bgs
 Well Diameter: 2"
 Well Total Depth: 60' bgs

Water Bearing Zone: First
 Static Water Level: Enc. ~ <38' bgs
 Screen Interval: 50-60' bgs
 Hammer Weight: 140 lbs.

Sand: 48-61'
 Grout/Seal: 0-44'/44-47'
 Screen Slot: 0.010"
 Sheet: 2 of 2

ATTACHMENT D
LABORATORY ANALYTICAL DATA REPORTS

1956 Webster St Ste 400 Oakland, California 94612

♦ Phone 510/343-3000 ♦ Fax 510/343-3001 ♦ www.ninyoandmoore.com

To:

Mr. Tom Fortner

Firm:

Weston Solutions

Deliver By:

email: Thomas.Fortner@WestonSolutions.com

From:

Lydia L. Barrow

Date:

October 17, 2014

Subject:

Soil and Aggregate Report
Argonaut Mine Tailings

Project No.:

402277002

Total Number Of Pages (Including Transmittal): 10

- Geotechnical Engineering
- Engineering Geology
- Materials Testing and Inspection
- Construction Management
- Engineering Design
- Environmental Engineering
- Environmental Site Assessments
- Regulatory Compliance and Permitting
- Water Quality and Resource Evaluations
- Hazardous Waste Management
- Soil and Groundwater Remediation
- Asbestos and Lead-Based Paint Surveys
- Geophysical Studies
- Mineral Resource Evaluations
- Value Engineering
- Forensic Studies
- Expert Witness Testimony

JOB STAMP:

PROJECT NO.: 402277002

SAMPLE NO.: 2F-1-18.5-B

PROJECT NAME: Weston Argonaut

SAMPLED BY: Weston

CLIENT: Weston Solutions

DATE SAMPLED: 09/22/14

FILE/PLAN NO.:

TESTED BY: JMK

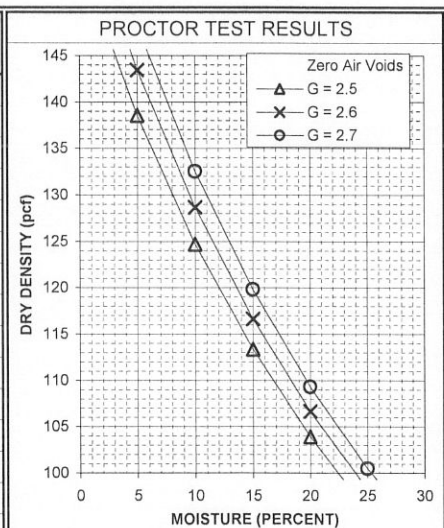
REVIEWED BY: KG

SAMPLE SOURCE: Argonaut Mine Tailings

SAMPLE DESCRIPTION:

INTENDED USE:

PARAMETER	TEST METHOD	TEST RESULT	SPEC RANGE MIN	SPEC RANGE MAX	COMMENTS
USCS CLASS.					
WATER CONTENT	D 2216	46.6			
LIQUID LIMIT	D 4318	32%			
PLASTIC LIMIT	D 4318	22%			
PLASTICITY INDEX	D 4318	10%			
SPECIFIC GRAVITY					
ABSORPTION					
SAND EQUIVALENT					
CLEANNES VALUE					
DURABILITY INDEX					
EXPANSION INDEX					
R-VALUE					
pH					
RESISTIVITY					
CHLORIDE CONTENT					
SULFATE CONTENT					



TEST METHOD:

MAX PARTICLE SIZE:

PERCENT OVERSIZE:

MAX DRY DENSITY (pcf):

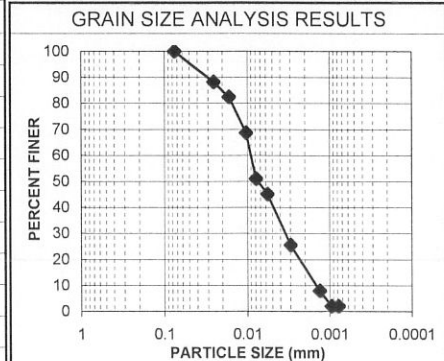
OPTIMUM MOISTURE (%):

MAX DRY DENSITY* (pcf):

OPTIMUM MOISTURE* (%):

*WITH OVERSIZE CORRECTION

GRAIN SIZE ANALYSIS (ASTM D422)					COMMENTS
SIEVE	PARTICLE SIZE (mm)	PERCENT PASSING	SPEC RANGE MIN	SPEC RANGE MAX	
No. 200	0.0750	100			
	0.0254	88			
	0.0166	82			
	0.0103	69			
	0.0079	51			
	0.0057	45			
	0.0030	25			
	0.0009	2			
	0.0008	2			



10% FINER DIAMETER (mm):

30% FINER DIAMETER (mm):

60% FINER DIAMETER (mm):

UNIFORMITY COEFFICIENT:

CURVATURE COEFFICIENT:

JOB STAMP:

PROJECT NO.: 402277002

SAMPLE NO.: 2F-1-25.5-B

PROJECT NAME: Weston Argonaut

SAMPLED BY: Weston

CLIENT: Weston Solutions

DATE SAMPLED: 09/22/14

FILE/PLAN NO.:

TESTED BY: JMK

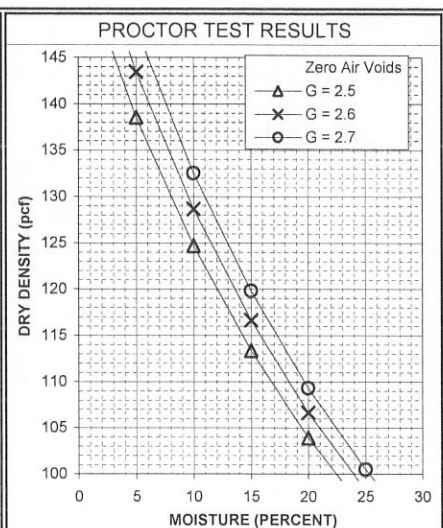
REVIEWED BY: KG

SAMPLE SOURCE: Argonaut Mine Tailings

SAMPLE DESCRIPTION:

INTENDED USE:

PARAMETER	TEST METHOD	TEST RESULT	SPEC RANGE MIN	SPEC RANGE MAX	COMMENTS
USCS CLASS.					
WATER CONTENT	D 2216	47.6			
LIQUID LIMIT	D 4318	34%			
PLASTIC LIMIT	D 4318	19%			
PLASTICITY INDEX	D 4318	15%			
SPECIFIC GRAVITY					
ABSORPTION					
SAND EQUIVALENT					
CLEANNES VALUE					
DURABILITY INDEX					
EXPANSION INDEX					
R-VALUE					
pH					
RESISTIVITY					
CHLORIDE CONTENT					
SULFATE CONTENT					



TEST METHOD:

MAX PARTICLE SIZE:

PERCENT OVERSIZE:

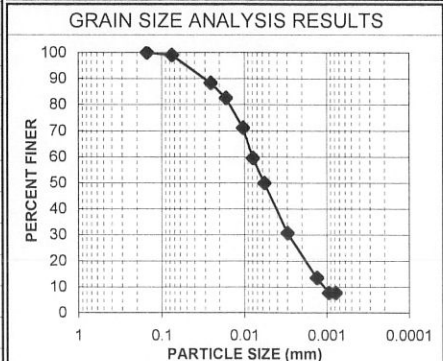
MAX DRY DENSITY (pcf):

OPTIMUM MOISTURE (%):

MAX DRY DENSITY* (pcf):

OPTIMUM MOISTURE* (%):

*WITH OVERSIZE CORRECTION



10% FINER DIAMETER (mm):

30% FINER DIAMETER (mm):

60% FINER DIAMETER (mm):

UNIFORMITY COEFFICIENT:

CURVATURE COEFFICIENT:

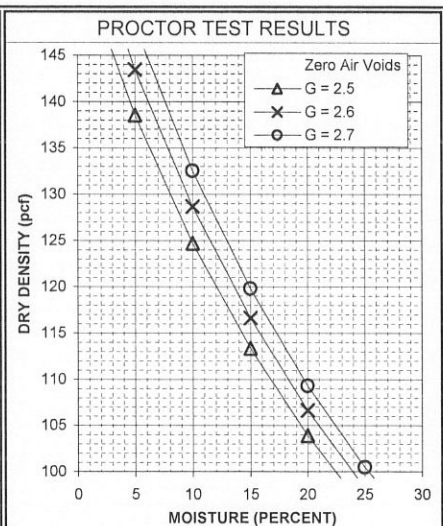
JOB STAMP:

PROJECT NO.: 402277002
 PROJECT NAME: Weston Argonaut
 CLIENT: Weston Solutions
 FILE/PLAN NO.:

SAMPLE NO.: 2F-2-16-B
 SAMPLED BY: Weston
 DATE SAMPLED: 09/23/14
 TESTED BY: JMK
 REVIEWED BY: KG

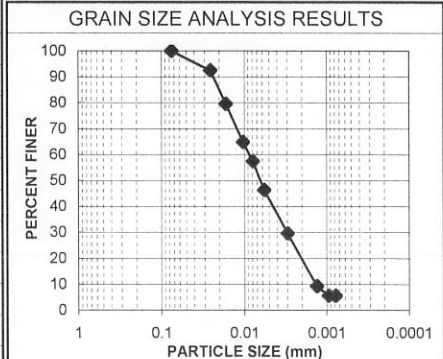
SAMPLE SOURCE: Argonaut Mine Tailings
 SAMPLE DESCRIPTION:
 INTENDED USE:

PARAMETER	TEST METHOD	TEST RESULT	SPEC RANGE MIN	SPEC RANGE MAX	COMMENTS
USCS CLASS.					
WATER CONTENT	D 2216	44.7			
LIQUID LIMIT	D 4318	34%			
PLASTIC LIMIT	D 4318	19%			
PLASTICITY INDEX	D 4318	15%			
SPECIFIC GRAVITY					
ABSORPTION					
SAND EQUIVALENT					
CLEANNES VALUE					
DURABILITY INDEX					
EXPANSION INDEX					
R-VALUE					
pH					
RESISTIVITY					
CHLORIDE CONTENT					
SULFATE CONTENT					



TEST METHOD:
 MAX PARTICLE SIZE:
 PERCENT OVERSIZE:
 MAX DRY DENSITY (pcf):
 OPTIMUM MOISTURE (%):
 MAX DRY DENSITY* (pcf):
 OPTIMUM MOISTURE* (%):
 *WITH OVERSIZE CORRECTION

GRAIN SIZE ANALYSIS (ASTM D422)					
SIEVE	PARTICLE SIZE (mm)	PERCENT PASSING	SPEC RANGE MIN	SPEC RANGE MAX	COMMENTS
No. 200	0.0750	100			
	0.0254	93			
	0.0166	80			
	0.0103	65			
	0.0079	57			
	0.0057	46			
	0.0030	30			
	0.0013	9			
	0.0009	6			
	0.0008	6			



10% FINER DIAMETER (mm):
 30% FINER DIAMETER (mm):
 60% FINER DIAMETER (mm):
 UNIFORMITY COEFFICIENT:
 CURVATURE COEFFICIENT:

JOB STAMP:

PROJECT NO.: 402277002

SAMPLE NO.: 2F-2-27-B

PROJECT NAME: Weston Argonaut

SAMPLED BY: Weston

CLIENT: Weston Solutions

DATE SAMPLED: 09/23/14

FILE/PLAN NO.:

TESTED BY: JMK

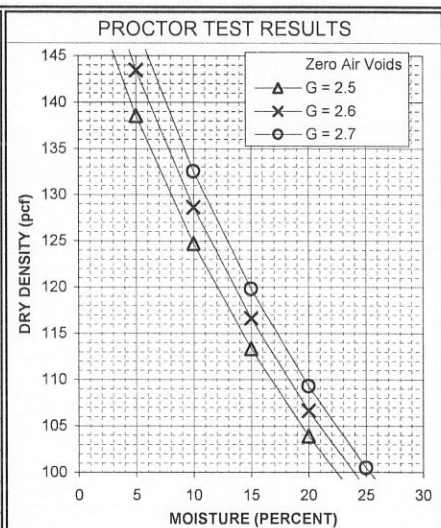
REVIEWED BY: KG

SAMPLE SOURCE: Argonaut Mine Tailings

SAMPLE DESCRIPTION:

INTENDED USE:

PARAMETER	TEST METHOD	TEST RESULT	SPEC RANGE MIN	SPEC RANGE MAX	COMMENTS
USCS CLASS.					
WATER CONTENT	D 2216	32.6			
LIQUID LIMIT	D 4318	19%			
PLASTIC LIMIT	D 4318	14%			
PLASTICITY INDEX	D 4318	5%			
SPECIFIC GRAVITY					
ABSORPTION					
SAND EQUIVALENT					
CLEANNES VALUE					
DURABILITY INDEX					
EXPANSION INDEX					
R-VALUE					
pH					
RESISTIVITY					
CHLORIDE CONTENT					
SULFATE CONTENT					



TEST METHOD:

MAX PARTICLE SIZE:

PERCENT OVERSIZE:

MAX DRY DENSITY (pcf):

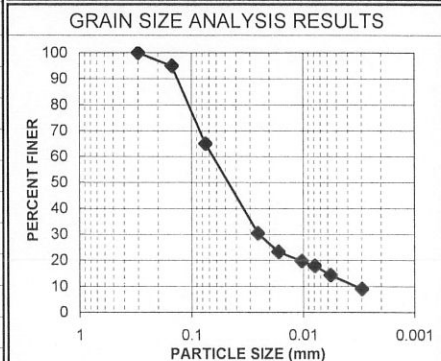
OPTIMUM MOISTURE (%):

MAX DRY DENSITY* (pcf):

OPTIMUM MOISTURE* (%):

*WITH OVERSIZE CORRECTION

GRAIN SIZE ANALYSIS (ASTM D422)					
SIEVE	PARTICLE SIZE (mm)	PERCENT PASSING	SPEC RANGE MIN	SPEC RANGE MAX	COMMENTS
	mm	% Finer			
No. 50	0.3000	100			
No. 100	0.1500	95			
No. 200	0.0750	65			
	0.0254	30			
	0.0166	23			
	0.0103	20			
	0.0079	18			
	0.0057	14			
	0.0030	9			



10% FINER DIAMETER (mm):

30% FINER DIAMETER (mm):

60% FINER DIAMETER (mm):

UNIFORMITY COEFFICIENT:

CURVATURE COEFFICIENT:

JOB STAMP:

PROJECT NO.: 402277002

PROJECT NAME: Weston Argonaut

CLIENT: Weston Solutions

FILE/PLAN NO.:

SAMPLE NO.: 2F-3-15-B

SAMPLED BY: Weston

DATE SAMPLED: 09/24/14

TESTED BY: JMK

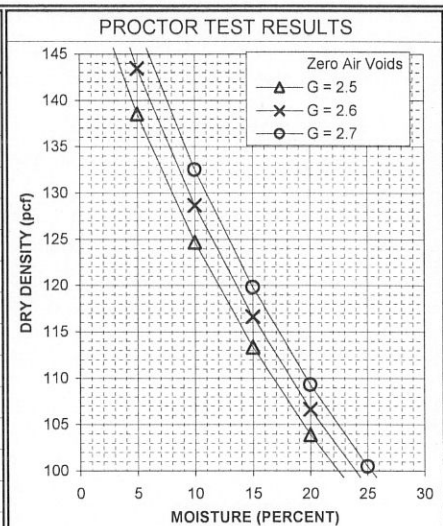
REVIEWED BY: KG

SAMPLE SOURCE: Argonaut Mine Tailings

SAMPLE DESCRIPTION:

INTENDED USE:

PARAMETER	TEST METHOD	TEST RESULT	SPEC RANGE MIN	SPEC RANGE MAX	COMMENTS
USCS CLASS.					
WATER CONTENT	D 2216	6			
LIQUID LIMIT					
PLASTIC LIMIT					
PLASTICITY INDEX	D 4318	NP			
SPECIFIC GRAVITY					
ABSORPTION					
SAND EQUIVALENT					
CLEANNESS VALUE					
DURABILITY INDEX					
EXPANSION INDEX					
R-VALUE					
pH					
RESISTIVITY					
CHLORIDE CONTENT					
SULFATE CONTENT					



TEST METHOD:

MAX PARTICLE SIZE:

PERCENT OVERSIZE:

MAX DRY DENSITY (pcf):

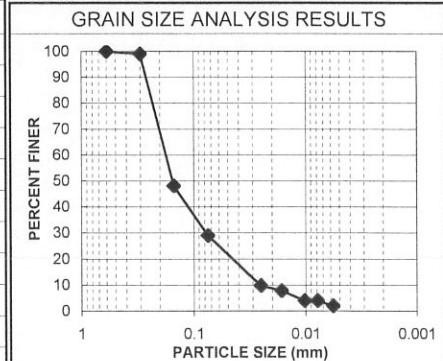
OPTIMUM MOISTURE (%):

MAX DRY DENSITY* (pcf):

OPTIMUM MOISTURE* (%):

*WITH OVERSIZE CORRECTION

GRAIN SIZE ANALYSIS (ASTM D422)					
SIEVE	PARTICLE SIZE (mm)	PERCENT PASSING	SPEC RANGE MIN	SPEC RANGE MAX	COMMENTS
	mm	% Finer			
No. 30	0.6000	100			
No. 50	0.3000	99			
No. 100	0.1500	48			
No. 200	0.0750	29			
	0.0254	10			
	0.0166	8			
	0.0103	4			
	0.0079	4			
	0.0057	2			



10% FINER DIAMETER (mm):

30% FINER DIAMETER (mm):

60% FINER DIAMETER (mm):

UNIFORMITY COEFFICIENT:

CURVATURE COEFFICIENT:

JOB STAMP:

PROJECT NO.: 402277002

SAMPLE NO.: 2F-3-45-B

PROJECT NAME: Weston Argonaut

SAMPLED BY: Weston

CLIENT: Weston Solutions

DATE SAMPLED: 09/24/14

FILE/PLAN NO.:

TESTED BY: JMK

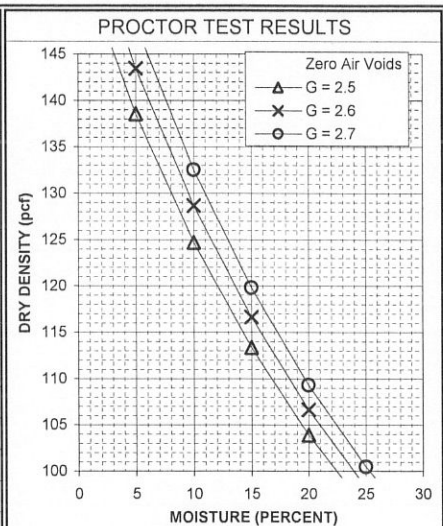
REVIEWED BY: KG

SAMPLE SOURCE: Argonaut Mine Tailings

SAMPLE DESCRIPTION:

INTENDED USE:

PARAMETER	TEST METHOD	TEST RESULT	SPEC RANGE MIN	SPEC RANGE MAX	COMMENTS
USCS CLASS.					
WATER CONTENT	D 2216	6.8			
LIQUID LIMIT					
PLASTIC LIMIT					
PLASTICITY INDEX	D 4318	NP			
SPECIFIC GRAVITY					
ABSORPTION					
SAND EQUIVALENT					
CLEANNESS VALUE					
DURABILITY INDEX					
EXPANSION INDEX					
R-VALUE					
pH					
RESISTIVITY					
CHLORIDE CONTENT					
SULFATE CONTENT					



TEST METHOD:

MAX PARTICLE SIZE:

PERCENT OVERSIZE:

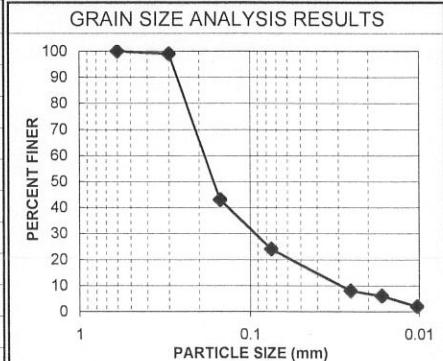
MAX DRY DENSITY (pcf):

OPTIMUM MOISTURE (%):

MAX DRY DENSITY* (pcf):

OPTIMUM MOISTURE* (%):

*WITH OVERSIZE CORRECTION



10% FINER DIAMETER (mm):

30% FINER DIAMETER (mm):

60% FINER DIAMETER (mm):

UNIFORMITY COEFFICIENT:

CURVATURE COEFFICIENT:

JOB STAMP:

PROJECT NO.: 402277002
 PROJECT NAME: Weston Argonaut
 CLIENT: Weston Solutions
 FILE/PLAN NO.:

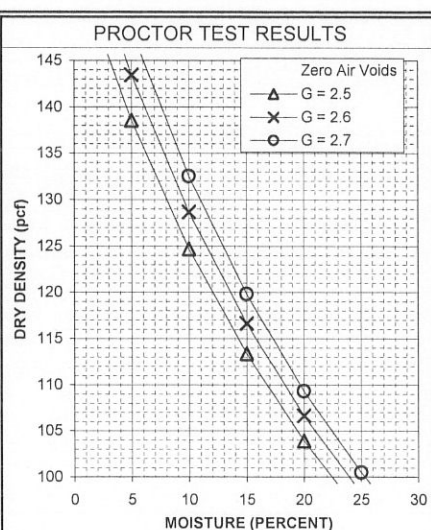
SAMPLE NO.: 2F-4-16-B
 SAMPLED BY: Weston
 DATE SAMPLED: 09/25/14
 TESTED BY: JMK
 REVIEWED BY: KG

SAMPLE SOURCE: Argonaut Mine Tailings

SAMPLE DESCRIPTION:

INTENDED USE:

PARAMETER	TEST METHOD	TEST RESULT	SPEC RANGE MIN	SPEC RANGE MAX	COMMENTS
USCS CLASS.					
WATER CONTENT	D 2216	15.2			
LIQUID LIMIT					
PLASTIC LIMIT					
PLASTICITY INDEX	D 4318	NP			
SPECIFIC GRAVITY					
ABSORPTION					
SAND EQUIVALENT					
CLEANNESS VALUE					
DURABILITY INDEX					
EXPANSION INDEX					
R-VALUE					
pH					
RESISTIVITY					
CHLORIDE CONTENT					
SULFATE CONTENT					



TEST METHOD:

MAX PARTICLE SIZE:

PERCENT OVERSIZE:

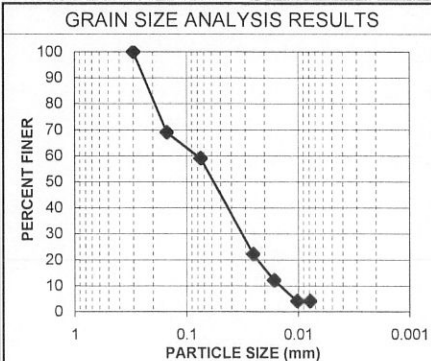
MAX DRY DENSITY (pcf):

OPTIMUM MOISTURE (%):

MAX DRY DENSITY* (pcf):

OPTIMUM MOISTURE* (%):

*WITH OVERSIZE CORRECTION



10% FINER DIAMETER (mm):

30% FINER DIAMETER (mm):

60% FINER DIAMETER (mm):

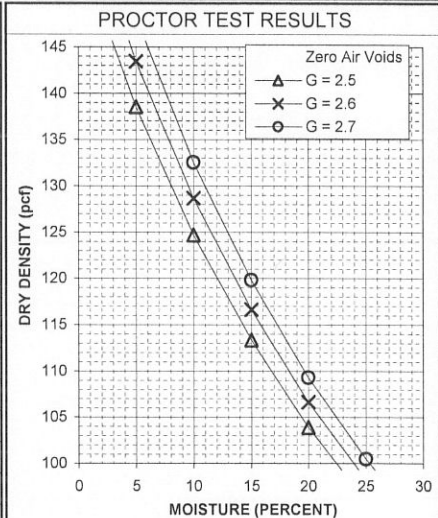
UNIFORMITY COEFFICIENT:

CURVATURE COEFFICIENT:

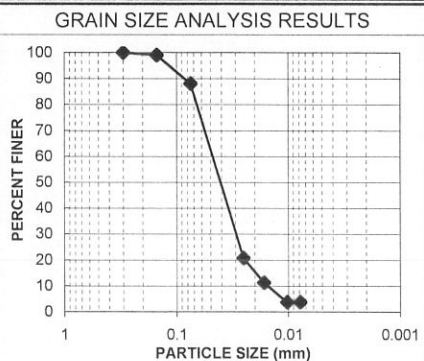


SAMPLE NO.:	2F-4-28-B
SAMPLED BY:	Weston
DATE SAMPLED:	09/26/14
TESTED BY:	JMK
REVIEWED BY:	KG

PARAMETER	TEST METHOD	TEST RESULT	SPEC RANGE		COMMENTS
			MIN	MAX	
USCS CLASS.					
WATER CONTENT	D 2216	28.1			
LIQUID LIMIT	D 4318	25%			
PLASTIC LIMIT	D 4318	25%			
PLASTICITY INDEX	D 4318	0%			
SPECIFIC GRAVITY					
ABSORPTION					
SAND EQUIVALENT					
CLEANNES VALUE					
DURABILITY INDEX					
EXPANSION INDEX					
R-VALUE					
pH					
RESISTIVITY					
CHLORIDE CONTENT					
SULFATE CONTENT					



MAX PARTICLE SIZE:	
PERCENT OVERSIZE:	
MAX DRY DENSITY (pcf):	
OPTIMUM MOISTURE (%):	
MAX DRY DENSITY* (pcf):	
OPTIMUM MOISTURE* (%):	
*WITH OVERSIZE CORRECTION	

[illegible]

10% FINER DIAMETER (mm):
30% FINER DIAMETER (mm):
60% FINER DIAMETER (mm):
UNIFORMITY COEFFICIENT:
CURVATURE COEFFICIENT:

JOB STAMP:

PROJECT NO.: 402277002

SAMPLE NO.: 2F-4-40.5-B

PROJECT NAME: Weston Argonaut

SAMPLED BY: Weston

CLIENT: Weston Solutions

DATE SAMPLED: 09/26/14

FILE/PLAN NO.:

TESTED BY: JMK

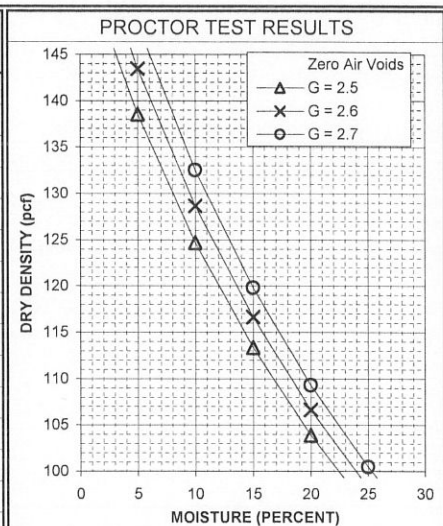
REVIEWED BY: KG

SAMPLE SOURCE: Argonaut Mine Tailings

SAMPLE DESCRIPTION:

INTENDED USE:

PARAMETER	TEST METHOD	TEST RESULT	SPEC RANGE MIN	SPEC RANGE MAX	COMMENTS
USCS CLASS.					
WATER CONTENT	D 2216	32.5			
LIQUID LIMIT	D 4318	26%			
PLASTIC LIMIT	D 4318	24%			
PLASTICITY INDEX	D 4318	2%			
SPECIFIC GRAVITY					
ABSORPTION					
SAND EQUIVALENT					
CLEANNES VALUE					
DURABILITY INDEX					
EXPANSION INDEX					
R-VALUE					
pH					
RESISTIVITY					
CHLORIDE CONTENT					
SULFATE CONTENT					



TEST METHOD:

MAX PARTICLE SIZE:

PERCENT OVERSIZE:

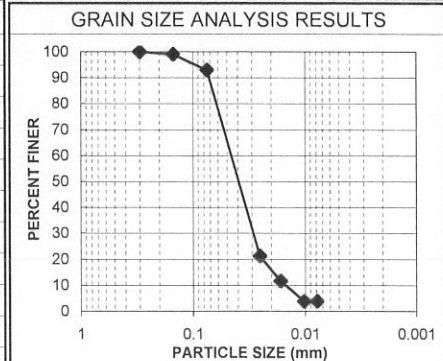
MAX DRY DENSITY (pcf):

OPTIMUM MOISTURE (%):

MAX DRY DENSITY* (pcf):

OPTIMUM MOISTURE* (%):

*WITH OVERSIZE CORRECTION



10% FINER DIAMETER (mm):

30% FINER DIAMETER (mm):

60% FINER DIAMETER (mm):

UNIFORMITY COEFFICIENT:

CURVATURE COEFFICIENT:

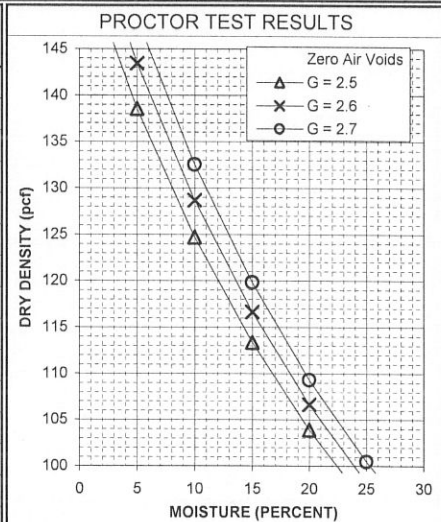
JOB STAMP:

PROJECT NO.: 402277002
PROJECT NAME: Weston Argonaut
CLIENT: Weston Solutions
FILE/PLAN NO.:

SAMPLE NO.: 2F-4-57-B
SAMPLED BY: Weston
DATE SAMPLED: 09/26/14
TESTED BY: JMK
REVIEWED BY: KG

SAMPLE SOURCE: Argonaut Mine Tailings
SAMPLE DESCRIPTION:
INTENDED USE:

PARAMETER	TEST METHOD	TEST RESULT	SPEC RANGE MIN	SPEC RANGE MAX	COMMENTS
USCS CLASS.					
WATER CONTENT	D 2216	33.1			
LIQUID LIMIT	D 4318	26%			
PLASTIC LIMIT	D 4318	25%			
PLASTICITY INDEX	D 4318	1%			
SPECIFIC GRAVITY					
ABSORPTION					
SAND EQUIVALENT					
CLEANNES VALUE					
DURABILITY INDEX					
EXPANSION INDEX					
R-VALUE					
pH					
RESISTIVITY					
CHLORIDE CONTENT					
SULFATE CONTENT					



TEST METHOD:

MAX PARTICLE SIZE:

PERCENT OVERSIZE:

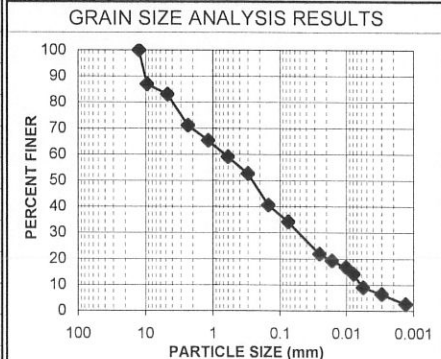
MAX DRY DENSITY (pcf):

OPTIMUM MOISTURE (%):

MAX DRY DENSITY* (pcf):

OPTIMUM MOISTURE* (%):

*WITH OVERSIZE CORRECTION



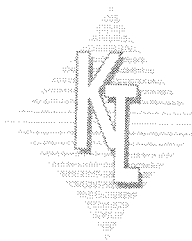
10% FINER DIAMETER (mm):

30% FINER DIAMETER (mm):

60% FINER DIAMETER (mm):

UNIFORMITY COEFFICIENT:

CURVATURE COEFFICIENT:



KEANTAN LABORATORIES

www.keantanlabs.com
email: info@keantanlabs.com

November 10, 2014

Ninyo & Moore
475 Goddard, Suite 200
Irvine, California 92618

Attention: John Krobetzky

Subject: Report/Laboratory Test Results
Project Name: Argonaut Mine Tailings
Project No.: 402277002
KTL Project No.: 05-318-123

Dear Mr. Darin Vojtaskovic :

Enclosed are results of the laboratory testing program conducted on samples from the above referenced project. The testing performed for this program was conducted in general accordance with testing procedures as follows:

TYPE OF TEST

Triaxial Shear (CU)
Sieve Analysis with Hydrometer

TEST PROCEDURE

ASTM D 4767
ASTM D 422

Attached herewith is Summary of Triaxial Shear Test Result (4).

We appreciate the opportunity to provide testing services to Ninyo & Moore. If you have any questions regarding the test results, please contact us.

Very truly yours,
Keantan Laboratories



Jonathan F. Khaw

Encls.



KEANTAN LABORATORIES

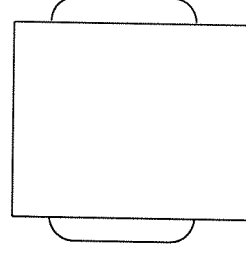
www.keantanlabs.com
email: info@keantanlabs.com

SUMMARY OF LABORATORY TEST RESULT

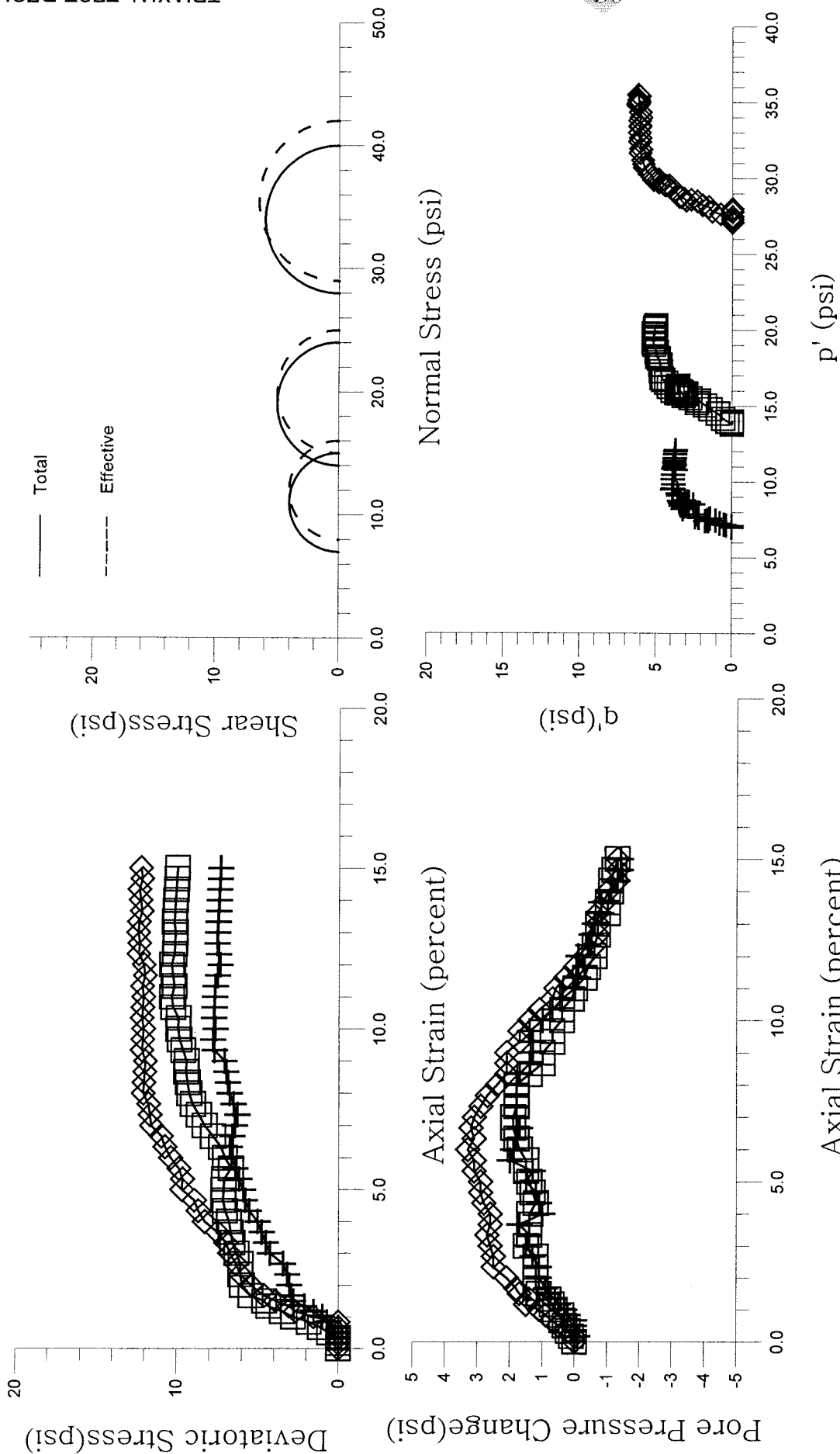
PROJECT NAME.: Argonaut Mine Tailings
PROJECT NO.: 402277002
DATE.: 11/10/2014
KTL NO.: 05-318-123
CLIENT.: Ninyo & Moore
SUMMARIZED BY.: K. Tan

Boring NO.	DEPTH (FT)	Diameter (In)	Height (In)	MOISTURE CONTENT (%) ASTM D 2937	DRY DENSITY (pcf) ASTM D 2937	WET DENSITY (pcf) ASTM D 2937	Void Ratio	Degree Of Saturation (%)
2f-1-17-ST	n/a	3	5	42.59	79.34	113.13	1.117	40
2f-1-17-ST	n/a	3	5	39.03	69.92	96.79	1.430	38
2f-1-17-ST	n/a	3	5	37.96	85.67	118.2	.953	38

Soil Description: Color: Black, Moisture: Wet, Grain: Fine
Atterberg Limit: Non Plastic
Specimen Type: Undisturbed Drive
Remark:



Failure Sketch



Symbol	BORING NO.	SAMPLE NO.	DEPTH (FT)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	CELL PRESSURE (PSI)	BACK PRESSURE (PSI)	EFFECTIVE STRESS (PSI)	MAX DEVIATOR STRESS (PSI)
+	N/A	2f-1-17-ST	n/a	42.6	79.3	87.0	80	7.0	7
□	N/A	2f-1-17-ST	n/a	39.0	69.9	94.0	80	14.0	10
○	N/A	2f-1-17-ST	n/a	37.9	85.7	108.0	80	28.0	12

2f-1-17-5L
7psi

Disp(in)	Load(7)	strain	strain(%)	area	stress(7)	pp(17)	STRAIN(%)	dpp(7)	SIGMA1A	SIGMA3A	SIGMA _{A1A}	SIGMA3A	P/A	QA
0	0	0.00	0.00	7.06	0	82.1	0.00	0.00	7	7	7	7	7	0
0.01	0	0.00	0.17	7.07	0	82.0	0.01	0.17	7	7	7	7	7	0
0.02	0	0.00	0.33	7.08	0	82.1	0.02	0.33	7	7	7	7	7	0
0.03	0	0.01	0.50	7.10	0	82.1	0.03	0.50	7	7	7	7	7	0
0.04	0	0.01	0.67	7.11	0	82.1	0.04	0.67	7	7	7	7	7	0
0.05	5	0.01	0.83	7.12	1	82.3	0.05	0.83	8	7	8	7	7	0
0.06	7	0.01	1.00	7.13	1	82.4	0.06	1.00	8	7	8	7	7	0
0.07	11	0.01	1.17	7.14	2	82.6	0.07	1.17	8	7	8	7	7	0
0.08	15	0.01	1.33	7.16	2	82.7	0.08	1.33	9	7	8	6	7	1
0.09	20	0.02	1.50	7.17	3	82.9	0.09	1.50	10	7	9	6	7	1
0.1	21	0.02	1.67	7.18	3	83.0	0.10	1.67	10	7	9	6	7	1
0.12	22	0.02	2.00	7.20	3	83.2	0.12	2.00	11	7	9	6	7	2
0.14	23	0.02	2.33	7.23	3	83.2	0.14	2.33	10	7	9	6	7	2
0.16	25	0.03	2.67	7.25	3	83.4	0.16	2.67	10	7	9	6	7	2
0.18	31	0.03	3.00	7.28	4	83.6	0.18	3.00	11	7	10	6	7	2
0.2	33	0.03	3.33	7.30	5	83.5	0.20	3.33	12	7	10	6	7	2
0.22	35	0.04	3.67	7.33	5	83.8	0.22	3.67	12	7	10	5	8	2
0.24	37	0.04	4.00	7.35	5	83.1	0.24	4.00	12	7	11	6	9	3
0.26	41	0.04	4.33	7.38	6	83.2	0.26	4.33	13	7	11	6	9	3
0.28	43	0.05	4.67	7.41	6	83.3	0.28	4.67	13	7	12	6	9	3
0.3	44	0.05	5.00	7.43	6	83.6	0.30	5.00	13	7	11	6	8	3
0.32	46	0.05	5.33	7.46	6	83.4	0.35	5.83	13	7	12	6	9	3
0.34	48	0.06	5.67	7.48	6	84.1	0.40	6.67	13	7	11	5	8	3
0.36	50	0.06	6.00	7.51	7	84.0	0.45	7.50	14	7	12	5	8	3
0.38	51	0.06	6.33	7.54	7	83.9	0.50	8.33	14	7	12	5	9	3
0.4	50	0.07	6.67	7.56	7	83.8	0.55	9.17	14	7	12	5	9	3
0.42	49	0.07	7.00	7.59	6	83.9	0.60	10.00	13	7	12	5	8	3
0.44	48	0.07	7.33	7.62	6	83.9	0.65	10.83	13	7	12	5	8	3
0.46	50	0.08	7.67	7.65	7	83.9	0.70	11.67	14	7	12	5	8	3
0.48	52	0.08	8.00	7.67	7	83.9	0.75	12.50	14	7	12	5	9	3
0.5	53	0.08	8.33	7.70	7	83.8	0.80	13.33	14	7	12	5	9	3
0.52	54	0.09	8.67	7.73	7	83.5	0.85	14.17	14	7	13	6	9	3
0.54	55	0.09	9.00	7.76	7	83.4	0.90	15.00	14	7	13	6	9	4
0.56	60	0.09	9.33	7.79	8	83.4	0.95	15.83	15	7	13	6	10	4
0.58	61	0.10	9.67	7.82	8	83.5	1.00	16.67	15	7	13	6	10	4
0.6	60	0.10	10.00	7.84	8	83.1	1.05	17.50	15	7	14	6	10	4
0.62	61	0.10	10.33	7.87	8	82.8	1.10	18.33	15	7	14	6	10	4
0.64	61	0.11	10.67	7.90	8	82.5	1.15	19.17	15	7	14	7	10	4
0.66	61	0.11	11.00	7.93	8	82.1	1.20	20.00	15	7	15	7	11	4
0.68	61	0.11	11.33	7.96	8	82.0	1.25	20.83	15	7	15	7	11	4
0.7	60	0.12	11.67	7.99	8	81.8	1.30	21.67	15	7	15	7	11	4
0.72	59	0.12	12.00	8.02	7	82.0	1.35	22.50	14	7	14	7	11	4
0.74	60	0.12	12.33	8.05	7	81.7	1.40	23.33	14	7	15	7	11	4
0.76	61	0.13	12.67	8.08	8	81.6	1.45	24.17	15	7	15	8	11	4
0.78	61	0.13	13.00	8.11	8	81.5	1.50	25.00	15	7	15	8	11	4
0.8	61	0.13	13.33	8.15	7	81.3	1.55	25.83	14	7	15	8	12	4
0.82	61	0.14	13.67	8.18	7	81.3	1.60	26.67	14	7	15	8	12	4
0.84	61	0.14	14.00	8.21	7	81.0	1.65	27.50	14	7	16	8	12	4
0.86	61	0.14	14.33	8.24	7	80.8	1.70	28.33	14	7	16	8	12	4
0.88	61	0.15	14.67	8.27	7	80.7	1.75	29.17	14	7	16	8	12	4
0.9	61	0.15	15.00	8.31	7	80.7	1.80	30.00	14	7	16	8	12	4

s1	s1'	s3	s3'	s1+s3/2	s1'+s3'/2	s1-s3/2	s1'-s3'/2	teta	2 teta	2 TETA	COS 2 TETA	SIN 2 TETA	S TETA	GAO TET/	s' teta	t' teta
15	16	7	8	11	12	4	4	0	0	0	1	0	15	0	16	0
15	16	7	8	11	12	4	4	-1	-2	-0.03490658	0.999390827	-0.0348995	14.9976	0.1396	15.9976	0.1396
15	16	7	8	11	12	4	4	-2	-4	-0.06981317	0.99756405	-0.06975647	14.9903	0.27903	15.9903	0.27903
15	16	7	8	11	12	4	4	-3	-6	-0.10471975	0.994521896	-0.10452846	14.9781	0.41811	15.9781	0.41811
15	16	7	8	11	12	4	4	-4	-8	-0.13962634	0.990268069	-0.1391731	14.9611	0.55669	15.9611	0.55669
15	16	7	8	11	12	4	4	-5	-10	-0.17453292	0.984807754	-0.17364817	14.9392	0.69459	15.9392	0.69459
15	16	7	8	11	12	4	4	-6	-12	-0.2094395	0.978147602	-0.20791168	14.9126	0.83165	15.9126	0.83165
15	16	7	8	11	12	4	4	-7	-14	-0.24434609	0.970295728	-0.24192189	14.8812	0.96769	15.8812	0.96769
15	16	7	8	11	12	4	4	-8	-16	-0.27925267	0.961261698	-0.27563735	14.845	1.10255	15.845	1.10255
15	16	7	8	11	12	4	4	-9	-18	-0.31415926	0.951056519	-0.30901699	14.8042	1.23607	15.8042	1.23607
15	16	7	8	11	12	4	4	-10	-20	-0.34906584	0.939692624	-0.34202013	14.7588	1.36808	15.7588	1.36808
15	16	7	8	11	12	4	4	-11	-22	-0.38397242	0.927183859	-0.37460658	14.7087	1.49843	15.7087	1.49843
15	16	7	8	11	12	4	4	-12	-24	-0.41887901	0.913545463	-0.40673663	14.6542	1.62695	15.6542	1.62695
15	16	7	8	11	12	4	4	-13	-26	-0.45378559	0.898794052	-0.43837113	14.5952	1.75348	15.5952	1.75348
15	16	7	8	11	12	4	4	-14	-28	-0.48869218	0.8829476	-0.46947155	14.5318	1.87789	15.5318	1.87789
15	16	7	8	11	12	4	4	-15	-30	-0.52359876	0.866025412	-0.49999999	14.4641	2	15.4641	2
15	16	7	8	11	12	4	4	-16	-32	-0.55850534	0.848048105	-0.52991925	14.3922	2.11968	15.3922	2.11968
15	16	7	8	11	12	4	4	-17	-34	-0.59341193	0.829037582	-0.55919289	14.3162	2.23677	15.3162	2.23677
15	16	7	8	11	12	4	4	-18	-36	-0.62831851	0.809017005	-0.58778524	14.2361	2.35114	15.2361	2.35114
15	16	7	8	11	12	4	4	-19	-38	-0.6632251	0.788010766	-0.61566146	14.152	2.46265	15.152	2.46265
15	16	7	8	11	12	4	4	-20	-40	-0.69813168	0.766044456	-0.64278759	14.0642	2.57115	15.0642	2.57115
15	16	7	8	11	12	4	4	-21	-42	-0.73303826	0.74314484	-0.66913059	13.9726	2.67652	14.9726	2.67652
15	16	7	8	11	12	4	4	-22	-44	-0.76794485	0.719339816	-0.69465835	13.8774	2.77863	14.8774	2.77863
15	16	7	8	11	12	4	4	-23	-46	-0.80285143	0.694658388	-0.71933978	13.7786	2.87736	14.7786	2.87736
15	16	7	8	11	12	4	4	-24	-48	-0.83775802	0.669130625	-0.74314481	13.6765	2.97258	14.6765	2.97258
15	16	7	8	11	12	4	4	-25	-50	-0.8726646	0.64278763	-0.76604443	13.5712	3.06418	14.5712	3.06418
15	16	7	8	11	12	4	4	-26	-52	-0.90757118	0.615661497	-0.78801074	13.4626	3.15204	14.4626	3.15204
15	16	7	8	11	12	4	4	-27	-54	-0.94247777	0.587785275	-0.80901698	13.3511	3.23607	14.3511	3.23607
15	16	7	8	11	12	4	4	-28	-56	-0.97738435	0.559192928	-0.82903756	13.2368	3.31615	14.2368	3.31615
15	16	7	8	11	12	4	4	-29	-58	-1.01229094	0.52991929	-0.84804808	13.1197	3.39219	14.1197	3.39219
15	16	7	8	11	12	4	4	-30	-60	-1.04719752	0.500000027	-0.86602539	13	3.4641	14	3.4641
15	16	7	8	11	12	4	4	-31	-62	-1.0821041	0.469471591	-0.88294758	12.8779	3.53179	13.8779	3.53179
15	16	7	8	11	12	4	4	-32	-64	-1.11701069	0.438371177	-0.89879403	12.7535	3.59518	13.7535	3.59518
15	16	7	8	11	12	4	4	-33	-66	-1.15191727	0.406736674	-0.91354544	12.6269	3.65418	13.6269	3.65418
15	16	7	8	11	12	4	4	-34	-68	-1.18682386	0.374606626	-0.92718384	12.4984	3.70874	13.4984	3.70874
15	16	7	8	11	12	4	4	-35	-70	-1.22173044	0.342020178	-0.93969261	12.3681	3.75877	13.3681	3.75877
15	16	7	8	11	12	4	4	-36	-72	-1.25663702	0.30901703	-0.9510565	12.2361	3.80423	13.2361	3.80423
15	16	7	8	11	12	4	4	-37	-74	-1.29154361	0.275637393	-0.96126169	12.1025	3.84505	13.1025	3.84505
15	16	7	8	11	12	4	4	-38	-76	-1.32645019	0.241921934	-0.97029572	11.9677	3.88118	12.9677	3.88118
15	16	7	8	11	12	4	4	-39	-78	-1.36135678	0.20791173	-0.97814759	11.8316	3.91259	12.8316	3.91259
15	16	7	8	11	12	4	4	-40	-80	-1.39626336	0.173648219	-0.98480775	11.6946	3.93923	12.6946	3.93923
15	16	7	8	11	12	4	4	-41	-82	-1.43116994	0.139173143	-0.99026806	11.5567	3.96107	12.5567	3.96107
15	16	7	8	11	12	4	4	-42	-84	-1.46607653	0.104528507	-0.99452189	11.4181	3.97809	12.4181	3.97809
15	16	7	8	11	12	4	4	-43	-86	-1.50098311	0.069756518	-0.99756405	11.279	3.99026	12.279	3.99026
15	16	7	8	11	12	4	4	-44	-88	-1.5358897	0.034899542	-0.99939083	11.1396	3.99756	12.1396	3.99756
15	16	7	8	11	12	4	4	-45	-90	-1.57079628	4.67949E-08	-1	11	4	12	4
15	16	7	8	11	12	4	4	-46	-92	-1.60570286	-0.03489945	-0.99939083	10.8604	3.99756	11.8604	3.99756
15	16	7	8	11	12	4	4	-47	-94	-1.64060945	-0.06975642	-0.99756405	10.721	3.99026	11.721	3.99026
15	16	7	8	11	12	4	4	-48	-96	-1.67551603	-0.10452841	-0.9945219	10.5819	3.97809	11.5819	3.97809
15	16	7	8	11	12	4	4	-49	-98	-1.71042262	-0.13917305	-0.99026808	10.4433	3.96107	11.4433	3.96107
15	16	7	8	11	12	4	4	-50	-100	-1.7453292	-0.17364813	-0.98480776	10.3054	3.93923	11.3054	3.93923
15	16	7	8	11	12	4	4	-51	-102	-1.78023578	-0.20791164	-0.97814761	10.1684	3.91259	11.1684	3.91259
15	16	7	8	11	12	4	4	-52	-104	-1.81514237	-0.24192184	-0.97029574	10.0323	3.88118	11.0323	3.88118
15	16	7	8	11	12	4	4	-53	-106	-1.85004895	-0.2756373	-0.96126171	9.8745	3.84505	10.8745	3.84505
15	16	7	8	11	12	4	4	-54	-108	-1.88495554	-0.30901694	-0.95105653	9.76393	3.80423	10.7639	3.80423
15	16	7	8	11	12	4	4	-55	-110	-1.91986212	-0.34202009	-0.93969264	9.63192	3.75877	10.6319	3.75877
15	16	7	8	11	12	4	4	-56	-112	-1.9547687	-0.37460654	-0.92718388	9.50157	3.70874	10.5016	3.70874
15	16	7	8	11	12	4	4	-57	-114	-1.98967529	-0.40673659	-0.91354548	9.37305	3.65418	10.3731	3.65418
15	16	7	8	11	12	4	4	-58	-116	-2.02458187	-0.43837109	-0.89879407	9.24652	3.59518	10.2465	3.59518
15	16	7	8	11	12	4	4	-59	-118	-2.05948846	-0.46947151	-0.88294762	9.12211	3.53179	10.1221	3.53179
15	16	7	8	11	12	4	4	-60	-120	-2.09439504	-0.49999995	-0.86602543	9	3.4641	10	3.4641
15	16	7	8	11	12	4	4	-61	-122	-2.12930162	-0.52991921	-0.84804813	8.88032	3.39219	9.88032	3.39219
15	16	7	8	11	12	4	4	-62	-124	-2.16420821	-0.55919285	-0.82903761	8.76323	3.31615	9.76323	3.31615
15	16	7	8	11	12	4	4	-63	-126	-2.19911479	-0.5877852	-0.80901703	8.64886	3.23607	9.64886	3.23607
15	16	7	8	11	12	4	4	-64	-128	-2.23402138	-0.61566142	-0.78801079	8.53735	3.15204	9.53735	3.15204
15	16	7	8	11	12	4	4	-65	-130	-2.26892796	-0.64278756	-0.76604449	8.42885	3.06418	9.42885	3.06418
15	16	7	8	11	12	4	4	-66	-132	-2.30383454	-0.66913056	-0.74314487	8.32348	2.97258	9.32348	2.97258
15	16	7	8	11	12	4	4	-67	-134	-2.33874113	-0.69465832	-0.71933985	8.22137	2.87736	9.22137	2.87736
15	16	7	8	11	12	4	4	-68	-136	-2.37364771	-0.71933975	-0.69465842	8.12264	2.77863	9.12264	2.77863
15	16	7	8	11	12	4	4	-69	-138	-2.4085543	-0.74314478	-0.66913066	8.02742	2.67652	9.02742	2.67652
15	16	7	8	11	12	4	4	-70	-140	-2.44346088	-0.7660444	-0.64278767	7.93582	2.57115	8.93582	2.57115
15	16	7	8	11	12	4	4	-71	-142	-2.47836746	-0.78801071	-0.61566153	7.84796	2.46265	8.84796	2.46265
15	16	7	8	11	12	4	4	-72	-144	-2.51327405	-0.80901695	-0.58778531	7.76393	2.35114	8.76393	2.35114
15	16	7	8	11	12	4	4	-73	-146	-2.54818063	-0.82903753	-0.55919297	7.68385	2.23677	8.68385	2.23677
15	16	7	8	11	12	4	4	-74	-148	-2.58308722	-0.84804806	-0.52991933	7.60781	2.11968	8.60781	2.11968
1																

ZS-1-17-5C
14 psi

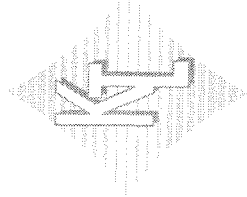
Disp(in)	Load(14)	strain	strain(%)	area	stress(14)	pp(14)	STRAIN(%)	dpp(14)	SIGMA1A	SIGMA3A	SIGMA1'A	SIGMA3'A	P'A	QA
0	0	0	0.00	0.00	7.06	0	0.00	0.0	0.0	14	14	14	14	0
0.01	0	0	0.00	0.17	7.07	0	0.01	0.17	0.1	14	14	14	14	0
0.02	0	0	0.00	0.33	7.08	0	0.02	0.33	0.2	14	14	14	14	0
0.03	4	0.01	0.01	0.50	7.10	1	0.03	0.50	0.3	15	14	14	14	0
0.04	8	0.01	0.01	0.67	7.11	1	0.04	0.67	0.4	15	14	14	14	1
0.05	13	0.01	0.01	0.83	7.12	2	0.05	0.83	0.4	16	15	14	14	1
0.06	20	0.01	0.01	1.00	7.13	3	0.06	1.00	0.6	17	16	14	13	1
0.07	25	0.01	0.01	1.17	7.14	3	0.07	1.17	0.7	17	17	13	15	2
0.08	31	0.01	0.01	1.33	7.16	4	0.08	1.33	0.8	18	14	13	15	2
0.09	33	0.02	0.02	1.50	7.17	5	0.09	1.50	1.1	19	14	13	15	2
0.1	39	0.02	0.02	1.67	7.18	5	0.10	1.67	1.2	19	14	13	16	3
0.12	43	0.02	0.02	2.00	7.20	6	0.12	2.00	1.2	20	14	13	16	3
0.14	44	0.02	0.02	2.33	7.23	6	0.14	2.33	1.2	20	14	13	16	3
0.16	44	0.03	0.03	2.67	7.25	6	0.16	2.67	1.2	20	14	13	16	3
0.18	46	0.03	0.03	3.00	7.28	6	0.18	3.00	1.5	20	14	13	16	3
0.2	48	0.03	0.03	3.33	7.30	7	0.20	3.33	1.4	21	14	13	16	3
0.22	49	0.04	0.04	3.67	7.33	7	0.22	3.67	1.4	21	14	13	16	3
0.24	50	0.04	0.04	4.00	7.35	7	0.24	4.00	1.4	21	14	13	16	3
0.26	52	0.04	0.04	4.33	7.38	7	0.26	4.33	1.2	21	14	13	16	3
0.28	53	0.05	0.05	4.67	7.41	7	0.28	4.67	1.3	21	14	13	16	4
0.3	53	0.05	0.05	5.00	7.43	7	0.30	5.00	1.4	21	14	13	16	4
0.32	53	0.05	0.05	5.33	7.46	7	0.35	5.83	1.5	21	14	13	16	4
0.34	50	0.06	0.06	5.67	7.48	7	0.40	6.67	1.5	21	14	13	16	3
0.36	53	0.06	0.06	6.00	7.51	7	0.45	7.50	1.7	21	14	12	16	4
0.38	55	0.06	0.06	6.33	7.54	7	0.50	8.33	1.8	21	14	12	16	4
0.4	59	0.07	0.07	6.67	7.56	8	0.55	9.17	1.9	22	14	12	16	4
0.42	63	0.07	0.07	7.00	7.59	8	0.60	10.00	1.9	22	14	12	16	4
0.44	66	0.07	0.07	7.33	7.62	9	0.65	10.83	1.8	23	14	12	17	4
0.46	69	0.08	0.08	7.67	7.65	9	0.70	11.67	1.8	23	14	12	17	5
0.48	71	0.08	0.08	8.00	7.67	9	0.75	12.50	1.8	23	14	12	17	5
0.5	72	0.08	0.08	8.33	7.70	9	0.80	13.33	1.4	23	14	13	17	5
0.52	73	0.09	0.09	8.67	7.73	9	0.85	14.17	1.0	23	14	13	18	5
0.54	73	0.09	0.09	9.00	7.76	9	0.90	15.00	1.0	23	14	13	18	5
0.56	75	0.09	0.09	9.33	7.79	10	0.95	15.83	0.7	24	14	13	18	5
0.58	77	0.10	0.10	9.67	7.82	10	1.00	16.67	0.7	24	14	13	18	5
0.6	78	0.10	0.10	10.00	7.84	10	1.05	17.50	0.4	24	14	14	19	5
0.62	78	0.10	0.10	10.33	7.87	10	1.10	18.33	0.4	24	14	14	19	5
0.64	81	0.11	0.11	10.67	7.90	10	1.15	19.17	0.1	24	14	14	19	5
0.66	82	0.11	0.11	11.00	7.93	10	1.20	20.00	0.0	24	14	14	19	5
0.68	81	0.11	0.11	11.33	7.96	10	1.25	20.83	-0.3	24	14	14	19	5
0.7	82	0.12	0.12	11.67	7.99	10	1.30	21.67	-0.4	24	14	14	19	5
0.72	83	0.12	0.12	12.00	8.02	10	1.35	22.50	-0.6	24	14	15	20	5
0.74	82	0.12	0.12	12.33	8.05	10	1.40	23.33	-0.6	24	14	15	20	5
0.76	82	0.13	0.13	12.67	8.08	10	1.45	24.17	-0.7	24	14	15	20	5
0.78	82	0.13	0.13	13.00	8.11	10	1.50	25.00	-0.7	24	14	15	20	5
0.8	83	0.13	0.13	13.33	8.15	10	1.55	25.83	-1.0	24	14	15	20	5
0.82	83	0.14	0.14	13.67	8.18	10	1.60	26.67	-1.0	24	14	15	20	5
0.84	83	0.14	0.14	14.00	8.21	10	1.65	27.50	-1.1	24	14	15	20	5
0.86	83	0.14	0.14	14.33	8.24	10	1.70	28.33	-1.1	24	14	15	20	5
0.88	83	0.15	0.15	14.67	8.27	10	1.75	29.17	-1.2	24	14	15	20	5
0.9	83	0.15	0.15	15.00	8.31	10	1.80	30.00	-1.3	24	14	15	20	5

s1	s1'	s3	s3'	s1+s3/2	s1'+s3'/2	s1-s3/2	s1'-s3'/2	teta	2 teta	2 TETA	COS 2 TETA	SIN 2 TETA	S TETA	AO TETA	s' teta	t' teta
24	25	14	15	19	20	5	5	0	0	0	1	0	24	0	25	0
24	25	14	15	19	20	5	5	-1	-2	-0.03490658	0.999390827	-0.0348995	23.997	0.1745	24.997	0.1745
24	25	14	15	19	20	5	5	-2	-4	-0.06981317	0.99756405	-0.06975647	23.987	0.34878	24.987	0.34878
24	25	14	15	19	20	5	5	-3	-6	-0.10471975	0.994521896	-0.10452846	23.9726	0.52264	24.9726	0.52264
24	25	14	15	19	20	5	5	-4	-8	-0.13962634	0.990268069	-0.1391731	23.9513	0.69587	24.9513	0.69587
24	25	14	15	19	20	5	5	-5	-10	-0.17453292	0.984807754	-0.17364817	23.924	0.86824	24.924	0.86824
24	25	14	15	19	20	5	5	-6	-12	-0.2094395	0.978147602	-0.20791168	23.8907	1.03956	24.8907	1.03956
24	25	14	15	19	20	5	5	-7	-14	-0.24434609	0.970295728	-0.24192189	23.8515	1.20961	24.8515	1.20961
24	25	14	15	19	20	5	5	-8	-16	-0.27925267	0.961261698	-0.27563735	23.8063	1.37819	24.8063	1.37819
24	25	14	15	19	20	5	5	-9	-18	-0.31415926	0.951056519	-0.30901699	23.7553	1.54508	24.7553	1.54508
24	25	14	15	19	20	5	5	-10	-20	-0.34906584	0.939692624	-0.34202013	23.6985	1.7101	24.6985	1.7101
24	25	14	15	19	20	5	5	-11	-22	-0.38397242	0.927183859	-0.37460658	23.6359	1.87303	24.6359	1.87303
24	25	14	15	19	20	5	5	-12	-24	-0.41887901	0.913545463	-0.40673663	23.5677	2.03368	24.5677	2.03368
24	25	14	15	19	20	5	5	-13	-26	-0.45378559	0.898794052	-0.43837113	23.494	2.19186	24.494	2.19186
24	25	14	15	19	20	5	5	-14	-28	-0.48869218	0.8829476	-0.46947155	23.4147	2.34736	24.4147	2.34736
24	25	14	15	19	20	5	5	-15	-30	-0.52359876	0.866025412	-0.49999999	23.3301	2.5	24.3301	2.5
24	25	14	15	19	20	5	5	-16	-32	-0.55850534	0.848048105	-0.52991925	23.2402	2.6496	24.2402	2.6496
24	25	14	15	19	20	5	5	-17	-34	-0.59341193	0.829037582	-0.55919289	23.1452	2.79596	24.1452	2.79596
24	25	14	15	19	20	5	5	-18	-36	-0.62831851	0.809017005	-0.58778524	23.0451	2.93893	24.0451	2.93893
24	25	14	15	19	20	5	5	-19	-38	-0.6632251	0.788010766	-0.61566146	22.9401	3.07831	23.9401	3.07831
24	25	14	15	19	20	5	5	-20	-40	-0.69813168	0.766044456	-0.64278759	22.8302	3.21394	23.8302	3.21394
24	25	14	15	19	20	5	5	-21	-42	-0.73303826	0.74314484	-0.66913059	22.7157	3.34565	23.7157	3.34565
24	25	14	15	19	20	5	5	-22	-44	-0.76794485	0.719339816	-0.69465835	22.5967	3.47329	23.5967	3.47329
24	25	14	15	19	20	5	5	-23	-46	-0.80285143	0.694658388	-0.71933978	22.4733	3.5967	23.4733	3.5967
24	25	14	15	19	20	5	5	-24	-48	-0.83775802	0.669130625	-0.74314481	22.3457	3.71572	23.3457	3.71572
24	25	14	15	19	20	5	5	-25	-50	-0.8726646	0.64278763	-0.76604443	22.2139	3.83022	23.2139	3.83022
24	25	14	15	19	20	5	5	-26	-52	-0.90757118	0.615661497	-0.78801074	22.0783	3.94005	23.0783	3.94005
24	25	14	15	19	20	5	5	-27	-54	-0.94247777	0.587785275	-0.80901698	21.9389	4.04508	22.9389	4.04508
24	25	14	15	19	20	5	5	-28	-56	-0.97738435	0.559192928	-0.82903756	21.796	4.14519	22.796	4.14519
24	25	14	15	19	20	5	5	-29	-58	-1.01229094	0.52991929	-0.84804808	21.6496	4.24024	22.6496	4.24024
24	25	14	15	19	20	5	5	-30	-60	-1.04719752	0.500000027	-0.86602539	21.5	4.33013	22.5	4.33013
24	25	14	15	19	20	5	5	-31	-62	-1.0821041	0.469471591	-0.88294758	21.3474	4.41474	22.3474	4.41474
24	25	14	15	19	20	5	5	-32	-64	-1.11701069	0.438371177	-0.89879403	21.1919	4.49397	22.1919	4.49397
24	25	14	15	19	20	5	5	-33	-66	-1.15191727	0.406736674	-0.91354544	21.0337	4.56773	22.0337	4.56773
24	25	14	15	19	20	5	5	-34	-68	-1.18682386	0.374606626	-0.92718384	20.873	4.63592	21.873	4.63592
24	25	14	15	19	20	5	5	-35	-70	-1.22173044	0.342020178	-0.93969261	20.7101	4.69846	21.7101	4.69846
24	25	14	15	19	20	5	5	-36	-72	-1.25663702	0.30901703	-0.9510565	20.5451	4.75528	21.5451	4.75528
24	25	14	15	19	20	5	5	-37	-74	-1.29154361	0.275637393	-0.96126169	20.3782	4.80631	21.3782	4.80631
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24	25	14	15	19	20	5	5	-40	-80	-1.39626336	0.173648219	-0.98480775	19.8682	4.92404	20.8682	4.92404
24	25	14	15	19	20	5	5	-41	-82	-1.43116994	0.139173143	-0.99026806	19.6959	4.95134	20.6959	4.95134
24	25	14	15	19	20	5	5	-42	-84	-1.46607653	0.104528507	-0.99452189	19.5226	4.97261	20.5226	4.97261
24	25	14	15	19	20	5	5	-43	-86	-1.50098311	0.069756518	-0.99756405	19.3488	4.98782	20.3488	4.98782
24	25	14	15	19	20	5	5	-44	-88	-1.53588897	0.034899542	-0.99939083	19.1745	4.99695	20.1745	4.99695
24	25	14	15	19	20	5	5	-45	-90	-1.57079628	4.67949E-08	-1	19	5	20	5
24	25	14	15	19	20	5	5	-46	-92	-1.60570286	-0.03489945	-0.99939083	18.8255	4.99695	19.8255	4.99695
24	25	14	15	19	20	5	5	-47	-94	-1.64060945	-0.06975642	-0.99756405	18.6512	4.98782	19.6512	4.98782
24	25	14	15	19	20	5	5	-48	-96	-1.67551603	-0.10452841	-0.9945219	18.4774	4.97261	19.4774	4.97261
24	25	14	15	19	20	5	5	-49	-98	-1.71042262	-0.13917305	-0.99026808	18.3041	4.95134	19.3041	4.95134
24	25	14	15	19	20	5	5	-50	-100	-1.7453292	-0.17364813	-0.98480776	18.1318	4.92404	19.1318	4.92404
24	25	14	15	19	20	5	5	-51	-102	-1.78023578	-0.20791164	-0.97814761	17.9604	4.89074	18.9604	4.89074
24	25	14	15	19	20	5	5	-52	-104	-1.81514237	-0.24192184	-0.97029574	17.7904	4.85148	18.7904	4.85148
24	25	14	15	19	20	5	5	-53	-106	-1.85004895	-0.2756373	-0.96126171	17.6218	4.80631	18.6218	4.80631
24	25	14	15	19	20	5	5	-54	-108	-1.88495554	-0.30901694	-0.95105653	17.4549	4.75528	18.4549	4.75528
24	25	14	15	19	20	5	5	-55	-110	-1.91986212	-0.34202009	-0.93969264	17.2899	4.69846	18.2899	4.69846
24	25	14	15	19	20	5	5	-56	-112	-1.9547687	-0.37460654	-0.92718388	17.127	4.63592	18.127	4.63592
24	25	14	15	19	20	5	5	-57	-114	-1.98967529	-0.40673659	-0.91354548	16.9663	4.56773	17.9663	4.56773
24	25	14	15	19	20	5	5	-58	-116	-2.02458187	-0.43837109	-0.89879407	16.8081	4.49397	17.8081	4.49397
24	25	14	15	19	20	5	5	-59	-118	-2.05948846	-0.46947151	-0.88294762	16.6526	4.41474	17.6526	4.41474
24	25	14	15	19	20	5	5	-60	-120	-2.09439504	-0.49999995	-0.86602543	16.5	4.33013	17.5	4.33013
24	25	14	15	19	20	5	5	-61	-122	-2.12930162	-0.52991921	-0.84804813	16.3504	4.24024	17.3504	4.24024
24	25	14	15	19	20	5	5	-62	-124	-2.16420821	-0.55919285	-0.82903761	16.204	4.14519	17.204	4.14519
24	25	14	15	19	20	5	5	-63	-126	-2.19911479	-0.5877852	-0.80901703	16.0611	4.04509	17.0611	4.04509
24	25	14	15	19	20	5	5	-64	-128	-2.23402138	-0.61566142	-0.78801079	15.9217	3.94005	16.9217	3.94005
24	25	14	15	19	20	5	5	-65	-130	-2.26892796	-0.64278756	-0.76604449	15.7861	3.83022	16.7861	3.83022
24	25	14	15	19	20	5	5	-66	-132	-2.30383454	-0.66913056	-0.74314487	15.6543	3.71572	16.6543	3.71572
24	25	14	15	19	20	5	5	-67	-134	-2.33874113	-0.69465832	-0.71933985	15.5267	3.5967	16.5267	3.5967
24	25	14	15	19	20	5	5	-68	-136	-2.37364771	-0.71933975	-0.69465842	15.4033	3.47329	16.4033	3.47329
24	25	14	15	19	20	5	5	-69	-138	-2.4085543	-0.74314478	-0.66913066	15.2843	3.34565	16.2843	3.34565
24	25	14	15	19	20	5	5	-70	-140	-2.44346088	-0.7660444	-0.64278767	15.1698	3.21394	16.1698	3.21394
24	25	14	15	19	20	5	5	-71	-142	-2.47836746	-0.78801071	-0.61566153	15.0599	3.07831	16.0599	3.07831
24	25	14	15	19	20	5	5	-72	-144	-2.51327405	-0.80901695	-0.58778531	14.9549	2.93893	15.9549	2.93893
24	25	14	15	19	20	5	5	-73	-146	-2.54818063	-0.82903753	-0.55919297	14.8548	2.79596	15.8548	2.79596
24	25	14</														

28-1-17-56
28 psi

Disp(in)	Load(28)	strain	strain(%)	area	stress(28)	pp(28)	STRAIN(%)	dpp(±3)	SIGMA1A	SIGMA3A	SIGMA1A	SIGMA3A	P/A	QA
0	0	0.00	0.00	7.06	0	82.4	0.00	0.0	28	28	28	28	28	0
0.01	0	0.00	0.17	7.07	0	82.4	0.01	0.17	28	28	28	28	28	0
0.02	0	0.00	0.33	7.08	0	82.6	0.02	0.33	28	28	28	28	28	0
0.03	0	0.01	0.50	7.10	0	82.9	0.03	0.50	28	28	28	28	28	0
0.04	0	0.01	0.67	7.11	0	83.1	0.04	0.67	28	28	27	27	27	0
0.05	0	0.01	0.83	7.12	0	83.3	0.05	0.83	28	28	27	27	27	0
0.06	11	0.01	1.00	7.13	2	83.5	0.06	1.00	30	28	28	27	28	1
0.07	19	0.01	1.17	7.14	3	83.9	0.07	1.17	31	28	29	27	28	1
0.08	22	0.01	1.33	7.16	3	83.8	0.08	1.33	31	28	30	27	28	2
0.09	28	0.02	1.50	7.17	4	84.1	0.09	1.50	32	28	30	26	28	2
0.1	33	0.02	1.67	7.18	5	84.2	0.10	1.67	33	28	31	26	28	2
0.12	39	0.02	2.00	7.20	5	84.5	0.12	2.00	33	28	31	26	29	3
0.14	44	0.02	2.33	7.23	6	84.9	0.14	2.33	34	28	32	26	29	3
0.16	46	0.03	2.67	7.25	6	84.9	0.16	2.67	34	28	32	26	29	3
0.18	49	0.03	3.00	7.28	7	85.0	0.18	3.00	35	28	32	25	29	3
0.2	51	0.03	3.33	7.30	7	85.1	0.20	3.33	35	28	32	25	29	3
0.22	55	0.04	3.67	7.33	8	85.0	0.22	3.67	36	28	33	25	29	4
0.24	61	0.04	4.00	7.35	8	85.0	0.24	4.00	36	28	34	25	30	4
0.26	64	0.04	4.33	7.38	9	85.2	0.26	4.33	37	28	34	25	30	4
0.28	66	0.05	4.67	7.41	9	85.3	0.28	4.67	37	28	34	25	30	4
0.3	72	0.05	5.00	7.43	10	85.3	0.30	5.00	38	28	35	25	30	5
0.32	72	0.05	5.33	7.46	10	85.5	0.35	5.83	38	28	35	25	30	5
0.34	74	0.06	5.67	7.48	10	85.5	0.40	6.67	38	28	35	25	30	5
0.36	78	0.06	6.00	7.51	10	85.7	0.45	7.50	38	28	35	25	30	5
0.38	81	0.06	6.33	7.54	11	85.5	0.50	8.33	39	28	36	25	30	5
0.4	83	0.07	6.67	7.56	11	85.6	0.55	9.17	39	28	36	25	30	5
0.42	88	0.07	7.00	7.59	12	85.5	0.60	10.00	40	28	36	25	31	6
0.44	89	0.07	7.33	7.62	12	85.3	0.65	10.83	40	28	37	25	31	6
0.46	90	0.08	7.67	7.65	12	85.1	0.70	11.67	40	28	37	25	31	6
0.48	93	0.08	8.00	7.67	12	84.8	0.75	12.50	40	28	38	26	32	6
0.5	93	0.08	8.33	7.70	12	84.5	0.80	13.33	40	28	38	26	32	6
0.52	93	0.09	8.67	7.73	12	84.5	0.85	14.17	40	28	38	26	32	6
0.54	93	0.09	9.00	7.76	12	84.5	0.90	15.00	40	28	38	26	32	6
0.56	95	0.09	9.33	7.79	12	84.1	0.95	15.83	40	28	39	26	32	6
0.58	95	0.10	9.67	7.82	12	84.1	1.00	16.67	40	28	38	26	32	6
0.6	95	0.10	10.00	7.84	12	83.8	1.05	17.50	40	28	39	27	33	6
0.62	96	0.10	10.33	7.87	12	83.5	1.10	18.33	40	28	39	27	33	6
0.64	96	0.11	10.67	7.90	12	83.1	1.15	19.17	40	28	39	27	33	6
0.66	96	0.11	11.00	7.93	12	83.0	1.20	20.00	40	28	40	27	33	6
0.68	97	0.11	11.33	7.96	12	82.7	1.25	20.83	40	28	40	28	34	6
0.7	96	0.12	11.67	7.99	12	82.4	1.30	21.67	40	28	40	28	34	6
0.72	97	0.12	12.00	8.02	12	82.1	1.35	22.50	40	28	40	28	34	6
0.74	100	0.12	12.33	8.05	12	81.8	1.40	23.33	40	28	41	29	35	6
0.76	100	0.13	12.67	8.08	12	81.7	1.45	24.17	40	28	41	29	35	6
0.78	101	0.13	13.00	8.11	12	81.7	1.50	25.00	40	28	41	29	35	6
0.8	101	0.13	13.33	8.15	12	81.7	1.55	25.83	40	28	41	29	35	6
0.82	100	0.14	13.67	8.18	12	81.5	1.60	26.67	40	28	41	29	35	6
0.84	101	0.14	14.00	8.21	12	81.4	1.65	27.50	40	28	41	29	35	6
0.86	102	0.14	14.33	8.24	12	81.1	1.70	28.33	40	28	42	29	35	6
0.88	101	0.15	14.67	8.27	12	81.1	1.75	29.17	40	28	42	29	35	6
0.9	102	0.15	15.00	8.31	12	81.1	1.80	30.00	40	28	42	29	35	6

s1	s1'	s3	s3'	s1+s3/2	s1'+s3'/2	s1-s3/2	s1'-s3'/2	teta	2 teta	2 TETA	COS 2 TETA	SIN 2 TETA	S TETA	FAO TET/	s' teta	t' teta
40	42	28	29	34	35.5	6	6.5	0	0	0	1	0	40	0	42	0
40	42	28	29	34	35.5	6	6.5	-1	-2	-0.03490658	0.999390827	-0.0348995	39.9963	0.2094	41.996	0.22685
40	42	28	29	34	35.5	6	6.5	-2	-4	-0.06981317	0.99756405	-0.06975647	39.9854	0.41854	41.9842	0.45342
40	42	28	29	34	35.5	6	6.5	-3	-6	-0.10471975	0.994521896	-0.10452846	39.9671	0.62717	41.9644	0.67943
40	42	28	29	34	35.5	6	6.5	-4	-8	-0.13962634	0.990268069	-0.1391731	39.9416	0.83504	41.9367	0.90463
40	42	28	29	34	35.5	6	6.5	-5	-10	-0.17453292	0.984807754	-0.17364817	39.9088	1.04189	41.9013	1.12871
40	42	28	29	34	35.5	6	6.5	-6	-12	-0.2094395	0.978147602	-0.20791168	39.8689	1.24747	41.858	1.35143
40	42	28	29	34	35.5	6	6.5	-7	-14	-0.24434609	0.970295728	-0.24192189	39.8218	1.45153	41.8069	1.57249
40	42	28	29	34	35.5	6	6.5	-8	-16	-0.27925267	0.961261698	-0.27563735	39.7676	1.65382	41.7482	1.79164
40	42	28	29	34	35.5	6	6.5	-9	-18	-0.31415926	0.951056519	-0.30901699	39.7063	1.8541	41.6819	2.00861
40	42	28	29	34	35.5	6	6.5	-10	-20	-0.34906584	0.939692624	-0.34202013	39.6382	2.05212	41.608	2.22313
40	42	28	29	34	35.5	6	6.5	-11	-22	-0.38397242	0.927183859	-0.37460658	39.5631	2.24764	41.5267	2.43494
40	42	28	29	34	35.5	6	6.5	-12	-24	-0.41887901	0.913545463	-0.40673663	39.4813	2.44042	41.438	2.64379
40	42	28	29	34	35.5	6	6.5	-13	-26	-0.45378559	0.898794052	-0.43837113	39.3928	2.63023	41.3422	2.84941
40	42	28	29	34	35.5	6	6.5	-14	-28	-0.48869218	0.8829476	-0.46947155	39.2977	2.81683	41.2392	3.05157
40	42	28	29	34	35.5	6	6.5	-15	-30	-0.52359876	0.866025412	-0.49999999	39.1962	3	41.1292	3.25
40	42	28	29	34	35.5	6	6.5	-16	-32	-0.55850534	0.848048105	-0.52991925	39.0883	3.17952	41.0123	3.44448
40	42	28	29	34	35.5	6	6.5	-17	-34	-0.59341193	0.829037582	-0.55919289	38.9742	3.35516	40.8887	3.63475
40	42	28	29	34	35.5	6	6.5	-18	-36	-0.62831851	0.809017005	-0.58778524	38.8541	3.52671	40.7586	3.8206
40	42	28	29	34	35.5	6	6.5	-19	-38	-0.6632251	0.788010766	-0.61566146	38.7281	3.69397	40.6221	4.0018
40	42	28	29	34	35.5	6	6.5	-20	-40	-0.69813168	0.766044456	-0.64278759	38.5963	3.85673	40.4793	4.17812
40	42	28	29	34	35.5	6	6.5	-21	-42	-0.73303826	0.74314484	-0.66913059	38.4589	4.01478	40.3304	4.34935
40	42	28	29	34	35.5	6	6.5	-22	-44	-0.76794485	0.719339816	-0.69465835	38.316	4.16795	40.1757	4.51528
40	42	28	29	34	35.5	6	6.5	-23	-46	-0.80285143	0.694658388	-0.71933978	38.168	4.31604	40.0153	4.67571
40	42	28	29	34	35.5	6	6.5	-24	-48	-0.83775802	0.669130625	-0.74314481	38.0148	4.45887	39.8493	4.83044
40	42	28	29	34	35.5	6	6.5	-25	-50	-0.8726646	0.64278763	-0.76604443	37.8567	4.59627	39.6781	4.97929
40	42	28	29	34	35.5	6	6.5	-26	-52	-0.90757118	0.615661497	-0.78801074	37.694	4.72806	39.5018	5.12207
40	42	28	29	34	35.5	6	6.5	-27	-54	-0.94247777	0.587785275	-0.80901698	37.5267	4.8541	39.3206	5.25861
40	42	28	29	34	35.5	6	6.5	-28	-56	-0.97738435	0.559192928	-0.82903756	37.3552	4.97423	39.1348	5.38874
40	42	28	29	34	35.5	6	6.5	-29	-58	-1.01229094	0.52991929	-0.84804808	37.1795	5.08829	38.9445	5.51231
40	42	28	29	34	35.5	6	6.5	-30	-60	-1.04719752	0.500000027	-0.86602539	37	5.19615	38.75	5.62917
40	42	28	29	34	35.5	6	6.5	-31	-62	-1.0821041	0.469471591	-0.88294758	36.8168	5.29769	38.5516	5.73916
40	42	28	29	34	35.5	6	6.5	-32	-64	-1.11701069	0.438371177	-0.89879403	36.6302	5.39276	38.3494	5.84216
40	42	28	29	34	35.5	6	6.5	-33	-66	-1.15191727	0.406736674	-0.91354544	36.4404	5.48127	38.1438	5.93805
40	42	28	29	34	35.5	6	6.5	-34	-68	-1.18682386	0.374606626	-0.92718384	36.2476	5.5631	37.9349	6.02669
40	42	28	29	34	35.5	6	6.5	-35	-70	-1.22173044	0.342020178	-0.93969261	36.0521	5.63816	37.7231	6.108
40	42	28	29	34	35.5	6	6.5	-36	-72	-1.25663702	0.30901703	-0.9510565	35.8541	5.70634	37.5086	6.18187
40	42	28	29	34	35.5	6	6.5	-37	-74	-1.29154361	0.275637393	-0.96126169	35.6538	5.76757	37.2916	6.2482
40	42	28	29	34	35.5	6	6.5	-38	-76	-1.32645019	0.241921934	-0.97029572	35.4515	5.82177	37.0725	6.30692
40	42	28	29	34	35.5	6	6.5	-39	-78	-1.36135678	0.20791173	-0.97814759	35.2475	5.86889	36.8514	6.35796
40	42	28	29	34	35.5	6	6.5	-40	-80	-1.39626336	0.173648219	-0.98480775	35.0419	5.90885	36.6287	6.40125
40	42	28	29	34	35.5	6	6.5	-41	-82	-1.43116994	0.139173143	-0.99026806	34.835	5.94161	36.4046	6.43674
40	42	28	29	34	35.5	6	6.5	-42	-84	-1.46607653	0.104528507	-0.99452189	34.6272	5.96713	36.1794	6.46439
40	42	28	29	34	35.5	6	6.5	-43	-86	-1.50098311	0.069756518	-0.99756405	34.4185	5.98538	35.9534	6.48417
40	42	28	29	34	35.5	6	6.5	-44	-88	-1.5358897	0.034899542	-0.99939083	34.2094	5.99634	35.7268	6.49604
40	42	28	29	34	35.5	6	6.5	-45	-90	-1.57079628	4.67949E-08	-1	34	6	35.5	6.5
40	42	28	29	34	35.5	6	6.5	-46	-92	-1.60570286	-0.03489945	-0.99939083	33.7906	5.99634	35.2732	6.49604
40	42	28	29	34	35.5	6	6.5	-47	-94	-1.64060945	-0.06975642	-0.99756405	33.5815	5.98538	35.0466	6.48417
40	42	28	29	34	35.5	6	6.5	-48	-96	-1.67551603	-0.10452841	-0.9945219	33.3728	5.96713	34.8206	6.46439
40	42	28	29	34	35.5	6	6.5	-49	-98	-1.71042262	-0.13917305	-0.99026808	33.165	5.94161	34.5954	6.43674
40	42	28	29	34	35.5	6	6.5	-50	-100	-1.7453292	-0.17364813	-0.98480776	32.9581	5.90885	34.3713	6.40125
40	42	28	29	34	35.5	6	6.5	-51	-102	-1.78023578	-0.20791164	-0.97814761	32.7525	5.86889	34.1486	6.35796
40	42	28	29	34	35.5	6	6.5	-52	-104	-1.81514237	-0.24192184	-0.97029574	32.5485	5.82177	33.9275	6.30692
40	42	28	29	34	35.5	6	6.5	-53	-106	-1.85004895	-0.2756373	-0.96126171	32.3462	5.76757	33.7084	6.2482
40	42	28	29	34	35.5	6	6.5	-54	-108	-1.88495554	-0.30901694	-0.95105653	32.1459	5.70634	33.4914	6.18187
40	42	28	29	34	35.5	6	6.5	-55	-110	-1.91986212	-0.34202009	-0.93969264	31.9479	5.63816	33.2769	6.108
40	42	28	29	34	35.5	6	6.5	-56	-112	-1.9547687	-0.37460654	-0.92718388	31.7524	5.5631	33.0651	6.0267
40	42	28	29	34	35.5	6	6.5	-57	-114	-1.98967529	-0.40673659	-0.91354548	31.5596	5.48127	32.8562	5.93805
40	42	28	29	34	35.5	6	6.5	-58	-116	-2.02458187	-0.43837109	-0.89879407	31.3698	5.39276	32.6506	5.84216
40	42	28	29	34	35.5	6	6.5	-59	-118	-2.05948846	-0.46947151	-0.88294762	31.1832	5.29769	32.4484	5.73916
40	42	28	29	34	35.5	6	6.5	-60	-120	-2.09439504	-0.49999995	-0.86602543	31	5.19615	32.25	5.62917
40	42	28	29	34	35.5	6	6.5	-61	-122	-2.12930162	-0.52991921	-0.84804813	30.8205	5.08829	32.0555	5.51231
40	42	28	29	34	35.5	6	6.5	-62	-124	-2.16420821	-0.55919285	-0.82903761	30.6448	4.97423	31.8652	5.38874
40	42	28	29	34	35.5	6	6.5	-63	-126	-2.19911479	-0.5877852	-0.80901703	30.4733	4.8541	31.6794	5.25861
40	42	28	29	34	35.5	6	6.5	-64	-128	-2.23402138	-0.61566142	-0.78801079	30.306	4.72806	31.4982	5.12207
40	42	28	29	34	35.5	6	6.5	-65	-130	-2.26892796	-0.64278756	-0.76604449	30.1433	4.59627	31.3219	4.97929
40	42	28	29	34	35.5	6	6.5	-66	-132	-2.30383454	-0.66913056	-0.74314487	29.9852	4.45887	31.1507	4.83044
40	42	28	29	34	35.5	6	6.5	-67	-134	-2.33874113	-0.69465832	-0.71933985	29.8321	4.31604	30.9847	4.67571
40	42	28	29	34	35.5	6	6.5	-68	-136	-2.37364771	-0.71933975	-0.69465842	29.684	4.16795	30.8243	4.51528
40	42	28	29	34	35.5	6	6.5	-69	-138	-2.4085543	-0.74314478	-0.66913066	29.5411	4.01478	30.6696	4.34935
40	42	28	29	34	35.5	6	6.5	-70	-140	-2.44346088	-0.7660444	-0.64278767	29.4037	3.85673	30.5207	4.17812
40	42	28	29	34	35.5	6	6.5	-71	-142	-2.47836746	-0.78801071	-0.61566153	29.2719	3.69397	30.3779	4.0018
40	42	28	29	34	35.5	6	6.5	-72								



KEANTAN LABORATORIES

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SUMMARY OF LABORATORY TEST RESULT

PROJECT NAME.: Argonaut Mine Tailings
PROJECT NO.: 402277002
DATE.: 11/10/2014
KTL NO.: 05-318-123
CLIENT.: Ninyo & Moore
SUMMARIZED BY.: K. Tan

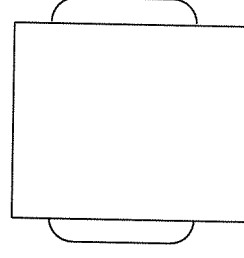
Boring NO.	DEPTH (FT)	Diameter (In)	Height (In)	MOISTURE CONTENT (%) ASTM D 2937	DRY DENSITY (pcf) ASTM D 2937	WET DENSITY (pcf) ASTM D 2937	Void Ratio	Degree Of Saturation (%)
2F1-39-ST	n/a	3	5	39.65	73.35	102.43	1.298	39
2F1-39-ST	n/a	3	5	34.33	87.05	116.93	.922	35
2F1-39-ST	n/a	3	5	32.77	75.02	99.61	1.222	34

Soil Description: Color: Black, Moisture: Wet, Grain: Silt with Gravel

Atterberg Limit: Non Plastic

Specimen Type: Undisturbed Drive

Remark: Sieve with Hydrometer included



Failure Sketch

GRAIN SIZE DISTRIBUTION

ASTM D422
Sieve and Hydrometer

PROJECT NAME: Argonaut Mine Tailings

SAMPLE NO.: 2F-1-39-ST

DEPTH(FT)

n/a

KTL NO.: 05-318-123

PROJECT NO.: n/a

DATE: 11/10/2014

TECH.: jk

UNIFIED SOIL CLASSIFICATION: NEED DATA
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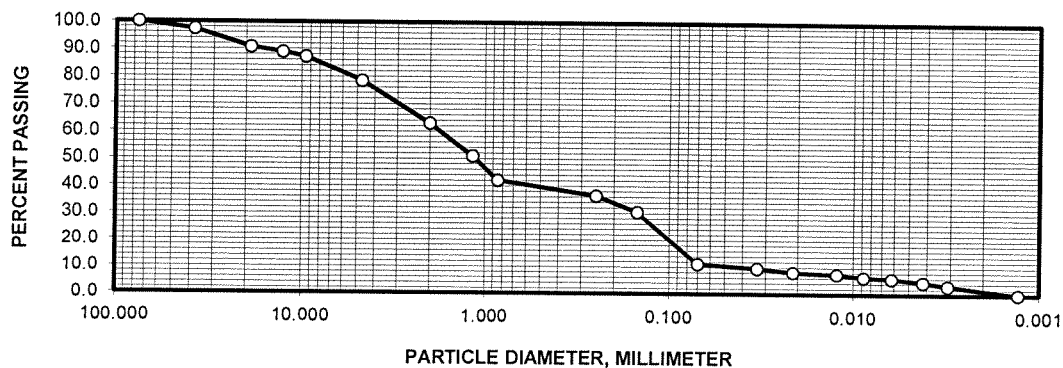
Moisture Content Determination:	35.25%
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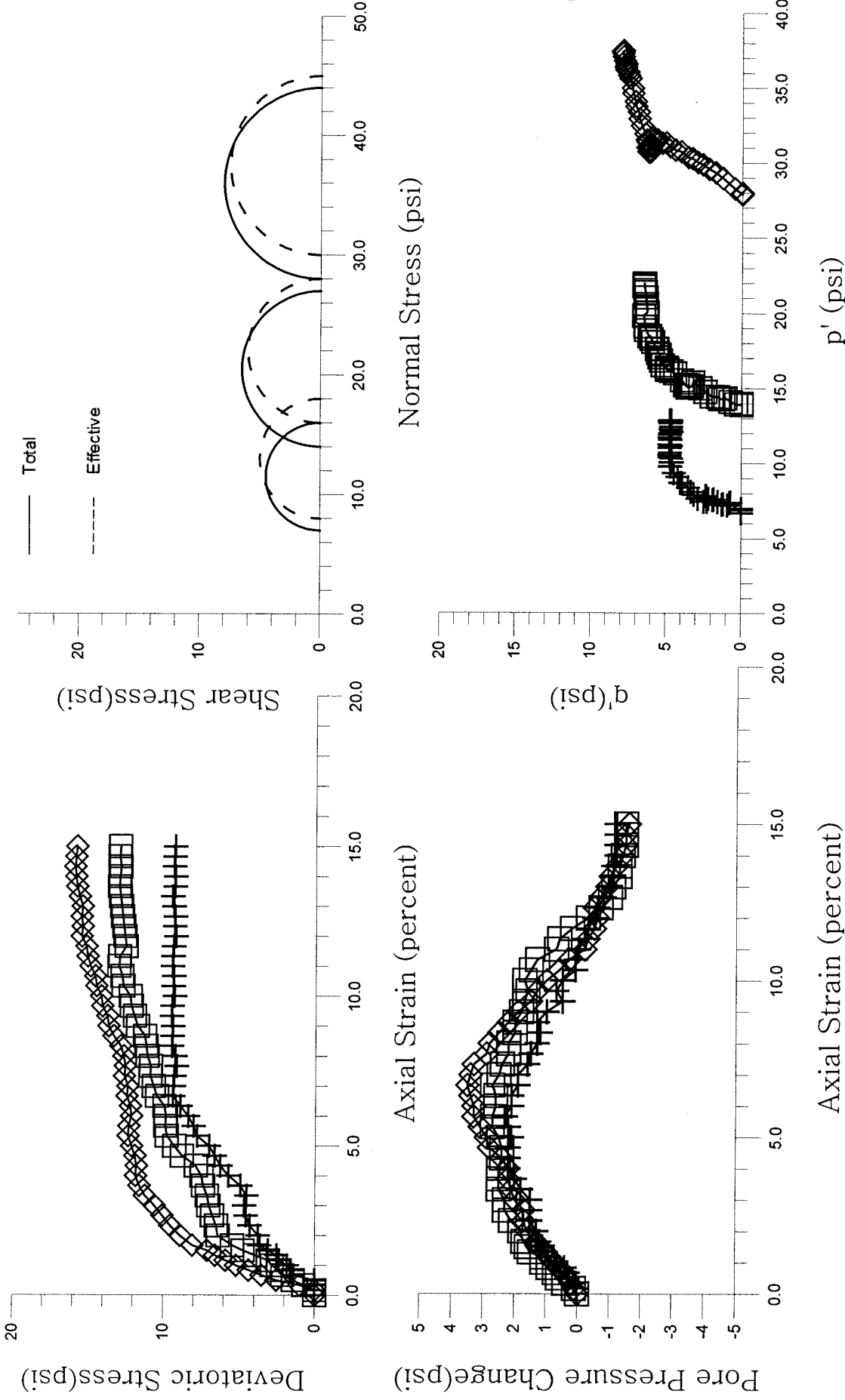
Pan Number:	KB-23
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Pan + Dry Soil, gms.	1121.0
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Wt. of Pan, gms.	84.7
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Wt. of Dry Soil, gms.	1036.3
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[illegible]



Symbol	BORING NO.	SAMPLE NO.	DEPTH (FT)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	CELL PRESSURE (PSI)	BACK PRESSURE (PSI)	EFFECTIVE STRESS (PSI)	MAX DEVIATOR STRESS (PSI)
+	N/A	2f-1-39-ST	n/a	39.7	73.4	87.0	80	7.0	10
□	N/A	2f-1-39-ST	n/a	34.3	87.1	94.0	80	14.0	13
○	N/A	2f-1-39-ST	n/a	32.7	75.0	108.0	80	28.0	16

2f-1-39-5c
7pc

Disp(in)	Load(7)	strain	strain(%)	area	stress(7)	μp(7)	STRAIN(%)	dpp(7)	SIGMA1A	SIGMA3A	P/A	QA
0	0	0	0.00	0.00	7.06	0	0.00	0.00	7	7	7	7
0.01	0	0	0.00	0.17	7.07	0	0.01	0.17	7	7	7	7
0.02	0	0	0.00	0.33	7.08	0	0.02	0.33	7	7	7	7
0.03	0	0	0.01	0.50	7.10	0	0.03	0.50	7	7	7	7
0.04	10	0.01	0.67	7.11	7.11	1	0.04	0.67	8	7	7	7
0.05	11	0.01	0.83	7.12	7.12	2	0.05	0.83	9	7	7	7
0.06	13	0.01	1.00	7.13	7.13	2	0.06	1.00	9	7	7	7
0.07	17	0.01	1.17	7.14	7.14	2	0.07	0.9	9	7	6	7
0.08	18	0.01	1.33	7.16	7.16	3	0.08	1.33	10	7	6	7
0.09	22	0.02	1.50	7.17	7.17	3	0.09	1.50	10	7	6	7
0.1	26	0.02	1.67	7.18	7.18	4	0.10	1.67	11	7	6	7
0.12	27	0.02	2.00	7.20	7.20	4	0.12	2.00	11	7	6	7
0.14	31	0.02	2.33	7.23	7.23	4	0.14	2.33	11	7	6	7
0.16	33	0.03	2.67	7.25	7.25	5	0.16	2.67	12	7	6	7
0.18	34	0.03	3.00	7.28	7.28	5	0.18	3.00	12	7	6	7
0.2	33	0.03	3.33	7.30	7.30	5	0.20	3.33	12	7	5	7
0.22	36	0.04	3.67	7.33	7.33	5	0.22	3.67	12	7	5	7
0.24	42	0.04	4.00	7.35	7.35	6	0.24	4.00	13	7	5	7
0.26	46	0.04	4.33	7.38	7.38	6	0.26	4.33	13	7	5	7
0.28	49	0.05	4.67	7.41	7.41	7	0.28	4.67	14	7	5	7
0.3	52	0.05	5.00	7.43	7.43	7	0.30	5.00	14	7	5	7
0.32	58	0.05	5.33	7.46	7.46	8	0.35	5.83	15	7	5	7
0.34	60	0.06	5.67	7.48	7.48	8	0.40	6.67	15	7	5	7
0.36	63	0.06	6.00	7.51	7.51	8	0.45	7.50	15	7	5	7
0.38	67	0.06	6.33	7.54	7.54	9	0.50	8.33	16	7	5	7
0.4	71	0.07	6.67	7.56	7.56	9	0.55	9.17	16	7	5	7
0.42	71	0.07	7.00	7.59	7.59	9	0.60	10.00	16	7	5	7
0.44	71	0.07	7.33	7.62	7.62	9	0.65	10.83	16	7	5	7
0.46	70	0.08	7.67	7.65	7.65	9	0.70	11.67	16	7	5	7
0.48	71	0.08	8.00	7.67	7.67	9	0.75	12.50	16	7	5	7
0.5	73	0.08	8.33	7.70	7.70	9	0.80	13.33	16	7	5	7
0.52	73	0.09	8.67	7.73	7.73	9	0.85	14.17	16	7	5	7
0.54	73	0.09	9.00	7.76	7.76	9	0.90	15.00	16	7	5	7
0.56	74	0.09	9.33	7.79	7.79	10	0.95	15.83	17	7	5	7
0.58	74	0.10	9.67	7.82	7.82	9	1.00	16.67	16	7	5	7
0.6	73	0.10	10.00	7.84	7.84	9	1.05	17.50	16	7	5	7
0.62	74	0.10	10.33	7.87	7.87	9	1.10	18.33	16	7	5	7
0.64	74	0.11	10.67	7.90	7.90	9	1.15	19.17	16	7	5	7
0.66	75	0.11	11.00	7.93	7.93	9	1.20	20.00	16	7	5	7
0.68	75	0.11	11.33	7.96	7.96	9	1.25	20.83	16	7	5	7
0.7	75	0.12	11.67	7.99	7.99	9	1.30	21.67	16	7	5	7
0.72	74	0.12	12.00	8.02	8.02	9	1.35	22.50	16	7	5	7
0.74	75	0.12	12.33	8.05	8.05	9	1.40	23.33	16	7	5	7
0.76	75	0.13	12.67	8.08	8.08	9	1.45	24.17	16	7	5	7
0.78	76	0.13	13.00	8.11	8.11	9	1.50	25.00	16	7	5	7
0.8	77	0.13	13.33	8.15	8.15	9	1.55	25.83	16	7	5	7
0.82	76	0.14	13.67	8.18	8.18	9	1.60	26.67	16	7	5	7
0.84	76	0.14	14.00	8.21	8.21	9	1.65	27.50	16	7	5	7
0.86	77	0.14	14.33	8.24	8.24	9	1.70	28.33	16	7	5	7
0.88	77	0.15	14.67	8.27	8.27	9	1.75	29.17	16	7	5	7
0.9	77	0.15	15.00	8.31	8.31	9	1.80	30.00	16	7	5	7

s1	s1'	s3	s3'	s1+s3/2	s1'+s3'/2	s1-s3/2	s1'-s3'/2	teta	2 teta	2 TETA	COS 2 TETA	SIN 2 TETA	S TETA	GAO TET/	s' teta	t' teta
16	18	7	8	11.5	13	4.5	5	0	0	0	1	0	16	0	18	0
16	18	7	8	11.5	13	4.5	5	-1	-2	-0.03490658	0.999390827	-0.0348995	15.9973	0.15705	17.997	0.1745
16	18	7	8	11.5	13	4.5	5	-2	-4	-0.06981317	0.99756405	-0.06975647	15.989	0.3139	17.9878	0.34878
16	18	7	8	11.5	13	4.5	5	-3	-6	-0.10471975	0.994521896	-0.10452846	15.9753	0.47038	17.9726	0.52264
16	18	7	8	11.5	13	4.5	5	-4	-8	-0.13962634	0.990268069	-0.1391731	15.9562	0.62628	17.9513	0.69587
16	18	7	8	11.5	13	4.5	5	-5	-10	-0.17453292	0.984807754	-0.17364817	15.9316	0.78142	17.924	0.86824
16	18	7	8	11.5	13	4.5	5	-6	-12	-0.2094395	0.978147602	-0.20791168	15.9017	0.9356	17.8907	1.03956
16	18	7	8	11.5	13	4.5	5	-7	-14	-0.24434609	0.970295728	-0.24192189	15.8663	1.08865	17.8515	1.20961
16	18	7	8	11.5	13	4.5	5	-8	-16	-0.27925267	0.961261698	-0.27563735	15.8257	1.24037	17.8063	1.37819
16	18	7	8	11.5	13	4.5	5	-9	-18	-0.31415926	0.951056519	-0.30901699	15.7798	1.39058	17.7553	1.54508
16	18	7	8	11.5	13	4.5	5	-10	-20	-0.34906584	0.939692624	-0.34202013	15.7286	1.53909	17.6985	1.7101
16	18	7	8	11.5	13	4.5	5	-11	-22	-0.38397242	0.927183859	-0.37460658	15.6723	1.68573	17.6359	1.87303
16	18	7	8	11.5	13	4.5	5	-12	-24	-0.41887901	0.913545463	-0.40673663	15.611	1.83031	17.5677	2.03368
16	18	7	8	11.5	13	4.5	5	-13	-26	-0.45378559	0.898794052	-0.43837113	15.5446	1.97267	17.494	2.19186
16	18	7	8	11.5	13	4.5	5	-14	-28	-0.48869218	0.8829476	-0.46947155	15.4733	2.11262	17.4147	2.34736
16	18	7	8	11.5	13	4.5	5	-15	-30	-0.52359876	0.866025412	-0.49999999	15.3971	2.25	17.3301	2.5
16	18	7	8	11.5	13	4.5	5	-16	-32	-0.55850534	0.848048105	-0.52991925	15.3162	2.38464	17.2402	2.6496
16	18	7	8	11.5	13	4.5	5	-17	-34	-0.59341193	0.829037582	-0.55919289	15.2307	2.51637	17.1452	2.79596
16	18	7	8	11.5	13	4.5	5	-18	-36	-0.62831851	0.809017005	-0.58778524	15.1406	2.64503	17.0451	2.93893
16	18	7	8	11.5	13	4.5	5	-19	-38	-0.6632251	0.788010766	-0.61566146	15.046	2.77048	16.9401	3.07831
16	18	7	8	11.5	13	4.5	5	-20	-40	-0.69813168	0.766044456	-0.64278759	14.9472	2.89254	16.8302	3.21394
16	18	7	8	11.5	13	4.5	5	-21	-42	-0.73303826	0.74314484	-0.66913059	14.8442	3.01109	16.7157	3.34565
16	18	7	8	11.5	13	4.5	5	-22	-44	-0.76794485	0.719339816	-0.69465835	14.737	3.12596	16.5967	3.47329
16	18	7	8	11.5	13	4.5	5	-23	-46	-0.80285143	0.694658388	-0.71933978	14.626	3.23703	16.4733	3.5967
16	18	7	8	11.5	13	4.5	5	-24	-48	-0.83775802	0.669130625	-0.74314481	14.5111	3.34415	16.3457	3.71572
16	18	7	8	11.5	13	4.5	5	-25	-50	-0.8726646	0.64278763	-0.76604443	14.3925	3.4472	16.2139	3.83022
16	18	7	8	11.5	13	4.5	5	-26	-52	-0.90757118	0.615661497	-0.78801074	14.2705	3.54605	16.0783	3.94005
16	18	7	8	11.5	13	4.5	5	-27	-54	-0.94247777	0.587785275	-0.80901698	14.145	3.64058	15.9389	4.04508
16	18	7	8	11.5	13	4.5	5	-28	-56	-0.97738435	0.559192928	-0.82903756	14.0164	3.73067	15.796	4.14519
16	18	7	8	11.5	13	4.5	5	-29	-58	-1.01229094	0.52991929	-0.84804808	13.8846	3.81622	15.6496	4.24024
16	18	7	8	11.5	13	4.5	5	-30	-60	-1.04719752	0.500000027	-0.86602539	13.75	3.89711	15.5	4.33013
16	18	7	8	11.5	13	4.5	5	-31	-62	-1.0821041	0.469471591	-0.88294758	13.6126	3.97326	15.3474	4.41474
16	18	7	8	11.5	13	4.5	5	-32	-64	-1.11701069	0.438371177	-0.89879403	13.4727	4.04457	15.1919	4.49397
16	18	7	8	11.5	13	4.5	5	-33	-66	-1.15191727	0.406736674	-0.91354544	13.3303	4.11095	15.0337	4.56773
16	18	7	8	11.5	13	4.5	5	-34	-68	-1.18682386	0.374606626	-0.92718384	13.1857	4.17233	14.873	4.63592
16	18	7	8	11.5	13	4.5	5	-35	-70	-1.22173044	0.342020178	-0.93969261	13.0391	4.22862	14.7101	4.69846
16	18	7	8	11.5	13	4.5	5	-36	-72	-1.25663702	0.30901703	-0.9510565	12.8906	4.27975	14.5451	4.75528
16	18	7	8	11.5	13	4.5	5	-37	-74	-1.29154361	0.275637393	-0.96126169	12.7404	4.32568	14.3782	4.80631
16	18	7	8	11.5	13	4.5	5	-38	-76	-1.32645019	0.241921934	-0.97029572	12.5886	4.36633	14.2096	4.85148
16	18	7	8	11.5	13	4.5	5	-39	-78	-1.36135678	0.20791173	-0.97814759	12.4356	4.40166	14.0396	4.89074
16	18	7	8	11.5	13	4.5	5	-40	-80	-1.39626336	0.173648219	-0.98480775	12.2814	4.43163	13.8682	4.92404
16	18	7	8	11.5	13	4.5	5	-41	-82	-1.43116994	0.139173143	-0.99026806	12.1263	4.45621	13.6959	4.95134
16	18	7	8	11.5	13	4.5	5	-42	-84	-1.46607653	0.104528507	-0.99452189	11.9704	4.47535	13.5226	4.97261
16	18	7	8	11.5	13	4.5	5	-43	-86	-1.50098311	0.069756518	-0.99756405	11.8139	4.48904	13.3488	4.98782
16	18	7	8	11.5	13	4.5	5	-44	-88	-1.53588897	0.034899542	-0.99939083	11.657	4.49726	13.1745	4.99695
16	18	7	8	11.5	13	4.5	5	-45	-90	-1.57079628	4.67949E-08	-1	11.5	4.5	13	5
16	18	7	8	11.5	13	4.5	5	-46	-92	-1.60570286	-0.03489945	-0.99939083	11.343	4.49726	12.8255	4.99695
16	18	7	8	11.5	13	4.5	5	-47	-94	-1.64060945	-0.06975642	-0.99756405	11.1861	4.48904	12.6512	4.98782
16	18	7	8	11.5	13	4.5	5	-48	-96	-1.67551603	-0.10452841	-0.9945219	11.0296	4.47535	12.4774	4.97261
16	18	7	8	11.5	13	4.5	5	-49	-98	-1.71042262	-0.13917305	-0.99026808	10.8737	4.45621	12.3041	4.95134
16	18	7	8	11.5	13	4.5	5	-50	-100	-1.7453292	-0.17364813	-0.98480776	10.7186	4.43163	12.1318	4.92404
16	18	7	8	11.5	13	4.5	5	-51	-102	-1.78023578	-0.20791164	-0.97814761	10.5644	4.40166	11.9604	4.89074
16	18	7	8	11.5	13	4.5	5	-52	-104	-1.81514237	-0.24192184	-0.97029574	10.4114	4.36633	11.7904	4.85148
16	18	7	8	11.5	13	4.5	5	-53	-106	-1.85004895	-0.2756373	-0.96126171	10.2596	4.32568	11.6218	4.80631
16	18	7	8	11.5	13	4.5	5	-54	-108	-1.88495554	-0.30901694	-0.95105653	10.1094	4.27975	11.4549	4.75528
16	18	7	8	11.5	13	4.5	5	-55	-110	-1.91986212	-0.34202009	-0.93969264	9.96091	4.22862	11.2899	4.69846
16	18	7	8	11.5	13	4.5	5	-56	-112	-1.9547687	-0.37460654	-0.92718388	9.81427	4.17233	11.127	4.63592
16	18	7	8	11.5	13	4.5	5	-57	-114	-1.98967529	-0.40673659	-0.91354548	9.66969	4.11095	10.9663	4.56773
16	18	7	8	11.5	13	4.5	5	-58	-116	-2.02458187	-0.43837109	-0.89879407	9.52733	4.04457	10.8081	4.49397
16	18	7	8	11.5	13	4.5	5	-59	-118	-2.05948846	-0.46947151	-0.88294762	9.38738	3.97326	10.6526	4.41474
16	18	7	8	11.5	13	4.5	5	-60	-120	-2.09439504	-0.49999995	-0.86602543	9.25	3.89711	10.5	4.33013
16	18	7	8	11.5	13	4.5	5	-61	-122	-2.12930162	-0.52991921	-0.84804813	9.11536	3.81622	10.3504	4.24024
16	18	7	8	11.5	13	4.5	5	-62	-124	-2.16420821	-0.55919285	-0.82903761	8.98363	3.73067	10.204	4.14519
16	18	7	8	11.5	13	4.5	5	-63	-126	-2.19911479	-0.5877852	-0.80901703	8.85497	3.64058	10.0611	4.04509
16	18	7	8	11.5	13	4.5	5	-64	-128	-2.23402138	-0.61566142	-0.78801079	8.72952	3.54605	9.92169	3.94005
16	18	7	8	11.5	13	4.5	5	-65	-130	-2.26892796	-0.64278756	-0.76604449	8.60746	3.4472	9.78606	3.83022
16	18	7	8	11.5	13	4.5	5	-66	-132	-2.30383454	-0.66913056	-0.74314487	8.48891	3.34415	9.65435	3.71572
16	18	7	8	11.5	13	4.5	5	-67	-134	-2.33874113	-0.69465832	-0.71933985	8.37404	3.23703	9.52671	3.5967
16	18	7	8	11.5	13	4.5	5	-68	-136	-2.37364771	-0.71933975	-0.69465842	8.26297	3.12596	9.4033	3.47329
16	18	7	8	11.5	13	4.5	5	-69	-138	-2.4085543	-0.74314478	-0.66913066	8.15585	3.01109	9.28428	3.34565
16	18	7	8	11.5	13	4.5	5	-70	-140	-2.44346088	-0.7660444	-0.64278767	8.0528	2.89254	9.16978	3.21394
16	18	7	8	11.5	13	4.5	5	-71	-142	-2.47836746	-0.78801071	-0.61566153	7.95395	2.77048	9.05995	3.07831
16	18	7	8	11.5	13	4.5	5	-72	-144	-2.51327405	-0.80901695	-0.58778531	7.85942	2.64503	8.95492	2.93893
16	18	7	8	11.5												

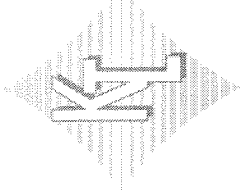
Disp(in)	Load(14)	strain	strain(%)	area	stress(14)	pp(14)	STRAIN(%)	dpp(14)	SIGMA1,A	SIGMA3A	SIGMA1'A	SIGMA3'A	P'A	QA
0	0	0.00	0.00	7.06	0	86.8	0.00	0.00	14	14	14	14	14	0
0.01	0	0.00	0.17	7.07	0	86.9	0.01	0.17	14	14	14	14	14	0
0.02	5	0.00	0.33	7.08	1	87.2	0.02	0.33	15	14	14	14	14	0
0.03	10	0.01	0.50	7.10	1	87.4	0.03	0.50	15	14	15	13	14	1
0.04	15	0.01	0.67	7.11	2	87.5	0.04	0.67	16	14	15	13	14	1
0.05	17	0.01	0.83	7.12	2	87.7	0.05	0.83	16	14	15	13	14	1
0.06	20	0.01	1.00	7.13	3	87.9	0.06	1.00	17	14	16	13	14	1
0.07	22	0.01	1.17	7.14	3	87.9	0.07	1.17	17	14	16	13	14	2
0.08	28	0.01	1.33	7.16	4	88.3	0.08	1.33	18	14	16	13	14	2
0.09	34	0.02	1.50	7.17	5	88.4	0.09	1.50	19	14	17	12	15	2
0.1	39	0.02	1.67	7.18	5	88.5	0.10	1.67	19	14	18	12	15	3
0.12	46	0.02	2.00	7.20	6	88.6	0.12	2.00	20	14	19	12	15	3
0.14	47	0.02	2.33	7.23	7	88.9	0.14	2.33	21	14	18	12	15	3
0.16	49	0.03	2.67	7.25	7	89.1	0.16	2.67	21	14	18	12	15	3
0.18	51	0.03	3.00	7.28	7	89.1	0.18	3.00	21	14	19	12	15	4
0.2	52	0.03	3.33	7.30	7	89.3	0.20	3.33	21	14	19	12	15	4
0.22	54	0.04	3.67	7.33	7	89.3	0.22	3.67	21	14	19	12	15	4
0.24	55	0.04	4.00	7.35	7	89.3	0.24	4.00	21	14	19	12	15	4
0.26	58	0.04	4.33	7.38	8	89.2	0.26	4.33	22	14	19	12	16	4
0.28	65	0.05	4.67	7.41	9	89.2	0.28	4.67	23	14	20	12	16	4
0.3	69	0.05	5.00	7.43	9	89.3	0.30	5.00	23	14	21	11	16	5
0.32	73	0.05	5.33	7.46	10	89.5	0.35	5.83	24	14	21	11	16	5
0.34	74	0.06	5.67	7.48	10	89.5	0.40	6.67	24	14	21	11	16	5
0.36	74	0.06	6.00	7.51	10	89.4	0.45	7.50	24	14	21	11	16	5
0.38	75	0.06	6.33	7.54	10	89.4	0.50	8.33	24	14	21	11	16	5
0.4	79	0.07	6.67	7.56	10	89.5	0.55	9.17	24	14	22	11	17	5
0.42	81	0.07	7.00	7.59	11	89.3	0.60	10.00	25	14	22	12	17	5
0.44	83	0.07	7.33	7.62	11	89.2	0.65	10.83	25	14	22	12	17	5
0.46	83	0.08	7.67	7.65	11	89.0	0.70	11.67	25	14	23	12	17	5
0.48	85	0.08	8.00	7.67	11	89.0	0.75	12.50	25	14	23	12	17	6
0.5	86	0.08	8.33	7.70	11	88.8	0.80	13.33	25	14	23	12	18	6
0.52	87	0.09	8.67	7.73	11	88.8	0.85	14.17	26	14	24	12	18	6
0.54	91	0.09	9.00	7.76	12	88.6	0.90	15.00	26	14</				

s1	s1'	s3	s3'	s1+s3/2	s1'+s3'/2	s1-s3/2	s1'-s3'/2	teta	2 teta	2 TETA	COS 2 TETA	SIN 2 TETA	S TETA	GAO TET/	s' teta	t' teta
27	28	14	16	20.5	22	6.5	6	0	0	0	1	0	27	0	28	0
27	28	14	16	20.5	22	6.5	6	-1	-2	-0.03490658	0.999390827	-0.0348995	26.996	0.22685	27.9963	0.2094
27	28	14	16	20.5	22	6.5	6	-2	-4	-0.06981317	0.99756405	-0.06975647	26.9842	0.45342	27.9854	0.41854
27	28	14	16	20.5	22	6.5	6	-3	-6	-0.10471975	0.994521896	-0.10452846	26.9644	0.67943	27.9671	0.62717
27	28	14	16	20.5	22	6.5	6	-4	-8	-0.13962634	0.990268069	-0.1391731	26.9367	0.90463	27.9416	0.83504
27	28	14	16	20.5	22	6.5	6	-5	-10	-0.17453292	0.984807754	-0.17364817	26.9013	1.12871	27.9088	1.04189
27	28	14	16	20.5	22	6.5	6	-6	-12	-0.2094395	0.978147602	-0.20791168	26.858	1.35143	27.8689	1.24747
27	28	14	16	20.5	22	6.5	6	-7	-14	-0.24434609	0.970295728	-0.24192189	26.8069	1.57249	27.8218	1.45153
27	28	14	16	20.5	22	6.5	6	-8	-16	-0.27925267	0.961261698	-0.27563735	26.7482	1.79164	27.7676	1.65382
27	28	14	16	20.5	22	6.5	6	-9	-18	-0.31415926	0.951056519	-0.30901699	26.6819	2.00861	27.7063	1.8541
27	28	14	16	20.5	22	6.5	6	-10	-20	-0.34906584	0.939692624	-0.34202013	26.608	2.22313	27.6382	2.05212
27	28	14	16	20.5	22	6.5	6	-11	-22	-0.38397242	0.927183859	-0.37460658	26.5267	2.43494	27.5631	2.24764
27	28	14	16	20.5	22	6.5	6	-12	-24	-0.41887901	0.913545463	-0.40673663	26.438	2.64379	27.4813	2.44042
27	28	14	16	20.5	22	6.5	6	-13	-26	-0.45378559	0.898794052	-0.43837113	26.3422	2.84941	27.3928	2.63023
27	28	14	16	20.5	22	6.5	6	-14	-28	-0.48869218	0.8829476	-0.46947155	26.2392	3.05157	27.2977	2.81683
27	28	14	16	20.5	22	6.5	6	-15	-30	-0.52359876	0.866025412	-0.49999999	26.1292	3.25	27.1962	3
27	28	14	16	20.5	22	6.5	6	-16	-32	-0.55850534	0.848048105	-0.52991925	26.0123	3.44448	27.0883	3.17952
27	28	14	16	20.5	22	6.5	6	-17	-34	-0.59341193	0.829037582	-0.55919289	25.8873	3.63475	26.9742	3.35516
27	28	14	16	20.5	22	6.5	6	-18	-36	-0.62831851	0.809017005	-0.58778524	25.7586	3.8206	26.8541	3.52671
27	28	14	16	20.5	22	6.5	6	-19	-38	-0.6632251	0.788010766	-0.61566146	25.6221	4.0018	26.7281	3.69397
27	28	14	16	20.5	22	6.5	6	-20	-40	-0.69813168	0.766044456	-0.64278759	25.4793	4.17812	26.5963	3.85673
27	28	14	16	20.5	22	6.5	6	-21	-42	-0.73303826	0.74314484	-0.66913059	25.3304	4.34935	26.4589	4.01478
27	28	14	16	20.5	22	6.5	6	-22	-44	-0.76794485	0.719339816	-0.69465835	25.1757	4.51528	26.316	4.16795
27	28	14	16	20.5	22	6.5	6	-23	-46	-0.80285143	0.694658388	-0.71933978	25.0153	4.67571	26.168	4.31604
27	28	14	16	20.5	22	6.5	6	-24	-48	-0.83775802	0.669130625	-0.74314481	24.8493	4.83044	26.0148	4.45887
27	28	14	16	20.5	22	6.5	6	-25	-50	-0.8726646	0.64278763	-0.76604443	24.6781	4.97929	25.8567	4.59627
27	28	14	16	20.5	22	6.5	6	-26	-52	-0.90757118	0.615661497	-0.78801074	24.5018	5.12207	25.694	4.72806
27	28	14	16	20.5	22	6.5	6	-27	-54	-0.94247777	0.587785275	-0.80901698	24.3206	5.25861	25.5267	4.8541
27	28	14	16	20.5	22	6.5	6	-28	-56	-0.97738435	0.559192928	-0.82903756	24.1348	5.38874	25.3552	4.97423
27	28	14	16	20.5	22	6.5	6	-29	-58	-1.01229094	0.52991929	-0.84804808	23.9445	5.51231	25.1795	5.08829
27	28	14	16	20.5	22	6.5	6	-30	-60	-1.04719752	0.500000027	-0.86602539	23.75	5.62917	25	5.19615
27	28	14	16	20.5	22	6.5	6	-31	-62	-1.0821041	0.469471591	-0.88294758	23.5516	5.73916	24.8168	5.29769
27	28	14	16	20.5	22	6.5	6	-32	-64	-1.11701069	0.438371177	-0.89879403	23.3494	5.84216	24.6302	5.39276
27	28	14	16	20.5	22	6.5	6	-33	-66	-1.15191727	0.406736674	-0.91354544	23.1438	5.93805	24.4404	5.48127
27	28	14	16	20.5	22	6.5	6	-34	-68	-1.18682386	0.374606626	-0.92718384	22.9349	6.02669	24.2476	5.5631
27	28	14	16	20.5	22	6.5	6	-35	-70	-1.22173044	0.342020178	-0.93969261	22.7231	6.108	24.0521	5.63816
27	28	14	16	20.5	22	6.5	6	-36	-72	-1.25663702	0.30901703	-0.9510565	22.5086	6.18187	23.8541	5.70634
27	28	14	16	20.5	22	6.5	6	-37	-74	-1.29154361	0.275637393	-0.96126169	22.2916	6.2482	23.6538	5.76757
27	28	14	16	20.5	22	6.5	6	-38	-76	-1.32645019	0.241921934	-0.97029572	22.0725	6.30692	23.4515	5.82177
27	28	14	16	20.5	22	6.5	6	-39	-78	-1.36135678	0.20791173	-0.97814759	21.8514	6.35796	23.2475	5.86889
27	28	14	16	20.5	22	6.5	6	-40	-80	-1.39626336	0.173648219	-0.98480775	21.6287	6.40125	23.0419	5.90885
27	28	14	16	20.5	22	6.5	6	-41	-82	-1.43116994	0.139173143	-0.99026806	21.4046	6.43674	22.835	5.94161
27	28	14	16	20.5	22	6.5	6	-42	-84	-1.46607653	0.104528507	-0.99452189	21.1794	6.46439	22.6272	5.96713
27	28	14	16	20.5	22	6.5	6	-43	-86	-1.50098311	0.069756518	-0.99756405	20.9534	6.48417	22.4185	5.98538
27	28	14	16	20.5	22	6.5	6	-44	-88	-1.53588897	0.034899542	-0.99939083	20.7268	6.49604	22.2094	5.99634
27	28	14	16	20.5	22	6.5	6	-45	-90	-1.57079628	4.67949E-08	-1	20.5	6.5	22	6
27	28	14	16	20.5	22	6.5	6	-46	-92	-1.60570286	-0.03489945	-0.99939083	20.2732	6.49604	21.7906	5.99634
27	28	14	16	20.5	22	6.5	6	-47	-94	-1.64060945	-0.06975642	-0.99756405	20.0466	6.48417	21.5815	5.98538
27	28	14	16	20.5	22	6.5	6	-48	-96	-1.67551603	-0.10452841	-0.9945219	19.8206	6.46439	21.3728	5.96713
27	28	14	16	20.5	22	6.5	6	-49	-98	-1.71042262	-0.13917305	-0.99026808	19.5954	6.43674	21.165	5.94161
27	28	14	16	20.5	22	6.5	6	-50	-100	-1.7453292	-0.17364813	-0.98480776	19.3713	6.40125	20.9581	5.90885
27	28	14	16	20.5	22	6.5	6	-51	-102	-1.78023578	-0.20791164	-0.97814761	19.1486	6.35796	20.7525	5.86889
27	28	14	16	20.5	22	6.5	6	-52	-104	-1.81514237	-0.24192184	-0.97029574	18.9275	6.30692	20.5485	5.82177
27	28	14	16	20.5	22	6.5	6	-53	-106	-1.85004895	-0.2756373	-0.96126171	18.7084	6.2482	20.3462	5.76757
27	28	14	16	20.5	22	6.5	6	-54	-108	-1.88495554	-0.30901694	-0.95105653	18.4914	6.18187	20.1459	5.70634
27	28	14	16	20.5	22	6.5	6	-55	-110	-1.91986212	-0.34202009	-0.93969264	18.2769	6.108	19.9479	5.63816
27	28	14	16	20.5	22	6.5	6	-56	-112	-1.9547687	-0.37460654	-0.92718388	18.0651	6.0267	19.7524	5.5631
27	28	14	16	20.5	22	6.5	6	-57	-114	-1.98967529	-0.40673659	-0.91354548	17.8562	5.93805	19.5596	5.48127
27	28	14	16	20.5	22	6.5	6	-58	-116	-2.02458187	-0.43837109	-0.89879407	17.6506	5.84216	19.3698	5.39276
27	28	14	16	20.5	22	6.5	6	-59	-118	-2.05948846	-0.46947151	-0.88294762	17.4484	5.73916	19.1832	5.29769
27	28	14	16	20.5	22	6.5	6	-60	-120	-2.09439504	-0.49999995	-0.86602543	17.25	5.62917	19	5.19615
27	28	14	16	20.5	22	6.5	6	-61	-122	-2.12930162	-0.52991921	-0.84804813	17.0555	5.51231	18.8205	5.08829
27	28	14	16	20.5	22	6.5	6	-62	-124	-2.16420821	-0.55919285	-0.82903761	16.8652	5.38874	18.6448	4.97423
27	28	14	16	20.5	22	6.5	6	-63	-126	-2.19911479	-0.5877852	-0.80901703	16.6794	5.25861	18.4733	4.8541
27	28	14	16	20.5	22	6.5	6	-64	-128	-2.23402138	-0.61566142	-0.78801079	16.4982	5.12207	18.306	4.72806
27	28	14	16	20.5	22	6.5	6	-65	-130	-2.26892796	-0.64278756	-0.76604449	16.3219	4.97929	18.1433	4.59627
27	28	14	16	20.5	22	6.5	6	-66	-132	-2.30383454	-0.66913056	-0.74314487	16.1507	4.83044	17.9852	4.45887
27	28	14	16	20.5	22	6.5	6	-67	-134	-2.33874113	-0.69465832	-0.71933985	15.9847	4.67571	17.8321	4.31604
27	28	14	16	20.5	22	6.5	6	-68	-136	-2.37364771	-0.71933975	-0.69465842	15.8243	4.51528	17.684	4.16795
27	28	14	16	20.5	22	6.5	6	-69	-138	-2.4085543	-0.74314478	-0.66913066	15.6696	4.34935	17.5411	4.01478
27	28	14	16	20.5	22	6.5	6	-70	-140	-2.44346088	-0.7660444	-0.64278767	15.5207	4.17812	17.4037	3.85673
27	28	14	16	20.5	22	6.5	6	-71	-142	-2.47836746	-0.78801071	-0.61566153	15.3779	4.0018	17.2719	3.69397
27	28	14	16	20.5	22	6.5	6	-72</								

24-1-39-5C
78Pa

Disp(in)	Load(28)	strain	strain(%)	area	stress(28)	pp(28)	STRAIN(%)	dpp(28)	SIGMA1A	SIGMA3A	SIGMA1A	SIGMA3A	P/A	QA
0	0	0.00	0.00	7.06	0	90.3	0.00	0.00	28	28	28	28	28	28
0.01	0	0.00	0.17	7.07	0	90.4	0.01	0.17	28	28	28	28	28	28
0.02	7	0.00	0.33	7.08	1	90.5	0.02	0.33	28	28	28	28	28	28
0.03	18	0.01	0.50	7.10	3	90.6	0.03	0.50	31	28	30	28	28	29
0.04	25	0.01	0.67	7.11	4	90.7	0.04	0.67	32	28	31	28	28	29
0.05	31	0.01	0.83	7.12	4	90.9	0.05	0.83	32	28	32	27	27	30
0.06	37	0.01	1.00	7.13	5	91.0	0.06	1.00	33	28	33	27	27	30
0.07	42	0.01	1.17	7.14	6	91.2	0.07	1.17	34	28	33	27	27	30
0.08	47	0.01	1.33	7.16	7	91.3	0.08	1.33	35	28	34	27	27	30
0.09	51	0.02	1.50	7.17	7	91.5	0.09	1.50	35	28	34	27	27	30
0.1	58	0.02	1.67	7.18	8	91.6	0.10	1.67	36	28	35	27	27	31
0.12	64	0.02	2.00	7.20	9	91.9	0.12	2.00	37	28	35	26	26	31
0.14	69	0.02	2.33	7.23	10	92.0	0.14	2.33	38	28	36	26	26	31
0.16	73	0.03	2.67	7.25	10	92.0	0.16	2.67	38	28	36	26	26	31
0.18	77	0.03	3.00	7.28	11	92.3	0.18	3.00	39	28	37	26	26	31
0.2	82	0.03	3.33	7.30	11	92.4	0.20	3.33	39	28	37	26	26	32
0.22	85	0.04	3.67	7.33	12	92.5	0.22	3.67	40	28	37	26	26	32
0.24	87	0.04	4.00	7.35	12	92.5	0.24	4.00	40	28	38	26	26	32
0.26	87	0.04	4.33	7.38	12	92.7	0.26	4.33	40	28	37	26	26	31
0.28	88	0.05	4.67	7.41	12	93.1	0.28	4.67	40	28	37	25	25	31
0.3	90	0.05	5.00	7.43	12	93.2	0.30	5.00	40	28	37	25	25	31
0.32	92	0.05	5.33	7.46	12	93.4	0.35	5.83	40	28	37	25	25	31
0.34	92	0.06	5.67	7.48	12	93.6	0.40	6.67	40	28	37	25	25	31
0.36	91	0.06	6.00	7.51	12	93.6	0.45	7.50	40	28	37	25	25	31
0.38	92	0.06	6.33	7.54	12	93.7	0.50	8.33	40	28	37	25	25	31
0.4	94	0.07	6.67	7.56	12	93.8	0.55	9.17	40	28	37	25	25	31
0.42	94	0.07	7.00	7.59	12	93.7	0.60	10.00	40	28	37	25	25	31
0.44	96	0.07	7.33	7.62	13	93.6	0.65	10.83	41	28	37	25	25	31
0.46	96	0.08	7.67	7.65	13	93.2	0.70	11.67	41	28	38	25	25	31
0.48	97	0.08	8.00	7.67	13	93.1	0.75	12.50	41	28	38	25	25	32
0.5	99	0.08	8.33	7.70	13	92.8	0.80	13.33	41	28	38	26	26	32
0.52	103	0.09	8.67	7.73	13	92.5	0.85	14.17	41	28	39	26	26	32
0.54	106	0.09	9.00	7.76	14	92.2	0.90	15.00	42	28	40	26	26	33
0.56	107	0.09	9.33	7.79	14	91.8	0.95	15.83	42	28	40	27	27	33
0.58	110	0.10	9.67	7.82	14	91.6	1.00	16.67	42	28	41	27	27	34
0.6	111	0.10	10.00	7.84	14	91.3	1.05	17.50	42	28	41	27	27	34
0.62	114	0.10	10.33	7.87	14	90.9	1.10	18.33	42	28	42	27	27	35
0.64	115	0.11	10.67	7.90	15	90.6	1.15	19.17	43	28	42	28	28	35
0.66	118	0.11	11.00	7.93	15	90.1	1.20	20.00	43	28	43	28	28	35
0.68	120	0.11	11.33	7.96	15	90.0	1.25	20.83	43	28	43	28	28	36
0.7	121	0.12	11.67	7.99	15	89.8	1.30	21.67	43	28	44	29	29	36
0.72	124	0.12	12.00	8.02	15	89.7	1.35	22.50	43	28	44	29	29	36
0.74	124	0.12	12.33	8.05	15	89.8	1.40	23.33	43	28	44	29	29	36
0.76	125	0.13	12.67	8.08	15	89.6	1.45	24.17	43	28	44	29	29	36
0.78	125	0.13	13.00	8.11	15	89.4	1.50	25.00	43	28	44	29	29	36
0.8	127	0.13	13.33	8.15	16	89.3	1.55	25.83	44	28	45	29	29	37
0.82	129	0.14	13.67	8.18	16	89.1	1.60	26.67	44	28	45	29	29	37
0.84	130	0.14	14.00	8.21	16	88.9	1.65	27.50	44	28	45	29	29	37
0.86	131	0.14	14.33	8.24	16	88.8	1.70	28.33	44	28	45	30	30	37
0.88	131	0.15	14.67	8.27	16	88.8	1.75	29.17	44	28	45	30	30	37
0.9	131	0.15	15.00	8.31	16	88.7	1.80	30.00	44	28	45	30	30	37

s1	s1'	s3	s3'	s1+s3/2	s1'+s3'/2	s1-s3/2	s1'-s3'/2	teta	2 teta	2 TETA	COS 2 TETA	SIN 2 TETA	S TETA	GAO TET/	s' teta	t' teta
44	45	28	30	36	37.5	8	7.5	0	0	0	1	0	44	0	45	0
44	45	28	30	36	37.5	8	7.5	-1	-2	-0.03490658	0.999390827	-0.0348995	43.9951	0.2792	44.9954	0.26175
44	45	28	30	36	37.5	8	7.5	-2	-4	-0.06981317	0.99756405	-0.06975647	43.9805	0.55805	44.9817	0.52317
44	45	28	30	36	37.5	8	7.5	-3	-6	-0.10471975	0.994521896	-0.10452846	43.9562	0.83623	44.9589	0.78396
44	45	28	30	36	37.5	8	7.5	-4	-8	-0.13962634	0.990268069	-0.1391731	43.9221	1.11338	44.927	1.0438
44	45	28	30	36	37.5	8	7.5	-5	-10	-0.17453292	0.984807754	-0.17364817	43.8785	1.38919	44.8861	1.30236
44	45	28	30	36	37.5	8	7.5	-6	-12	-0.2094395	0.978147602	-0.20791168	43.8252	1.66329	44.8361	1.55934
44	45	28	30	36	37.5	8	7.5	-7	-14	-0.24434609	0.970295728	-0.24192189	43.7624	1.93538	44.7772	1.81441
44	45	28	30	36	37.5	8	7.5	-8	-16	-0.27925267	0.961261698	-0.27563735	43.6901	2.2051	44.7095	2.06728
44	45	28	30	36	37.5	8	7.5	-9	-18	-0.31415926	0.951056519	-0.30901699	43.6085	2.47214	44.6329	2.31763
44	45	28	30	36	37.5	8	7.5	-10	-20	-0.34906584	0.939692624	-0.34202013	43.5175	2.73616	44.5477	2.56515
44	45	28	30	36	37.5	8	7.5	-11	-22	-0.38397242	0.927183859	-0.37460658	43.4175	2.99685	44.4539	2.80955
44	45	28	30	36	37.5	8	7.5	-12	-24	-0.41887901	0.913545463	-0.40673663	43.3084	3.25389	44.3516	3.05052
44	45	28	30	36	37.5	8	7.5	-13	-26	-0.45378559	0.898794052	-0.43837113	43.1904	3.50697	44.241	3.28778
44	45	28	30	36	37.5	8	7.5	-14	-28	-0.48869218	0.8829476	-0.46947155	43.0636	3.75577	44.1221	3.52104
44	45	28	30	36	37.5	8	7.5	-15	-30	-0.52359876	0.866025412	-0.49999999	42.9282	4	43.9952	3.75
44	45	28	30	36	37.5	8	7.5	-16	-32	-0.55850534	0.848048105	-0.52991925	42.7844	4.23935	43.8604	3.97439
44	45	28	30	36	37.5	8	7.5	-17	-34	-0.59341193	0.829037582	-0.55919289	42.6323	4.47354	43.7178	4.19395
44	45	28	30	36	37.5	8	7.5	-18	-36	-0.62831851	0.809017005	-0.58778524	42.4721	4.70228	43.5676	4.40839
44	45	28	30	36	37.5	8	7.5	-19	-38	-0.6632251	0.788010766	-0.61566146	42.3041	4.92529	43.4101	4.61746
44	45	28	30	36	37.5	8	7.5	-20	-40	-0.69813168	0.766044456	-0.64278759	42.1284	5.1423	43.2453	4.82091
44	45	28	30	36	37.5	8	7.5	-21	-42	-0.73303826	0.74314484	-0.66913059	41.9452	5.35304	43.0736	5.01848
44	45	28	30	36	37.5	8	7.5	-22	-44	-0.76794485	0.719339816	-0.69465835	41.7547	5.55727	42.895	5.20994
44	45	28	30	36	37.5	8	7.5	-23	-46	-0.80285143	0.694658388	-0.71933978	41.5573	5.75472	42.7099	5.39505
44	45	28	30	36	37.5	8	7.5	-24	-48	-0.83775802	0.669130625	-0.74314481	41.353	5.94516	42.5185	5.57359
44	45	28	30	36	37.5	8	7.5	-25	-50	-0.8726646	0.64278763	-0.76604443	41.1423	6.12836	42.3209	5.74533
44	45	28	30	36	37.5	8	7.5	-26	-52	-0.90757118	0.615661497	-0.78801074	40.9253	6.30409	42.1175	5.91008
44	45	28	30	36	37.5	8	7.5	-27	-54	-0.94247777	0.587785275	-0.80901698	40.7023	6.47214	41.9084	6.06763
44	45	28	30	36	37.5	8	7.5	-28	-56	-0.97738435	0.559192928	-0.82903756	40.4735	6.6323	41.6939	6.21778
44	45	28	30	36	37.5	8	7.5	-29	-58	-1.01229094	0.52991929	-0.84804808	40.2394	6.78438	41.4744	6.36036
44	45	28	30	36	37.5	8	7.5	-30	-60	-1.04719752	0.500000027	-0.86602539	40	6.9282	41.25	6.49519
44	45	28	30	36	37.5	8	7.5	-31	-62	-1.0821041	0.469471591	-0.88294758	39.7558	7.06358	41.021	6.62211
44	45	28	30	36	37.5	8	7.5	-32	-64	-1.11701069	0.438371177	-0.89879403	39.507	7.19035	40.7878	6.74096
44	45	28	30	36	37.5	8	7.5	-33	-66	-1.15191727	0.406736674	-0.91354544	39.2539	7.30836	40.5505	6.85159
44	45	28	30	36	37.5	8	7.5	-34	-68	-1.18682386	0.374606626	-0.92718384	38.9969	7.41747	40.3095	6.95388
44	45	28	30	36	37.5	8	7.5	-35	-70	-1.22173044	0.342020178	-0.93969261	38.7362	7.51754	40.0652	7.04769
44	45	28	30	36	37.5	8	7.5	-36	-72	-1.25663702	0.30901703	-0.9510565	38.4721	7.60845	39.8176	7.13292
44	45	28	30	36	37.5	8	7.5	-37	-74	-1.29154361	0.275637393	-0.96126169	38.2051	7.69009	39.5673	7.20946
44	45	28	30	36	37.5	8	7.5	-38	-76	-1.32645019	0.241921934	-0.97029572	37.9354	7.76237	39.3144	7.27722
44	45	28	30	36	37.5	8	7.5	-39	-78	-1.36135678	0.20791173	-0.97814759	37.6633	7.82518	39.0593	7.33611
44	45	28	30	36	37.5	8	7.5	-40	-80	-1.39626336	0.173648219	-0.98480775	37.3892	7.87846	38.8024	7.38606
44	45	28	30	36	37.5	8	7.5	-41	-82	-1.43116994	0.139173143	-0.99026806	37.1134	7.92214	38.5438	7.42701
44	45	28	30	36	37.5	8	7.5	-42	-84	-1.46607653	0.104528507	-0.99452189	36.8362	7.95618	38.284	7.45891
44	45	28	30	36	37.5	8	7.5	-43	-86	-1.50098311	0.069756518	-0.99756405	36.5581	7.98051	38.0232	7.48173
44	45	28	30	36	37.5	8	7.5	-44	-88	-1.5358897	0.034899542	-0.99939083	36.2792	7.99513	37.7617	7.49543
44	45	28	30	36	37.5	8	7.5	-45	-90	-1.57079628	4.67949E-08	-1	36	8	37.5	7.5
44	45	28	30	36	37.5	8	7.5	-46	-92	-1.60570286	-0.03489945	-0.99939083	35.7208	7.99513	37.2383	7.49543
44	45	28	30	36	37.5	8	7.5	-47	-94	-1.64060945	-0.06975642	-0.99756405	35.4419	7.98051	36.9768	7.48173
44	45	28	30	36	37.5	8	7.5	-48	-96	-1.67551603	-0.10452841	-0.9945219	35.1638	7.95618	36.716	7.45891
44	45	28	30	36	37.5	8	7.5	-49	-98	-1.71042262	-0.13917305	-0.99026808	34.8866	7.92214	36.4562	7.42701
44	45	28	30	36	37.5	8	7.5	-50	-100	-1.7453292	-0.17364813	-0.98480776	34.6108	7.87846	36.1976	7.38606
44	45	28	30	36	37.5	8	7.5	-51	-102	-1.78023578	-0.20791164	-0.97814761	34.3367	7.82518	35.9407	7.33611
44	45	28	30	36	37.5	8	7.5	-52	-104	-1.81514237	-0.24192184	-0.97029574	34.0646	7.76237	35.6856	7.27722
44	45	28	30	36	37.5	8	7.5	-53	-106	-1.85004895	-0.2756373	-0.96126171	33.7949	7.69009	35.4327	7.20946
44	45	28	30	36	37.5	8	7.5	-54	-108	-1.88495554	-0.30901694	-0.95105653	33.5279	7.60845	35.1824	7.13292
44	45	28	30	36	37.5	8	7.5	-55	-110	-1.91986212	-0.34202009	-0.93969264	33.2638	7.51754	34.9348	7.04769
44	45	28	30	36	37.5	8	7.5	-56	-112	-1.9547687	-0.37460654	-0.92718388	33.0031	7.41747	34.6905	6.95388
44	45	28	30	36	37.5	8	7.5	-57	-114	-1.98967529	-0.40673659	-0.91354548	32.7461	7.30836	34.4495	6.85159
44	45	28	30	36	37.5	8	7.5	-58	-116	-2.02458187	-0.43837109	-0.89879407	32.493	7.19035	34.2122	6.74096
44	45	28	30	36	37.5	8	7.5	-59	-118	-2.05948846	-0.46947151	-0.88294762	32.2442	7.06358	33.979	6.62211
44	45	28	30	36	37.5	8	7.5	-60	-120	-2.09439504	-0.49999995	-0.86602543	32	6.9282	33.75	6.49519
44	45	28	30	36	37.5	8	7.5	-61	-122	-2.12930162	-0.52991921	-0.84804813	31.7606	6.78439	33.5256	6.36036
44	45	28	30	36	37.5	8	7.5	-62	-124	-2.16420821	-0.55919285	-0.82903761	31.5265	6.6323	33.3061	6.21778
44	45	28	30	36	37.5	8	7.5	-63	-126	-2.19911479	-0.5877852	-0.80901703	31.2977	6.47214	33.0916	6.06763
44	45	28	30	36	37.5	8	7.5	-64	-128	-2.23402138	-0.61566142	-0.78801079	31.0747	6.30409	32.8825	5.91008
44	45	28	30	36	37.5	8	7.5	-65	-130	-2.26892796	-0.64278756	-0.76604449	30.8577	6.12836	32.6791	5.74533
44	45	28	30	36	37.5	8	7.5	-66	-132	-2.30383454	-0.66913056	-0.74314487	30.647	5.94516	32.4815	5.57359
44	45	28	30	36	37.5	8	7.5	-67	-134	-2.33874111	-0.69465832	-0.71933985	30.4427	5.75472	32.2901	5.39505
44	45	28	30	36	37.5	8	7.5	-68	-136	-2.37364773	-0.71933975	-0.69465842	30.2453	5.55727	32.105	5.20994
44	45	28	30	36	37.5	8	7.5	-69	-138	-2.4085543	-0.74314478	-0.66913066	30.0548	5.35305	31.9264	5.01848
44	45	28	30	36	37.5	8	7.5	-70	-140	-2.44346088	-0.7660444	-0.64278767	29.8716	5.1423	31.7547	4.82091
44	45	28	30	36	37.5	8	7.5	-71	-142	-2.47836746	-0.78801071	-0.61566153	29.6959	4.92529	31.5899	4.61746
44	45	28	30	36	37.5	8	7.5									



KEANTAN LABORATORIES

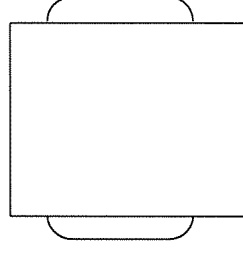
www.keantanlabs.com
email: info@keantanlabs.com

SUMMARY OF LABORATORY TEST RESULT

PROJECT NAME.: Argonaut Mine Tailings KTL NO.: 05-318-123
PROJECT NO.: 402277002 CLIENT.: Ninyo & Moore
DATE.: 11/10/2014 SUMMARIZED BY.: K. Tan

Boring NO.	DEPTH (FT)	Diameter (In)	Height (In)	MOISTURE CONTENT (%) ASTM D 2937	DRY DENSITY (pcf) ASTM D 2937	WET DENSITY (pcf) ASTM D 2937	Void Ratio	Degree Of Saturation (%)
2f-3-57.5-ST	n/a	3	5	19.29	110.83	132.21	.532	23
2f-3-57.5-ST	n/a	3	5	22.67	103.73	127.24	.613	27
2f-3-57.5-ST	n/a	3	5	20.08	103.91	124.78	.622	24

Soil Description: Color: Brown, Moisture: Wet, Grain: Silt with Gravel
Atterberg Limit: Non Plastic
Specimen Type: Undisturbed Drive
Remark: Sieve with Hydrometer included



Failure Sketch

GRAIN SIZE DISTRIBUTION

ASTM D422
Sieve and Hydrometer

PROJECT NAME: Argonaut Mine Tailings

SAMPLE NO.: 2F-3-57.5-ST

DEPTH(FT)

n/a

KTL NO.: 05-318-123

PROJECT NO.: n/a

DATE: 11/10/2014

TECH.: jk

UNIFIED SOIL CLASSIFICATION: NEED DATA
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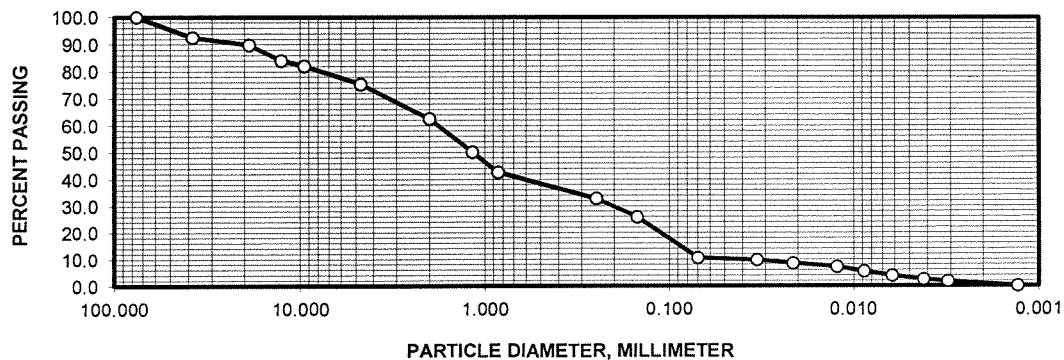
Moisture Content Determination:	20.68%
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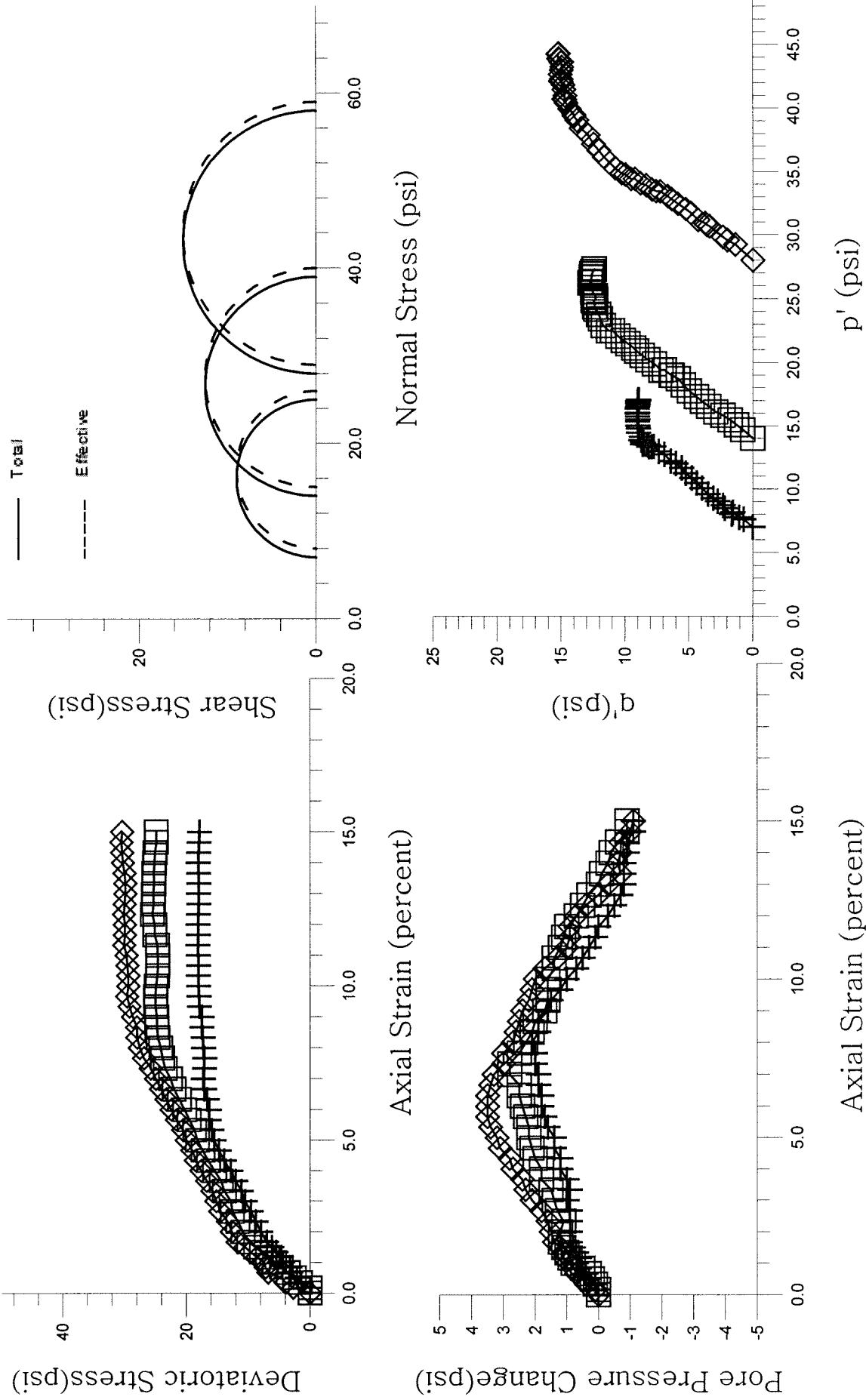
Pan Number:	KB-44
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Pan + Dry Soil, gms.	1409.7
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Wt. of Pan, gms.	84.5
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Wt. of Dry Soil, gms.	1325.2
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[illegible]



Symbol	BORING NO.	SAMPLE NO.	DEPTH (FT)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	CELL PRESSURE (PSI)	BACK PRESSURE (PSI)	EFFECTIVE STRESS (PSI)	MAX DEVIATOR STRESS (PSI)
+	N/A	2f-3-57.5-ST	n/a	19.3	110.8	87.0	80	7.0	18
□	N/A	2f-3-57.5-ST	n/a	22.7	103.7	94.0	80	14.0	25
○	N/A	2f-3-57.5-ST	n/a	20.0	103.9	108.0	80	28.0	30

21-3-5715-SC
JPS.

Disp(in)	Load(7)	strain	strain(%)	area	stress(7)	pp(7)	STRAIN(%)	dpp(7)	SIGMA1A	SIGMA3A	SIGMA1A	SIGMA3A	P/A	QA
0	0	0	0.00	0.00	7.06	0	0.00	0.00	0.0	7	7	7	7	7
0.01	0	0	0.00	0.17	7.07	0	0.01	0.17	0.0	7	7	7	7	0
0.02	10	0.00	0.33	7.08	1	83.6	0.02	0.33	0.1	8	7	8	7	0
0.03	15	0.01	0.50	7.10	2	83.8	0.03	0.50	0.3	9	7	9	7	1
0.04	22	0.01	0.67	7.11	3	83.9	0.04	0.67	0.4	10	7	10	7	1
0.05	23	0.01	0.83	7.12	3	84.1	0.05	0.83	0.6	10	7	10	7	2
0.06	31	0.01	1.00	7.13	4	84.2	0.06	1.00	0.7	11	7	11	6	2
0.07	33	0.01	1.17	7.14	5	84.1	0.07	1.17	0.6	11	7	11	6	2
0.08	39	0.01	1.33	7.16	5	84.2	0.08	1.33	0.7	12	7	12	6	2
0.09	44	0.02	1.50	7.17	6	84.3	0.09	1.50	0.8	13	7	12	6	3
0.1	50	0.02	1.67	7.18	7	84.4	0.10	1.67	0.9	14	7	13	6	3
0.12	57	0.02	2.00	7.20	8	84.4	0.12	2.00	0.9	15	7	14	6	3
0.14	63	0.02	2.33	7.23	9	84.4	0.14	2.33	0.9	16	7	15	6	4
0.16	69	0.03	2.67	7.25	10	84.4	0.16	2.67	0.9	17	7	16	6	4
0.18	76	0.03	3.00	7.28	10	84.5	0.18	3.00	1.0	17	7	16	6	5
0.2	81	0.03	3.33	7.30	11	84.4	0.20	3.33	0.9	18	7	17	6	5
0.22	88	0.04	3.67	7.33	12	84.5	0.22	3.67	1.0	19	7	18	6	6
0.24	94	0.04	4.00	7.35	13	84.7	0.24	4.00	1.2	20	7	19	6	6
0.26	102	0.04	4.33	7.38	14	84.7	0.26	4.33	1.2	21	7	20	6	6
0.28	109	0.05	4.67	7.41	15	84.9	0.28	4.67	1.4	22	7	20	6	7
0.3	115	0.05	5.00	7.43	15	84.9	0.30	5.00	1.4	22	7	21	6	7
0.32	118	0.05	5.33	7.46	16	85.1	0.35	5.83	1.6	23	7	21	5	8
0.34	122	0.06	5.67	7.48	16	85.2	0.40	6.67	1.7	23	7	22	5	8
0.36	122	0.06	6.00	7.51	16	85.3	0.45	7.50	1.8	23	7	21	5	8
0.38	125	0.06	6.33	7.54	17	85.3	0.50	8.33	1.8	24	7	22	5	8
0.4	129	0.07	6.67	7.56	17	85.4	0.55	9.17	1.9	24	7	22	5	8
0.42	131	0.07	7.00	7.59	17	85.4	0.60	10.00	1.9	24	7	22	5	9
0.44	130	0.07	7.33	7.62	17	85.5	0.65	10.83	2.0	24	7	22	5	9
0.46	130	0.08	7.67	7.65	17	85.5	0.70	11.67	2.0	24	7	22	5	9
0.48	132	0.08	8.00	7.67	17	85.6	0.75	12.50	2.1	24	7	22	5	9
0.5	133	0.08	8.33	7.70	17	85.4	0.80	13.33	1.9	24	7	22	5	9
0.52	135	0.09	8.67	7.73	17	85.4	0.85	14.17	1.9	24	7	23	5	9
0.54	135	0.09	9.00	7.76	17	85.1	0.90	15.00	1.6	24	7	23	5	9
0.56	139	0.09	9.33	7.79	18	85.0	0.95	15.83	1.5	25	7	23	5	9
0.58	140	0.10	9.67	7.82	18	84.7	1.00	16.67	1.2	25	7	24	6	9
0.6	141	0.10	10.00	7.84	18	84.5	1.05	17.50	1.0	25	7	24	6	9
0.62	142	0.10	10.33	7.87	18	84.2	1.10	18.33	0.7	25	7	24	6	9
0.64	142	0.11	10.67	7.90	18	84.0	1.15	19.17	0.5	25	7	24	6	9
0.66	143	0.11	11.00	7.93	18	83.8	1.20	20.00	0.3	25	7	25	7	9
0.68	144	0.11	11.33	7.96	18	83.6	1.25	20.83	0.1	25	7	25	7	9
0.7	144	0.12	11.67	7.99	18	83.5	1.30	21.67	0.0	25	7	25	7	9
0.72	145	0.12	12.00	8.02	18	83.2	1.35	22.50	-0.3	25	7	25	7	9
0.74	145	0.12	12.33	8.05	18	83.0	1.40	23.33	-0.5	25	7	26	8	9
0.76	145	0.13	12.67	8.08	18	82.8	1.45	24.17	-0.7	25	7	26	8	9
0.78	146	0.13	13.00	8.11	18	82.7	1.50	25.00	-0.8	25	7	26	8	9
0.8	146	0.13	13.33	8.15	18	82.7	1.55	25.83	-0.8	25	7	26	8	9
0.82	147	0.14	13.67	8.18	18	82.7	1.60	26.67	-0.8	25	7	26	8	9
0.84	148	0.14	14.00	8.21	18	82.6	1.65	27.50	-0.9	25	7	26	8	9
0.86	148	0.14	14.33	8.24	18	82.6	1.70	28.33	-0.9	25	7	26	8	9
0.88	148	0.15	14.67	8.27	18	82.4	1.75	29.17	-1.1	25	7	26	8	9
0.9	148	0.15	15.00	8.31	18	82.4	1.80	30.00	-1.1	25	7	26	8	9

s1	s1'	s3	s3'	s1+s3/2	s1'+s3'/2	s1-s3/2	s1'-s3'/2	teta	2 teta	2 TETA	COS 2 TETA	SIN 2 TETA	S TETA	AO TET/	s' teta	t' teta
25	26	7	8	16	17	9	9	0	0	0	1	0	25	0	26	0
25	26	7	8	16	17	9	9	-1	-2	-0.03490658	0.999390827	-0.0348995	24.9945	0.3141	25.9945	0.3141
25	26	7	8	16	17	9	9	-2	-4	-0.06981317	0.99756405	-0.06975647	24.9781	0.62781	25.9781	0.62781
25	26	7	8	16	17	9	9	-3	-6	-0.10471975	0.994521896	-0.10452846	24.9507	0.94076	25.9507	0.94076
25	26	7	8	16	17	9	9	-4	-8	-0.13962634	0.990268069	-0.1391731	24.9124	1.25256	25.9124	1.25256
25	26	7	8	16	17	9	9	-5	-10	-0.17453292	0.984807754	-0.17364817	24.8633	1.56283	25.8633	1.56283
25	26	7	8	16	17	9	9	-6	-12	-0.2094395	0.978147602	-0.20791168	24.8033	1.87121	25.8033	1.87121
25	26	7	8	16	17	9	9	-7	-14	-0.24434609	0.970295728	-0.24192189	24.7327	2.1773	25.7327	2.1773
25	26	7	8	16	17	9	9	-8	-16	-0.27925267	0.961261698	-0.27563735	24.6514	2.48074	25.6514	2.48074
25	26	7	8	16	17	9	9	-9	-18	-0.31415926	0.951056519	-0.30901699	24.5595	2.78115	25.5595	2.78115
25	26	7	8	16	17	9	9	-10	-20	-0.34906584	0.939692624	-0.34202013	24.4572	3.07818	25.4572	3.07818
25	26	7	8	16	17	9	9	-11	-22	-0.38397242	0.927183859	-0.37460658	24.3447	3.37146	25.3447	3.37146
25	26	7	8	16	17	9	9	-12	-24	-0.41887901	0.913545463	-0.40673663	24.2219	3.66063	25.2219	3.66063
25	26	7	8	16	17	9	9	-13	-26	-0.45378559	0.898794052	-0.43837113	24.0891	3.94534	25.0891	3.94534
25	26	7	8	16	17	9	9	-14	-28	-0.48869218	0.8829476	-0.46947155	23.9465	4.22524	24.9465	4.22524
25	26	7	8	16	17	9	9	-15	-30	-0.52359876	0.866025412	-0.49999999	23.7942	4.5	24.7942	4.5
25	26	7	8	16	17	9	9	-16	-32	-0.55850534	0.848048105	-0.52991925	23.6324	4.76927	24.6324	4.76927
25	26	7	8	16	17	9	9	-17	-34	-0.59341193	0.829037582	-0.55919289	23.4613	5.03274	24.4613	5.03274
25	26	7	8	16	17	9	9	-18	-36	-0.62831851	0.809017005	-0.58778524	23.2812	5.29007	24.2812	5.29007
25	26	7	8	16	17	9	9	-19	-38	-0.6632251	0.788010766	-0.61566146	23.0921	5.54095	24.0921	5.54095
25	26	7	8	16	17	9	9	-20	-40	-0.69813168	0.766044456	-0.64278759	22.8944	5.78509	23.8944	5.78509
25	26	7	8	16	17	9	9	-21	-42	-0.73303826	0.74314484	-0.66913059	22.6883	6.02218	23.6883	6.02218
25	26	7	8	16	17	9	9	-22	-44	-0.76794485	0.719339816	-0.69465835	22.4741	6.25193	23.4741	6.25193
25	26	7	8	16	17	9	9	-23	-46	-0.80285143	0.694658388	-0.71933978	22.2519	6.47406	23.2519	6.47406
25	26	7	8	16	17	9	9	-24	-48	-0.83775802	0.669130625	-0.74314481	22.0222	6.6883	23.0222	6.6883
25	26	7	8	16	17	9	9	-25	-50	-0.8726646	0.64278763	-0.76604443	21.7851	6.8944	22.7851	6.8944
25	26	7	8	16	17	9	9	-26	-52	-0.90757118	0.615661497	-0.78801074	21.541	7.0921	22.541	7.0921
25	26	7	8	16	17	9	9	-27	-54	-0.94247777	0.587785275	-0.80901698	21.2901	7.28115	22.2901	7.28115
25	26	7	8	16	17	9	9	-28	-56	-0.97738435	0.559192928	-0.82903756	21.0327	7.46134	22.0327	7.46134
25	26	7	8	16	17	9	9	-29	-58	-1.01229094	0.52991929	-0.84804808	20.7693	7.63243	21.7693	7.63243
25	26	7	8	16	17	9	9	-30	-60	-1.04719752	0.500000027	-0.86602539	20.5	7.79423	21.5	7.79423
25	26	7	8	16	17	9	9	-31	-62	-1.0821041	0.469471591	-0.88294758	20.2252	7.94653	21.2252	7.94653
25	26	7	8	16	17	9	9	-32	-64	-1.11701069	0.438371177	-0.89879403	19.9453	8.08915	20.9453	8.08915
25	26	7	8	16	17	9	9	-33	-66	-1.15191727	0.406736674	-0.91354544	19.6606	8.22191	20.6606	8.22191
25	26	7	8	16	17	9	9	-34	-68	-1.18682386	0.374606626	-0.92718384	19.3715	8.34465	20.3715	8.34465
25	26	7	8	16	17	9	9	-35	-70	-1.22173044	0.342020178	-0.93969261	19.0782	8.45723	20.0782	8.45723
25	26	7	8	16	17	9	9	-36	-72	-1.25663702	0.30901703	-0.9510565	18.7812	8.55951	19.7812	8.55951
25	26	7	8	16	17	9	9	-37	-74	-1.29154361	0.275637393	-0.96126169	18.4807	8.65136	19.4807	8.65136
25	26	7	8	16	17	9	9	-38	-76	-1.32645019	0.241921934	-0.97029572	18.1773	8.73266	19.1773	8.73266
25	26	7	8	16	17	9	9	-39	-78	-1.36135678	0.20791173	-0.97814759	17.8712	8.80333	18.8712	8.80333
25	26	7	8	16	17	9	9	-40	-80	-1.39626336	0.173648219	-0.98480775	17.5628	8.86327	18.5628	8.86327
25	26	7	8	16	17	9	9	-41	-82	-1.43116994	0.139173143	-0.99026806	17.2526	8.91241	18.2526	8.91241
25	26	7	8	16	17	9	9	-42	-84	-1.46607653	0.104528507	-0.99452189	16.9408	8.9507	17.9408	8.9507
25	26	7	8	16	17	9	9	-43	-86	-1.50098311	0.069756518	-0.99756405	16.6278	8.97808	17.6278	8.97808
25	26	7	8	16	17	9	9	-44	-88	-1.5358897	0.034899542	-0.99939083	16.3141	8.99452	17.3141	8.99452
25	26	7	8	16	17	9	9	-45	-90	-1.57079628	4.67949E-08	-1	16	9	17	9
25	26	7	8	16	17	9	9	-46	-92	-1.60570286	-0.03489945	-0.99939083	15.6859	8.99452	16.6859	8.99452
25	26	7	8	16	17	9	9	-47	-94	-1.64060945	-0.06975642	-0.99756405	15.3722	8.97808	16.3722	8.97808
25	26	7	8	16	17	9	9	-48	-96	-1.67551603	-0.10452841	-0.9945219	15.0592	8.9507	16.0592	8.9507
25	26	7	8	16	17	9	9	-49	-98	-1.71042262	-0.13917305	-0.99026808	14.7474	8.91241	15.7474	8.91241
25	26	7	8	16	17	9	9	-50	-100	-1.7453292	-0.17364813	-0.98480776	14.4372	8.86327	15.4372	8.86327
25	26	7	8	16	17	9	9	-51	-102	-1.78023578	-0.20791164	-0.97814761	14.1288	8.80333	15.1288	8.80333
25	26	7	8	16	17	9	9	-52	-104	-1.81514237	-0.24192184	-0.97029574	13.8227	8.73266	14.8227	8.73266
25	26	7	8	16	17	9	9	-53	-106	-1.85004895	-0.2756373	-0.96126171	13.5193	8.65136	14.5193	8.65136
25	26	7	8	16	17	9	9	-54	-108	-1.88495554	-0.30901694	-0.95105653	13.2188	8.55951	14.2188	8.55951
25	26	7	8	16	17	9	9	-55	-110	-1.91986212	-0.34202009	-0.93969264	12.9218	8.45723	13.9218	8.45723
25	26	7	8	16	17	9	9	-56	-112	-1.9547687	-0.37460654	-0.92718388	12.6285	8.34465	13.6285	8.34465
25	26	7	8	16	17	9	9	-57	-114	-1.98967529	-0.40673659	-0.91354548	12.3394	8.22191	13.3394	8.22191
25	26	7	8	16	17	9	9	-58	-116	-2.02458187	-0.43837109	-0.89879407	12.0547	8.08915	13.0547	8.08915
25	26	7	8	16	17	9	9	-59	-118	-2.05948846	-0.46947151	-0.88294762	11.7748	7.94653	12.7748	7.94653
25	26	7	8	16	17	9	9	-60	-120	-2.09439504	-0.49999995	-0.86602543	11.5	7.79423	12.5	7.79423
25	26	7	8	16	17	9	9	-61	-122	-2.12930162	-0.52991921	-0.84804813	11.2307	7.63243	12.2307	7.63243
25	26	7	8	16	17	9	9	-62	-124	-2.16420821	-0.55919285	-0.82903761	10.9673	7.46134	11.9673	7.46134
25	26	7	8	16	17	9	9	-63	-126	-2.19911479	-0.5877852	-0.80901703	10.7099	7.28115	11.7099	7.28115
25	26	7	8	16	17	9	9	-64	-128	-2.23402138	-0.61566142	-0.78801079	10.459	7.0921	11.459	7.0921
25	26	7	8	16	17	9	9	-65	-130	-2.26892796	-0.64278756	-0.76604449	10.2149	6.8944	11.2149	6.8944
25	26	7	8	16	17	9	9	-66	-132	-2.30383454	-0.66913056	-0.74314487	9.97783	6.6883	10.9778	6.6883
25	26	7	8	16	17	9	9	-67	-134	-2.33874113	-0.69465832	-0.71933985	9.74808	6.47406	10.7481	6.47406
25	26	7	8	16	17	9	9	-68	-136	-2.37364771	-0.71933975	-0.69465842	9.52594	6.25193	10.5259	6.25193
25	26	7	8	16	17	9	9	-69	-138	-2.4085543	-0.74314478	-0.66913066	9.3117	6.02218	10.3117	6.02218
25	26	7	8	16	17	9	9	-70	-140	-2.44346088	-0.7660444	-0.64278767	9.1056	5.78509	10.1056	5.78509
25	26	7	8	16	17	9	9	-71	-142	-2.47836746	-0.78801071	-0.61566153	8.9079	5.54095	9.9079	5.54095
25	26	7	8	16	17	9	9	-72	-144	-2.51327405	-0.80901695	-0.58778531	8.71885	5.29007	9.71885	5.29007
25	26	7	8	16	17	9	9	-73	-146	-2.54818063	-0.82903753	-0.55919297	8.53866	5.03274	9.53866	5.03274
25	26	7	8	16	17	9	9	-74	-148	-2.58308722	-0.84804806	-0.52991933	8.36757	4.76927	9.36757	4.76927
25																

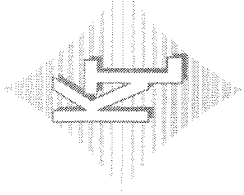
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1425

Disp(m)	Load(14j)	strain	strain(%)	area	stress(14)	pp(14)	STRAIN(%)	dpp(14)	SIGMA1A	SIGMA3A	SIGMA1A	SIGMA3A	P A	QA
0	0	0.00	0.00	0.00	7.06	0	0.00	0.00	0.0	14	14	14	14	0
0.01	0	0.00	0.17	0.00	7.07	0	0.01	0.17	0.0	14	14	14	14	0
0.02	11	0.00	0.33	0.00	7.08	2	0.02	0.33	0.1	16	14	14	14	0
0.03	18	0.01	0.50	0.00	7.10	3	0.03	0.50	0.2	17	14	16	14	1
0.04	25	0.01	0.67	0.00	7.11	4	0.04	0.67	0.3	18	14	17	14	1
0.05	33	0.01	0.83	0.00	7.12	5	0.05	0.83	0.5	19	14	18	14	2
0.06	41	0.01	1.00	0.00	7.13	6	0.06	1.00	0.8	20	14	19	14	2
0.07	49	0.01	1.17	0.00	7.14	7	0.07	1.17	0.9	21	14	20	13	3
0.08	56	0.01	1.33	0.00	7.16	8	0.08	1.33	1.0	22	14	21	13	3
0.09	63	0.02	1.50	0.00	7.17	9	0.09	1.50	1.1	23	14	22	13	4
0.1	71	0.02	1.67	0.00	7.18	10	0.10	1.67	1.2	24	14	23	13	4
0.12	78	0.02	2.00	0.00	7.20	11	0.12	2.00	1.2	25	14	24	13	5
0.14	84	0.02	2.33	0.00	7.23	12	0.14	2.33	1.1	26	14	25	13	5
0.16	91	0.03	2.67	0.00	7.25	13	0.16	2.67	1.3	27	14	26	13	6
0.18	93	0.03	3.00	0.00	7.28	13	0.18	3.00	1.4	27	14	27	13	6
0.2	101	0.03	3.33	0.00	7.30	14	0.20	3.33	1.5	28	14	28	13	6
0.22	105	0.04	3.67	0.00	7.33	14	0.22	3.67	1.8	28	14	29	13	7
0.24	113	0.04	4.00	0.00	7.35	15	0.24	4.00	1.8	29	14	30	12	7
0.26	121	0.04	4.33	0.00	7.38	16	0.26	4.33	2.0	30	14	31	12	8
0.28	128	0.05	4.67	0.00	7.41	17	0.28	4.67	2.1	31	14	32	12	8
0.3	135	0.05	5.00	0.00	7.43	18	0.30	5.00	2.2	32	14	33	12	9
0.32	139	0.05	5.33	0.00	7.46	19	0.35	5.83	2.2	33	14	34	12	9
0.34	146	0.06	5.67	0.00	7.48	20	0.40	6.67	2.3	34	14	35	12	10
0.36	152	0.06	6.00	0.00	7.51	20	0.45	7.50	2.4	34	14	36	12	10
0.38	159	0.06	6.33	0.00	7.54	21	0.50	8.33	2.5	35	14	37	12	11
0.4	166	0.07	6.67	0.00	7.56	22	0.55	9.17	2.5	36	14	38	12	11
0.42	171	0.07	7.00	0.00	7.59	23	0.60	10.00	2.8	37	14	39	12	11
0.44	178	0.07	7.33	0.00	7.62	23	0.65	10.83	2.8	37	14	40	11	11
0.46	182	0.08	7.67	0.00	7.65	24	0.70	11.67	2.5	38	14	41	11	12
0.48	185	0.08	8.00	0.00	7.67	24	0.75	12.50	2.3	38	14	42	12	12
0.5	189	0.08	8.33	0.00	7.70	25	0.80	13.33	2.1	39	14	43	12	12
0.52	191	0.09	8.67	0.00	7.73	25	0.85	14.17	2.0	39	14	44	12	12
0.54	192	0.09	9.00	0.00	7.76	25	0.90	15.00	1.7	39	14	45	12	12
0.56	194	0.09	9.33	0.00	7.79	25	0.95	15.83	1.6	39	14	46	12	12
0.58	195	0.10	9.67	0.00	7.82	25	1.00	16.67	1.6	39	14	47	12	12
0.6	195	0.10	10.00	0.00	7.84	25	1.05	17.50	1.6	39	14	48	12	12
0.62	194	0.10	10.33	0.00	7.87	25	1.10	18.33	1.4	39	14	49	12	12
0.64	194	0.11	10.67	0.00	7.90	25	1.15	19.17	1.4	39	14	50	13	12
0.66	195	0.11	11.00	0.00	7.93	25	1.20	20.00	1.2	39	14	51	13	12
0.68	196	0.11	11.33	0.00	7.96	25	1.25	20.83	1.1	39	14	52	13	12
0.7	200	0.12	11.67	0.00	7.99	25	1.30	21.67	1.0	39	14	53	13	12
0.72	201	0.12	12.00	0.00	8.02	25	1.35	22.50	0.7	39	14	54	13	12
0.74	205	0.12	12.33	0.00	8.05	25	1.40	23.33	0.5	39	14	55	13	13
0.76	204	0.13	12.67	0.00	8.08	25	1.45	24.17	0.3	39	14	56	13	13
0.78	205	0.13	13.00	0.00	8.11	25	1.50	25.00	0.0	39	14	57	13	13
0.8	205	0.13	13.33	0.00	8.15	25	1.55	25.83	-0.1	39	14	58	14	13
0.82	206	0.14	13.67	0.00	8.18	25	1.60	26.67	-0.3	39	14	59	14	13
0.84	206	0.14	14.00	0.00	8.21	25	1.65	27.50	-0.4	39	14	60	14	13
0.86	206	0.14	14.33	0.00	8.24	25	1.70	28.33	-0.6	39	14	61	15	13
0.88	205	0.15	14.67	0.00	8.27	25	1.75	29.17	-0.9	39	14	62	15	12
0.9	206	0.15	15.00	0.00	8.31	25	1.80	30.00	-0.9	39	14	63	15	12

s1	s1'	s3	s3'	s1+s3/2	s1'+s3'/2	s1-s3/2	s1'-s3'/2	teta	2 teta	2 TETA	COS 2 TETA	SIN 2 TETA	S TETA	GAO TET/	s' teta	t' teta
39	40	14	15	26.5	27.5	12.5	12.5	0	0	0	1	0	39	0	40	0
39	40	14	15	26.5	27.5	12.5	12.5	-1	-2	-0.03490658	0.999390827	-0.0348995	38.9924	0.43624	39.9924	0.43624
39	40	14	15	26.5	27.5	12.5	12.5	-2	-4	-0.06981317	0.99756405	-0.06975647	38.9696	0.87196	39.9696	0.87196
39	40	14	15	26.5	27.5	12.5	12.5	-3	-6	-0.10471975	0.994521896	-0.10452846	38.9315	1.30661	39.9315	1.30661
39	40	14	15	26.5	27.5	12.5	12.5	-4	-8	-0.13962634	0.990268069	-0.1391731	38.8784	1.73966	39.8784	1.73966
39	40	14	15	26.5	27.5	12.5	12.5	-5	-10	-0.17453292	0.984807754	-0.17364817	38.8101	2.1706	39.8101	2.1706
39	40	14	15	26.5	27.5	12.5	12.5	-6	-12	-0.2094395	0.978147602	-0.20791168	38.7268	2.5989	39.7268	2.5989
39	40	14	15	26.5	27.5	12.5	12.5	-7	-14	-0.24434609	0.970295728	-0.24192189	38.6287	3.02402	39.6287	3.02402
39	40	14	15	26.5	27.5	12.5	12.5	-8	-16	-0.27925267	0.961261698	-0.27563735	38.5158	3.44547	39.5158	3.44547
39	40	14	15	26.5	27.5	12.5	12.5	-9	-18	-0.31415926	0.951056519	-0.30901699	38.3882	3.86271	39.3882	3.86271
39	40	14	15	26.5	27.5	12.5	12.5	-10	-20	-0.34906584	0.939692624	-0.34202013	38.2462	4.27525	39.2462	4.27525
39	40	14	15	26.5	27.5	12.5	12.5	-11	-22	-0.38397242	0.927183859	-0.37460658	38.0898	4.68258	39.0898	4.68258
39	40	14	15	26.5	27.5	12.5	12.5	-12	-24	-0.41887901	0.913545463	-0.40673663	37.9193	5.08421	38.9193	5.08421
39	40	14	15	26.5	27.5	12.5	12.5	-13	-26	-0.45378559	0.898794052	-0.43837113	37.7349	5.47964	38.7349	5.47964
39	40	14	15	26.5	27.5	12.5	12.5	-14	-28	-0.48869218	0.8829476	-0.46947155	37.5368	5.86839	38.5368	5.86839
39	40	14	15	26.5	27.5	12.5	12.5	-15	-30	-0.52359876	0.866025412	-0.49999999	37.3253	6.25	38.3253	6.25
39	40	14	15	26.5	27.5	12.5	12.5	-16	-32	-0.55850534	0.848048105	-0.52991925	37.1006	6.62399	38.1006	6.62399
39	40	14	15	26.5	27.5	12.5	12.5	-17	-34	-0.59341193	0.829037582	-0.55919289	36.863	6.98991	37.863	6.98991
39	40	14	15	26.5	27.5	12.5	12.5	-18	-36	-0.62831851	0.809017005	-0.58778524	36.6127	7.34732	37.6127	7.34732
39	40	14	15	26.5	27.5	12.5	12.5	-19	-38	-0.6632251	0.788010766	-0.61566146	36.3501	7.69577	37.3501	7.69577
39	40	14	15	26.5	27.5	12.5	12.5	-20	-40	-0.69813168	0.766044456	-0.64278759	36.0756	8.03484	37.0756	8.03484
39	40	14	15	26.5	27.5	12.5	12.5	-21	-42	-0.73303826	0.74314484	-0.66913059	35.7893	8.36413	36.7893	8.36413
39	40	14	15	26.5	27.5	12.5	12.5	-22	-44	-0.76794485	0.719339816	-0.69465835	35.4917	8.68323	36.4917	8.68323
39	40	14	15	26.5	27.5	12.5	12.5	-23	-46	-0.80285143	0.694658388	-0.71933978	35.1832	8.99175	36.1832	8.99175
39	40	14	15	26.5	27.5	12.5	12.5	-24	-48	-0.83775802	0.669130625	-0.74314481	34.8641	9.28931	35.8641	9.28931
39	40	14	15	26.5	27.5	12.5	12.5	-25	-50	-0.8726646	0.64278763	-0.76604443	34.5348	9.57556	35.5348	9.57556
39	40	14	15	26.5	27.5	12.5	12.5	-26	-52	-0.90757118	0.615661497	-0.78801074	34.1958	9.85013	35.1958	9.85013
39	40	14	15	26.5	27.5	12.5	12.5	-27	-54	-0.94247777	0.587785275	-0.80901698	33.8473	10.1127	34.8473	10.1127
39	40	14	15	26.5	27.5	12.5	12.5	-28	-56	-0.97738435	0.559192928	-0.82903756	33.4899	10.363	34.4899	10.363
39	40	14	15	26.5	27.5	12.5	12.5	-29	-58	-1.01229094	0.52991929	-0.84804808	33.124	10.6006	34.124	10.6006
39	40	14	15	26.5	27.5	12.5	12.5	-30	-60	-1.04719752	0.500000027	-0.86602539	32.75	10.8253	33.75	10.8253
39	40	14	15	26.5	27.5	12.5	12.5	-31	-62	-1.0821041	0.469471591	-0.88294758	32.3684	11.0368	33.3684	11.0368
39	40	14	15	26.5	27.5	12.5	12.5	-32	-64	-1.11701089	0.438371177	-0.89879403	31.9796	11.2349	32.9796	11.2349
39	40	14	15	26.5	27.5	12.5	12.5	-33	-66	-1.15191727	0.406736674	-0.91354544	31.5842	11.4193	32.5842	11.4193
39	40	14	15	26.5	27.5	12.5	12.5	-34	-68	-1.18682386	0.374606626	-0.92718384	31.1826	11.5898	32.1826	11.5898
39	40	14	15	26.5	27.5	12.5	12.5	-35	-70	-1.22173044	0.342020178	-0.93969261	30.7753	11.7462	31.7753	11.7462
39	40	14	15	26.5	27.5	12.5	12.5	-36	-72	-1.25663702	0.30901703	-0.9510565	30.3627	11.8882	31.3627	11.8882
39	40	14	15	26.5	27.5	12.5	12.5	-37	-74	-1.29154361	0.275637393	-0.96126169	29.9455	12.0158	30.9455	12.0158
39	40	14	15	26.5	27.5	12.5	12.5	-38	-76	-1.32645019	0.241921934	-0.97029572	29.524	12.1287	30.524	12.1287
39	40	14	15	26.5	27.5	12.5	12.5	-39	-78	-1.36135678	0.20791173	-0.97814759	29.0989	12.2268	30.0989	12.2268
39	40	14	15	26.5	27.5	12.5	12.5	-40	-80	-1.39626336	0.173648219	-0.98480775	28.6706	12.3101	29.6706	12.3101
39	40	14	15	26.5	27.5	12.5	12.5	-41	-82	-1.43116994	0.139173143	-0.99026806	28.2397	12.3784	29.2397	12.3784
39	40	14	15	26.5	27.5	12.5	12.5	-42	-84	-1.46607653	0.104528507	-0.99452189	27.8066	12.4315	28.8066	12.4315
39	40	14	15	26.5	27.5	12.5	12.5	-43	-86	-1.50098311	0.069756518	-0.99756405	27.372	12.4696	28.372	12.4696
39	40	14	15	26.5	27.5	12.5	12.5	-44	-88	-1.5358897	0.034899542	-0.99939083	26.9362	12.4924	27.9362	12.4924
39	40	14	15	26.5	27.5	12.5	12.5	-45	-90	-1.57079628	4.67949E-08	-1	26.5	12.5	27.5	12.5
39	40	14	15	26.5	27.5	12.5	12.5	-46	-92	-1.60570286	-0.03489945	-0.99939083	26.0638	12.4924	27.0638	12.4924
39	40	14	15	26.5	27.5	12.5	12.5	-47	-94	-1.64060945	-0.06975642	-0.99756405	25.628	12.4696	26.628	12.4696
39	40	14	15	26.5	27.5	12.5	12.5	-48	-96	-1.67551603	-0.10452841	-0.9945219	25.1934	12.4315	26.1934	12.4315
39	40	14	15	26.5	27.5	12.5	12.5	-49	-98	-1.71042262	-0.13917305	-0.99026808	24.7603	12.3784	25.7603	12.3784
39	40	14	15	26.5	27.5	12.5	12.5	-50	-100	-1.74532292	-0.17364813	-0.98480776	24.3294	12.3101	25.3294	12.3101
39	40	14	15	26.5	27.5	12.5	12.5	-51	-102	-1.78023578	-0.20791164	-0.97814761	23.9011	12.2268	24.9011	12.2268
39	40	14	15	26.5	27.5	12.5	12.5	-52	-104	-1.81514237	-0.24192184	-0.97029574	23.476	12.1287	24.476	12.1287
39	40	14	15	26.5	27.5	12.5	12.5	-53	-106	-1.85004895	-0.2756373	-0.96126171	23.0545	12.0158	24.0545	12.0158
39	40	14	15	26.5	27.5	12.5	12.5	-54	-108	-1.88495554	-0.30901694	-0.95105653	22.6373	11.8882	23.6373	11.8882
39	40	14	15	26.5	27.5	12.5	12.5	-55	-110	-1.91986212	-0.34202009	-0.93969264	22.2247	11.7462	23.2247	11.7462
39	40	14	15	26.5	27.5	12.5	12.5	-56	-112	-1.9547687	-0.37460654	-0.92718388	21.8174	11.5898	22.8174	11.5898
39	40	14	15	26.5	27.5	12.5	12.5	-57	-114	-1.98967529	-0.40673659	-0.91354548	21.4158	11.4193	22.4158	11.4193
39	40	14	15	26.5	27.5	12.5	12.5	-58	-116	-2.02458187	-0.43837109	-0.89879407	21.0204	11.2349	22.0204	11.2349
39	40	14	15	26.5	27.5	12.5	12.5	-59	-118	-2.05948846	-0.46947151	-0.88294762	20.6316	11.0368	21.6316	11.0368
39	40	14	15	26.5	27.5	12.5	12.5	-60	-120	-2.09439504	-0.49999995	-0.86602543	20.25	10.8253	21.25	10.8253
39	40	14	15	26.5	27.5	12.5	12.5	-61	-122	-2.12930162	-0.52991921	-0.84804813	19.876	10.6006	20.876	10.6006
39	40	14	15	26.5	27.5	12.5	12.5	-62	-124	-2.16420821	-0.55919285	-0.82903761	19.5101	10.363	20.5101	10.363
39	40	14	15	26.5	27.5	12.5	12.5	-63	-126	-2.19911479	-0.5877852	-0.80901703	19.1527	10.1127	20.1527	10.1127
39	40	14	15	26.5	27.5	12.5	12.5	-64	-128	-2.23402138	-0.61566142	-0.78801079	18.8042	9.85013	19.8042	9.85013
39	40	14	15	26.5	27.5	12.5	12.5	-65	-130	-2.26892796	-0.64278756	-0.76604449	18.4652	9.57556	19.4652	9.57556
39	40	14	15	26.5	27.5	12.5	12.5	-66	-132	-2.30383454	-0.66913056	-0.74314487	18.1359	9.28931	19.1359	9.28931
39	40	14	15	26.5	27.5	12.5	12.5	-67	-134	-2.33874113	-0.69465832	-0.71933985	17.8168	8.99175	18.8168	8.99175
39	40	14	15	26.5	27.5	12.5	12.5	-68	-136	-2.37364771	-0.71933975	-0.69465842	17.5083	8.68323	18.5083	8.68323
39	40	14	15	26.5	27.5	12.5	12.5	-69	-138	-2.4085543	-0.74314478	-0.66913066	17.2107	8.3		

Disp(h _i)	Load(2θ)	strain	strain(%)	area	siress(2θ)	pp(2θ)	STRAIN(%)	dpp(2θ)	SIGMA1A	SIGMA3A	SIGMA1YA	SIGMA3YA	PA	QA
0	0	0	0.00	0.00	7.06	0	0.00	0.00	28	28	28	28	28	28
0.01	19	0.00	0.17	7.07	3	87.1	0.01	0.17	0.1	31	28	31	28	0
0.02	28	0.00	0.33	7.08	4	87.5	0.02	0.33	0.4	32	28	32	28	1
0.03	33	0.01	0.50	7.10	5	87.6	0.03	0.50	0.5	33	28	32	28	2
0.04	48	0.01	0.67	7.11	7	87.8	0.04	0.67	0.7	35	28	34	27	3
0.05	51	0.01	0.83	7.12	7	87.9	0.05	0.83	0.8	35	28	34	27	3
0.06	53	0.01	1.00	7.13	7	87.9	0.06	1.00	0.8	35	28	35	27	4
0.07	61	0.01	1.17	7.14	9	88.2	0.07	1.17	1.1	37	28	35	27	4
0.08	69	0.01	1.33	7.16	10	88.2	0.08	1.33	1.1	38	28	37	27	4
0.09	75	0.02	1.50	7.17	10	88.3	0.09	1.50	1.2	38	28	37	27	5
0.1	84	0.02	1.67	7.18	12	88.5	0.10	1.67	1.4	40	28	38	27	5
0.12	91	0.02	2.00	7.20	13	88.6	0.12	2.00	1.5	41	28	39	27	6
0.14	96	0.02	2.33	7.23	13	88.7	0.14	2.33	1.6	41	28	40	27	6
0.16	105	0.03	2.67	7.25	14	88.9	0.16	2.67	1.8	42	28	41	26	7
0.18	110	0.03	3.00	7.28	15	89.2	0.18	3.00	2.1	43	28	41	26	7
0.2	115	0.03	3.33	7.30	16	89.4	0.20	3.33	2.3	44	28	41	26	8
0.22	122	0.04	3.67	7.33	17	89.5	0.22	3.67	2.4	45	28	42	26	8
0.24	129	0.04	4.00	7.35	18	89.8	0.24	4.00	2.7	46	28	43	25	9
0.26	136	0.04	4.33	7.38	18	89.9	0.26	4.33	2.8	46	28	44	25	9
0.28	141	0.05	4.67	7.41	19	90.2	0.28	4.67	3.1	47	28	44	25	9
0.3	148	0.05	5.00	7.43	20	90.3	0.30	5.00	3.2	48	28	45	25	10
0.32	153	0.05	5.33	7.46	21	90.5	0.35	5.83	3.4	49	28	45	25	10
0.34	161	0.06	5.67	7.48	22	90.6	0.40	6.67	3.5	50	28	46	25	11
0.36	168	0.06	6.00	7.51	22	90.6	0.45	7.50	3.5	50	28	47	25	11
0.38	175	0.06	6.33	7.54	23	90.6	0.50	8.33	3.5	51	28	48	25	11
0.4	182	0.07	6.67	7.56	24	90.5	0.55	9.17	3.4	52	28	49	25	12
0.42	189	0.07	7.00	7.59	25	90.4	0.60	10.00	3.3	53	28	50	25	12
0.44	196	0.07	7.33	7.62	26	90.1	0.65	10.83	3.0	54	28	51	25	12
0.46	205	0.08	7.67	7.65	27	90.1	0.70	11.67	3.0	55	28	52	25	13
0.48	211	0.08	8.00	7.67	27	89.8	0.75	12.50	2.7	55	28	53	25	13
0.5	215	0.08	8.33	7.70	28	89.7	0.80	13.33	2.6	56	28	53	25	14
0.52	216	0.09	8.67	7.73	28	89.6	0.85	14.17	2.5	56	28	53	26	14
0.54														

s1	s1'	s3	s3'	s1+s3/2	s1'+s3'/2	s1-s3/2	s1'-s3'/2	teta	2 teta	2 TETA	COS 2 TETA	SIN 2 TETA	S TETA	GAO TETA	s' teta	t' teta
58	59	28	29	43	44	15	15	0	0	0	1	0	58	0	59	0
58	59	28	29	43	44	15	15	-1	-2	-0.03490658	0.999390827	-0.0348995	57.9909	0.52349	58.9909	0.52349
58	59	28	29	43	44	15	15	-2	-4	-0.06981317	0.99756405	-0.06975647	57.9635	1.04635	58.9635	1.04635
58	59	28	29	43	44	15	15	-3	-6	-0.10471975	0.994521896	-0.10452846	57.9178	1.56793	58.9178	1.56793
58	59	28	29	43	44	15	15	-4	-8	-0.13962634	0.990268069	-0.1391731	57.854	2.0876	58.854	2.0876
58	59	28	29	43	44	15	15	-5	-10	-0.17453292	0.984807754	-0.17364817	57.7721	2.60472	58.7721	2.60472
58	59	28	29	43	44	15	15	-6	-12	-0.2094395	0.978147602	-0.20791168	57.6722	3.11868	58.6722	3.11868
58	59	28	29	43	44	15	15	-7	-14	-0.24434609	0.970295728	-0.24192189	57.5544	3.62883	58.5544	3.62883
58	59	28	29	43	44	15	15	-8	-16	-0.27925267	0.961261698	-0.27563735	57.4189	4.13456	58.4189	4.13456
58	59	28	29	43	44	15	15	-9	-18	-0.31415926	0.951056519	-0.30901699	57.2658	4.63525	58.2658	4.63525
58	59	28	29	43	44	15	15	-10	-20	-0.34906584	0.939692624	-0.34202013	57.0954	5.1303	58.0954	5.1303
58	59	28	29	43	44	15	15	-11	-22	-0.38397242	0.927183859	-0.37460658	56.9078	5.6191	57.9078	5.6191
58	59	28	29	43	44	15	15	-12	-24	-0.41887901	0.913545463	-0.40673663	56.7032	6.10105	57.7032	6.10105
58	59	28	29	43	44	15	15	-13	-26	-0.45378559	0.898794052	-0.43837113	56.4819	6.57557	57.4819	6.57557
58	59	28	29	43	44	15	15	-14	-28	-0.48869218	0.8829476	-0.46947155	56.2442	7.04207	57.2442	7.04207
58	59	28	29	43	44	15	15	-15	-30	-0.52359876	0.866025412	-0.49999999	55.9904	7.5	56.9904	7.5
58	59	28	29	43	44	15	15	-16	-32	-0.55850534	0.848048105	-0.52991925	55.7207	7.94879	56.7207	7.94879
58	59	28	29	43	44	15	15	-17	-34	-0.59341193	0.829037582	-0.55919289	55.4356	8.38789	56.4356	8.38789
58	59	28	29	43	44	15	15	-18	-36	-0.62831851	0.809017005	-0.58778524	55.1353	8.81678	56.1353	8.81678
58	59	28	29	43	44	15	15	-19	-38	-0.66322251	0.788010766	-0.61566146	54.8202	9.23492	55.8202	9.23492
58	59	28	29	43	44	15	15	-20	-40	-0.69813168	0.766044456	-0.64278759	54.4907	9.64181	55.4907	9.64181
58	59	28	29	43	44	15	15	-21	-42	-0.73303826	0.74314484	-0.66913059	54.1472	10.037	55.1472	10.037
58	59	28	29	43	44	15	15	-22	-44	-0.76794485	0.719339816	-0.69465835	53.7901	10.4199	54.7901	10.4199
58	59	28	29	43	44	15	15	-23	-46	-0.80285143	0.694658388	-0.71933978	53.4199	10.7901	54.4199	10.7901
58	59	28	29	43	44	15	15	-24	-48	-0.83775802	0.669130625	-0.74314481	53.037	11.1472	54.037	11.1472
58	59	28	29	43	44	15	15	-25	-50	-0.8726646	0.64278763	-0.76604443	52.6418	11.4907	53.6418	11.4907
58	59	28	29	43	44	15	15	-26	-52	-0.90757118	0.615661497	-0.78801074	52.2349	11.8202	53.2349	11.8202
58	59	28	29	43	44	15	15	-27	-54	-0.94247777	0.587785275	-0.80901698	51.8168	12.1353	52.8168	12.1353
58	59	28	29	43	44	15	15	-28	-56	-0.97738435	0.559192928	-0.82903756	51.3879	12.4356	52.3879	12.4356
58	59	28	29	43	44	15	15	-29	-58	-1.01229094	0.52991929	-0.84804808	50.9488	12.7207	51.9488	12.7207
58	59	28	29	43	44	15	15	-30	-60	-1.04719752	0.500000027	-0.86602539	50.5	12.9904	51.5	12.9904
58	59	28	29	43	44	15	15	-31	-62	-1.0821041	0.469471591	-0.88294758	50.0421	13.2442	51.0421	13.2442
58	59	28	29	43	44	15	15	-32	-64	-1.11701069	0.438371177	-0.89879403	49.5756	13.4819	50.5756	13.4819
58	59	28	29	43	44	15	15	-33	-66	-1.15191727	0.406736674	-0.91354544	49.1011	13.7032	50.1011	13.7032
58	59	28	29	43	44	15	15	-34	-68	-1.18682386	0.374606626	-0.92718384	48.6191	13.9078	49.6191	13.9078
58	59	28	29	43	44	15	15	-35	-70	-1.22173044	0.342020178	-0.93969261	48.1303	14.0954	49.1303	14.0954
58	59	28	29	43	44	15	15	-36	-72	-1.25663702	0.30901703	-0.9510565	47.6353	14.2658	48.6353	14.2658
58	59	28	29	43	44	15	15	-37	-74	-1.29154361	0.275637393	-0.96126169	47.1346	14.4189	48.1346	14.4189
58	59	28	29	43	44	15	15	-38	-76	-1.32645019	0.241921934	-0.97029572	46.6288	14.5544	47.6288	14.5544
58	59	28	29	43	44	15	15	-39	-78	-1.36135678	0.20791173	-0.97814759	46.1187	14.6722	47.1187	14.6722
58	59	28	29	43	44	15	15	-40	-80	-1.39626336	0.173648219	-0.98480775	45.6047	14.7721	46.6047	14.7721
58	59	28	29	43	44	15	15	-41	-82	-1.43116994	0.139173143	-0.99026806	45.0876	14.854	46.0876	14.854
58	59	28	29	43	44	15	15	-42	-84	-1.46607653	0.104528507	-0.99452189	44.5679	14.9178	45.5679	14.9178
58	59	28	29	43	44	15	15	-43	-86	-1.50098311	0.069756518	-0.99756405	44.0463	14.9635	45.0463	14.9635
58	59	28	29	43	44	15	15	-44	-88	-1.5358897	0.034899542	-0.99939083	43.5235	14.9909	44.5235	14.9909
58	59	28	29	43	44	15	15	-45	-90	-1.57079628	4.67949E-08	-1	43	15	44	15
58	59	28	29	43	44	15	15	-46	-92	-1.60570286	-0.03489945	-0.99939083	42.4765	14.9909	43.4765	14.9909
58	59	28	29	43	44	15	15	-47	-94	-1.64060945	-0.06975642	-0.99756405	41.9537	14.9635	42.9537	14.9635
58	59	28	29	43	44	15	15	-48	-96	-1.67551603	-0.10452841	-0.9945219	41.4321	14.9178	42.4321	14.9178
58	59	28	29	43	44	15	15	-49	-98	-1.71042262	-0.13917305	-0.99026808	40.9124	14.854	41.9124	14.854
58	59	28	29	43	44	15	15	-50	-100	-1.7453292	-0.17364813	-0.98480776	40.3953	14.7721	41.3953	14.7721
58	59	28	29	43	44	15	15	-51	-102	-1.78023578	-0.20791164	-0.97814761	39.8813	14.6722	40.8813	14.6722
58	59	28	29	43	44	15	15	-52	-104	-1.81514237	-0.24192184	-0.97029574	39.3712	14.5544	40.3712	14.5544
58	59	28	29	43	44	15	15	-53	-106	-1.85004895	-0.2756373	-0.96126171	38.8654	14.4189	39.8654	14.4189
58	59	28	29	43	44	15	15	-54	-108	-1.88495554	-0.30901694	-0.95105653	38.3647	14.2658	39.3647	14.2658
58	59	28	29	43	44	15	15	-55	-110	-1.91986212	-0.34202009	-0.93969264	37.8697	14.0954	38.8697	14.0954
58	59	28	29	43	44	15	15	-56	-112	-1.9547687	-0.37460654	-0.92718388	37.3809	13.9078	38.3809	13.9078
58	59	28	29	43	44	15	15	-57	-114	-1.98967529	-0.40673659	-0.91354548	36.899	13.7032	37.899	13.7032
58	59	28	29	43	44	15	15	-58	-116	-2.02458187	-0.43837109	-0.89879407	36.4244	13.4819	37.4244	13.4819
58	59	28	29	43	44	15	15	-59	-118	-2.05948846	-0.46947151	-0.88294762	35.9579	13.2442	36.9579	13.2442
58	59	28	29	43	44	15	15	-60	-120	-2.09439504	-0.49999995	-0.86602543	35.5	12.9904	36.5	12.9904
58	59	28	29	43	44	15	15	-61	-122	-2.12930162	-0.52991921	-0.84804813	35.0512	12.7207	36.0512	12.7207
58	59	28	29	43	44	15	15	-62	-124	-2.16420821	-0.55919285	-0.82903761	34.6121	12.4356	35.6121	12.4356
58	59	28	29	43	44	15	15	-63	-126	-2.19911479	-0.5877852	-0.80901703	34.1832	12.1353	35.1832	12.1353
58	59	28	29	43	44	15	15	-64	-128	-2.23402138	-0.61566142	-0.78801079	33.7651	11.8202	34.7651	11.8202
58	59	28	29	43	44	15	15	-65	-130	-2.26892796	-0.64278756	-0.76604449	33.3582	11.4907	34.3582	11.4907
58	59	28	29	43	44	15	15	-66	-132	-2.30383454	-0.66913056	-0.74314487	32.963	11.1472	33.963	11.1472
58	59	28	29	43	44	15	15	-67	-134	-2.33874113	-0.69465832	-0.71933985	32.5801	10.7901	33.5801	10.7901
58	59	28	29	43	44	15	15	-68	-136	-2.37364771	-0.71933975	-0.69465842	32.2099	10.4199	33.2099	10.4199
58	59	28	29	43	44	15	15	-69	-138	-2.4085543	-0.74314478	-0.66913066	31.8528	10.037	32.8528	10.037
58	59	28	29	43	44	15	15	-70	-140	-2.44346088	-0.7660444	-0.64278767	31.5093	9.64181	32.5093	9.64181
58	59	28	29	43	44	15	15	-71	-142	-2.47836746	-0.78801071	-0.61566153	31.1798	9.23492	32.1798	9.23492
58	59	28	29	43	44	15	15	-72	-144	-2.51327405	-0.80901695	-0.58778531	30.8647	8.81678	31.8647	8.81678
58	59	28	29	43												



KEANTAN LABORATORIES

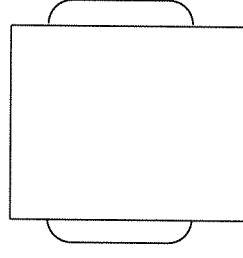
www.keantanlabs.com
email: info@keantanlabs.com

SUMMARY OF LABORATORY TEST RESULT

PROJECT NAME.: Argonaut Mine Tailings KTL NO.: 05-318-123
PROJECT NO.: 402277002 CLIENT.: Ninyo & Moore
DATE.: 11/10/2014 SUMMARIZED BY.: K. Tan

Boring NO.	DEPTH (FT)	Diameter (In)	Height (In)	MOISTURE CONTENT (%) ASTM D 2937	DRY DENSITY (pcf) ASTM D 2937	WET DENSITY (pcf) ASTM D 2937	Void Ratio	Degree Of Saturation (%)
2f-4-58-ST	n/a	3	5	23.79	109.48	135.52	.540	27
2f-4-58-ST	n/a	3	5	24.23	96.07	119.34	.761	28

Soil Description: Color: Black, Moisture: Wet, Grain: Silt
Atterberg Limit: Non Plastic
Specimen Type: Undisturbed Drive
Remark: Sieve with Hydrometer included, Only two samples we extracted



Failure Sketch

GRAIN SIZE DISTRIBUTION

ASTM D422
Sieve and Hydrometer

PROJECT NAME:	Argonaut Mine Tailings		
SAMPLE NO.:	2F-4-58-ST	DEPTH(FT)	n/a
DESCRIPTION:			

KTL NO.: 05-318-123
PROJECT NO.: n/a
DATE: 11/10/2014
TECH.: jk

UNIFIED SOIL CLASSIFICATION: NEED DATA

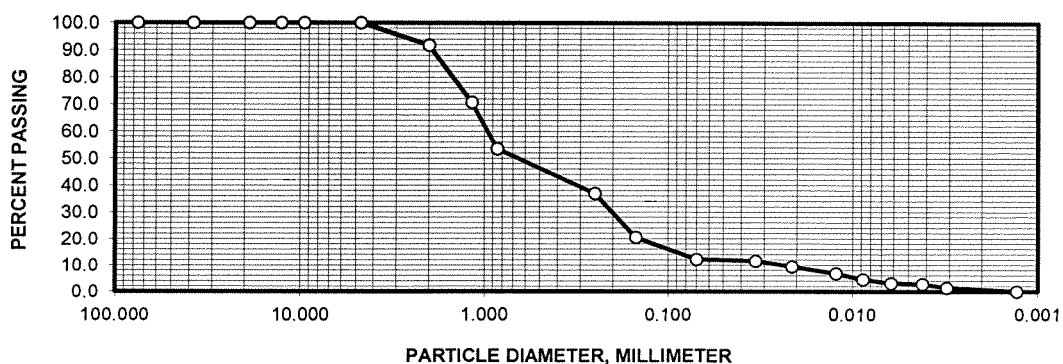
Moisture Content Determination:	35.58%
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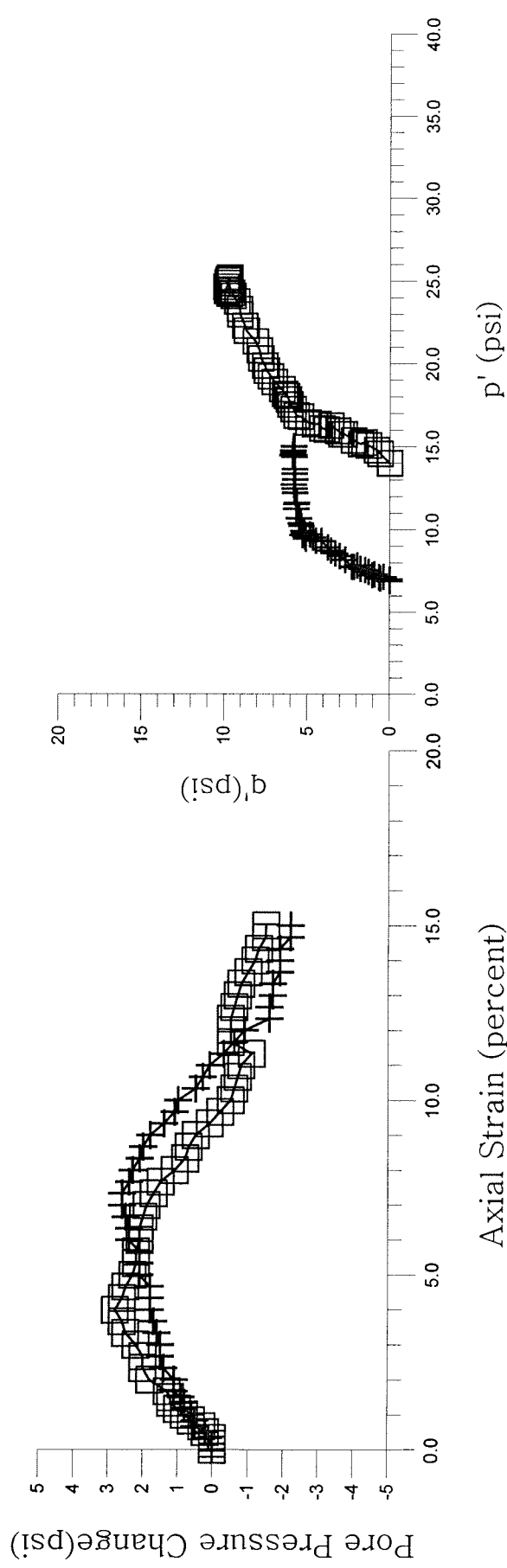
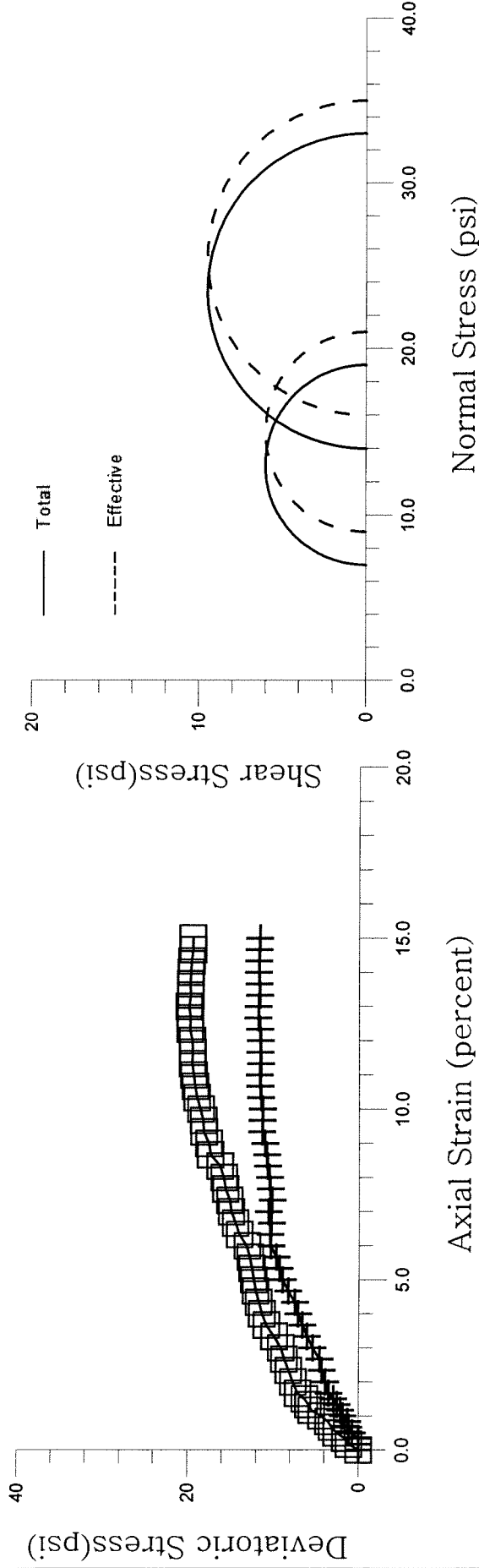
Pan Number:	KB-19
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Pan + Dry Soil, gms.	379.3
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Wt. of Pan, gms.	85.8
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Wt. of Dry Soil, gms.	293.5
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[illegible]



Symbol	BORING NO.	SAMPLE NO.	DEPTH (FT)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	CELL PRESSURE (PSI)	BACK PRESSURE (PSI)	EFFECTIVE STRESS (PSI)	MAX DEVIATOR STRESS (PSI)
+	N/A	2f-4-58-ST	n/a	23.8	109.5	87.0	80	7.0	12
□	N/A	2f-4-58-ST	n/a	24.2	96.1	94.0	80	14.0	20
○	NO SAMPLE								

28-4-88-5c
7ps

Displ(in)	Load(7)	strain	strain(%)	area	stress(7)	pp(7)	STRAIN(%)	dpp(7)	SIGMA1A	SIGMA3A	SIGMA1A	SIGMA3A	PA	QA
0	0	0	0.00	0.00	7.06	0	0.00	0.00	0.0	7	7	7	7	0
0.01	0	0	0.00	0.17	7.07	0	0.17	0.01	0.0	7	7	7	7	0
0.02	0	0	0.00	0.33	7.08	0	0.33	0.02	0.0	7	7	7	7	0
0.03	5	5	0.01	0.50	7.10	1	0.50	0.03	0.1	7	7	7	7	0
0.04	8	8	0.01	0.67	7.11	1	0.67	0.04	0.2	8	7	8	7	0
0.05	9	9	0.01	0.83	7.12	1	0.83	0.05	0.5	8	7	8	7	0
0.06	13	13	0.01	1.00	7.13	2	0.83	0.05	0.5	8	7	8	7	1
0.07	15	15	0.01	1.17	7.14	2	84.3	0.06	0.6	9	7	8	7	1
0.08	18	18	0.01	1.33	7.16	3	84.5	0.07	0.8	9	7	8	6	1
0.09	21	21	0.02	1.50	7.17	3	84.5	0.08	1.33	10	7	9	6	1
0.1	25	25	0.02	1.67	7.18	3	84.6	0.09	1.50	10	7	9	6	1
0.12	28	28	0.02	2.00	7.20	4	84.8	0.10	1.67	10	7	9	6	1
0.14	31	31	0.02	2.33	7.23	4	85.1	0.12	2.00	11	7	9	6	2
0.16	33	33	0.03	2.67	7.25	5	85.2	0.14	2.33	11	7	10	6	2
0.18	39	39	0.03	3.00	7.28	5	85.2	0.16	2.67	12	7	10	6	2
0.2	44	44	0.03	3.33	7.30	6	85.2	0.18	3.00	12	7	10	6	2
0.22	48	48	0.04	3.67	7.33	7	85.3	0.20	3.33	13	7	11	6	3
0.24	52	52	0.04	4.00	7.35	7	85.4	0.22	3.67	13	7	11	5	3
0.26	55	55	0.04	4.33	7.38	7	85.5	0.24	4.00	14	7	12	5	3
0.28	61	61	0.05	4.67	7.41	8	85.5	0.26	4.33	14	7	12	5	4
0.3	66	66	0.05	5.00	7.43	9	85.5	0.28	4.67	15	7	13	5	4
0.32	69	69	0.05	5.33	7.46	9	85.8	0.30	5.00	15	7	13	5	4
0.34	72	72	0.06	5.67	7.48	10	85.8	0.35	5.83	16	7	14	5	4
0.36	77	77	0.06	6.00	7.51	10	85.8	0.40	6.67	16	7	14	5	5
0.38	78	78	0.06	6.33	7.54	10	86.1	0.45	7.50	17	7	15	5	5
0.4	77	77	0.07	6.67	7.56	10	86.1	0.50	8.33	17	7	15	5	5
0.42	80	80	0.07	7.00	7.59	11	86.2	0.55	9.17	17	7	15	5	5
0.44	77	77	0.07	7.33	7.62	10	86.3	0.60	10.00	18	7	15	5	5
0.46	79	79	0.08	7.67	7.65	10	86.3	0.65	10.83	18	7	15	4	5
0.48	80	80	0.08	8.00	7.67	10	86.1	0.70	11.67	17	7	15	4	5
0.5	82	82	0.08	8.33	7.70	11	86.0	0.75	12.50	17	7	15	5	5
0.52	83	83	0.09	8.67	7.73	11	85.8	0.80	13.33	18	7	16	5	5
0.54	85	85	0.09	9.00	7.76	11	85.7	0.85	14.17	18	7	16	5	5
0.56	88	88	0.09	9.33	7.79	11	85.5	0.90	15.00	18	7	16	5	5
0.58	88	88	0.10	9.67	7.82	11	85.1	0.95	15.83	18	7	16	5	5
0.6	88	88	0.10	10.00	7.84	11	84.8	1.00	16.67	17	7	17	6	6
0.62	90	90	0.10	10.33	7.87	11	84.7	1.05	17.50	18	7	17	6	6
0.64	91	91	0.11	10.67	7.90	12	84.2	1.10	18.33	18	7	17	6	6
0.66	92	92	0.11	11.00	7.93	12	84.0	1.15	19.17	18	7	18	7	6
0.68	91	91	0.11	11.33	7.96	11	83.8	1.20	20.00	19	7	18	7	6
0.7	92	92	0.12	11.67	7.99	12	83.4	1.25	20.83	19	7	18	7	6
0.72	92	92	0.12	12.00	8.02	12	83.1	1.30	21.67	19	7	19	8	6
0.74	93	93	0.12	12.33	8.05	12	82.8	1.35	22.50	18	7	19	8	6
0.76	95	95	0.13	12.67	8.08	12	82.1	1.40	23.33	19	7	20	9	6
0.78	95	95	0.13	13.00	8.11	12	82.0	1.45	24.17	19	7	20	9	6
0.8	94	94	0.13	13.33	8.15	12	82.0	1.50	25.00	19	7	20	9	6
0.82	95	95	0.14	13.67	8.18	12	82.0	1.55	25.83	19	7	20	9	6
0.84	96	96	0.14	14.00	8.21	12	81.8	1.60	26.67	19	7	21	9	6
0.86	96	96	0.14	14.33	8.24	12	81.8	1.65	27.50	19	7	21	9	6
0.88	96	96	0.15	14.67	8.27	12	81.8	1.70	28.33	19	7	21	9	6
0.9	96	96	0.15	15.00	8.31	12	81.5	1.75	29.17	19	7	21	9	6
							30.00	1.80		19	7	21	9	6

s1	s1'	s3	s3'	s1+s3/2	s1'+s3'/2	s1-s3/2	s1'-s3'/2	teta	2 teta	2 TETA	COS 2 TETA	SIN 2 TETA	S TETA	FAO TET/	s' teta	t' teta
19	21	7	9	13	15	6	6	0	0	0	1	0	19	0	21	0
19	21	7	9	13	15	6	6	-1	-2	-0.03490658	0.999390827	-0.0348995	18.9963	0.2094	20.9963	0.2094
19	21	7	9	13	15	6	6	-2	-4	-0.06981317	0.99756405	-0.06975647	18.9854	0.41854	20.9854	0.41854
19	21	7	9	13	15	6	6	-3	-6	-0.10471975	0.994521896	-0.10452846	18.9671	0.62717	20.9671	0.62717
19	21	7	9	13	15	6	6	-4	-8	-0.13962634	0.990268069	-0.1391731	18.9416	0.83504	20.9416	0.83504
19	21	7	9	13	15	6	6	-5	-10	-0.17453292	0.984807754	-0.17364817	18.9088	1.04189	20.9088	1.04189
19	21	7	9	13	15	6	6	-6	-12	-0.2094395	0.978147602	-0.20791168	18.8689	1.24747	20.8689	1.24747
19	21	7	9	13	15	6	6	-7	-14	-0.24434609	0.970295728	-0.24192189	18.8218	1.45153	20.8218	1.45153
19	21	7	9	13	15	6	6	-8	-16	-0.27925267	0.961261698	-0.27563735	18.7676	1.65382	20.7676	1.65382
19	21	7	9	13	15	6	6	-9	-18	-0.31415926	0.951056519	-0.30901699	18.7063	1.8541	20.7063	1.8541
19	21	7	9	13	15	6	6	-10	-20	-0.34906584	0.939692624	-0.34202013	18.6382	2.05212	20.6382	2.05212
19	21	7	9	13	15	6	6	-11	-22	-0.38397242	0.927183859	-0.37460658	18.5631	2.24764	20.5631	2.24764
19	21	7	9	13	15	6	6	-12	-24	-0.41887901	0.913545463	-0.40673663	18.4813	2.44042	20.4813	2.44042
19	21	7	9	13	15	6	6	-13	-26	-0.45378559	0.898794052	-0.43837113	18.3928	2.63023	20.3928	2.63023
19	21	7	9	13	15	6	6	-14	-28	-0.48869218	0.8829476	-0.46947155	18.2977	2.81683	20.2977	2.81683
19	21	7	9	13	15	6	6	-15	-30	-0.52359876	0.866025412	-0.49999999	18.1962	3	20.1962	3
19	21	7	9	13	15	6	6	-16	-32	-0.55850534	0.848048105	-0.52991925	18.0883	3.17952	20.0883	3.17952
19	21	7	9	13	15	6	6	-17	-34	-0.59341193	0.829037582	-0.55919289	17.9742	3.35516	19.9742	3.35516
19	21	7	9	13	15	6	6	-18	-36	-0.62831851	0.809017005	-0.58778524	17.8541	3.52671	19.8541	3.52671
19	21	7	9	13	15	6	6	-19	-38	-0.6632251	0.788010766	-0.61566146	17.7281	3.69397	19.7281	3.69397
19	21	7	9	13	15	6	6	-20	-40	-0.69813168	0.766044456	-0.64278759	17.5963	3.85673	19.5963	3.85673
19	21	7	9	13	15	6	6	-21	-42	-0.73303826	0.74314484	-0.66913059	17.4589	4.01478	19.4589	4.01478
19	21	7	9	13	15	6	6	-22	-44	-0.76794485	0.719339816	-0.69465835	17.316	4.16795	19.316	4.16795
19	21	7	9	13	15	6	6	-23	-46	-0.80285143	0.694658388	-0.71933978	17.168	4.31604	19.168	4.31604
19	21	7	9	13	15	6	6	-24	-48	-0.83775802	0.669130625	-0.74314481	17.0148	4.45887	19.0148	4.45887
19	21	7	9	13	15	6	6	-25	-50	-0.8726646	0.64278763	-0.76604443	16.8567	4.59627	18.8567	4.59627
19	21	7	9	13	15	6	6	-26	-52	-0.90757118	0.615661497	-0.78801074	16.694	4.72806	18.694	4.72806
19	21	7	9	13	15	6	6	-27	-54	-0.94247777	0.587785275	-0.80901698	16.5267	4.8541	18.5267	4.8541
19	21	7	9	13	15	6	6	-28	-56	-0.97738435	0.559192928	-0.82903756	16.3552	4.97423	18.3552	4.97423
19	21	7	9	13	15	6	6	-29	-58	-1.01229094	0.52991929	-0.84804808	16.1795	5.08829	18.1795	5.08829
19	21	7	9	13	15	6	6	-30	-60	-1.04719752	0.500000027	-0.86602539	16	5.19615	18	5.19615
19	21	7	9	13	15	6	6	-31	-62	-1.0821041	0.469471591	-0.88294758	15.8168	5.29769	17.8168	5.29769
19	21	7	9	13	15	6	6	-32	-64	-1.11701069	0.438371177	-0.89879403	15.6302	5.39276	17.6302	5.39276
19	21	7	9	13	15	6	6	-33	-66	-1.15191727	0.406736674	-0.91354544	15.4404	5.48127	17.4404	5.48127
19	21	7	9	13	15	6	6	-34	-68	-1.18682386	0.374606626	-0.92718384	15.2476	5.5631	17.2476	5.5631
19	21	7	9	13	15	6	6	-35	-70	-1.22173044	0.342020178	-0.93969261	15.0521	5.63816	17.0521	5.63816
19	21	7	9	13	15	6	6	-36	-72	-1.25663702	0.30901703	-0.9510565	14.8541	5.70634	16.8541	5.70634
19	21	7	9	13	15	6	6	-37	-74	-1.29154361	0.275637393	-0.96126169	14.6538	5.76757	16.6538	5.76757
19	21	7	9	13	15	6	6	-38	-76	-1.32645019	0.241921934	-0.97029572	14.4515	5.82177	16.4515	5.82177
19	21	7	9	13	15	6	6	-39	-78	-1.36135678	0.20791173	-0.97814759	14.2475	5.86889	16.2475	5.86889
19	21	7	9	13	15	6	6	-40	-80	-1.39626336	0.173648219	-0.98480775	14.0419	5.90885	16.0419	5.90885
19	21	7	9	13	15	6	6	-41	-82	-1.43116994	0.139173143	-0.99026806	13.835	5.94161	15.835	5.94161
19	21	7	9	13	15	6	6	-42	-84	-1.46607653	0.104528507	-0.99452189	13.6272	5.96713	15.6272	5.96713
19	21	7	9	13	15	6	6	-43	-86	-1.50098311	0.069756518	-0.99756405	13.4185	5.98538	15.4185	5.98538
19	21	7	9	13	15	6	6	-44	-88	-1.5358897	0.034899542	-0.99939083	13.2094	5.99634	15.2094	5.99634
19	21	7	9	13	15	6	6	-45	-90	-1.57079628	4.67949E-08	-1	13	6	15	6
19	21	7	9	13	15	6	6	-46	-92	-1.60570286	-0.03489945	-0.99939083	12.7906	5.99634	14.7906	5.99634
19	21	7	9	13	15	6	6	-47	-94	-1.64060945	-0.06975642	-0.99756405	12.5815	5.98538	14.5815	5.98538
19	21	7	9	13	15	6	6	-48	-96	-1.67551603	-0.10452841	-0.9945219	12.3728	5.96713	14.3728	5.96713
19	21	7	9	13	15	6	6	-49	-98	-1.71042262	-0.13917305	-0.99026808	12.165	5.94161	14.165	5.94161
19	21	7	9	13	15	6	6	-50	-100	-1.7453292	-0.17364813	-0.98480776	11.9581	5.90885	13.9581	5.90885
19	21	7	9	13	15	6	6	-51	-102	-1.78023578	-0.20791164	-0.97814761	11.7525	5.86889	13.7525	5.86889
19	21	7	9	13	15	6	6	-52	-104	-1.81514237	-0.24192184	-0.97029574	11.5485	5.82177	13.5485	5.82177
19	21	7	9	13	15	6	6	-53	-106	-1.85004895	-0.2756373	-0.96126171	11.3462	5.76757	13.3462	5.76757
19	21	7	9	13	15	6	6	-54	-108	-1.88495554	-0.30901694	-0.95105653	11.1459	5.70634	13.1459	5.70634
19	21	7	9	13	15	6	6	-55	-110	-1.91986212	-0.34202009	-0.93969264	10.9479	5.63816	12.9479	5.63816
19	21	7	9	13	15	6	6	-56	-112	-1.9547687	-0.37460654	-0.92718388	10.7524	5.5631	12.7524	5.5631
19	21	7	9	13	15	6	6	-57	-114	-1.98967529	-0.40673659	-0.91354548	10.5596	5.48127	12.5596	5.48127
19	21	7	9	13	15	6	6	-58	-116	-2.02458187	-0.43837109	-0.89879407	10.3698	5.39276	12.3698	5.39276
19	21	7	9	13	15	6	6	-59	-118	-2.05948846	-0.46947151	-0.88294762	10.1832	5.29769	12.1832	5.29769
19	21	7	9	13	15	6	6	-60	-120	-2.09439504	-0.49999995	-0.86602543	10	5.19615	12	5.19615
19	21	7	9	13	15	6	6	-61	-122	-2.12930162	-0.52991921	-0.84804813	9.82048	5.08829	11.8205	5.08829
19	21	7	9	13	15	6	6	-62	-124	-2.16420821	-0.55919285	-0.82903761	9.64484	4.97423	11.6448	4.97423
19	21	7	9	13	15	6	6	-63	-126	-2.19911479	-0.5877852	-0.80901703	9.47329	4.8541	11.4733	4.8541
19	21	7	9	13	15	6	6	-64	-128	-2.23402138	-0.61566142	-0.78801079	9.30603	4.72806	11.306	4.72806
19	21	7	9	13	15	6	6	-65	-130	-2.26892796	-0.64278756	-0.76604449	9.14327	4.59627	11.1433	4.59627
19	21	7	9	13	15	6	6	-66	-132	-2.30383454	-0.66913056	-0.74314487	8.98522	4.45887	10.9852	4.45887
19	21	7	9	13	15	6	6	-67	-134	-2.33874113	-0.69465832	-0.71933985	8.83205	4.31604	10.8321	4.31604
19	21	7	9	13	15	6	6	-68	-136	-2.37364771	-0.71933975	-0.69465842	8.68396	4.16795	10.684	4.16795
19	21	7	9	13	15	6	6	-69	-138	-2.40855543	-0.74314478	-0.66913066	8.54113	4.01478	10.5411	4.01478
19	21	7	9	13	15	6	6	-70	-140	-2.44346088	-0.7660444	-0.64278767	8.40373	3.85673	10.4037	3.85673
19	21	7	9	13	15	6	6	-71	-142	-2.47836746	-0.78801071	-0.61566153	8.27194	3.69397	10.2719	3.69397
19	21	7	9	13	15	6	6	-72	-144	-2.51327405	-0.80901695	-0.58778531	8.1459	3.52671	10.1459	3.52671
19	21	7	9	13	15	6	6	-73	-146	-2.54818063	-0.82903753	-0.55919297	8.02577	3.35516	10.0258	3.35516
19	21	7	9	13	15	6	6	-74	-148	-2.58308722	-0.84804806	-0.52991933	7.91171	3.17952	9.91171	3.17952
19	21															

28-4-58-5c
(4psi)



Disp(m)	Load(14)	strain	strain(%)	area	stress ₁₄ (14)	pp(14)	STRAIN(%)	dpp(14)	SIGMA1A	SIGMA3A	SIGMA1'A	SIGMA3'A	P'A	QA
0	0	0.00	0.00	7.06	0	85.3	0.00	0.00	14	14	14	14	14	0
0.01	8	0.00	0.17	7.07	1	85.3	0.01	0.17	15	14	15	14	14	1
0.02	11	0.00	0.33	7.08	2	85.3	0.02	0.33	16	14	16	14	14	1
0.03	18	0.01	0.50	7.10	3	85.5	0.03	0.50	17	14	16	14	14	1
0.04	22	0.01	0.67	7.11	3	85.6	0.04	0.67	17	14	17	14	14	1
0.05	25	0.01	0.83	7.12	4	85.9	0.05	0.83	18	14	17	14	14	2
0.06	31	0.01	1.00	7.13	4	86.1	0.06	1.00	18	14	17	13	13	2
0.07	39	0.01	1.17	7.14	5	86.3	0.07	1.17	19	14	18	13	13	2
0.08	42	0.01	1.33	7.16	6	86.5	0.08	1.33	20	14	18	13	13	3
0.09	45	0.02	1.50	7.17	6	86.5	0.09	1.50	20	14	19	13	16	3
0.1	51	0.02	1.67	7.18	7	86.6	0.10	1.67	21	14	20	13	16	3
0.12	55	0.02	2.00	7.20	8	87.1	0.12	2.00	22	14	20	12	16	4
0.14	59	0.02	2.33	7.23	8	87.3	0.14	2.33	22	14	20	12	16	4
0.16	63	0.03	2.67	7.25	9	87.3	0.16	2.67	23	14	21	12	16	4
0.18	66	0.03	3.00	7.28	9	87.5	0.18	3.00	23	14	21	12	16	4
0.2	72	0.03	3.33	7.30	10	87.8	0.20	3.33	24	14	21	12	16	5
0.22	79	0.04	3.67	7.33	11	87.9	0.22	3.67	25	14	22	11	17	5
0.24	83	0.04	4.00	7.35	11	88.1	0.24	4.00	25	14	22	11	17	5
0.26	86	0.04	4.33	7.38	12	87.9	0.26	4.33	26	14	23	11	17	6
0.28	89	0.05	4.67	7.41	12	87.8	0.28	4.67	26	14	23	11	17	6
0.3	91	0.05	5.00	7.43	12	87.6	0.30	5.00	26	14	24	12	18	6
0.32	93	0.05	5.33	7.46	12	87.5	0.35	5.83	26	14	24	12	18	6
0.34	95	0.06	5.67	7.48	13	87.5	0.40	6.67	27	14	24	12	18	6
0.36	98	0.06	6.00	7.51	13	87.4	0.45	7.50	27	14	24	12	18	6
0.38	105	0.06	6.33	7.54	14	87.4	0.50	8.33	28	14	25	12	18	7
0.4	109	0.07	6.67	7.56	14	87.3	0.55	9.17	28	14	26	12	19	7
0.42	113	0.07	7.00	7.59	15	87.2	0.60	10.00	29	14	26	12	19	7
0.44	115	0.07	7.33	7.62	15	87.0	0.65	10.83	29	14	27	12	20	7
0.46	119	0.08	7.67	7.65	16	86.8	0.70	11.67	30	14	27	12	20	8
0.48	121	0.08	8.00	7.67	16	86.4	0.75	12.50	30	14	28	13	20	8
0.5	125	0.08	8.33	7.70	16	86.1	0.80	13.33	30	14	29	13	21	8
0.52	134	0.09	8.67	7.73	17	86.0	0.85	14.17	31	14	29	13	21	8
0.54	136	0.09	9.00	7.76	18	85.8	0.90	15.00	32	14	31	13	22	9
0.56	141	0.09	9.33	7.79	18	85.4	0.95	15.83	32	14	31	14	22	9
0.58	142	0.10	9.67	7.82	18	85.1	1.00	16.67	32	14	32	14	23	9
0.6	145	0.10	10.00	7.84	18	84.8	1.05	17.50	32	14	32	14	23	9
0.62	149	0.10	10.33	7.87	19	84.7	1.10	18.33	33	14	33	15	24	9
0.64	151	0.11	10.67	7.90	19	84.6	1.15	19.17	33	14	34	15	24	9
0.66	153	0.11	11.00	7.93	19	84.5	1.20	20.00	33	14	34	15	24	10
0.68	155	0.11	11.33	7.96	19	84.2	1.25	20.83	33	14	34	15	24	10
0.7	155	0.12	11.67	7.99	19	84.8	1.30	21.67	33	14	35	15	25	10
0.72	156	0.12	12.00	8.02	19	84.8	1.35	22.50	33	14	34	15	25	10
0.74	159	0.12	12.33	8.05	20	84.8	1.40	23.33	34	14	34	15	24	10
0.76	159	0.13	12.67	8.08	20	84.7	1.45	24.17	34	14	34	15	24	10
0.78	161	0.13	13.00	8.11	20	84.6	1.50	25.00	34	14	34	15	24	10
0.8	160	0.13	13.33	8.15	20	84.5	1.55	25.83	34	14	35	15	25	10
0.82	161	0.14	13.67	8.18	20	84.3	1.60	26.67	34	14	35	15	25	10
0.84	161	0.14	14.00	8.21	20	84.1	1.65	27.50	34	14	35	15	25	10
0.86	161	0.14	14.33	8.24	20	84.0	1.70	28.33	34	14	35	15	25	10
0.88	160	0.15	14.67	8.27	19	83.8	1.75	29.17	33	14	35	16	25	10
0.9	161	0.15	15.00	8.31	19	83.8	1.80	30.00	33	14	35	16	25	10

s1	s1'	s3	s3'	s1+s3/2	s1'+s3'/2	s1-s3/2	s1'-s3'/2	teta	2 teta	2 TETA	COS 2 TETA	SIN 2 TETA	S TETA	TAO TET/	s' teta	t' teta
33	35	14	16	23.5	25.5	9.5	9.5	0	0	0	1	0	33	0	35	0
33	35	14	16	23.5	25.5	9.5	9.5	-1	-2	-0.03490658	0.999390827	-0.0348995	32.9942	0.33155	34.9942	0.33155
33	35	14	16	23.5	25.5	9.5	9.5	-2	-4	-0.06981317	0.99756405	-0.06975647	32.9769	0.66269	34.9769	0.66269
33	35	14	16	23.5	25.5	9.5	9.5	-3	-6	-0.10471975	0.994521896	-0.10452846	32.948	0.99302	34.948	0.99302
33	35	14	16	23.5	25.5	9.5	9.5	-4	-8	-0.13962634	0.990268069	-0.1391731	32.9075	1.32214	34.9075	1.32214
33	35	14	16	23.5	25.5	9.5	9.5	-5	-10	-0.17453292	0.984807754	-0.17364817	32.8557	1.64966	34.8557	1.64966
33	35	14	16	23.5	25.5	9.5	9.5	-6	-12	-0.2094395	0.978147602	-0.20791168	32.7924	1.97516	34.7924	1.97516
33	35	14	16	23.5	25.5	9.5	9.5	-7	-14	-0.24434609	0.970295728	-0.24192189	32.7178	2.29826	34.7178	2.29826
33	35	14	16	23.5	25.5	9.5	9.5	-8	-16	-0.27925267	0.961261698	-0.27563735	32.632	2.61855	34.632	2.61855
33	35	14	16	23.5	25.5	9.5	9.5	-9	-18	-0.31415926	0.951056519	-0.30901699	32.535	2.93566	34.535	2.93566
33	35	14	16	23.5	25.5	9.5	9.5	-10	-20	-0.34906584	0.939692624	-0.34202013	32.4271	3.24919	34.4271	3.24919
33	35	14	16	23.5	25.5	9.5	9.5	-11	-22	-0.38397242	0.927183859	-0.37460658	32.3082	3.55876	34.3082	3.55876
33	35	14	16	23.5	25.5	9.5	9.5	-12	-24	-0.41887901	0.913545463	-0.40673663	32.1787	3.864	34.1787	3.864
33	35	14	16	23.5	25.5	9.5	9.5	-13	-26	-0.45378559	0.898794052	-0.43837113	32.0385	4.16453	34.0385	4.16453
33	35	14	16	23.5	25.5	9.5	9.5	-14	-28	-0.48869218	0.8829476	-0.46947155	31.888	4.45998	33.888	4.45998
33	35	14	16	23.5	25.5	9.5	9.5	-15	-30	-0.52359876	0.866025412	-0.49999999	31.7272	4.75	33.7272	4.75
33	35	14	16	23.5	25.5	9.5	9.5	-16	-32	-0.55850534	0.848048105	-0.52991925	31.5565	5.03423	33.5565	5.03423
33	35	14	16	23.5	25.5	9.5	9.5	-17	-34	-0.59341193	0.829037582	-0.55919289	31.3759	5.31233	33.3759	5.31233
33	35	14	16	23.5	25.5	9.5	9.5	-18	-36	-0.62831851	0.809017005	-0.58778524	31.1857	5.58396	33.1857	5.58396
33	35	14	16	23.5	25.5	9.5	9.5	-19	-38	-0.6632251	0.788010766	-0.61566146	30.9861	5.84878	32.9861	5.84878
33	35	14	16	23.5	25.5	9.5	9.5	-20	-40	-0.69813168	0.766044456	-0.64278759	30.7774	6.10648	32.7774	6.10648
33	35	14	16	23.5	25.5	9.5	9.5	-21	-42	-0.73303826	0.74314484	-0.66913059	30.5599	6.35674	32.5599	6.35674
33	35	14	16	23.5	25.5	9.5	9.5	-22	-44	-0.76794485	0.719339816	-0.69465835	30.3337	6.59925	32.3337	6.59925
33	35	14	16	23.5	25.5	9.5	9.5	-23	-46	-0.80285143	0.694658388	-0.71933978	30.0993	6.83373	32.0993	6.83373
33	35	14	16	23.5	25.5	9.5	9.5	-24	-48	-0.83775802	0.669130625	-0.74314481	29.8567	7.05988	31.8567	7.05988
33	35	14	16	23.5	25.5	9.5	9.5	-25	-50	-0.8726646	0.64278763	-0.76604443	29.6065	7.27742	31.6065	7.27742
33	35	14	16	23.5	25.5	9.5	9.5	-26	-52	-0.90757118	0.615661497	-0.78801074	29.3488	7.4861	31.3488	7.4861
33	35	14	16	23.5	25.5	9.5	9.5	-27	-54	-0.94247777	0.587785275	-0.80901698	29.084	7.68566	31.084	7.68566
33	35	14	16	23.5	25.5	9.5	9.5	-28	-56	-0.97738435	0.559192928	-0.82903756	28.8123	7.87586	30.8123	7.87586
33	35	14	16	23.5	25.5	9.5	9.5	-29	-58	-1.01229094	0.52991929	-0.84804808	28.5342	8.05646	30.5342	8.05646
33	35	14	16	23.5	25.5	9.5	9.5	-30	-60	-1.04719752	0.500000027	-0.86602539	28.25	8.22724	30.25	8.22724
33	35	14	16	23.5	25.5	9.5	9.5	-31	-62	-1.0821041	0.469471591	-0.88294758	27.96	8.388	29.96	8.388
33	35	14	16	23.5	25.5	9.5	9.5	-32	-64	-1.11701069	0.438371177	-0.89879403	27.6645	8.53854	29.6645	8.53854
33	35	14	16	23.5	25.5	9.5	9.5	-33	-66	-1.15191727	0.406736674	-0.91354544	27.364	8.67868	29.364	8.67868
33	35	14	16	23.5	25.5	9.5	9.5	-34	-68	-1.18682386	0.374606626	-0.92718384	27.0588	8.80825	29.0588	8.80825
33	35	14	16	23.5	25.5	9.5	9.5	-35	-70	-1.22173044	0.342020178	-0.93969261	26.7492	8.92708	28.7492	8.92708
33	35	14	16	23.5	25.5	9.5	9.5	-36	-72	-1.25663702	0.30901703	-0.9510565	26.4357	9.03504	28.4357	9.03504
33	35	14	16	23.5	25.5	9.5	9.5	-37	-74	-1.29154361	0.275637393	-0.96126169	26.1186	9.13199	28.1186	9.13199
33	35	14	16	23.5	25.5	9.5	9.5	-38	-76	-1.32645019	0.241921934	-0.97029572	25.7983	9.21781	27.7983	9.21781
33	35	14	16	23.5	25.5	9.5	9.5	-39	-78	-1.36135678	0.20791173	-0.97814759	25.4752	9.2924	27.4752	9.2924
33	35	14	16	23.5	25.5	9.5	9.5	-40	-80	-1.39626336	0.173648219	-0.98480775	25.1497	9.35567	27.1497	9.35567
33	35	14	16	23.5	25.5	9.5	9.5	-41	-82	-1.43116994	0.139173143	-0.99026806	24.8221	9.40755	26.8221	9.40755
33	35	14	16	23.5	25.5	9.5	9.5	-42	-84	-1.46607653	0.104528507	-0.99452189	24.493	9.44796	26.493	9.44796
33	35	14	16	23.5	25.5	9.5	9.5	-43	-86	-1.50098311	0.069756518	-0.99756405	24.1627	9.47686	26.1627	9.47686
33	35	14	16	23.5	25.5	9.5	9.5	-44	-88	-1.5358897	0.034899542	-0.99939083	23.8315	9.49421	25.8315	9.49421
33	35	14	16	23.5	25.5	9.5	9.5	-45	-90	-1.57079628	4.67949E-08	-1	23.5	9.5	25.5	9.5
33	35	14	16	23.5	25.5	9.5	9.5	-46	-92	-1.60570286	-0.03489945	-0.99939083	23.1685	9.49421	25.1685	9.49421
33	35	14	16	23.5	25.5	9.5	9.5	-47	-94	-1.64060945	-0.06975642	-0.99756405	22.8373	9.47686	24.8373	9.47686
33	35	14	16	23.5	25.5	9.5	9.5	-48	-96	-1.67551603	-0.10452841	-0.9945219	22.507	9.44796	24.507	9.44796
33	35	14	16	23.5	25.5	9.5	9.5	-49	-98	-1.71042262	-0.13917305	-0.99026808	22.1779	9.40755	24.1779	9.40755
33	35	14	16	23.5	25.5	9.5	9.5	-50	-100	-1.7453292	-0.17364813	-0.98480776	21.8503	9.35567	23.8503	9.35567
33	35	14	16	23.5	25.5	9.5	9.5	-51	-102	-1.78023578	-0.20791164	-0.97814761	21.5248	9.2924	23.5248	9.2924
33	35	14	16	23.5	25.5	9.5	9.5	-52	-104	-1.81514237	-0.24192184	-0.97029574	21.2017	9.21781	23.2017	9.21781
33	35	14	16	23.5	25.5	9.5	9.5	-53	-106	-1.85004895	-0.2756373	-0.96126171	20.8814	9.13199	22.8814	9.13199
33	35	14	16	23.5	25.5	9.5	9.5	-54	-108	-1.88495554	-0.30901694	-0.95105653	20.5643	9.03504	22.5643	9.03504
33	35	14	16	23.5	25.5	9.5	9.5	-55	-110	-1.91986212	-0.34202009	-0.93969264	20.2508	8.92708	22.2508	8.92708
33	35	14	16	23.5	25.5	9.5	9.5	-56	-112	-1.9547687	-0.37460654	-0.92718388	19.9412	8.80825	21.9412	8.80825
33	35	14	16	23.5	25.5	9.5	9.5	-57	-114	-1.98967529	-0.40673659	-0.91354548	19.636	8.67868	21.636	8.67868
33	35	14	16	23.5	25.5	9.5	9.5	-58	-116	-2.02458187	-0.43837109	-0.89879407	19.3355	8.53854	21.3355	8.53854
33	35	14	16	23.5	25.5	9.5	9.5	-59	-118	-2.05948846	-0.46947151	-0.88294762	19.04	8.388	21.04	8.388
33	35	14	16	23.5	25.5	9.5	9.5	-60	-120	-2.09439504	-0.49999995	-0.86602543	18.75	8.22724	20.75	8.22724
33	35	14	16	23.5	25.5	9.5	9.5	-61	-122	-2.12930162	-0.52991921	-0.84804813	18.4658	8.05646	20.4658	8.05646
33	35	14	16	23.5	25.5	9.5	9.5	-62	-124	-2.16420821	-0.55919285	-0.82903761	18.1877	7.87586	20.1877	7.87586
33	35	14	16	23.5	25.5	9.5	9.5	-63	-126	-2.19911479	-0.5877852	-0.80901703	17.916	7.68566	19.916	7.68566
33	35	14	16	23.5	25.5	9.5	9.5	-64	-128	-2.23402138	-0.61566142	-0.78801079	17.6512	7.4861	19.6512	7.4861
33	35	14	16	23.5	25.5	9.5	9.5	-65	-130	-2.26892796	-0.64278756	-0.76604449	17.3935	7.27742	19.3935	7.27742
33	35	14	16	23.5	25.5	9.5	9.5	-66	-132	-2.30383454	-0.66913056	-0.74314487	17.1433	7.05988	19.1433	7.05988
33	35	14	16	23.5	25.5	9.5	9.5	-67	-134	-2.33874113	-0.69465832	-0.71933985	16.9007	6.83373	18.9007	6.83373
33	35	14	16	23.5	25.5	9.5	9.5	-68	-136	-2.37364771	-0.71933975	-0.69465842	16.6663	6.59926	18.6663	6.59926
33	35	14	16	23.5	25.5	9.5	9.5	-69	-138	-2.40855543	-0.74314478	-0.66913066	16.4401	6.35674	18.4401	6.35674
33	35	14	16	23.5	25.5	9.5	9.5	-70	-140	-2.44346088	-0.7660444	-0.64278767	16.2226			



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Customer		Ninyo and Moore	Project Number	05-318-123
Site Name		Argonaut Mine Tailings	Site Location	
Photograph ID	1			
Date	11/14/14			
Location				
Direction				
Comments: 2f-1-39-ST Fine Silt with Gravel				
Photograph ID	2			
Date	11/14/14			
Location				
Direction				
Comments: 2f-3-57.5-ST Brown silt with Gravel				

Photographic Log-P-1



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Customer		Ninyo and Moore	Project Number	05-318-123
Site Name		Argonaut Mine Tailings	Site Location	
Photograph ID	3			
Date	11/14/14			
Location				
Direction				
Comments: 2f-4-58-ST Black Fine Silt				
Photograph ID	4			
Date				
Location				
Direction				
Comments:				

Photographic Log-P-2