OMB No. 2040-0042 Approval Expires 12/31/2018

EPA

United States Environmental Protection Agency
Washington, DC 20460

Completion Form For Injection Wells

Administrative Information

1. Permittee: Florence Copper Inc.

Address *(Permanent Mailing Address) (Street, City, and ZIP Code)*: 1575 W Hunt Hwy, Florence, AZ 85132

2. Operator: Florence Copper Inc.

Address *(Street, City, State and ZIP Code)*: 1575 W Hunt Hwy, Florence, AZ 85132

3. Facility Name: Florence Copper Inc.

Telephone Number: (520) 374-3984

Address *(Street, City, State and ZIP Code)*: 1575 W Hunt Hwy, Florence, AZ 85132

4. Surface Location Description of Injection Well(s)

State: Arizona

County: Pinal

Surface Location Description

SW 1/4 of SE 1/4 of NE 1/4 of SW 1/4 of Section 28 Township 4S Range 9E

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 1060 ft. frm (N/S) N Line of quarter section and 555 ft. from (E/W) E Line of quarter section.

Well Activity

- [ ] Class I
- [ ] Class II
  - [ ] Brine Disposal
  - [ ] Enhanced Recovery
  - [ ] Hydrocarbon Storage
- [x] Class III
- [ ] Other

Well Status

- [x] Operating
- [ ] Modification/Conversion
- [ ] Proposed

Type of Permit

- [ ] Individual
- [x] Area : Number of Wells 33

Lease Number: NA

Well Number: M61-LBF

Submit with this Completion Form the attachments listed in Attachments for Completion Form.

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Ian Ream, Senior Hydrogeologist		9-12-2018

PAPERWORK REDUCTION ACT

The public reporting and record keeping burden for this collection of information is estimated to average 49 hours per response for a Class I hazardous facility, and 47 hours per response for a Class I non-hazardous facility. Burden means the total time, effort, or financial resource expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal Agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to the collection of information; search data sources; complete and review the collection of information; and, transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques to Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed forms to this address.

Attachments to be submitted with the Completion report:

I. Geologic Information

1. Lithology and Stratigraphy

A. Provide a geologic description of the rock units penetrated by name, age, depth, thickness, and lithology of each rock unit penetrated.

B. Provide a description of the injection unit.

(1) Name
(2) Depth (drilled)
(3) Thickness
(4) Formation fluid pressure
(5) Age of unit
(6) Porosity (avg.)
(7) Permeability
(8) Bottom hole temperature
(9) Lithology
(10) Bottom hold pressure
(11) Fracture pressure

C. Provide chemical characteristics of formation fluid (attach chemical analysis).

D. Provide a description of freshwater aquifers.

(1) Depth to base of fresh water (less than 10,000 mg/l TDS).
(2) Provide a geologic description of aquifer units with name, age, depth, thickness, lithology, and average total dissolved solids.

II. Well Design and Construction

1. Provide data on surface, intermediate, and long string casing and tubing. Data must include material, size, weight, grade, and depth set.

2. Provide data on the well cement, such as type/class, additives, amount, and method of emplacement.

3. Provide packer data on the packer (if used) such as type, name and model, setting depth, and type of annular fluid used.

4. Provide data on centralizers to include number, type and depth.

5. Provide data on bottom hole completions.

6. Provide data on well stimulation used.

III. Description of Surface Equipment

1. Provide data and a sketch of holding tanks, flow lines, filters, and injection pump.

IV. Monitoring Systems

1. Provide data on recording and nonrecording injection pressure gauges, casing-tubing annulus pressure gauges, injection rate meters, temperature meters, and other meters or gauges.

2. Provide data on constructed monitor wells such as location, depth, casing diameter, method of cementing, etc.

V. Logging and Testing Results

Provide a descriptive report interpreting the results of geophysical logs and other tests. Include a description and data on deviation checks run during drilling.

VI. Provide an as-built diagrammatic sketch of the injection well(s) showing casing, cement, tubing, packer, etc., with proper setting depths. The sketch should include well head and gauges.

VII. Provide data demonstrating mechanical integrity pursuant to 40 CFR 146.08.

VIII. Report on the compatibility of injected wastes with fluids and minerals in both the injection zone and the confining zone.

IX. Report the status of corrective action on defective wells in the area of review.

X. Include the anticipated maximum pressure and flow rate at which injection will operate.

HALEY & ALDRICH, INC.
One Arizona Center
400 E. Van Buren St., Suite 545
Phoenix, AZ 85004
602.760.2450

TECHNICAL MEMORANDUM

17 September 2018
File No. 129687-010

REGISTERED GEOLOGIST
CERTIFICATE NO. 49659
LAUREN A. CANDREVA
Date Signed 9/17/18
ARIZONA, U.S.A.
exp. 6/30/21

TO: Florence Copper Inc.
Ian Ream, Senior Hydrogeologist

FROM: Haley & Aldrich, Inc.
Lauren Candreva, R.G.

Subject: Drilling, Installation, and Integrity Testing Summary
PTF Supplemental Monitoring Well M61-LBF
Florence Copper Inc., Florence, Arizona

This document summarizes the drilling, installation, and testing of Production Test Facility (PTF) supplemental monitoring well M61-LBF for Florence Copper Inc. (Florence Copper) in Florence, Arizona, including the equipment used to perform the work, completion, and the results of well testing activities. Separate well completion reports have been created for each PTF well.

The Arizona Department of Water Resources Registry ID for well M61-LBF is 55-226799; the Well Registry Report is included in Appendix A. The well is located in the southwest quarter of the northeast quarter of the southwest quarter of Section 28 of Township 4 north, Range 9 east of the Gila and Salt River Baseline and Meridian (D(4-9)28CAC). The well is located within the Underground Injection Control (UIC) Permitted Area of Review (AOR) for UIC Permit R9UIC-AZ3-FY11-1 and was completed as a Class III supplemental monitoring well for the PTF (Figure 1).

Florence Copper contracted National Exploration, Wells, and Pumps (National EWP) to drill, install, and test well M61-LBF in accordance with *Bid Specification: Installation, of Class III Monitoring Wells, Production Test Facility, Florence, Arizona* (Haley & Aldrich, Inc. [Haley & Aldrich], 2015). A Schramm T685WS drilling rig was used for all drilling and construction activities. Haley & Aldrich provided intermittent oversight of drilling activities and provided complete oversight during key activities such as geophysical logging, well installation, and testing. All reported depths are in feet below ground surface unless otherwise noted.

I. Geologic Information

1. Lithology and Stratigraphy

   A. Geology of Penetrated Units

The geology penetrated during the drilling of the Class III well M61-LBF is summarized below, and a lithologic log is included in Appendix B.

Lithologic Unit Name	Depth to Bottom of Unit (feet)	Thickness of Unit (feet)	Lithology and Age of Unit
Upper Basin Fill Unit (UBFU)	282	282	Alluvium; Quaternary to Tertiary
Middle Fine-Grained Unit (MFGU)	305	23	Alluvium; Tertiary
Lower Basin Fill Unit (LBFU)	615	310	Alluvium; Tertiary to Cretaceous
Bedrock Oxide Unit (Oxide)	Not encountered	>31	Igneous porphyry; Precambrian

   B. Description of Injection Unit

Name	Bedrock Oxide Unit
Depth Drilled	615 feet
Thickness	>31 feet
Formation Fluid Pressure	Atmospheric plus head of freshwater; no additional formation pressure
Age of Unit	Precambrian with intrusions of Precambrian to Tertiary rocks
Porosity[1]	Approximately 6 to 8.5%
Permeability	Hydraulic conductivity = 0.56 feet per day
Bottom Hole Temperature	30.98 degrees Celsius
Lithology	Igneous porphyry: quartz monzonite, granodiorite with diabase and andesite dykes (detailed log included in Appendix B)
Bottom Hole Pressure	Approximately 430 pounds per square inch (PSI) (pressure exerted by the column of freshwater with no additional contribution from formation pressure)
Fracture Pressure	0.65 PSI per foot

[1] Porosity values for the bedrock oxide unit are approximate values from calculated neutron porosity values from injection well borehole surveys.

C. Chemical Characteristics of Formation Fluid

The chemical characteristics of the formation fluid in the injection zone are summarized below and are the sampling results from the center PTF wellfield well, R-09. The table below summarizes the primary chemical characteristics detected in a formation fluid sample collected on 23 April 2018; the complete analytical report is included in Appendix C.

Analyte	Result (mg/L)
Metals	
Aluminum	<0.08
Antimony	<0.005
Arsenic	0.0016
Barium	0.071
Beryllium	<0.0005
Cadmium	<0.00025
Calcium	140
Chromium	0.0051
Cobalt	<0.00025
Copper	0.011
Iron	<0.30
Lead	<0.0005
Magnesium	27
Manganese	0.002
Mercury	<0.001
Nickel	0.0033
Potassium	6.8
Selenium	<0.0025
Sodium	170
Thallium	<0.0005
Zinc	<0.04
Anions	
Bicarbonate	150
Chloride	310
Fluoride	<0.5
Nitrate	8.8
Sulfate	190
Field Parameters	
Total Dissolved Solids	1,000
pH	7.8
Radiochemicals	
Uranium	0.016
Notes: *mg/L = milligrams per liter*	

Water quality of each PTF monitoring well, including well M61-LBF, is summarized in *Procedures for Determining Alert Levels and Aquifer Quality Limits for Groundwater Compliance Monitoring* (Brown and Caldwell, 2018).

D. Description of Freshwater Aquifers

1) The depth to the base of the freshwater aquifer is defined by the interface where deeper formation fluid exhibits a total dissolved solids (TDS) value of 10,000 milligrams per liter (mg/L). The depth of the 10,000 mg/L interface is deeper than all of the wells drilled at the site and consequently has not been defined.

2) A geologic description of the aquifer units is included below:

Aquifer Unit Name	Age	Depth (feet)	Thickness (feet)	Lithology	Average Total Dissolved Solids[1] (mg/L)
UBFU	Quaternary/Tertiary	0 to 282	282	Alluvium	914
LBFU	Tertiary	305 to 615	310	Alluvium	754

[1] Average TDS values calculated from UBFU and LBFU monitoring well ambient monitoring results near the PTF.

II. Well Design and Construction

1. Well M61-LBF Casing Installed

Casing	Material	Diameter (inches)	Weight (pounds per foot)	Depth (feet)	Borehole Diameter (inches)	Drilling Method
Surface	Mild steel	14 O.D. 13⅜ I.D.	47.36	0 to 40	17½	Conventional mud rotary
Well casing	Mild steel	5.66 O.D. 5.14 I.D.	5.40	-2.0 to 429	10⅝	Conventional mud rotary
Screen	PVC Sch. 80 with 0.020-inch wide slots	5.56 O.D. 4.81 I.D.	4.08	429 to 629	10⅝	Conventional mud rotary

Notes:
I.D. = inside diameter
O.D. = outside diameter
PVC = polyvinyl chloride
Sch. = Schedule

2. Well Cement

Cement Interval	Cement Type	Additives	Amount Installed (cubic yards)	Method of Emplacement
Surface casing	Type V Neat 21 sack slurry	None	1	Submerged tremie
Well casing	Type V Neat 21 sack slurry	None	7.5	Submerged tremie

Field forms documenting pipe tallies, annular materials, and cement tickets are included in Appendix D.

3. Annular Packers

No annular packers were used during construction of well M61-LBF.

4. Centralizers

Casing	Centralizer Type	Number and Spacing
Well – FRP and PVC	Stainless steel – heavy duty	16 installed – every 40 feet
Notes: *FRP = fiberglass reinforced plastic* *PVC = polyvinyl chloride*		

5. Bottom Hole Completion

There is no bottom hole completion, as this is not an oil/gas well. The well was completed at the bottom with a stainless-steel endcap of the same diameter as the well screen.

6. Well Stimulation

No well stimulation was used during the drilling and construction of well M61-LBF.

III. Description of Surface Equipment

1. Surface Equipment

Well M61-LBF is a supplemental monitoring well and has been equipped with a pressure transducer for monitoring water levels and a low-flow pump for collecting water quality samples. There is no surface equipment beyond the well casing stick-up and locking well vault. An as-built diagram of the well is included as Figure 2.

IV. Monitoring Systems

1. Well Monitoring Equipment

   Well M61-LBF is a monitoring well and does not have any monitoring systems for injection. A pressure transducer with a data logger is installed in the well to collect water levels for compliance reporting.

2. Monitoring Wells

   A total of 16 monitoring wells (including M61-LBF) are associated with the PTF: 7 point of compliance (POC) wells, 7 United States Environmental Protection Agency (USEPA) supplemental monitoring wells, and 2 operational monitoring wells. The POC wells are located outside the AOR and are not constructed as Class III wells. The supplemental monitoring and operational monitoring wells are located within the AOR and are constructed as Class III wells as required by the UIC Permit. The wells are summarized in the tables below by type.

POC Wells						
Well ID	**Location X/Y (State Plane NAD 83)**	**Depth (feet)**	**Well Nom. Diameter (inches)**	**Cementing Method**	**Screened Interval (feet)**	**Screened Lithologic Unit**
M14-GL	846750.23 746461.52	859	5 9/16 OD	Submerged tremie	778 to 838	LBFU
M15-GU	846697.17 746464.82	615	5 9/16 OD	Submerged tremie	554 to 594	LBFU
M22-O	846751.26 746514.47	1,140	5 9/16 OD to 528 feet; 4½ OD to 1,140 feet	Submerged tremie	932 to 1,130	Oxide
M23-UBF	846688.13 746512.48	250	6⅝ OD	Submerged tremie	210 to 250	UBFU
M52-UBF	851092.00 774178.00	274	5 9/16	Submerged tremie	198 to 273	UBFU
M54-LBF	847331.96 746682.61	630	5 9/16	Submerged tremie	310 to 629	LBFU
M54-O	847342.99 746702.36	1,199	5 9/16	Submerged tremie	668 to 1,198	Oxide
OD = outside diameter						

Supplemental Monitoring Wells						
Well ID	**Location X/Y (State Plane NAD 83)**	**Depth (feet)**	**Well Nom. Diameter (inches)**	**Cementing Method**	**Screened Interval (feet)**	**Screened Lithologic Unit**
M55-UBF	847541.46 746280.63	261	5	Submerged tremie	240 to 260	UBFU
M56-LBF	847518.70 746303.41	340	5	Submerged tremie	320 to 340	LBFU
M57-O	847378.37 746248.93	1,200	5	Submerged tremie	523 to 1,199	Oxide
M58-O	847672.23 746595.97	1,200	5	Submerged tremie	594 to 1,199	Oxide
M59-O	847934.95 746218.89	1,201	5	Submerged tremie	534 to 1,199	Oxide
M60-O	847599.37 745903.70	1,201	5	Submerged tremie	444 to 1,200	Oxide
M61-LBF	848184.46 746148.88	629	5	Submerged tremie	429 to 629	LBFU

Operational Monitoring Wells						
Well ID	**Location X/Y (State Plane NAD 83)**	**Depth (feet)**	**Well Nom. Diameter (inches)**	**Cementing Method**	**Screened Interval**	**Screened Lithologic Unit**
MW-01-LBF	847487.97 746360.54	444	5	Submerged tremie	330 to 440	LBFU
MW-01-O	847499.04 746369.31	1,200	5	Submerged tremie	500 to 1,200	Oxide

V. Logging and Testing Results

Borehole geophysical logging was conducted on well M61-LBF in two phases: 1) open-hole surveys in the 12.25-inch borehole prior to installation of the well casing and screen, and 2) cased-hole surveys in the completed well.

The open-hole geophysical surveys completed at well M61-LBF included:

- Spontaneous potential;
- Natural gamma;
- Electrical resistivity (short and long normal);
- Caliper with calculated volume;

- Temperature;
- Sonic; and
- Deviation.

The cased-hole geophysical surveys completed included:

- Sonic (for cement evaluation);
- 4 pi density (for cement evaluation);
- Dual density (for cement evaluation);
- Natural gamma;
- Fluid conductivity; and
- Temperature.

Open-hole geophysical surveys were used to support identification of the lithologic contacts, to evaluate the condition of the borehole, and to evaluate the deviation of the borehole.

The primary logs used to evaluate lithologic contacts were natural gamma ray, short (16-inch) and long (64-inch) normal electrical resistance, and single-point resistance.

The lithologic contacts for the Middle Fine-Grained Unit (MFGU) were selected based on the short and long resistance and the single-point resistance. All the resistivity values decreased and remained consistently low through the MFGU. This contact is generally characterized by a relatively sharp decrease in resistance at the top of the unit and a gradual increase in resistance below the bottom of the unit.

The contact between the Lower Basin Fill Unit (LBFU) and the bedrock was identified primarily using the natural gamma and correlated with the resistance logs. There is a consistent increase in gamma values at the contact between the LBFU and the bedrock that was identified and documented at the site during exploration in the 1990s. For well M61-LBF, the gamma values are consistent at approximately 80 American Petroleum Institute (API) units throughout the Upper Basin Fill Unit (UBFU), increase slightly to approximately 90 to 100 API units in the MFGU through the LBFU, and increase to over 200 API units at 615 feet. After the increase at approximately 615 feet, the natural gamma values begin to vary more than in the alluvial units. This change in the response of the natural gamma indicates the contact with the bedrock unit.

Cased-hole geophysical surveys were conducted to evaluate the cement seal and the casing-cement bond, to document baseline fluid temperature and conductivity, and to evaluate the plumbness of the well. The cement bond is discussed in Section VII.

Copies of all the geophysical logs are included in Appendix E; a figure summarizing the open-hole logs used to evaluate the geology is included as Figure 3.

VI. Well As-Built Diagram

An as-built diagram for well M61-LBF is included as Figure 2.

VII. Demonstration of Mechanical Integrity

A demonstration of Part I mechanical integrity of the well was completed using a standard annular pressure test (SAPT) in accordance with Part II.E.3.a.i.A of the UIC Permit. Mechanical integrity will be demonstrated every 2 years during operations. The SAPT for well M61-LBF is summarized below.

The SAPT was conducted by installing an inflatable packer in the well secured with a threaded well seal at the surface. The packer was installed near the bottom of the FRP-cased portion of the well and the wellhead was equipped with a water-tight threaded wellhead; the packer was inflated to form a seal against the casing. The bottom 5 feet of the packer drop pipe was perforated to allow for communication between the tubing and the annulus of the packer assembly. The drop pipe extended through the wellhead and a high pressure/low volume pump was attached to the drop pipe to pressurize the test interval. A valve on the drop pipe at the surface was used to isolate the test interval once the planned test pressure was achieved.

An In-Situ LevelTROLL® pressure transducer with a data logger was installed at the well head and connected to the packer assembly annulus interval via a National Pipe Thread adapter. The LevelTROLL was used to monitor and record pressure inside the well during the SAPT. To conduct the SAPT, water was pumped from a nearby well immediately prior to testing. Before the water was pumped into the test well, the water temperature was measured to ensure that it was similar to the ambient groundwater temperature of the test well to reduce the potential for differential temperature effects on the well casing. The SAPT for the Class III well was conducted by applying hydraulic pressure to the well casing and shutting in pressure between the packer and wellhead assembly, monitoring the shut-in pressure for a 30-minute period, then measuring the volume of water returned from the well casing after the pressure was released.

On 18 June 2017, the packer was installed to approximately 395 feet; the SAPT was unsuccessful. The USEPA SAPT form, a table of the data, and a chart of the data is provided in Appendix F.

Part II mechanical integrity is demonstrated by the cementing records included in this report (in accordance with Part II.E.3.ii.C of the UIC Permit) and will be demonstrated during operations by annular conductivity monitoring on the observation and multi-level sampling wells (in accordance with Part II.E.3.a.ii.A of the UIC Permit).

Cemented Interval	Cement Type	Calculated Grout Volume (cubic yards)	Installed Grout Volume (cubic yards)
Surface casing	Type V 21 sack neat cement slurry	0.9	1
Well casing	Type V 21 sack neat cement slurry	7.5	7.5

On 12 May 2017, a cement bond log was run over the entire length of the completed well to verify the grout seal. A summary of the logs completed to demonstrate cement bond are included in Appendix G.

The cement bond of the steel casing at well M61-LBF was evaluated by the geophysical contractor by calculating a bond index. However, due to the limited saturated interval, density logs including focused density and 4pi density logs were also run to evaluate the unsaturated portion of the well. The bond index was calculated to be greater than 90 percent over the saturated cement grouted interval from approximately 260 to 400 feet. Below 400 feet, there is a decreased bond, but the density values do not decrease in this zone, indicating the annular material in M61-LBF does not change in this interval. The bond evaluation data is included on the summary log in Appendix G.

VIII. Compatibility of Injected Waste

The Florence Copper Project is a Class III mineral extraction project and does not include the injection of any waste products of any kind. The injected fluid (lixiviant) is a carefully constituted in-situ copper recovery solution that will be recovered and recycled following injection.

The compatibility of the lixiviant was evaluated as part of the geochemical modeling completed by Florence Copper and summarized in the *Geochemical Evaluation to Forecast Composition of Process Solutions for In-Situ Copper Recovery Pilot Test Facility at Florence Copper, Florence Arizona* (Daniel B. Stephens Inc., 2014) which was included in Attachment H of the UIC Permit Application.

IX. Status of Corrective Action on Defective Wells in the Area of Review

There are not currently any defective wells in the AOR.

X. Maximum Pressures and Flow Rates for M61-LBF

Maximum Operating Pressure	Maximum Flow
Atmospheric	Not applicable – monitoring well

This well is a monitoring well used to monitor water quality near the PTF. No fluids will be injected.

XI. Well Development

Well M61-LBF was initially developed by the airlift method, followed by pump development. Development activities were completed by National EWP using a workover rig. On 26 April 2017, an airline was temporarily installed to 627 feet and airlift development of the well was conducted to purge drilling fluids and solids from the well. During airlift development, the airlift pump was turned on and

off to surge the well. After 11 hours, approximately 1 gallon of AquaClear PFD® polymer dispersant was swabbed into the screened interval. Airlift development was conducted for a total of approximately 15 hours over a period of 3 days. The discharge was turbid but sand-free at the end of the airlift development period.

To pump develop the well, a submersible pump was temporarily installed to 625 feet on 2 May 2017. Prior to pumping, the static water level was approximately 253 feet. Pump development was conducted at approximately 12 gpm; the submersible pump was periodically turned off to surge the well during development. Pump development was conducted for a total of approximately 45 hours over a period of 5 days. The development was concluded on 8 May 2017, at which time the discharge was sand-free with turbidity values less than 5 Nephelometric Turbidity Units. Well development forms are included in Appendix H.

XII. Well Completion

A well video survey was conducted on 5 June 2017. The video log depths are presented in feet below the top of the casing and thus vary slightly from what is recorded; however, these values are the same with the correction for stick up.

The surveyed location for well M61-LBF is as follows:

Northing (feet)	Easting (feet)	Measuring Point Elevation (feet amsl)
746148.88	848184.46	1480.78

***Notes**:*
Northing and easting locations provided in State Plane North American Datum 1983; vertical location provided in North American Vertical Datum 1988.
amsl = above mean sea level

XIII. Downhole Equipment

Permanent equipment installed in well M61-LBF includes the following:

- QED® low-flow sampling pump hung on drop tubing (pump at 535 feet); and
- Pressure transducer.

The type and depth of equipment installed in each well is not constrained by the UIC Permit or the Aquifer Protection Permit (APP). This information is provided in accordance with Section 2.7.4.3 of the APP. Operational considerations may require that the type and depth of equipment be changed in response to conditions observed during operations.

XIV. References

Brown and Caldwell, Inc., 2018. *Procedures for Determining Alert Levels and Aquifer Quality Limits for Groundwater Compliance Monitoring, Florence Copper Project, Florence, Arizona*. June.

Daniel B. Stephens, Inc., 2014. *Geochemical Evaluation to Forecast Composition of Process Solutions for In-Situ Copper Recovery Pilot Test Facility at Florence Copper, Florence Arizona.* Prepared for Florence Copper. May.

Haley & Aldrich, Inc., 2017. *Bid Specification: Installation, of Class III Monitoring Wells, Production Test Facility, Florence, Arizona*. Revised September 2017.

Enclosures:

- Figure 1 – Well Locations
- Figure 2 – M61-LBF Supplemental Monitoring Well As-Built Diagram
- Figure 3 – Geophysical Data and Lithologic Log
- Appendix A – Arizona Department of Water Resources Well Registry Report
- Appendix B – Lithologic Log
- Appendix C – Chemical Characteristics of Formation Water
- Appendix D – Well Completion Documentation
- Appendix E – Geophysical Logs
- Appendix F – SAPT Documentation
- Appendix G – Cement Bond Log Summary
- Appendix H – Well Development Field Forms

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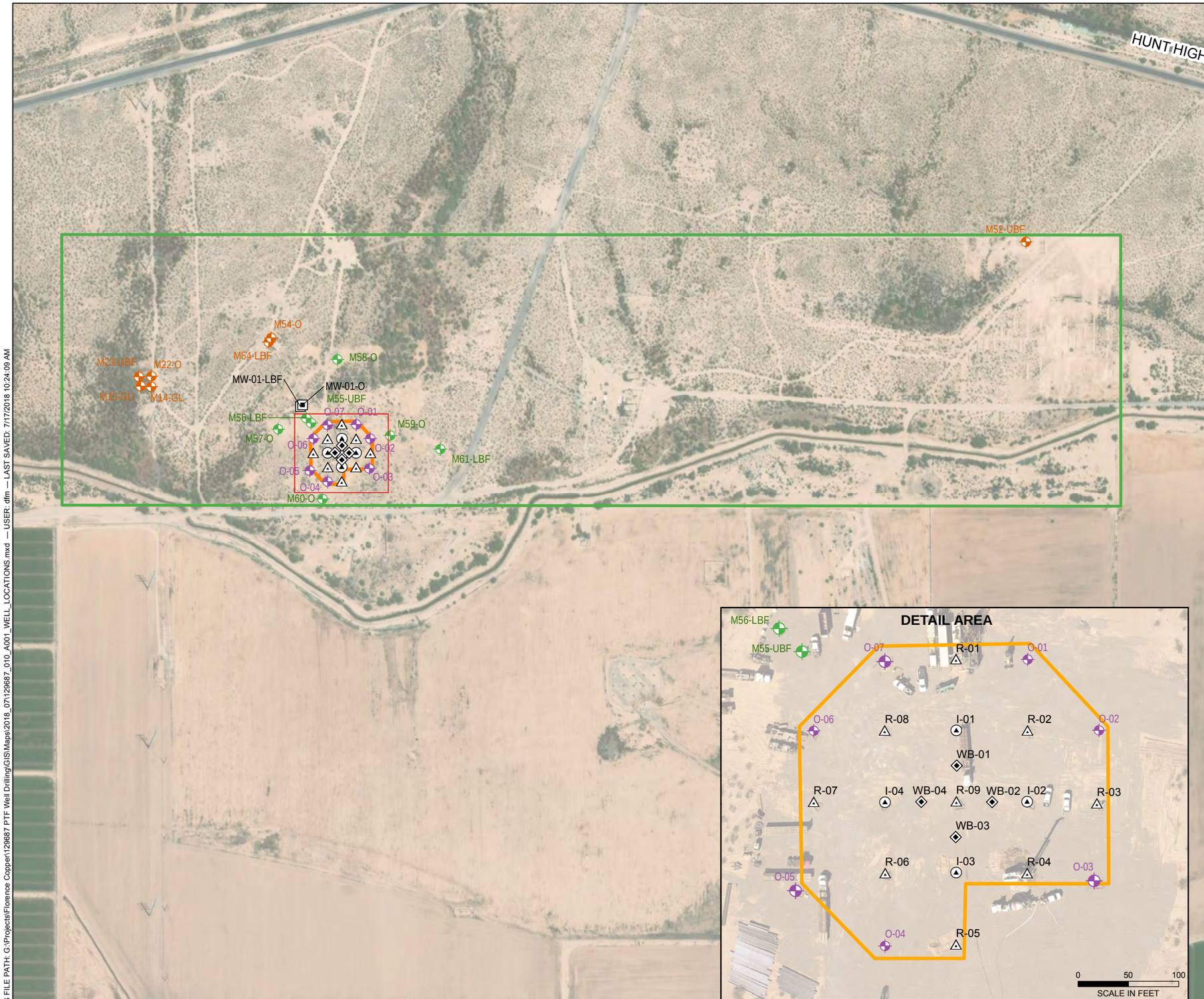
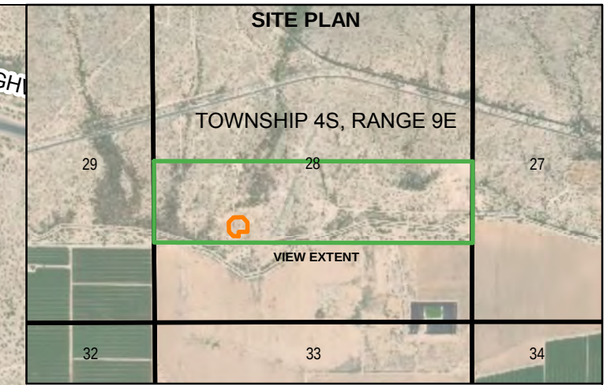
FIGURES





0 1,250 2,500
SCALE IN FEET

LEGEND

- OBSERVATION WELL
- SUPPLEMENTAL MONITORING WELL
- POINT-OF-COMPLIANCE WELL

PTF WELL

- INJECTION
- RECOVERY
- WESTBAY WELL
- OPERATIONAL MONITORING
- PTF WELL FIELD
- STATE LAND LEASE

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI

N

0 500 1,000
SCALE IN FEET

HALEY ALDRICH

FLORENCE COPPER PROJECT
FLORENCE, ARIZONA

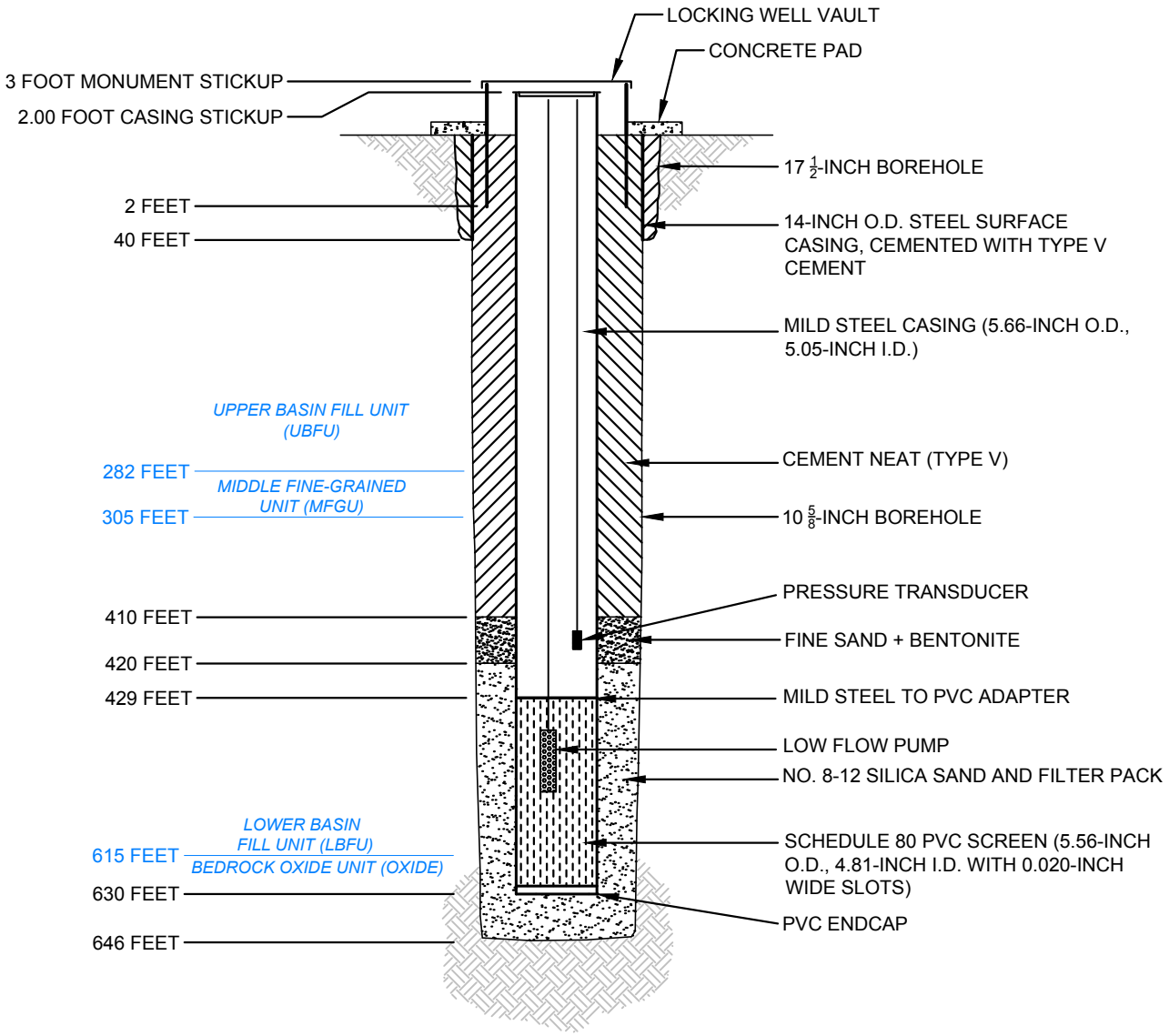
WELL LOCATIONS

FLORENCE COPPER INC.

AUGUST 2018

FIGURE 1

GIS FILE PATH: G:\Projects\Florence Copper\129687 PTF Well Drilling\GIS\Maps\2018_07\129687_010_A001_WELL_LOCATIONS.mxd — USER: dfm — LAST SAVED: 7/17/2018 10:24:09 AM



NOTES

1. WELL REGISTRATION NO.: 55-226799
2. CADASTRAL LOCATION: D (4-9) 28 CAC
3. TOP OF CASING ELEVATION: 1480.78' AMSL
4. CONCRETE PAD ELEVATION: 1478.91' AMSL
5. I.D. = INSIDE DIAMETER
6. O.D. = OUTSIDE DIAMETER
7. PVC = POLYVINYL CHLORIDE

HALEY ALDRICH

PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

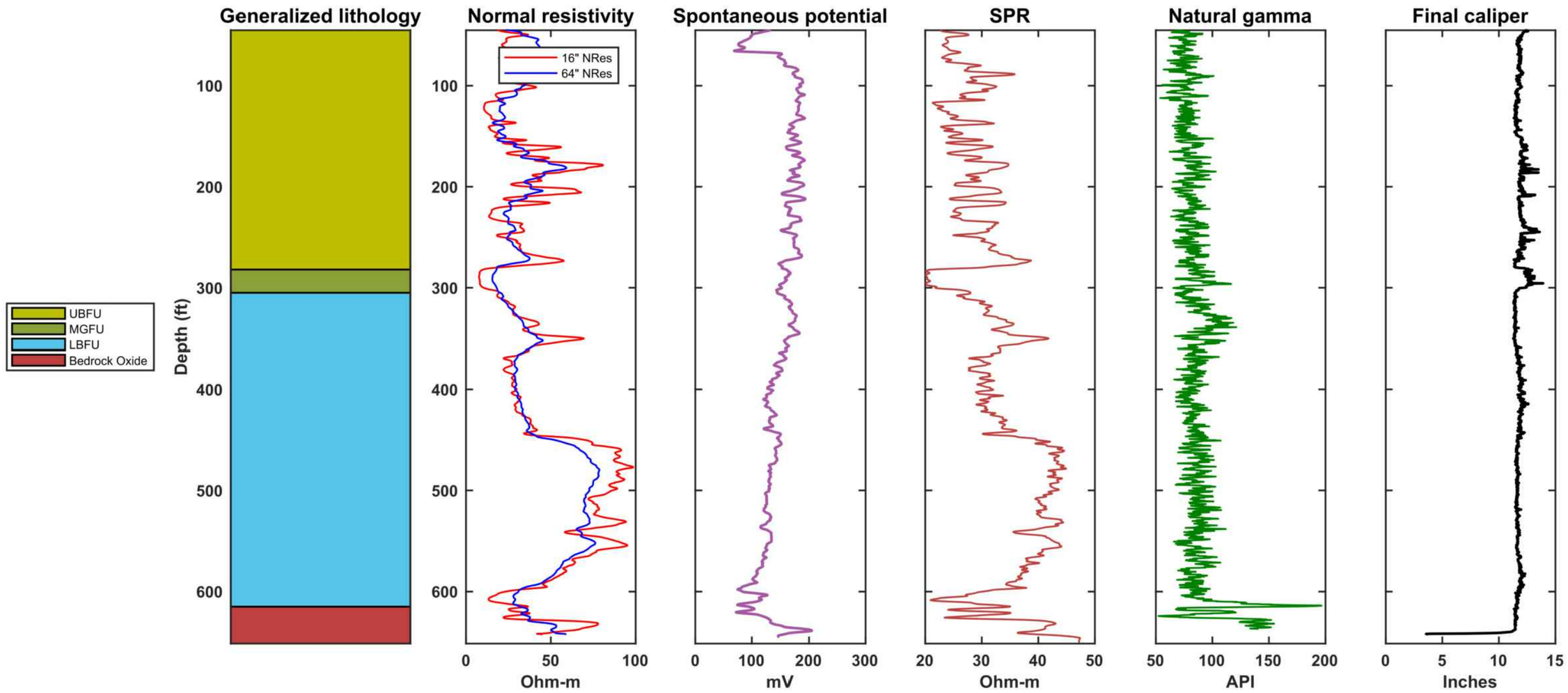
M61-LBF
SUPPLEMENTAL MONITORING
WELL AS-BUILT DIAGRAM

FLORENCE COPPER INC.

SCALE: NOT TO SCALE
SEPTEMBER 2018

FIGURE 2

MOBINI, GITA Printed: 8/31/2018 2:37 PM Layout: M61-LBF
E:\PROJECTS\FLORENCE COPPER\CAD\AS-BUILTS\MONITORING WELLS\M61-LBF_WELLDESIGN_ASBUILT.DWG



HALEY ALDRICH

PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

M61-LBF SUPPLEMENTAL MONITORING WELL GEOPHYSICAL DATA AND LITHOLOGIC LOG

FLORENCE COPPER

SCALE: AS SHOWN
SEPTEMBER 2018

FIGURE 3

MCELENEY, TERRI Printed: 6/14/2018 3:33 PM Layout: M61LBF
G:\129687\GLOBAL\CAD\129687-010 GEOPHYICAL DATA 2018-06-14.DWG

APPENDIX A

Arizona Department of Water Resources Well Registry Report

Arizona Department of Water Resources
Information Management Unit
PO Box 36020 • Phoenix, Arizona 85067-6020
(602) 771-8527 • 602-771-8500

Well Driller Report and Well Log

9/20/17

THIS REPORT MUST BE FILED WITHIN **30 DAYS** OF COMPLETING THE WELL.

PLEASE PRINT CLEARLY USING BLACK OR BLUE INK

FILE NUMBER: D(4-9) 28 CBD
WELL REGISTRATION NUMBER: 55 - 226799
PERMIT NUMBER (IF ISSUED):

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm — Mail To:

NAME: NATIONAL EWP, INC.	DWR LICENSE NUMBER: 823
ADDRESS: 1200 W. SAN PEDRO ST.	TELEPHONE NUMBER: 480-558-3500
CITY / STATE / ZIP: GILBERT, AZ, 85233	FAX:

RECEIVED AUG 9 2017 ARIZONA DEPARTMENT OF WATER RESOURCES

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: FLORENCE COPPER, INC.

MAILING ADDRESS: 1575 W. HUNT HWY

CITY / STATE / ZIP: FLORENCE, AZ, 85132

CONTACT PERSON NAME AND TITLE: Ian Ream, Sr. Hydraulogist

TELEPHONE NUMBER: 520 374-3984 FAX:

WELL NAME (e.g., MW-1, PZ-3, lot 25 Well, Smith Well, etc.): M61-LBF

Location of Well

WELL LOCATION ADDRESS (IF ANY): Same as well owner

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
4S	9E	28	SW 1/4	NE 1/4	SW 1/4

LATITUDE			LONGITUDE		
33 °	3 '	1 "N	111 °	25 '	59 "W

METHOD OF LATITUDE/LONGITUDE (CHECK ONE): ☐ USGS Quad Map ☐ Conventional Survey ☒ *GPS: Hand-Held ☐ *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: 1477 Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE): ☐ USGS Quad Map ☐ Conventional Survey ☒ *GPS: Hand-Held ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE): ☒ NAD-83 ☐ Other (please specify)

COUNTY: Pinal

ASSESSOR'S PARCEL ID NUMBER (MOST RECENT): BOOK 0 MAP 0 PARCEL 0

SECTION 3. WELL CONSTRUCTION DETAILS

Drilling Method — CHECK ONE
- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☒ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development — CHECK ONE
- ☒ Airlift
- ☐ Bail
- ☐ Surge Block
- ☐ Surge Pump
- ☐ Other (please specify)

Condition of Well — CHECK ONE
- ☐ Capped
- ☒ Pump Installed

Method of Sealing at Reduction Points — CHECK ONE
- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

Construction Dates

DATE WELL CONSTRUCTION STARTED: 4.18.2017

DATE WELL CONSTRUCTION COMPLETED: 4.19.2017

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

SIGNATURE OF QUALIFYING PARTY: 8-3-17 DATE:

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 226799

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILD) (attach additional page if needed)

Depth

DEPTH OF BORING	DEPTH OF COMPLETED WELL
645 Feet Below Land Surface	630 Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
250 Feet Below Land Surface	5.02.2017	12:00	☐ Valve ☐ Other:

Borehole / Installed Casing

Borehole: DEPTH FROM SURFACE FROM (feet)	Borehole: DEPTH FROM SURFACE TO (feet)	Borehole: BOREHOLE DIAMETER (inches)	Installed Casing: DEPTH FROM SURFACE FROM (feet)	Installed Casing: DEPTH FROM SURFACE TO (feet)	Installed Casing: OUTER (inches)	MATERIAL TYPE (T): STEEL	MATERIAL TYPE (T): PVC	MATERIAL TYPE (T): ABS	MATERIAL TYPE (T): IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T): BLANK OR NONE	PERFORATION TYPE (T): WIRE WRAP	PERFORATION TYPE (T): SHUTTER SCREEN	PERFORATION TYPE (T): MILLS KNIFE	PERFORATION TYPE (T): SLOTTED	PERFORATION TYPE (T): IF OTHER TYPE, DESCRIBE	SLOT SIZE (inches)
0	40	17.5	0	40	14	x				x						
40	646	10.625	+2.5	430	5.5	x				x						
			430	626	5.5		x							x		

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T): NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE: GROUT	BENTONITE: CHIPS	BENTONITE: PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK: SAND	FILTER PACK: GRAVEL	FILTER PACK: SIZE
0	410			x					Type 5 Cement			
410	420							x	Pell plug			
420	646										x	8x12

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 226799

SECTION 5. GEOLOGIC LOG OF WELL			
DEPTH FROM SURFACE		**Description**	Check (T) every interval where water was encountered (if known)
FROM (feet)	TO (feet)	Describe material, grain size, color, etc.	
0	282	Upper Basin Fill Unit	
282	305	Middle Fine-Grained Unit	
305	615	Lower Basin Fill Unit	
615	646	Pre-Cambrian Oxide	

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 226799

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)		
	BOOK	MAP	PARCEL
FLORENCE COPPER, INC.			

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.

Run Date: 01/13/2017

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location D 4.0 9.0 28 C B D

Well Reg.No 55 - 226799

AMA PINAL AMA

Registered Name FLORENCE COPPER, INC.
1575 W. HUNT HWY
FLORENCE AZ 85132

File Type NEW WELLS (INTENTS OR APPLICATIONS)
Application/Issue Date 01/11/2017

Owner OWNER
Driller No. 823
Driller Name NATIONAL EWP, INC.
Driller Phone 480-558-3500
County PINAL

Intended Capacity GPM 0.00

Well Type ENV - MONITOR
SubBasin ELOY
Watershed UPPER GILA RIVER
Registered Water Uses MONITORING
Registered Well Uses MONITOR
Discharge Method NO DISCHARGE METHOD LISTED
Power NO POWER CODE LISTED

Well Depth	0.00	**Case Diam**	0.00	**Tested Cap**	0.00
Pump Cap.	0.00	**Case Depth**	0.00	**CRT**	
Draw Down	0.00	**Water Level**	0.00	**Log**	
		Acres Irrig	0.00	**Finish**	NO CASING CODE LISTED

Contamination Site: NO - NOT IN ANY REMEDIAL ACTION SITE

Tribe: Not in a tribal zone

Comments Well M61-LBF
Landownership: AZ State Land Dept. (Mineral Lease #11-026500)
TV

Current Action

1/13/2017 555 DRILLER & OWNER PACKETS MAILED
Action Comment: TNV

Action History

1/13/2017 550 DRILLING AUTHORITY ISSUED
Action Comment: TNV

1/11/2017 155 NOI RECEIVED FOR A NEW NON-PRODUCTION WELL
Action Comment: TNV

ARIZONA DEPARTMENT OF WATER RESOURCES
1110 W. Washington St. Suite 310
Phoenix, Arizona 85007

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILLING OPERATIONS

WELL REGISTRATION NO: **55-226799**

AUTHORIZED DRILLER: **NATIONAL EWP, INC.** LICENSE NO: **823**

NOTICE OF INTENTION TO DRILL ENV - MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: **FLORENCE COPPER, INC. 1575 W. HUNT HWY FLORENCE, AZ, 85132**

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

SE 1/4 of the **NW** 1/4 of the **SW** 1/4 Section **28** Township **4.0** **SOUTH** Range **9.0** **EAST**

NO. OF WELLS IN THIS PROJECT: **1**

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE DAY OF **January 11, 2018**

Stella Murillo

GROUNDWATER PERMITTING AND WELLS

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING.

ARIZONA DEPARTMENT of WATER RESOURCES
1110 W. Washington St. Suite 310
Phoenix, AZ 85007
602-771-8500
azwater.gov

January 13, 2017

FLORENCE COPPER, INC.
1575 W. HUNT HWY
FLORENCE, AZ 85132

DOUGLAS A. DUCEY
Governor

THOMAS BUSCHATZKE
Director

Registration No. 55- 226799
File Number: D(4-9) 28 CBD

Dear Well Applicant:

Enclosed is a copy of the Notice of Intention to Drill (NOI) a well which you or your driller recently filed with the Department of Water Resources. This letter is to inform you that the Department has approved the NOI and has mailed, or made available for download, a drilling authorization card to your designated well drilling contractor. The driller may not begin drilling until he/she has received the authorization, and must keep it in their possession at the well site during drilling. Although the issuance of this drill card authorizes you to drill the proposed well under state law, the drilling of the well may be subject to restrictions or regulations imposed by other entities.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, a new NOI must be filed and authorization from this Department received before proceeding with drilling. If the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed by your driller [as required by A.A.C. R12-15-816(F)].

If you change drillers, you must notify the Department of the new driller's identity on a Request to Change Well Information (form 55-71A). Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he/she receives a new drilling authorization card from the Department.

If you find it necessary to change the location of the proposed well(s), you may not proceed with drilling until you file an amended NOI with the Department. An amended drilling authorization card will then be issued to the well drilling contractor, which must be in their possession before drilling begins.

Arizona statute [A.R.S. § 45-600] requires registered well owners to file a Pump Installation Completion Report (form 55-56) with the Department within 30 days after the installation of pumping equipment, if authorized. A blank report is enclosed for your convenience. State statute also requires the driller to file a complete and accurate Well Drillers Report and Well Log (form 55-55) within 30 days after completion of drilling. A blank report form was provided to your driller with the drilling authorization card. You should insist and ensure that all of the required reports are accurately completed and timely filed with the Department.

Please be advised that Arizona statute [A.R.S. § 45-593(C)] requires a registered well owner to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (form 55-71A) that may be downloaded from the ADWR Internet website at www.azwater.gov.

Sincerely,

Groundwater Permitting and Wells Section

Arizona Department of Water Resources
Groundwater Permitting and Wells Section
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8500 • (602) 771-8690
· www.azwater.gov ·

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

$150 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - $150 check or money order for the filing fee.
  - Well construction diagram, labeling all specifications listed in Section 6 and Section 7.

  Authority for fee: A.R.S. § 45-596 and A.A.C. R12-15-104.

AMA / INA	B	SB	FILE NUMBER
Pinal	PIN	11	D(4-9)28CAC
RECEIVED DATE	WS		WELL REGISTRATION NUMBER
1/11/2017	08 UGR		55 - 226799
ISSUED DATE	REMEDIAL ACTION SITE		
1/13/2017	000 —		

SECTION 1. REGISTRY INFORMATION

To determine the location of well, please refer to the Well Registry Map (https://gisweb.azwater.gov/WellRegistry/Default.aspx) and/or Google Earth (http://www.earthpoint.us/Townships.aspx)

Well Type — CHECK ONE
- [x] Monitor
- [ ] Piezometer
- [ ] Vadose Zone
- [ ] Air Sparging
- [ ] Soil Vapor Extraction
- [ ] Other (*please specify*):

Proposed Action — CHECK ONE
- [x] Drill New Well
- [ ] Deepen
- [ ] Modify

WELL REGISTRATION NUMBER (*if Deepening or Modifying*): 55 -

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP(N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
4.0	9.0 E	28	SW ¼	NE ¼	SW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK | MAP | PARCEL 1001

COUNTY WHERE WELL IS LOCATED: PINAL

SECTION 2. OWNER INFORMATION

Land Owner	Well Owner (*check this box if Land Owner and Well Owner are same* [ ])
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: AZ State Land Dept (Mineral Lease # 11-026500)	FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: Florence Copper, Inc.
MAILING ADDRESS: 1616 W Adams St	MAILING ADDRESS: 1575 W Hunt Hwy
CITY / STATE / ZIP CODE: Phoenix, AZ 85007	CITY / STATE / ZIP CODE: Florence, AZ 85132
CONTACT PERSON NAME AND TITLE: Lisa Atkins, State Land Commissioner	CONTACT PERSON NAME AND TITLE: Ian Ream, Senior Hydrogeologist
TELEPHONE NUMBER: (602) 542-4631 / FAX:	TELEPHONE NUMBER: (520) 374-3984 / FAX: (520) 374-3999

RECEIVED
JAN 11 2017
ADWR

SECTION 3. DRILLING AUTHORIZATION

Drilling Firm	Consultant (*if applicable*)
NAME: National EWP	CONSULTING FIRM: Haley & Aldrich, Inc.
DWR LICENSE NUMBER: 823 558-3500 / ROC LICENSE CATEGORY: A-4	CONTACT PERSON NAME: Mark Nicholls
TELEPHONE NUMBER: (480) 558-3500 / FAX: 480-558-3525	TELEPHONE NUMBER: 602-760-2423 / FAX: 602-760-2448
EMAIL ADDRESS: jstephens@nationalewp.com	EMAIL ADDRESS: mnicholls@haleyaldrich.com

SECTION 4.

Questions	Yes	No	Explanation:
1. Are all annular spaces between the casing(s) and the borehole for the placement of grout at least 2 inches?	X		2-inch annular spaces are special standards required for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
2. Is the screened or perforated interval of casing greater than 100 feet in length?	X		100-foot maximum screen intervals are a special standard for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
3. Are you requesting a variance to use thermoplastic casing in lieu of steel casing in the surface seal?		X	The wells must be constructed in a vault. Pursuant to A.A.C. R12-15-801 (27) a "vault" is defined as a tamper-resistant watertight structure used to complete a well below the land surface.
4. Is there another well name or identification number associated with this well? (e.g., MW-1, PZ2, 06-04, etc.)	X		If yes, please state M61-LBF
5. Have construction plans been coordinated with the Arizona Department of Environmental Quality?	X		If yes, please state agency contact & phone number: David Haag, 602-771-4669
6. For monitor wells, is dedicated pump equipment to be installed?	X		If yes, please state design pump capacity (*Gallons per Minute*): Low-flow
7. Is this well a new well located in an Active Management Area **AND** intended to pump water for the purpose of remediating groundwater?		X	You must also file a supplemental form A.R.S. § 45-454(c) & (f) unless the well is a replacement well and the total number of operable wells on the site is not increasing. (*See instructions*)
8. Will the well registration number be stamped on the vault cover or on the upper part of the casing?	X		If no, where will the registration number be placed?

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

WELL REGISTRATION NUMBER
55 - 226799

SECTION 6. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE

- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☒ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (*please specify*):

DATE CONSTRUCTION TO BEGIN
01/16/2017

Method of Well Development

CHECK ONE

- ☒ Airlift
- ☐ Bail
- ☐ Surge Block
- ☐ Surge Pump
- ☐ Other (*please specify*):

Method of Sealing at Reduction Points

CHECK ONE

- ☒ None
- ☐ Welded
- ☐ Swedged
- ☐ Packed
- ☐ Other (*please specify*):

Grout Emplacement Method

CHECK ONE

- ☒ Tremie Pumped (*Recommended*)
- ☐ Gravity
- ☐ Pressure Grout
- ☐ Other (*please specify*):

Surface or Conductor Casing

CHECK ONE

- ☐ Flush Mount in a vault
- ☒ Extends at least 1' above grade

SECTION 7. PROPOSED WELL CONSTRUCTION PLAN (attach additional page if needed)

Attach a well construction diagram labeling all specifications below.

Borehole			Casing													
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
FROM (*feet*)	TO (*feet*)	BOREHOLE DIAMETER (*inches*)	FROM (*feet*)	TO (*feet*)	OUTER DIAMETER (*inches*)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (*inches*)
0	20	20	0	20	14	☒	☐	☐		☒	☐	☐	☐	☐		
20	645	10.5	0	435	5	☒	☐	☐		☒	☐	☐	☐	☐		
			435	635	5	☐	☒	☐		☐	☐	☐	☐	☒		0.020

Annular Material

DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (T)								FILTER PACK		
						BENTONITE						
FROM (*feet*)	TO (*feet*)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	415	☐	☐	☒	☐	☐	☐	☐		☐	☐	
415	425	☐	☐	☐	☐	☐	☐	☐		☒	☐	Fine sand
425	645	☐	☐	☐	☐	☐	☐	☐		☒	☐	No. 8-12

IF THIS WELL HAS NESTED CASINGS, SPECIFY NUMBER OF CASING STRINGS

EXPECTED DEPTH TO WATER (*Feet Below Ground Surface*)

SECTION 8. PERMISSION TO ACCESS

☐ By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. (*See instructions.*)

SECTION 9. LAND OWNER AND WELL OWNER SIGNATURE

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and

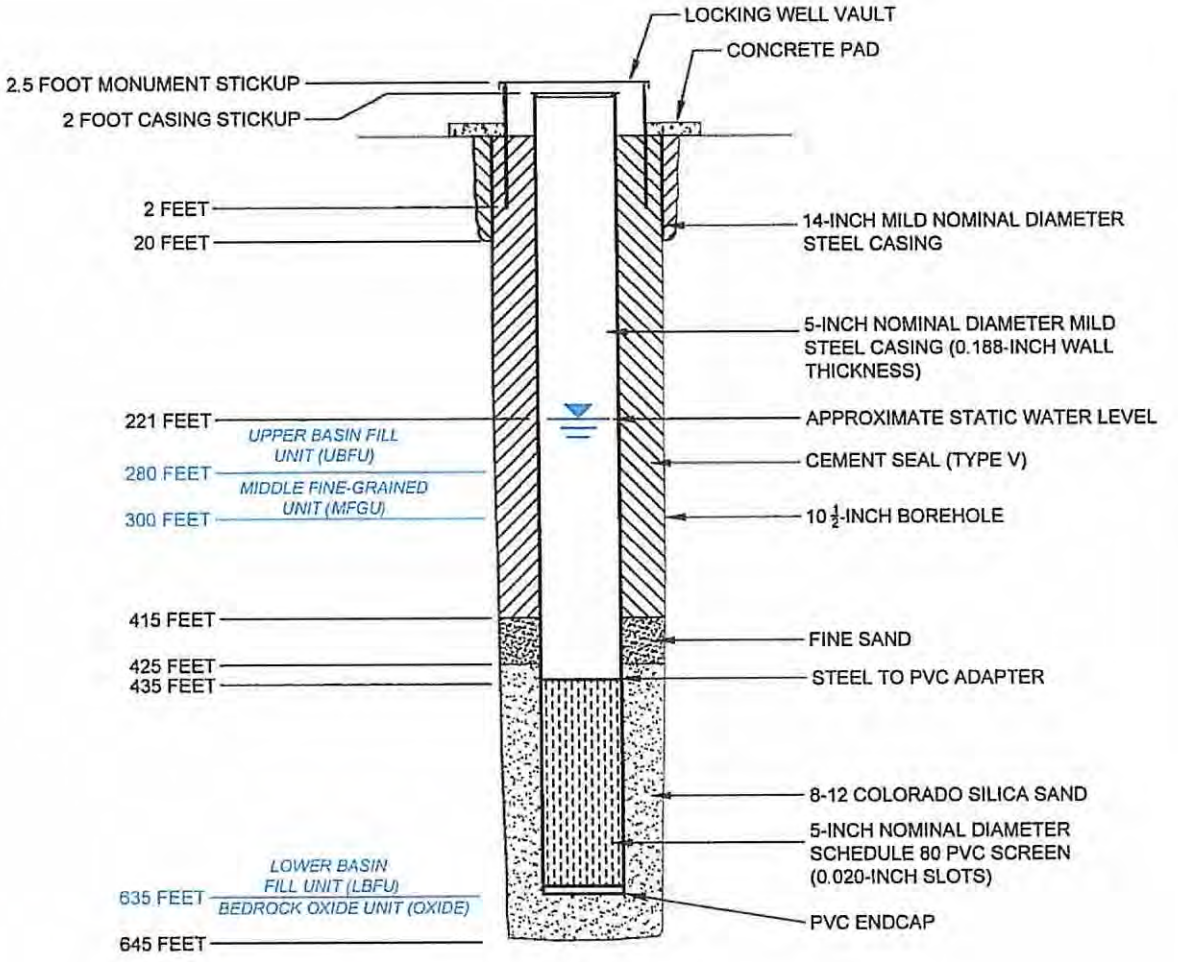
Land Owner	Well Owner (*if different from Land Owner; See instructions*)
PRINT NAME AND TITLE	PRINT NAME AND TITLE Ian Ream, Senior Hydrogeologist
SIGNATURE OF LAND OWNER	SIGNATURE OF WELL OWNER
DATE	DATE Jan 10, 2017
☐ By checking this box, you agree to allow ADWR to contact you via electronic mail.	☒ By checking this box, you agree to allow ADWR to contact you via electronic mail.
EMAIL ADDRESS	EMAIL ADDRESS IanReam@florencecopper.com

SECTION 5. Well Construction Diagram

Provide a well construction diagram showing all existing well construction features listed in Section 6 and Section 7.

See attached well diagram.

55-226799



HALEY ALDRICH

FLORENCE COPPER, INC.
FLORENCE, ARIZONA

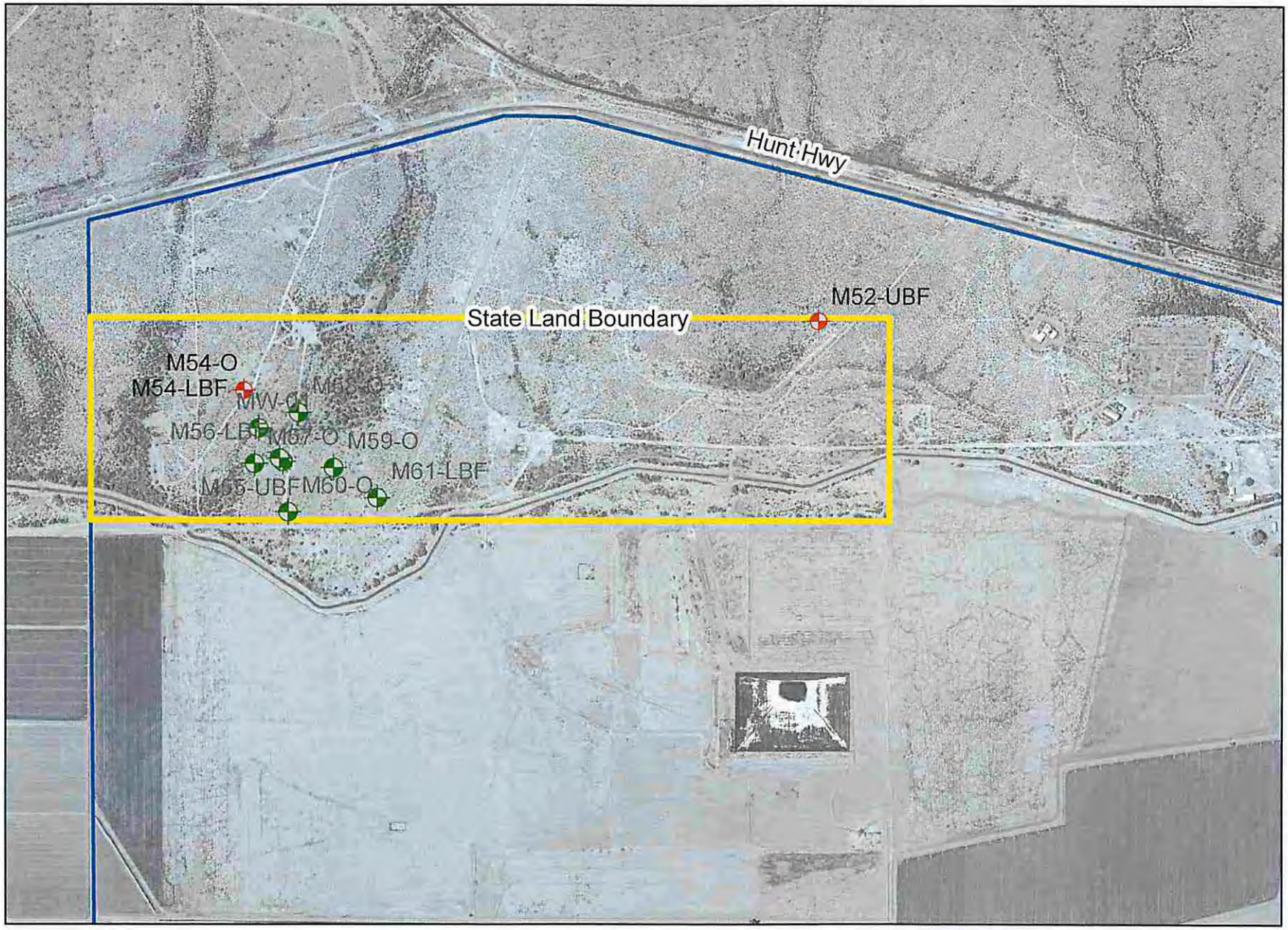
M61-LBF
WELL CONSTRUCTION DIAGRAM

FLORENCE COPPER INC.

SCALE: NOT TO SCALE

FIGURE 1

MOBINI, GITA Printed: 6/26/2015 2:40 PM Layout: M61-O
G:\PROJECTS\CURIS RESOURCES\38706-CURIS FEASIBILITY\DRAWINGS\M61-LBF_WELLDESIGN.DWG


Hunt Hwy
State Land Boundary
M52-UBF
M54-O
M54-LBF
MW-01
M56-LBF
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M59-O
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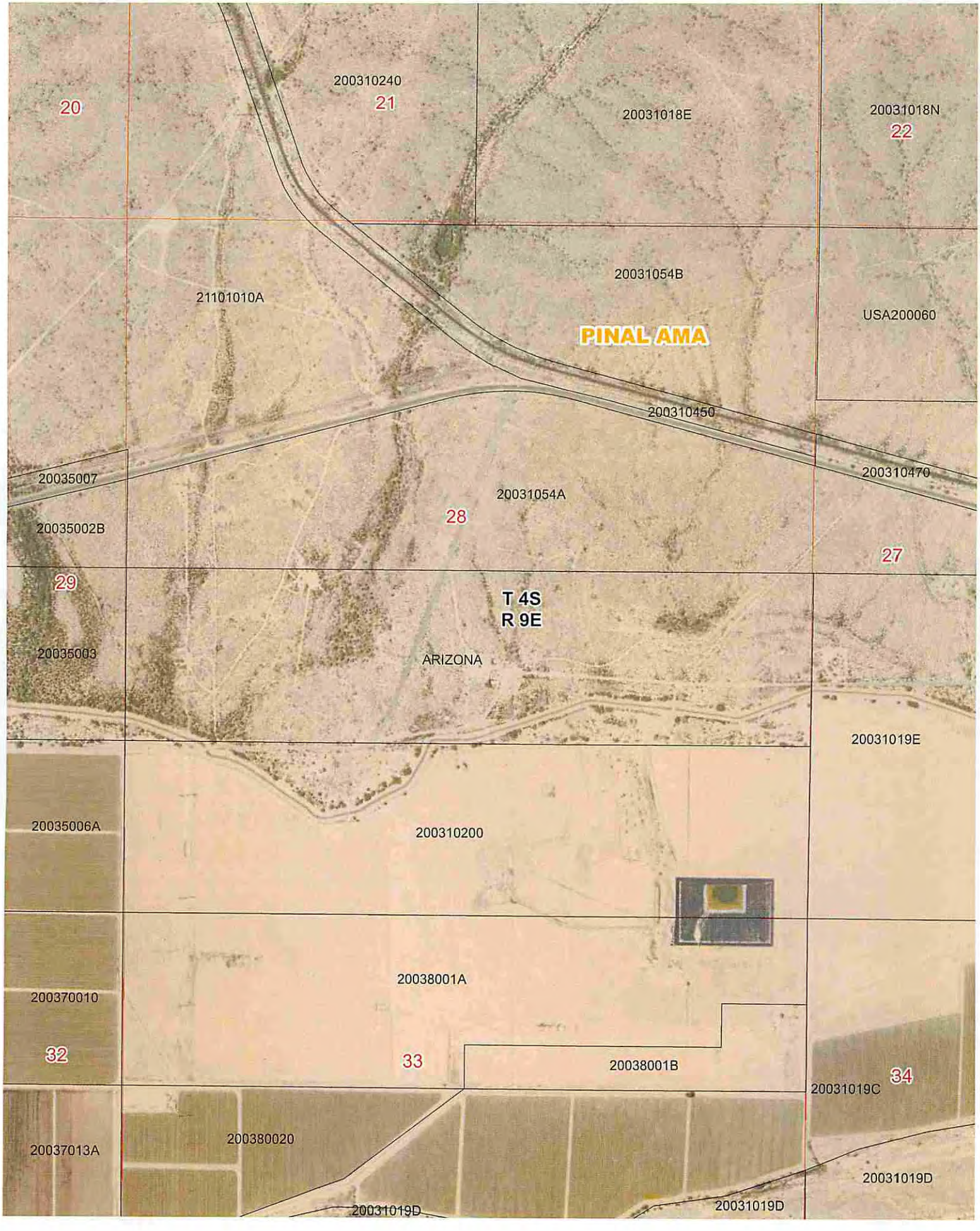
M55-UBF
M60-O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PINAL AMA
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20035002B
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R 9E
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20038001A
200370010
32
33
20038001B
34
20031019C
200380020
20037013A
20031019D
20031019D
20031019D

Torren Valdez

From: Ian Ream <IanReam@florencecopper.com>
Sent: Friday, January 13, 2017 9:06 AM
To: Torren Valdez
Subject: Re: Map of monitor well locations

Hi Torren,

The pumps will be QED micro purge. They typically do a liter or two a minute. Very low flow. Looking for discreet interval samples. The flow rate is based on drawdown. The goal is not to draw down the well much more than a half a foot or 1 foot.

Thanks,

Ian Ream
Senior Hydrogeologist
Florence Copper

On Jan 13, 2017, at 8:56 AM, Torren Valdez <tvaldez@azwater.gov> wrote:

> Ian,
>
> Would you happen to know the pump capacity (gpm) for the low-flow pumps that will be installed on those monitoring wells?
>
> Thank you,
>
> **Torren Valdez**
> Water Planning & Permitting Division
> Arizona Department of Water Resources
> 602.771.8614
>
> <image002.jpg>
>
> ---
>
> **From:** Ian Ream [mailto:IanReam@florencecopper.com]
> **Sent:** Thursday, January 12, 2017 11:13 AM
> **To:** Torren Valdez <tvaldez@azwater.gov>
> **Subject:** Map of monitor well locations
>
> Hi Torren,
>
> Here is a map with the well locations.
>
> Please don't hesitate to contact me if you need anything else or have any questions.
>
> Cheers,
>
> Ian

Ian Ream Senior Hydrogeologist

<image003.jpg>

Florence Copper Inc.
1575 W. Hunt Highway Florence AZ USA 85132
C 520-840-9604 **T** 520-374-3984 **F** 520-374-3999
E ianream@florencecopper.com **Web** florencecopper.com

"Notice Regarding Transmission

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"Notice Regarding Transmission

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NOTICE

A.R.S. § 41-1030(B), (D), (E) and (F) provide as follows:

B. An agency shall not base a licensing decision in whole or in part on a licensing requirement or condition that is not specifically authorized by statute, rule or state tribal gaming compact. A general grant of authority in statute does not constitute a basis for imposing a licensing requirement or condition unless a rule is made pursuant to that general grant of authority that specifically authorizes the requirement or condition.

D. This section may be enforced in a private civil action and relief may be awarded against the state. The court may award reasonable attorney fees, damages and all fees associated with the license application to a party that prevails in an action against the state for a violation of this section.

E. A state employee may not intentionally or knowingly violate this section. A violation of this section is cause for disciplinary action or dismissal pursuant to the agency's adopted personnel policy.

F. This section does not abrogate the immunity provided by section 12-820.01 or 12-820.02.

ARIZONA DEPARTMENT of WATER RESOURCES
1110 W. Washington St. Suite 310
Engineering and Permits Division
Phoenix, AZ 85007
602-771-8500

NOTICE TO WELL DRILLERS

This is a reminder that a valid drill card be present for the drilling of each and every well constructed on a site.* The problem seems to occur during the construction of a well when an unexpected problem occurs. Either the hole collapses, the hole is dry, a drill bit is lost and can't be recovered, or any number of other situations where the driller feels that he needs to move over and start another well. If you encounter this type of scenario, please be aware drillers do not have the authority to start another well without first obtaining drilling authority for the new well. Please note the following statutes and regulations pertaining to well drilling and construction:

ARIZONA REVISED STATUTE (A.R.S.)

A.R.S. § 45-592.A.

A person may construct, replace or deepen a well in this state only pursuant to this article and section 45-834.01. The drilling of a well may not begin until all requirements of this article and section 45-834.01, as applicable, are met.

***

A.R.S. § 594.A.

The director shall adopt rules establishing construction standards for new wells and replacement wells, the deepening and abandonment of existing wells and the capping of open wells.

***

A.R.S. § 600.A

A well driller shall maintain a complete and accurate log of each well drilled.

ARIZONA ADMINISTRATIVE CODE (A.A.C.)

A.A.C. R12-15-803.A.

A person shall not drill or abandon a well, or cause a well to be drilled or abandoned, in a manner which is not in compliance with A.R.S. Title 45, Chapter 2, Article 10, and the rules adopted thereunder.

***

A.A.C. R12-15-810.A.

A well drilling contractor or single well licensee may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

***

A.A.C. R12-15-816.F.

In the course of drilling a new well, the well may be abandoned without first filing a notice of intent to abandon and without an abandonment card.

*** THIS REQUIREMENT DOES NOT PERTAIN TO THE DRILLING OF MINERAL EXPLORATION, GEOTECHNICAL OR HEAT PUMP BOREHOLES**

Transaction Receipt - Success

Arizona Water Resources
Arizona Water Resources
MID:347501639533
1700 W Washington St
Phoenix , AZ 85012
602-771-8454

01/11/2017 04:20PM
Remittance ID
Arizona011117181536095Ald
Transaction ID:
178069995

KELSEY SHERRARD
500 Maint St
WOODLAND, California 95695
United States
Visa - 3420
Approval Code: 040691

Sale
Amount: $1,800.00

55-226788, 55-226789, 55-226790, 55-226791, 55-226792, 55-226793, 55-226794, 55-226795, 55-226796, 55-226797, 55-226798, 55-226799
N/A
Cash Reciepts
0
palder@azwater.gov

Cardmember acknowledges receipt of goods and/or services in the amount of the total shown hereon and agrees to perform the obligations set forth by the cardmember's agreement with the issuer.

Signature Phone Order

click here to continue.

Printed: 1/11/2017 4:27:39 PM

Arizona Department of Water Resources

1110 West Washington Street, Suite 310
Phoenix AZ 85007

Customer:
KELSEY SHERRARD
500 MAIN STREET
WOODLAND, CA 95695

Receipt #: 17-49315
Office: MAIN OFFICE
Receipt Date: 01/11/2017
Sale Type: Mail
Cashier: WRPXA

Item No.	Function Code	AOBJ	Description	Ref ID	Qty	Unit Price	Ext Price
8505	122221	4439-6F	MONITOR, PIEZOMETER, AIR SPARGING, SOIL VAPOR EXTR		12	150.00	1,800.00
					RECEIPT TOTAL:		**1,800.00**

Payment type: CREDIT CARD
Amount Paid: $1,800.00
Payment Received Date: 01/11/2017

Authorization 178069995

Notes: Credit card payment for $1,800.00 is for well registration numbers 55-226788, 55-226789, 55-226790, 55-226791, 55-226792, 55-226793, 55-226794, 55-226795, 55-226796, 55-226797, 55-226798, 55-226799

No refund without valid receipt

APPENDIX B

Lithologic Log

LITHOLOGIC LOG

M61-LBF

Project	Production Test Facility		Cadastral Location
Client	Florence Copper, Inc.		D (4-9) 28 CAC
Contractor	National EWP, Inc.		
Drilling Method	Conventional Mud Rotary	Concrete Pad 1478.91 feet, amsl	Start April 15, 2017
Borehole Diameter(s)	10.625	Datum State Plane NAD 83	Finish April 19, 2017
Rig Make & Model	Schramm T685WS	Location N 746,162 E 848,258	H&A Rep. R. Moore/ C. Price

Elevation (ft)	Depth (ft)	Well Diagram	USCS Symbol	Stratum Change Depth (ft)	LITHOLOGY IDENTIFICATION AND DESCRIPTION	COMMENTS
1460, 1440, 1420, 1400, 1380, 1360, 1340, 1320, 1300, 1280, 1260, 1240, 1220, 1200, 1180	0, 20, 40, 60, 80, 100, 120, 140, 160, 180, 200, 220, 240, 260, 280, 300		SP, SM, SP-SM, SW-SM, SC	10, 15, 35, 50, 115	**POORLY GRADED SAND (0-10 feet)** Primarily coarse sand with ~5% fines and trace gravel to 12 mm. Sand is subangular. Fines are nonplastic, have soft consistency, are brown (7.5YR 4/2), and have a medium weak reaction to HCL. **UBFU** **SILTY SAND (10-15 feet)** Roughly even distribution of fine sand and silt with a maximum particle size of 1 mm. Sand is subangular. Fines are nonplastic, have a soft consistency, low plasticity, medium toughness, medium dry strength, are reddish brown (5YR 4/4), and have a strong reaction to HCL. **UBFU** **POORLY GRADED SAND with SILT and GRAVEL (15-35 feet)** Primarily course sand with ~10% fines and ~40% gravel to 9 mm. Sand and gravel is subangular. Fines are nonplastic, have soft consistency, are brown (7.5YR 4/2), and have no reaction to HCL. **UBFU** **WELL GRADED SAND with SILT (35-50 feet)** Primarily fine to coarse sand to 4mm with ~10% fines. Sand is subrounded. Fines are nonplastic, have soft consistency, are brown (7.5YR 4/2), and have a weak reaction to HCL. **UBFU** **CLAYEY SAND (50-115 feet)** Primarily fine to medium sand to 3mm with ~30% fines. Sand is subangular. Fines have low to medium plasticity, have soft consistency, are strong brown (7.5YR 4/6), and have no reaction to HCL. **UBFU**	**Well Registry ID:** 55-226799 **Surface Completion:** Locking Well Vault & Concrete Pad **Well casing stickup:** 2.0 feet als *COLOR IDENTIFICATION MADE WITH WET SAMPLES USING MUNSELL CHART* **Surface Casing:** 14-inch mild steel; 0 - 40 feet **Well Casing:** Nominal 5-inch diameter Mild Steel; 0 - 429 feet **Unit Intervals:** UBFU: 0 - 282 feet MGFU: 282 - 305 feet LBFU: 305 - 615 feet Oxide: 615 - 646 feet
			CL	160	**SANDY LEAN CLAY (115-160 feet)** Primarily fines with ~30% sand to 5 mm. Sand is subangular. Fines have medium plasticity, soft consistency, medium toughness, medium dry strength, none to slow dilatancy, are reddish brown (5YR 4/4), and have no reaction to HCL. **UBFU**	
			SP	195	**POORLY GRADED SAND with GRAVEL (160-195 feet)** Primarily medium to coarse sand with ~5% fines and ~25% gravel to 10 mm. Sand and gravel is angular. Fines are nonplastic, have soft consistency, are reddish brown (5YR 4/4), and have a medium reaction to HCL. **UBFU**	
			SP	230	**POORLY GRADED SAND with GRAVEL (195-230 feet)** Primarily medium to coarse sand with ~5% fines and ~25% gravel to 16 mm. Sand is subangular, gravel is angular. Fines are nonplastic, have soft consistency, are reddish brown (5YR 4/4), and have a medium HCL reaction. **UBFU**	
			SW	282	**WELL GRADED SAND (230-282 feet)** Primarily fine to course sand with ~5% fines and ~10% gravel to 6 mm. Sand is subangular, gravel is angular. Fines are nonplastic, have soft consistency, are reddish brown (5YR 5/3), and have a medium reaction to HCL. **UBFU**	
			CH		**FAT CLAY with SAND (282-305 feet)** Primarily fines with ~20% sand and trace gravel to 10 mm. Sand is subrounded, gravel is angular. Fines have high plasticity, firm consistency, high toughness, high dry strength, are reddish brown (5YR 4/3)	

NOTE: Lithologic descrptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

H&A-SONIC-129687-ELEVATION HA-LIB09 WITH COMMENTS.GLB HA-DIRECT PUSH + SONIC LOG.GDT G:\PROJECTS\CURIS RESOURCES\129687 MONITOR WELL DRILLING\PROJECT DATA\GINT\GINT FILES\FCI WELLS.GPJ Oct 3, 17

HALEY ALDRICH

LITHOLOGIC LOG

M61-LBF

Elevation (ft)	Depth (ft)	Well Diagram	USCS Symbol	Stratum Change Depth (ft)	LITHOLOGY IDENTIFICATION AND DESCRIPTION	COMMENTS
	300			305	reddish brown, and have a medium reaction to HCL. **MFGU**	
			SW		**WELL GRADED SAND with GRAVEL (305-450 feet)** Primarily fine to coarse sand with ~5% fines and ~20% gravel to 12 mm. Sand and gravel is angular. Fines are nonplastic, have soft consistency, are reddish brown (5YR 5/4), and have a strong reaction to HCL. **LBFU**	
1160	320					
1140	340					
1120	360					
1100	380					**Seal:** Type V neat cement: 0 - 410 feet Fine Sand & Bentonite; 410 - 420 feet
1080	400					
1060	420					**Filter Pack:** 8 - 12 CO Silica Sand; 420 - 646 feet **Thread Adapter:** Stainless Steel, SCH 80 F480 PVC to SCH 40 F480 Mild Steel: 429 feet
1040	440			450		**Well Screen:** Nominal 5-inch diameter, SCH 80 PVC Screen (0.020-inch slots); 429 - 629 feet
			SP-SM		**POORLY GRADED SAND with SILT (450-615 feet)** Primarily fine to medium sand with ~10% fines and ~10% gravel to 12 mm. Sand and gravel is subangular. Fines have low plasticity, soft consistency, low toughness, are reddish brown (5YR 5/4), and have a strong reaction to HCL. **LBFU**	
1020	460					
1000	480					
980	500					
960	520					
940	540					
920	560					
900	580					
880	600					
				615	**DIABABSE/ GILA CONGLOMERATE (615-630 feet)** Mixture of dark gray to black diabase and Gila conglomerate from LBFU.	**Total Depth:** Driller Depth = 646 feet; Geophysical Logging Depth = 646 feet
860	620			630	**QUARTZ MONZONITE (630-646 feet)** Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximatley 5%.	
840	640			646		

NOTE: Lithologic descrptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

H&A-SONIC-129687-ELEVATION HA-LIB09 WITH COMMENTS.GLB HA-DIRECT PUSH + SONIC LOG.GDT G:\PROJECTS\CURIS RESOURCES\129687 MONITOR WELL DRILLING\PROJECT DATA\GINT\GINT FILES\FCI WELLS.GPJ Oct 3, 17

APPENDIX C

Chemical Characterization of Formation Water

May 23, 2018

Barbara Sylvester
Brown & Caldwell
201 E. Washington Suite 500
Phoenix, AZ 85004

TEL (602) 567-3894
FAX -

Work Order No.: 18D0619
Order Name: Florence Copper

RE: PTF

Dear Barbara Sylvester,

Turner Laboratories, Inc. received 2 sample(s) on 04/25/2018 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Kevin Brim
Project Manager

Turner Laboratories, Inc.

Date: 05/23/2018

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

Order: Florence Copper

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date/Time
18D0619-01	R-09	Ground Water	04/23/2018 1555
18D0619-02	TB	Ground Water	04/25/2018 0000

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

Case Narrative

The 8015D analysis was performed by TestAmerica Laboratories, Inc. in Phoenix, AZ.

The radiochemistry analysis was performed by Radiation Safety Engineering, Inc. in Chandler, AZ.

D5	Minimum Reporting Limit (MRL) is adjusted due to sample dilution; analyte was non-detect in the sample.
H5	This test is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated LCS/LCSD recovery was acceptable.

All soil, sludge, and solid matrix determinations are reported on a wet weight basis unless otherwise noted.

ND	Not Detected at or above the PQL
PQL	Practical Quantitation Limit
DF	Dilution Factor
PRL	Project Reporting Limit

Turner Laboratories, Inc.

Date: 05/23/2018

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Lab Sample ID: 18D0619-01

Client Sample ID: R-09
Collection Date/Time: 04/23/2018 1555
Matrix: Ground Water
Order Name: Florence Copper

Analyses	Result	PRL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
ICP Dissolved Metals-E 200.7 (4.4)									
Calcium	140		4.0	M3	mg/L	1	04/27/2018 1440	05/04/2018 1150	MH
Iron	ND		0.30		mg/L	1	04/27/2018 1440	05/04/2018 1150	MH
Magnesium	27		3.0		mg/L	1	04/27/2018 1440	05/04/2018 1150	MH
Potassium	6.8		5.0		mg/L	1	04/27/2018 1440	05/04/2018 1150	MH
Sodium	170		5.0	M3	mg/L	1	04/27/2018 1440	05/04/2018 1150	MH
ICP/MS Dissolved Metals-E 200.8 (5.4)									
Aluminum	ND		0.0800	D5	mg/L	2	04/27/2018 1440	05/07/2018 1139	MH
Antimony	ND		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Arsenic	0.0016		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Barium	0.071		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Beryllium	ND		0.00050	D5	mg/L	2	04/27/2018 1440	05/07/2018 1139	MH
Cadmium	ND		0.00025		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Chromium	0.0051		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Cobalt	ND		0.00025		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Copper	0.011		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Lead	ND		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Manganese	0.0020		0.00025		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Nickel	0.0033		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Selenium	ND		0.0025		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Thallium	ND		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Zinc	ND		0.040		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
CVAA Dissolved Mercury-E 245.1									
Mercury	ND		0.0010		mg/L	1	04/26/2018 0955	04/26/2018 1639	MH
pH-E150.1									
pH (pH Units)	7.8			H5	-	1	04/26/2018 1615	04/26/2018 1616	AP
Temperature (°C)	22			H5	-	1	04/26/2018 1615	04/26/2018 1616	AP
ICP/MS Total Metals-E200.8 (5.4)									
Uranium	0.016		0.00050		mg/L	1	04/27/2018 1230	04/30/2018 1348	MH

Turner Laboratories, Inc.

Date: 05/23/2018

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Lab Sample ID: 18D0619-01

Client Sample ID: R-09
Collection Date/Time: 04/23/2018 1555
Matrix: Ground Water
Order Name: Florence Copper

Analyses	Result	PRL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Anions by Ion Chromatography-E300.0 (2.1)									
Chloride	310		25		mg/L	25	04/26/2018 1225	04/26/2018 1415	AP
Fluoride	ND		0.50		mg/L	1	04/25/2018 1208	04/25/2018 1544	AP
Nitrogen, Nitrate (As N)	8.8		0.50		mg/L	1	04/25/2018 1208	04/25/2018 1544	AP
Nitrogen, Nitrite (As N)	ND		0.10		mg/L	1	04/25/2018 1208	04/25/2018 1544	AP
Sulfate	190		130		mg/L	25	04/26/2018 1225	04/26/2018 1415	AP
Cyanide-E335.4									
Cyanide	ND		0.10		mg/L	1	04/26/2018 0845	04/30/2018 1545	AP
Alkalinity-SM2320B									
Alkalinity, Bicarbonate (As CaCO3)	150		2.0		mg/L	1	05/03/2018 1030	05/03/2018 1210	EJ
Alkalinity, Carbonate (As CaCO3)	ND		2.0		mg/L	1	05/03/2018 1030	05/03/2018 1210	EJ
Alkalinity, Hydroxide (As CaCO3)	ND		2.0		mg/L	1	05/03/2018 1030	05/03/2018 1210	EJ
Alkalinity, Phenolphthalein (As CaCO3)	ND		2.0		mg/L	1	05/03/2018 1030	05/03/2018 1210	EJ
Alkalinity, Total (As CaCO3)	150		2.0		mg/L	1	05/03/2018 1030	05/03/2018 1210	EJ
Specific Conductance-SM2510 B									
Conductivity	1700		0.20		µmhos/cm	2	05/09/2018 1315	05/09/2018 1330	AP
Total Dissolved Solids (Residue, Filterable)-SM2540 C									
Total Dissolved Solids (Residue, Filterable)	1000		20		mg/L	1	04/26/2018 0826	05/01/2018 1600	EJ
Volatile Organic Compounds by GC/MS-SW8260B									
Benzene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 1943	KP
Carbon disulfide	ND		2.0		ug/L	1	05/07/2018 1824	05/07/2018 1943	KP
Ethylbenzene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 1943	KP
Toluene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 1943	KP
Xylenes, Total	ND		1.5		ug/L	1	05/07/2018 1824	05/07/2018 1943	KP
Surr: 4-Bromofluorobenzene	*95*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 1943*	*KP*
Surr: Dibromofluoromethane	*101*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 1943*	*KP*
Surr: Toluene-d8	*77*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 1943*	*KP*

Turner Laboratories, Inc.

Date: 05/23/2018

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Lab Sample ID: 18D0619-02

Client Sample ID: TB
Collection Date/Time: 04/25/2018 0000
Matrix: Ground Water
Order Name: Florence Copper

Analyses	Result	PRL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Volatile Organic Compounds by GC/MS-SW8260B									
Benzene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 2344	KP
Carbon disulfide	ND		2.0		ug/L	1	05/07/2018 1824	05/07/2018 2344	KP
Ethylbenzene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 2344	KP
Toluene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 2344	KP
Xylenes, Total	ND		1.5		ug/L	1	05/07/2018 1824	05/07/2018 2344	KP
Surr: 4-Bromofluorobenzene	*101*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 2344*	*KP*
Surr: Dibromofluoromethane	*110*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 2344*	*KP*
Surr: Toluene-d8	*103*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 2344*	*KP*

Turner Laboratories, Inc.

Date: 05/23/2018

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1804269 - E 245.1										
Blank (1804269-BLK1)				Prepared & Analyzed: 04/26/2018						
Mercury	ND	0.0010	mg/L							
LCS (1804269-BS1)				Prepared & Analyzed: 04/26/2018						
Mercury	0.0049	0.0010	mg/L	0.005000		98	85-115			
LCS Dup (1804269-BSD1)				Prepared & Analyzed: 04/26/2018						
Mercury	0.0048	0.0010	mg/L	0.005000		95	85-115	2	20	
Matrix Spike (1804269-MS1)		**Source: 18D0394-01**		Prepared & Analyzed: 04/26/2018						
Mercury	0.0050	0.0010	mg/L	0.005000	0.00020	97	85-115			
Matrix Spike Dup (1804269-MSD1)		**Source: 18D0394-01**		Prepared & Analyzed: 04/26/2018						
Mercury	0.0050	0.0010	mg/L	0.005000	0.00020	96	85-115	1	20	
Batch 1804292 - E200.8 (5.4)										
Blank (1804292-BLK1)				Prepared & Analyzed: 04/30/2018						
Uranium	ND	0.00050	mg/L							
LCS (1804292-BS1)				Prepared & Analyzed: 04/30/2018						
Uranium	0.046	0.00050	mg/L	0.05000		92	85-115			
LCS Dup (1804292-BSD1)				Prepared & Analyzed: 04/30/2018						
Uranium	0.046	0.00050	mg/L	0.05000		92	85-115	0.2	20	
Matrix Spike (1804292-MS1)		**Source: 18D0614-01**		Prepared & Analyzed: 04/30/2018						
Uranium	0.051	0.00050	mg/L	0.05000	0.0015	99	70-130			
Batch 1805051 - E 200.7 (4.4)										
Blank (1805051-BLK1)				Prepared & Analyzed: 05/04/2018						
Calcium	ND	4.0	mg/L							
Iron	ND	0.30	mg/L							
Magnesium	ND	3.0	mg/L							
Potassium	ND	5.0	mg/L							
Sodium	ND	5.0	mg/L							
LCS (1805051-BS1)				Prepared & Analyzed: 05/04/2018						
Calcium	11	4.0	mg/L	10.00		109	85-115			
Iron	1.0	0.30	mg/L	1.000		104	85-115			
Magnesium	10	3.0	mg/L	10.00		105	85-115			
Potassium	10	5.0	mg/L	10.00		105	85-115			
Sodium	10	5.0	mg/L	10.00		105	85-115			
LCS Dup (1805051-BSD1)				Prepared & Analyzed: 05/04/2018						
Calcium	11	4.0	mg/L	10.00		110	85-115	1	20	
Iron	1.0	0.30	mg/L	1.000		105	85-115	0.5	20	
Magnesium	10	3.0	mg/L	10.00		105	85-115	0.06	20	
Potassium	10	5.0	mg/L	10.00		105	85-115	0.05	20	
Sodium	11	5.0	mg/L	10.00		109	85-115	4	20	

Turner Laboratories, Inc.

Date: 05/23/2018

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1805051 - E 200.7 (4.4)										
Matrix Spike (1805051-MS1)		**Source: 18D0619-01**		Prepared & Analyzed: 05/04/2018						
Calcium	150	4.0	mg/L	10.00	140	59	70-130			M3
Iron	1.1	0.30	mg/L	1.000	0.028	105	70-130			
Magnesium	38	3.0	mg/L	10.00	27	108	70-130			
Potassium	17	5.0	mg/L	10.00	6.8	105	70-130			
Sodium	170	5.0	mg/L	10.00	170	30	70-130			M3
Matrix Spike (1805051-MS2)		**Source: 18E0021-01**		Prepared & Analyzed: 05/04/2018						
Calcium	64	4.0	mg/L	10.00	54	103	70-130			
Iron	1.0	0.30	mg/L	1.000	0.0060	101	70-130			
Magnesium	21	3.0	mg/L	10.00	11	99	70-130			
Potassium	15	5.0	mg/L	10.00	4.7	104	70-130			
Sodium	99	5.0	mg/L	10.00	90	87	70-130			
Batch 1805069 - E 200.8 (5.4)										
Blank (1805069-BLK1)				Prepared & Analyzed: 05/07/2018						
Aluminum	ND	0.0400	mg/L							
Antimony	ND	0.00050	mg/L							
Arsenic	ND	0.00050	mg/L							
Barium	ND	0.00050	mg/L							
Beryllium	ND	0.00025	mg/L							
Cadmium	ND	0.00025	mg/L							
Chromium	ND	0.00050	mg/L							
Cobalt	ND	0.00025	mg/L							
Copper	ND	0.00050	mg/L							
Lead	ND	0.00050	mg/L							
Manganese	ND	0.00025	mg/L							
Nickel	ND	0.00050	mg/L							
Selenium	ND	0.0025	mg/L							
Thallium	ND	0.00050	mg/L							
Zinc	ND	0.040	mg/L							
LCS (1805069-BS1)				Prepared & Analyzed: 05/07/2018						
Aluminum	0.104	0.0400	mg/L	0.1000		104	85-115			
Antimony	0.048	0.00050	mg/L	0.05000		96	85-115			
Arsenic	0.050	0.00050	mg/L	0.05000		100	85-115			
Barium	0.050	0.00050	mg/L	0.05000		100	85-115			
Beryllium	0.049	0.00025	mg/L	0.05000		97	85-115			
Cadmium	0.050	0.00025	mg/L	0.05000		100	85-115			
Chromium	0.051	0.00050	mg/L	0.05000		102	85-115			
Cobalt	0.051	0.00025	mg/L	0.05000		101	85-115			
Copper	0.051	0.00050	mg/L	0.05000		103	85-115			
Lead	0.049	0.00050	mg/L	0.05000		98	85-115			
Manganese	0.050	0.00025	mg/L	0.05000		101	85-115			
Nickel	0.051	0.00050	mg/L	0.05000		102	85-115			
Selenium	0.051	0.0025	mg/L	0.05000		103	85-115			
Thallium	0.050	0.00050	mg/L	0.05000		101	85-115			
Zinc	0.10	0.040	mg/L	0.1000		101	85-115			

Turner Laboratories, Inc.

Date: 05/23/2018

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1805069 - E 200.8 (5.4)										
LCS Dup (1805069-BSD1)				Prepared & Analyzed: 05/07/2018						
Aluminum	0.115	0.0400	mg/L	0.1000		115	85-115	10	20	
Antimony	0.048	0.00050	mg/L	0.05000		96	85-115	0.7	20	
Arsenic	0.050	0.00050	mg/L	0.05000		101	85-115	0.8	20	
Barium	0.051	0.00050	mg/L	0.05000		102	85-115	1	20	
Beryllium	0.049	0.00025	mg/L	0.05000		97	85-115	0.2	20	
Cadmium	0.050	0.00025	mg/L	0.05000		100	85-115	0.2	20	
Chromium	0.051	0.00050	mg/L	0.05000		102	85-115	0.4	20	
Cobalt	0.050	0.00025	mg/L	0.05000		101	85-115	0.5	20	
Copper	0.052	0.00050	mg/L	0.05000		105	85-115	2	20	
Lead	0.049	0.00050	mg/L	0.05000		98	85-115	0.1	20	
Manganese	0.050	0.00025	mg/L	0.05000		101	85-115	0.09	20	
Nickel	0.051	0.00050	mg/L	0.05000		103	85-115	0.8	20	
Selenium	0.052	0.0025	mg/L	0.05000		104	85-115	2	20	
Thallium	0.050	0.00050	mg/L	0.05000		101	85-115	0.06	20	
Zinc	0.10	0.040	mg/L	0.1000		104	85-115	3	20	
Matrix Spike (1805069-MS1)		**Source: 18D0693-01**		Prepared & Analyzed: 05/07/2018						
Aluminum	0.239	0.0400	mg/L	0.1000	0.166	74	70-130			
Antimony	0.045	0.00050	mg/L	0.05000	0.00024	90	70-130			
Arsenic	0.056	0.00050	mg/L	0.05000	0.0035	104	70-130			
Barium	0.16	0.00050	mg/L	0.05000	0.12	94	70-130			
Beryllium	0.045	0.00025	mg/L	0.05000	0.000029	90	70-130			
Cadmium	0.047	0.00025	mg/L	0.05000	ND	94	70-130			
Chromium	0.049	0.00050	mg/L	0.05000	0.00052	98	70-130			
Cobalt	0.048	0.00025	mg/L	0.05000	0.00097	95	70-130			
Copper	0.051	0.00050	mg/L	0.05000	0.0020	98	70-130			
Lead	0.047	0.00050	mg/L	0.05000	0.00016	94	70-130			
Manganese	0.054	0.00025	mg/L	0.05000	0.0075	94	70-130			
Nickel	0.049	0.00050	mg/L	0.05000	0.0018	94	70-130			
Selenium	0.057	0.0025	mg/L	0.05000	ND	114	70-130			
Thallium	0.048	0.00050	mg/L	0.05000	0.000038	96	70-130			
Zinc	0.11	0.040	mg/L	0.1000	ND	109	70-130			

Turner Laboratories, Inc.

Date: 05/23/2018

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1804261 - SM2540 C										
Duplicate (1804261-DUP1)		**Source: 18D0606-01**		Prepared: 04/26/2018 Analyzed: 04/27/2018						
Total Dissolved Solids (Residue, Filterable)	630	20	mg/L		630			0.3	5	
Duplicate (1804261-DUP2)		**Source: 18D0606-02**		Prepared: 04/26/2018 Analyzed: 04/27/2018						
Total Dissolved Solids (Residue, Filterable)	610	20	mg/L		620			0.8	5	
Batch 1804268 - E335.4										
Blank (1804268-BLK1)				Prepared: 04/26/2018 Analyzed: 04/30/2018						
Cyanide	ND	0.10	mg/L							
LCS (1804268-BS1)				Prepared: 04/26/2018 Analyzed: 04/30/2018						
Cyanide	2.0	0.10	mg/L	2.000		101	90-110			
LCS Dup (1804268-BSD1)				Prepared: 04/26/2018 Analyzed: 04/30/2018						
Cyanide	2.0	0.10	mg/L	2.000		101	90-110	0.1	20	
Matrix Spike (1804268-MS1)		**Source: 18D0602-03**		Prepared: 04/26/2018 Analyzed: 04/30/2018						
Cyanide	2.1	0.10	mg/L	2.000	ND	103	90-110			
Matrix Spike Dup (1804268-MSD1)		**Source: 18D0602-03**		Prepared: 04/26/2018 Analyzed: 04/30/2018						
Cyanide	2.0	0.10	mg/L	2.000	ND	98	90-110	5	20	
Batch 1804272 - E150.1										
Duplicate (1804272-DUP1)		**Source: 18D0662-02**		Prepared & Analyzed: 04/26/2018						
pH (pH Units)	7.8		-		7.8			0.1	200	H5
Temperature (°C)	21		-		21			2	200	H5
Batch 1805027 - SM2320B										
LCS (1805027-BS1)				Prepared & Analyzed: 05/03/2018						
Alkalinity, Total (As CaCO3)	240	2.0	mg/L	250.0		96	90-110			
LCS Dup (1805027-BSD1)				Prepared & Analyzed: 05/03/2018						
Alkalinity, Total (As CaCO3)	240	2.0	mg/L	250.0		96	90-110	0	10	
Matrix Spike (1805027-MS1)		**Source: 18D0606-02**		Prepared & Analyzed: 05/03/2018						
Alkalinity, Total (As CaCO3)	370	2.0	mg/L	250.0	130	96	85-115			
Matrix Spike Dup (1805027-MSD1)		**Source: 18D0606-02**		Prepared & Analyzed: 05/03/2018						
Alkalinity, Total (As CaCO3)	370	2.0	mg/L	250.0	130	95	85-115	0.5	10	
Batch 1805103 - SM2510 B										
LCS (1805103-BS1)				Prepared & Analyzed: 05/09/2018						
Conductivity	140	0.10	µmhos/cm	141.2		101	0-200			
LCS Dup (1805103-BSD1)				Prepared & Analyzed: 05/09/2018						
Conductivity	140	0.10	µmhos/cm	141.2		101	0-200	0.7	200	
Duplicate (1805103-DUP1)		**Source: 18E0192-01**		Prepared & Analyzed: 05/09/2018						
Conductivity	4.0	0.10	µmhos/cm		4.0			0	10	

Turner Laboratories, Inc.

Date: 05/23/2018

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1805074 - SW8260B										
Blank (1805074-BLK1)				Prepared & Analyzed: 05/07/2018						
Benzene	ND	0.50	ug/L							
Carbon disulfide	ND	2.0	ug/L							
Ethylbenzene	ND	0.50	ug/L							
Toluene	ND	0.50	ug/L							
Xylenes, Total	ND	1.5	ug/L							
Surrogate: 4-Bromofluorobenzene	*25.0*		*ug/L*	*25.00*		*100*	*70-130*			
Surrogate: Dibromofluoromethane	*26.9*		*ug/L*	*25.00*		*107*	*70-130*			
Surrogate: Toluene-d8	*25.1*		*ug/L*	*25.00*		*100*	*70-130*			
LCS (1805074-BS1)				Prepared & Analyzed: 05/07/2018						
1,1-Dichloroethene	29		ug/L	25.00		114	70-130			
Benzene	27		ug/L	25.00		109	70-130			
Chlorobenzene	29		ug/L	25.00		115	70-130			
Toluene	25		ug/L	25.00		101	70-130			
Trichloroethene	26		ug/L	25.00		103	70-130			
Surrogate: 4-Bromofluorobenzene	*24.6*		*ug/L*	*25.00*		*98*	*70-130*			
Surrogate: Dibromofluoromethane	*25.6*		*ug/L*	*25.00*		*102*	*70-130*			
Surrogate: Toluene-d8	*24.8*		*ug/L*	*25.00*		*99*	*70-130*			
LCS Dup (1805074-BSD1)				Prepared & Analyzed: 05/07/2018						
1,1-Dichloroethene	27		ug/L	25.00		110	70-130	4	30	
Benzene	26		ug/L	25.00		104	70-130	5	30	
Chlorobenzene	26		ug/L	25.00		105	70-130	9	30	
Toluene	24		ug/L	25.00		96	70-130	5	30	
Trichloroethene	25		ug/L	25.00		98	70-130	4	30	
Surrogate: 4-Bromofluorobenzene	*24.4*		*ug/L*	*25.00*		*98*	*70-130*			
Surrogate: Dibromofluoromethane	*26.1*		*ug/L*	*25.00*		*104*	*70-130*			
Surrogate: Toluene-d8	*25.1*		*ug/L*	*25.00*		*100*	*70-130*			
Matrix Spike (1805074-MS1)		**Source: 18D0582-02**		Prepared & Analyzed: 05/07/2018						
1,1-Dichloroethene	27		ug/L	25.00	0.070	109	70-130			
Benzene	26		ug/L	25.00	0.020	104	70-130			
Chlorobenzene	26		ug/L	25.00	0.0	105	70-130			
Toluene	27		ug/L	25.00	3.5	95	70-130			
Trichloroethene	24		ug/L	25.00	0.040	97	70-130			
Surrogate: 4-Bromofluorobenzene	*24.4*		*ug/L*	*25.00*		*98*	*70-130*			
Surrogate: Dibromofluoromethane	*26.4*		*ug/L*	*25.00*		*106*	*70-130*			
Surrogate: Toluene-d8	*24.9*		*ug/L*	*25.00*		*100*	*70-130*			
Matrix Spike Dup (1805074-MSD1)		**Source: 18D0582-02**		Prepared & Analyzed: 05/07/2018						
1,1-Dichloroethene	27		ug/L	25.00	0.070	108	70-130	0.8	30	
Benzene	25		ug/L	25.00	0.020	101	70-130	2	30	
Chlorobenzene	26		ug/L	25.00	0.0	105	70-130	0.3	30	
Toluene	27		ug/L	25.00	3.5	95	70-130	0.1	30	
Trichloroethene	24		ug/L	25.00	0.040	95	70-130	2	30	
Surrogate: 4-Bromofluorobenzene	*24.7*		*ug/L*	*25.00*		*99*	*70-130*			
Surrogate: Dibromofluoromethane	*26.4*		*ug/L*	*25.00*		*106*	*70-130*			
Surrogate: Toluene-d8	*25.3*		*ug/L*	*25.00*		*101*	*70-130*			

Turner Laboratories, Inc.

Date: 05/23/2018

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1804245 - E300.0 (2.1)										
Blank (1804245-BLK1)				Prepared & Analyzed: 04/25/2018						
Chloride	ND	1.0	mg/L							
Fluoride	ND	0.50	mg/L							
Nitrogen, Nitrate (As N)	ND	0.50	mg/L							
Nitrogen, Nitrite (As N)	ND	0.10	mg/L							
Sulfate	ND	5.0	mg/L							
LCS (1804245-BS1)				Prepared & Analyzed: 04/25/2018						
Chloride	12	1.0	mg/L	12.50		92	90-110			
Fluoride	2.0	0.50	mg/L	2.000		101	90-110			
Nitrogen, Nitrate (As N)	4.7	0.50	mg/L	5.000		95	90-110			
Nitrogen, Nitrite (As N)	2.3	0.10	mg/L	2.500		92	90-110			
Sulfate	12	5.0	mg/L	12.50		96	90-110			
LCS Dup (1804245-BSD1)				Prepared & Analyzed: 04/25/2018						
Chloride	12	1.0	mg/L	12.50		94	90-110	2	10	
Fluoride	2.0	0.50	mg/L	2.000		101	90-110	0.4	10	
Nitrogen, Nitrate (As N)	4.9	0.50	mg/L	5.000		98	90-110	3	10	
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500		95	90-110	3	10	
Sulfate	12	5.0	mg/L	12.50		98	90-110	3	10	
Matrix Spike (1804245-MS1)	**Source: 18D0613-08**			Prepared & Analyzed: 04/25/2018						
Fluoride	3.7	0.50	mg/L	2.000	1.7	100	80-120			
Nitrogen, Nitrate (As N)	4.7	0.50	mg/L	5.000	0.22	89	80-120			
Matrix Spike (1804245-MS2)	**Source: 18D0625-01**			Prepared & Analyzed: 04/26/2018						
Nitrogen, Nitrate (As N)	5.0	0.50	mg/L	5.000	0.46	92	80-120			
Nitrogen, Nitrite (As N)	2.2	0.10	mg/L	2.500	ND	88	80-120			
Matrix Spike (1804245-MS3)	**Source: 18D0614-01RE1**			Prepared & Analyzed: 04/26/2018						
Chloride	17		mg/L	12.50	6.4	88	80-120			
Sulfate	28		mg/L	12.50	18	85	80-120			
Matrix Spike Dup (1804245-MSD1)	**Source: 18D0613-08**			Prepared & Analyzed: 04/25/2018						
Fluoride	3.7	0.50	mg/L	2.000	1.7	100	80-120	0.4	10	
Nitrogen, Nitrate (As N)	4.7	0.50	mg/L	5.000	0.22	90	80-120	0.6	10	
Matrix Spike Dup (1804245-MSD2)	**Source: 18D0625-01**			Prepared & Analyzed: 04/26/2018						
Nitrogen, Nitrate (As N)	5.1	0.50	mg/L	5.000	0.46	92	80-120	0.2	10	
Nitrogen, Nitrite (As N)	2.2	0.10	mg/L	2.500	ND	88	80-120	0.4	10	
Matrix Spike Dup (1804245-MSD3)	**Source: 18D0614-01RE1**			Prepared & Analyzed: 04/26/2018						
Chloride	18		mg/L	12.50	6.4	89	80-120	0.6	10	
Sulfate	29		mg/L	12.50	18	86	80-120	0.6	10	

TURNER LABORATORIES INC.
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CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 18D0619 DATE 4/23/18 PAGE 1 OF 1

PROJECT NAME Florence Copper #
CONTACT NAME: Barb Sylvester
COMPANY NAME: Brown and Caldwell
ADDRESS: 2 N Central Ave, Suite 1600
CITY Phoenix STATE AZ ZIP CODE 85004
PHONE 602-567-3894 FAX
SAMPLER'S SIGNATURE

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	Diss Metals - list (Field Filtered)	Total Uranium (not Filtered)	Inorganics - list	Cyanide (free)	Organics - list	G.Alpha, (RadSafety sub)	Uranium activity if G. Alpha >12	Ra226, 228, Ra-Tot (RadsSafety)	TPH-D (TestAmerica Sub)
R-09	4-23-18	1555		GW	10	X	X	X	X	X	X	X	X	X
8260 TB	4-23-18	1600		GW	1					X				
				GW										
				GW										
				GW										
				GW										
				GW										
				GW										
				GW										
				GW										
				GW										

1. RELINQUISHED BY:
Signature
Printed Name Cold Gaiski
Firm HA
Date/Time 4-23-18 1630

2. RECEIVED BY: UPS
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS:
X Standard (approx10 days)*
Next day 2 Day 5 Day*
Email Preliminary Results To:
* Working Days

REPORT REQUIREMENTS:
X I. Routine Report
II. Report (includes DUP,MS,MSD, as required, may be charged as samples)
III. Date Validation Report (Includes All Raw Data)
Add 10% to invoice

INVOICE INFORMATION:
Account X Y N
P.O. #
Bill to: Florence Copper

SAMPLE RECEIPT:
Total Containers
Temperature 2.2
☑ Wet Ice ☐ Blue Ice

3. RELINQUISHED BY: UPS
Signature
Printed Name
Firm
Date/Time

4. RECEIVED BY:
Signature
Printed Name Joseph Catalano
Firm TURNER LABORATORIES INC.
Date/Time 4/23/18 1006

*LEGEND
DW = DRINKING WATER
GW = GROUNDWATER
SD = SOLID
SG = SLUDGE
SL = SOIL
ST = STORMWATER
WW = WASTEWATER

SPECIAL INSTRUCTIONS/COMMENTS:

Compliance Analysis: ☐ Yes ☐ No	Custody Seals ☐	Preservation Confirmation ☒
ADEQ Forms: ☐ Yes ☐ No	Container Intact ☒	Appropriate Head Space ☒
Mail ADEQ Forms: ☐ Yes ☐ No	COC/Labels Agree ☒	Received Within Hold Time ☒

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Phoenix
4625 East Cotton Ctr Blvd
Suite 189
Phoenix, AZ 85040
Tel: (602)437-3340

TestAmerica Job ID: 550-101943-1
Client Project/Site: 18D0619

For:
Turner Laboratories, Inc.
2445 North Coyote Drive
Suite 104
Tucson, Arizona 85745

Attn: Kevin Brim

Authorized for release by:
5/16/2018 12:23:25 PM

Ken Baker, Project Manager II
(602)659-7624
ken.baker@testamericainc.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
Q9	Insufficient sample received to meet method QC requirements.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 550-101943-1

Laboratory: TestAmerica Phoenix

Narrative

Job Narrative
550-101943-1

Comments
No additional comments.

Receipt
The sample was received on 4/27/2018 10:50 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.8º C.

GC Semi VOA
Method(s) 8015D: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD) associated with preparation batch 550-145985 and analytical batch 550-146884. Affected samples have been added a Q9 qualifier. 18D0619-01 (550-101943-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
Method(s) 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 3510C.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Sample Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
550-101943-1	18D0619-01	Water	04/23/18 15:55	04/27/18 10:50

Detection Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Client Sample ID: 18D0619-01 — Lab Sample ID: 550-101943-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
ORO (C22-C32)	0.21	Q9	0.20		mg/L	1		8015D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Client Sample ID: 18D0619-01

Lab Sample ID: 550-101943-1

Date Collected: 04/23/18 15:55

Matrix: Water

Date Received: 04/27/18 10:50

Method: 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
ORO (C22-C32)	0.21	Q9	0.20		mg/L		04/30/18 14:16	05/10/18 23:29	1
DRO (C10-C22)	ND	Q9	0.10		mg/L		04/30/18 14:16	05/10/18 23:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*79*		*10 - 150*	*04/30/18 14:16*	*05/10/18 23:29*	*1*

Surrogate Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Method: 8015D - Diesel Range Organics (DRO) (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)							
Lab Sample ID	**Client Sample ID**	**OTPH (10-150)**							
550-101943-1	18D0619-01	79							
LCS 550-145985/2-A	Lab Control Sample	79							
LCSD 550-145985/3-A	Lab Control Sample Dup	79							
MB 550-145985/1-A	Method Blank	65							

Surrogate Legend

OTPH = o-Terphenyl (Surr)

QC Sample Results

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 550-145985/1-A
Matrix: Water
Analysis Batch: 146884

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 145985

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
ORO (C22-C32)	ND		0.20		mg/L		04/30/18 14:15	05/11/18 11:16	1
DRO (C10-C22)	ND		0.10		mg/L		04/30/18 14:15	05/11/18 11:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*65*		*10 - 150*	*04/30/18 14:15*	*05/11/18 11:16*	*1*

Lab Sample ID: LCS 550-145985/2-A
Matrix: Water
Analysis Batch: 146884

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 145985

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
ORO (C22-C32)			1.60	1.59		mg/L		99	69 - 107		
DRO (C10-C22)			0.400	0.450		mg/L		113	42 - 133		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl (Surr)	*79*		*10 - 150*

Lab Sample ID: LCSD 550-145985/3-A
Matrix: Water
Analysis Batch: 146884

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 145985

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
ORO (C22-C32)			1.60	1.59		mg/L		100	69 - 107	0	20
DRO (C10-C22)			0.400	0.447		mg/L		112	42 - 133	1	22

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl (Surr)	*79*		*10 - 150*

QC Association Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

GC Semi VOA

Prep Batch: 145985

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-101943-1	18D0619-01	Total/NA	Water	3510C	
MB 550-145985/1-A	Method Blank	Total/NA	Water	3510C	
LCS 550-145985/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 550-145985/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 146884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-101943-1	18D0619-01	Total/NA	Water	8015D	145985
MB 550-145985/1-A	Method Blank	Total/NA	Water	8015D	145985
LCS 550-145985/2-A	Lab Control Sample	Total/NA	Water	8015D	145985
LCSD 550-145985/3-A	Lab Control Sample Dup	Total/NA	Water	8015D	145985

Lab Chronicle

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Client Sample ID: 18D0619-01

Date Collected: 04/23/18 15:55
Date Received: 04/27/18 10:50

Lab Sample ID: 550-101943-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			145985	04/30/18 14:16	REM	TAL PHX
Total/NA	Analysis	8015D		1	146884	05/10/18 23:29	TC1	TAL PHX

Laboratory References:

TAL PHX = TestAmerica Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

Accreditation/Certification Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Laboratory: TestAmerica Phoenix

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Arizona	State Program	9	AZ0728	06-09-18

Analysis Method	Prep Method	Matrix	Analyte

Method Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Method	Method Description	Protocol	Laboratory
8015D	Diesel Range Organics (DRO) (GC)	SW846	TAL PHX
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL PHX

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PHX = TestAmerica Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

SUBCONTRACT ORDER

Turner Laboratories, Inc.

101943

18D0619

SENDING LABORATORY:	**RECEIVING LABORATORY:**
Turner Laboratories, Inc.	TestAmerica Phoenix
2445 N. Coyote Drive, Ste #104	4625 East Cotton Center Boulevard Suite 189
Tucson, AZ 85745	Phoenix, AZ 85540
Phone: 520.882.5880	Phone :(602) 437-3340
Fax: 520.882.9788	Fax:
Project Manager: Kevin Brim	Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
-01			
Sample ID: 18D0619-01 Drinking Water Sampled:04/23/2018 15:55			
8015D Sub	04/30/2018 15:55		8015D DRO and ORO Paramaters Only
Containers Supplied:			

8015D Sub
o-Terphenyl
C10-C32 (Total)
C22-C32 (Oil Range Organics)
C10-C22 (Diesel Range Organics)
C6-C10 (Gasoline Range Organics)

550-101943 Chain of Custody

3.8°C UPS GR

TA-PHX

Released By	Date	Received By	Date
			4/27-18 1050
Released By	Date	Received By	Date

Page 1 of 1

Login Sample Receipt Checklist

Client: Turner Laboratories, Inc.

Job Number: 550-101943-1

Login Number: 101943
List Number: 1
Creator: Gravlin, Andrea

List Source: TestAmerica Phoenix

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	False	Check done at department level as required.

Radiation Safety Engineering, Inc.
3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121 (480) 897-9459
Website: www.radsafe.com FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: April 23, 2018
Sample Received: May 01, 2018
Analysis Completed: May 22, 2018

Sample ID	Gross Alpha Activity Method 600/00-02 (pCi/L)	Uranium Activity Method ASTM D6239 (pCi/L)	Adjusted Gross Alpha (pCi/L)	Radium 226 Activity Method GammaRay HPGE (pCi/L)	Radium 228 Activity Method GammaRay HPGE (pCi/L)	Total Radium (pCi/L)
18D0619-01	17.7 ± 0.9	12.9 ± 1.2	4.8 ± 1.5	3.1 ± 0.3	3.1 ± 0.4	6.2 ± 0.5
Date of Analysis	5/2/2018	5/21/2018	5/21/2018	5/4/2018	5/4/2018	5/4/2018

Robert L. Metzger, Ph.D., C.H.P. 5/22/2018
Date
Laboratory License Number AZ0462

Radiation Safety Engineering, Inc.
3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121
Website: www.radsafe.com
(480) 897-9459
FAX (480) 892-5446

Isotopic Uranium Analysis

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: April 23, 2018
Sample Received: May 01, 2018
Uranium Analysis Date: May 21, 2018

Sample No.	^{238}U	^{235}U	^{234}U	Total	
18D0619-01	6.0 ± 0.6	0.280 ± 0.004	6.6 ± 0.6	12.9 ± 1.2	Activity (pCi/L)
	17.9 ± 1.7	0.131 ± 0.002	0.00106 ± 0.00010	18.0 ± 1.7	Content (µg/L)
	Comments:				

Robert L. Metzger, Ph.D., C.H.P. 5/22/2018
Date
Laboratory License Number AZ0462

Arizona Department of Environmental Quality

Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report

Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____ PWS Name: _____

April 23, 2018 — Sample Date; 15:55 — Sample Time (24 hour clock); _____ Owner/Contact Person

_____ Owner/Contact Fax Number; _____ Owner/Contact Phone Number

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring — Date Q1 collected: _____

☐ Quarterly — Date Q2 collected: _____

☐ Composite of four quarterly samples — Date Q3 collected: _____

Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result		Exceed MCL
	15 pCi/L		Adjusted Gross Alpha	4000	5/21/2018	4.8 ± 1.5		
600/00-02		3 pCi/L	Gross Alpha	4002	5/2/2018	17.7 ± 0.9		
7500 - Rn			Radon	4004				
ASTM D6239	30 µg/L	1 µg/L	Combined Uranium	4006	5/21/2018	18.0 ± 1.7	µg/L	
			Uranium 234	4007	5/21/2018	0.00106 ± 0.00010		
			Uranium 235	4008	5/21/2018	0.131 ± 0.002		
			Uranium 238	4009	5/21/2018	17.9 ± 1.7		
	5 pCi/L	1 pCi/L	Combined Radium (226,228)	4010	5/4/2018	6.2 ± 0.5		X
GammaRay HPGE		1 pCi/L	Radium 226	4020	5/4/2018	3.1 ± 0.3		
GammaRay HPGE		1 pCi/L	Radium 228	4030	5/4/2018	3.1 ± 0.4		

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE60312

Lab ID Number: AZ0462

Lab Name: Radiation Safety Engineering, Inc.

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459

Comments: 18D0619-01

Authorized Signature: Robt L. Metzger

Date Public Water System Notified: _____

DWAR 6: 11/2007

SUBCONTRACT ORDER

Turner Laboratories, Inc.

18D0619

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Kevin Brim

RECEIVING LABORATORY:

Radiation Safety Engineering, Inc.
3245 N. Washington St.
Chandler, AZ 85225-1121
Phone :(480) 897-9459
Fax: (480) 892-5446
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
Sample ID: 18D0619-01 Drinking Water Sampled:04/23/2018 15:55			
Radiochemistry, Gross Alpha	10/20/2018 15:55		Analyze Uranium and Adjusted Alpha if G. Alpha is > 12
Radiochemistry, Radium 226/228	05/23/2018 15:55		
Containers Supplied:			

H 60312

Released By	Date	Received By	Date
	4/30/18 16:00	UPS	4/30/18 16:00
Released By	Date	Received By	Date

APPENDIX D

Well Completion Documentation

PIPE TALLY

Project Name.: Florence Copper-FNL	Project No.:
Well No.: MW-LBF	Date: 4/19/17
Location: ~~MW-LBF~~ Florence	Pipe Talley for: Casing
Total Depth: 64.6 ft	Geologist: Scott Hensel

Type of Connections: ☐ Welded ☐ T+C ☒ Flush Thread ☐ Other

Pipe	✓	Length (ft)	Length Σ (ft)	Pipe Type	Pipe	✓	Length (ft)	Length Σ (ft)	Pipe Type
1	✓	0.53	0.53	PVC cap	31	★	20.00	581.97	↓
2	★	20.01	20.54	PVC Screen	32	✓	20.00	601.97	
3	✓	20.00	40.54	↓	33	★	20.00	621.98	
4	★	20.02	60.56		34	✓	10.00	631.98	
5	✓	20.01	80.57						
6	★	20.01	100.58						
7	✓	20.02	120.60						
8	★	20.02	140.62						
9	✓	20.01	160.63						
10	★	20.01	180.64						
11	✓	20.02	200.66						
12	✓	1.30	201.96	PVC/Steel Adapter					
13	★	20.00	221.96	Steel Riser					
14	✓	20.01	241.97						
15	★	20.00	261.97						
16	✓	19.98	281.95						
17	★	20.00	301.95						
18	✓	20.00	321.95						
19	★	20.00	341.95						
20	✓	20.00	361.95						
21	★	20.00	381.95						
22	✓	20.00	401.95						
23	★	20.00	421.95						
24	✓	20.00	441.95						
25	★	20.00	461.95						
26	✓	20.01	481.96						
27	★	20.00	501.96						
28	✓	20.01	521.97						
29	★	20.00	541.97						
30	✓	20.00	561.97	↓					

SUMMARY OF TALLY

Total Length tallied:	631.98
Casing Stick-Up:	2.0'
Length of Casing Cut-Off:	0
Bottom of Well:	629.98
Screened Interval:	629.45 – 429.32
Total Screen in Hole:	200.13'

Notes:

200' of screen – 10 20' PVC Screen
430' of Steel – 21 20' Steel riser
1 10' steel riser
Centralizers every 40'

★ indicates centralizer @ bottom of pipe

Steel = ASTM A53A/ASME SA53A-E
PVC = Schedule 80 PVC 5" nominal, 0.020" slots

HALEY ALDRICH

ESTIMATED ANNULAR MATERIAL RECORD

Project Name: FCI **Project #.:** 129687-002 **Date:** 4-19-17
Well No.: MW1-LBF **Geologist:** C Price

ANNULAR VOLUME CALCULATIONS

Total Depth of Borehole [T]:	646	feet	Total Cased Depth:	630	feet
Borehole Diameter [D]:	10.625	inches	Rat Hole Volume [R=(D²) 0.005454*L_r]:	9.9	Ft³
Screen Length [L_s]:	200'	feet	Rat Hole Length [L_r]	16	feet
Screen Diameter [d_s]:	5.63	inches	Camera Tube Length [L_ct]	—	feet
Casing Length [L_c]	430	feet	Camera Tube Diameter [d_ct]	—	inches
Casing Diameter [d_c]	5.63	inches			

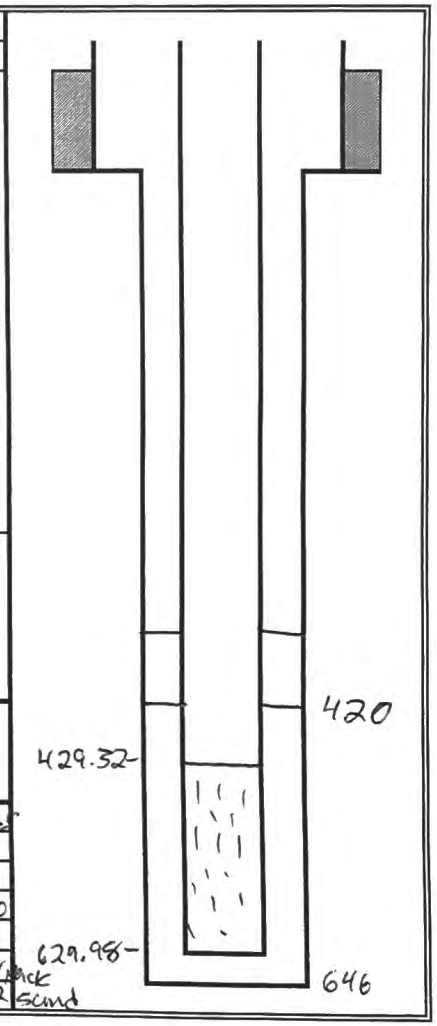
Screen Annular Volume (A_s): (D^2-d_s^2) 0.005454 = 0.44 Ft³/Lin. Ft
Casing Annular Volume (A_c): (D^2-d_c^2) 0.005454 = 0.44 Ft³/Lin. Ft
Casing/Cam.Tube Annular Volume (A_{c+ct}): (D^2-d_c^2-d_{ct}^2) 0.005454 = — Ft³/Lin. Ft

EQUATIONS

2,700 lbs. Silica Sand = 1 cubic yard = 27 cubic feet
[1] Volume of bag (Ft^3) = bag weight/100
[2] Calculated depth = Previous Calculated depth - (v/A)

Bentonite Sack = 0.69 ft^3
Silica Sand Super Sack = 3000 lbs.

No.	✓	Weight of Bag (lbs.)	Volume of Bag[1] (v) (ft³)	Total Vol. of Bags (ft³)	Calculated Depth[2] (ft bls)	Tagged Depth (ft bls)	Comments
1	✓	3000	30	30	584.3	570	6x12 silica sand 3000lbs
2	✓	3000	30	60	501.8	498	"
3	✓	3000	30	90	429.8	427	"
							swab 30 min 620-520
						436	30 min 520-430
4	✓	530	5.3	95.3	424	425	8-5gal buckets filter pack
5	✓	230	2.3	97.6	419.8	420	3x2-5gal buckets, 6x12 sand



HALEY ALDRICH

ESTIMATED ANNULAR MATERIAL RECORD (Continued)

Project Name: FCI **Project No.:** 129687-002 **Geologist:** CPride & K. Ford

Well No.: M61-LBF **Date:** 4-19-17

No.	✓	Weight of Bag (lbs.)	Volume of Bag[1](v) (ft³)	Total Vol. of Bags (ft³)	Calculated Depth[2] (ft bls)	Tagged Depth (ft bls)	Comments
6	✓	-	4.5	102.1	409.8	410	1-50 lb #60 silver sand + 6-5 gal pell plug buckets
7	✓	-	135	237.1	103.2	-	5 YARDS TYPE V CEMENT
8	✓	-	67.5	304.6	-50.2	0	2.5 YARDS "

Notes:

HALEY ALDRICH

CEMEX

53671325

Plant:	Begin Loading:	To Job:	Arrive Job:	Start Unload:	Finish Unload:	Leave Job:	Return Plant:
011/4111	1645						

Customer Code: 67 Customer Name: CE COPPER INC Customer Job Number: WELL Order Code / Date: 04/19/17

Project Code: 304 Project Name: NCE WELL Project P.O. Number: Order P.O. Number:

Ticket Date: 3/17 Delivery Address: HUNT HIGHWAY TYPE II/V SLURR Map Page: [ ] Map/Row/Column:

Delivery Instructions: & E/ FELIX RD ** TYPE II/V CEMENT ** Dispatcher: ewart

Ticket Number: 44098960

Due On Job:	Slump: 11.00	Truck Number: 1386	Driver Number:	Driver Name: JACKSON, KENNETH	End Use: BLDNG: OTHER

LOAD QUANTITY	CUMULATIVE QUANTITY	ORDERED QUANTITY	MATERIAL CODE	PRODUCTION DESCRIPTION	UOM	UNIT PRICE	AMOUNT
4.50	9.50	9.50	1333049	TYPE II/V SLURRY 21 SK CMT/W YDS			

LEGACY MATERIAL NO:

APR 19'17 16:48

1.00 1247818 FUEL SURCHARGE ADJ
1.00 1202749 ENVIRONMENTAL FEE
1.00 1572392 FREIGHT_NON_TAXABLE_ARIZONA_

Cash / Check / Charge	Check # / Auth Code:	Signature of Driver Receiving Cash:	Cash Received:	Total COD Order Amount to Collect Without Standby Charges:

Comments:

WATER ADDED: _____ GAL YARDS IN DRUM: _____ WHEN ADDED.

SIGNATURE

CURB LINE CROSSED AT OWNER'S/AGENT'S REQUEST:

SIGNATURE

☐ LOAD WAS TESTED BY: _____

Notice: Our drivers will make every effort to place materials where the customer designates, but the Company assumes no responsibility for damages inside curb or property line. Customer agrees to the terms of sale and delivery and accepts concrete as is. Due to important factors which are out of our control after delivery, this Company will not accept any responsibility for the finished results. No credit for returned concrete. Buyers exceptions and claims shall be deemed waived unless made to us in writing within one business day after the receipt of materials.

SPECIAL TERMS: Any water added is at customers own risk. If water is added on job, concrete strength is no longer guaranteed. **WARNING**: Product may cause skin and/or eye irritation. **CAUTION**: Material may be hazardous to your safety and health. Please refer to the backside of this ticket for important safety handling information, and to the material safety data sheets for additional information.

AUTHORIZED SIGNATURE:

PREV TRK: 10032050 SMITH, MICHEAL LOAD NUM: 2

68UNIVERSAL

INVOICE

CEMEX

53671324

Plant:	Begin Loading:	To Job:	Arrive Job:	Start Unload:	Finish Unload:	Leave Job:	Return Plant:
D11/4111	1611	1617	1659	1720			

Customer Code: 0121157 Customer Name: FLORENCE COPPER INC Customer Job Number: FLORENCE WELL Order Code / Date: 04/19/17

Project Code: 1099304 Project Name: FLORENCE WELL Project P.O. Number: NO Order P.O. Number:

Ticket Date: 9/17 Delivery Address: HUNT HIGHWAY TYPE II/V SLURR Map Page: N Map/Row/Column:

Delivery Instructions: HUNT HWY & E/ FELIX RD ** TYPE II/V CEMENT ** Dispatcher: Stewart

Ticket Number: 94098959

Due On Job:	Slump: 11.00	Truck Number: 050	Driver Number:	Driver Name: MICHEAL	End Use: BLDNG: OTHER

LOAD QUANTITY	CUMULATIVE QUANTITY	ORDERED QUANTITY	MATERIAL CODE	PRODUCTION DESCRIPTION	UOM	UNIT PRICE	AMOUNT
5.00	5.00	9.50	1333049	TYPE II/V SLURRY 21 SK LMT/W	YD3		
				LEGACY MATERIAL NO:			
1.00	1.00	1.00	1349968	SATURDAY OPENING	EA		
1.00			1247818	FUEL SURCHARGE ADJ			
1.00			1202749	ENVIRONMENTAL FEE			
1.00			1572392	FREIGHT_NON_TAXABLE_ARIZONA_			

APR 19 '17 16:11

Cash / Check / Charge	Check # / Auth Code:	Signature of Driver Receiving Cash:	Cash Received:	Total COD Order Amount to Collect Without Standby Charges:

Comments:

WATER ADDED: _____ GAL YARDS IN DRUM: _____ WHEN ADDED.

SIGNATURE

CURB LINE CROSSED AT OWNER'S/AGENT'S REQUEST:

SIGNATURE

☐ LOAD WAS TESTED BY: _____

Notice: Our drivers will make every effort to place materials where the customer designates, but the Company assumes no responsibility for damages inside curb or property line. Customer agrees to the terms of sale and delivery and accepts concrete as is. Due to important factors which are out of our control after delivery, this Company will not accept any responsibility for the finished results. No credit for returned concrete. Buyers exceptions and claims shall be deemed waived unless made to us in writing within one business day after the receipt of materials.

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AUTHORIZED SIGNATURE: ⓧ

PREV TRK: LOAD NUM: 1

68UNIVERSAL

INVOICE

CEMEX

53671324

Plant:	Begin Loading:	To Job:	Arrive Job:	Start Unload:	Finish Unload:	Leave Job:	Return Plant:
D11/4111	1611	1617	1659	1720			

Customer Code: [illegible] Customer Name: [illegible]NCE COPPER INC Customer Job Number: [illegible]NCE WELL Order Code / Date: [illegible] 04/19/17

Project Code: [illegible]304 Project Name: [illegible]NCE WELL Project P.O. Number: Order P.O. Number:

Ticket Date: [illegible]9/17 Delivery Address: HUNT HIGHWAY TYPE II/V SLURR Map Page: [illegible]N Map/Row/Column: [illegible]

Delivery Instructions: [illegible]Y & E/ FELIX RD ** TYPE II/V CEMENT ** Dispatcher: [illegible]tewart

Ticket Number: 44098959

Due On Job:	Slump: 11.00	Truck Number: [illegible]050	Driver Number: [illegible]	Driver Name: [illegible], MICHEAL	End Use: BLDNG: OTHER

LOAD QUANTITY	CUMULATIVE QUANTITY	ORDERED QUANTITY	MATERIAL CODE	PRODUCTION DESCRIPTION	UOM	UNIT PRICE	AMOUNT
5.00	5.00	9.50	1333049	TYPE II/V SLURRY 21 SK CMT/W	YD3		
				LEGACY MATERIAL NO:			
1.00	1.00	1.00	1349968	SATURDAY OPENING	EA		
1.00			1247818	FUEL SURCHARGE ADJ	APR 19 '17 16:11		
1.00			1202749	ENVIRONMENTAL FEE			
1.00			1572392	FREIGHT_NON_TAXABLE_ARIZONA_			

☐ Cash ☐ Check ☐ Charge — Check # / Auth Code:

Signature of Driver Receiving Cash:

Cash Received:

Total COD Order Amount to Collect Without Standby Charges:

Comments:

WATER ADDED: _____ GAL YARDS IN DRUM: _____ WHEN ADDED.

SIGNATURE

CURB LINE CROSSED AT OWNER'S/AGENT'S REQUEST:

SIGNATURE

☐ LOAD WAS TESTED BY: _____

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AUTHORIZED SIGNATURE

ⓧ [signature]

PREV TRK: LOAD NUM: 1

68UNIVERSAL

INVOICE

CEMEX

53671325

Plant:	Begin Loading:	To Job:	Arrive Job:	Start Unload:	Finish Unload:	Leave Job:	Return Plant:
D11/4111	1648						

Customer Code: [illegible]7 Customer Name: [illegible]CE COPPER INC Customer Job Number: [illegible] WELL Order Code / Date: 04/19/17

Project Code: [illegible]304 Project Name: [illegible]NCE WELL Project P.O. Number: Order P.O. Number:

Ticket Date: [illegible]3/17 Delivery Address: HUNT HIGHWAY TYPE II/V SLURR Map Page: [illegible] Map/Row/Column: [illegible]

Delivery Instructions: & E/ FELIX RD ** TYPE II/V CEMENT ** Dispatcher: [illegible]ewart

Ticket Number: 44098960

Due On Job:	Slump:	Truck Number:	Driver Number:	Driver Name:	End Use:
[illegible]	11.00	[illegible]386	[illegible]2	[illegible]KSON, KENNETH	BLDNG: OTHER

LOAD QUANTITY	CUMULATIVE QUANTITY	ORDERED QUANTITY	MATERIAL CODE	PRODUCTION DESCRIPTION	UOM	UNIT PRICE	AMOUNT
[illegible].00	[illegible].00	[illegible].00	[illegible]	TYPE II/V SLURRY 21 SK CMT/W	YDS		
				LEGACY MATERIAL NO:			
				APR 19 '17 16:48			
1.00			1247818	FUEL SURCHARGE ADJ			
1.00			1202749	ENVIRONMENTAL FEE			
1.00			1572392	FREIGHT_NON_TAXABLE_ARIZONA_			

☐ Cash ☐ Check ☐ Charge — Check # / Auth Code:

Signature of Driver Receiving Cash:

Cash Received:

Total COD Order Amount to Collect Without Standby Charges:

Comments:

WATER ADDED: _____ GAL YARDS IN DRUM: _____ WHEN ADDED.

SIGNATURE

CURB LINE CROSSED AT OWNER'S/AGENT'S REQUEST:

SIGNATURE

☐ LOAD WAS TESTED BY: _____

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AUTHORIZED SIGNATURE

(X)

PREV TRK: 10032050 SMITH, MICHEAL LOAD NUM: 2

68UNIVERSAL

INVOICE

APPENDIX E

Geophysical Logs

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	M61-LBF
FIELD	FLORENCE COPPER
COUNTY	PINAL STATE ARIZONA

TYPE OF LOGS: E-LOG - GAMMA

MORE:

LOCATION

SEC TWP RGE

OTHER SERVICES
CALIPER
TEMP / FLUID COND.
SONIC
DEVIATION

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	04-19-17	TYPE FLUID IN HOLE	FORMATION WATER
RUN No	2	MUD WEIGHT	N/A
TYPE LOG	E-LOG - GAMMA	VISCOSITY	N/A
DEPTH-DRILLER	642.0 FT	LEVEL	SURFACE
DEPTH-LOGGER	646.0 FT	MAX. REC. TEMP.	34.5 DEG C
BTM LOGGED INTERVAL	646.0 FT	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.2 FT
DRILLER / RIG#	NATIONAL DRILLING	LOGGING TRUCK	TRUCK #800
RECORDED BY / Logging Eng.	E. BEAM / K. MITCHELL	TOOL STRING/SN	ALT E-LOG IP SN 4992
WITNESSED BY	SCOTT - H & A	LOG TIME:ON SITE/OFF SITE	1:00 AM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	17 1/2 IN	SURFACE	40 FT	14 IN	STEEL	SURFACE	40 FT
2	10 5/8 IN	40 FT	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	04-19-17	**Date**	04-19-17	**Date**	04-19-17		
Run No.	1	**Run No.**	2	**Run No.**	3		
Tool Model	QL COMBO TOOL	**Tool Model**	ALT E-LOG IP	**Tool Model**	ALT 4 RX SONIC		
Tool SN	5979	**Tool SN**	4992	**Tool SN**	4572		
From	SURFACE	**From**	SURFACE	**From**	SURFACE		
To	646.0 FT	**To**	646.0 FT	**To**	646.0 FT		
Recorded By	E. BEAM	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM		
Truck No	800	**Truck No**	800	**Truck No**	800		
Operation Check	04-17-17	**Operation Check**	04-17-17	**Operation Check**	04-19-17		
Calibration Check	04-17-17	**Calibration Check**	N/A	**Calibration Check**	N/A		
Time Logged	1:45 AM	**Time Logged**	2:20 AM	**Time Logged**	2:50 AM		

Date	04-19-17	**Date**		**Date**			
Run No.	4	**Run No.**	5	**Run No.**	6		
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**			
Tool SN	143003	**Tool SN**		**Tool SN**			
From	SURFACE	**From**		**From**			
To	646.0 FT	**To**		**To**			
Recorded By	E. BEAM	**Recorded By**		**Recorded By**			
Truck No	800	**Truck No**		**Truck No**			
Operation Check	04-17-17	**Operation Check**		**Operation Check**			
Calibration Check	N/A	**Calibration Check**		**Calibration Check**			
Time Logged	3:25 AM	**Time Logged**		**Time Logged**			

Additional Comments:

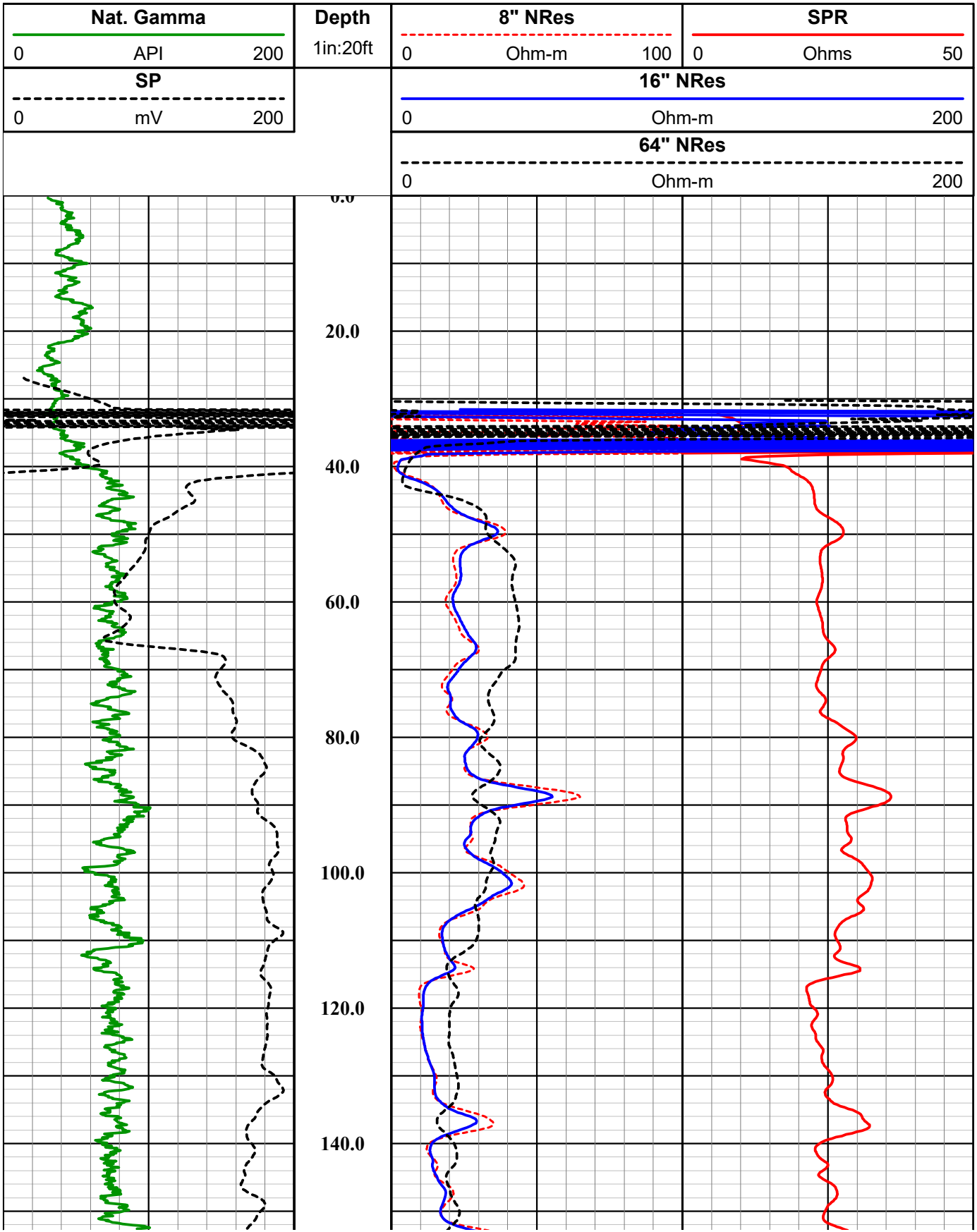
Caliper Arms Used: 9" **Calibration Points:** 6" & 12"

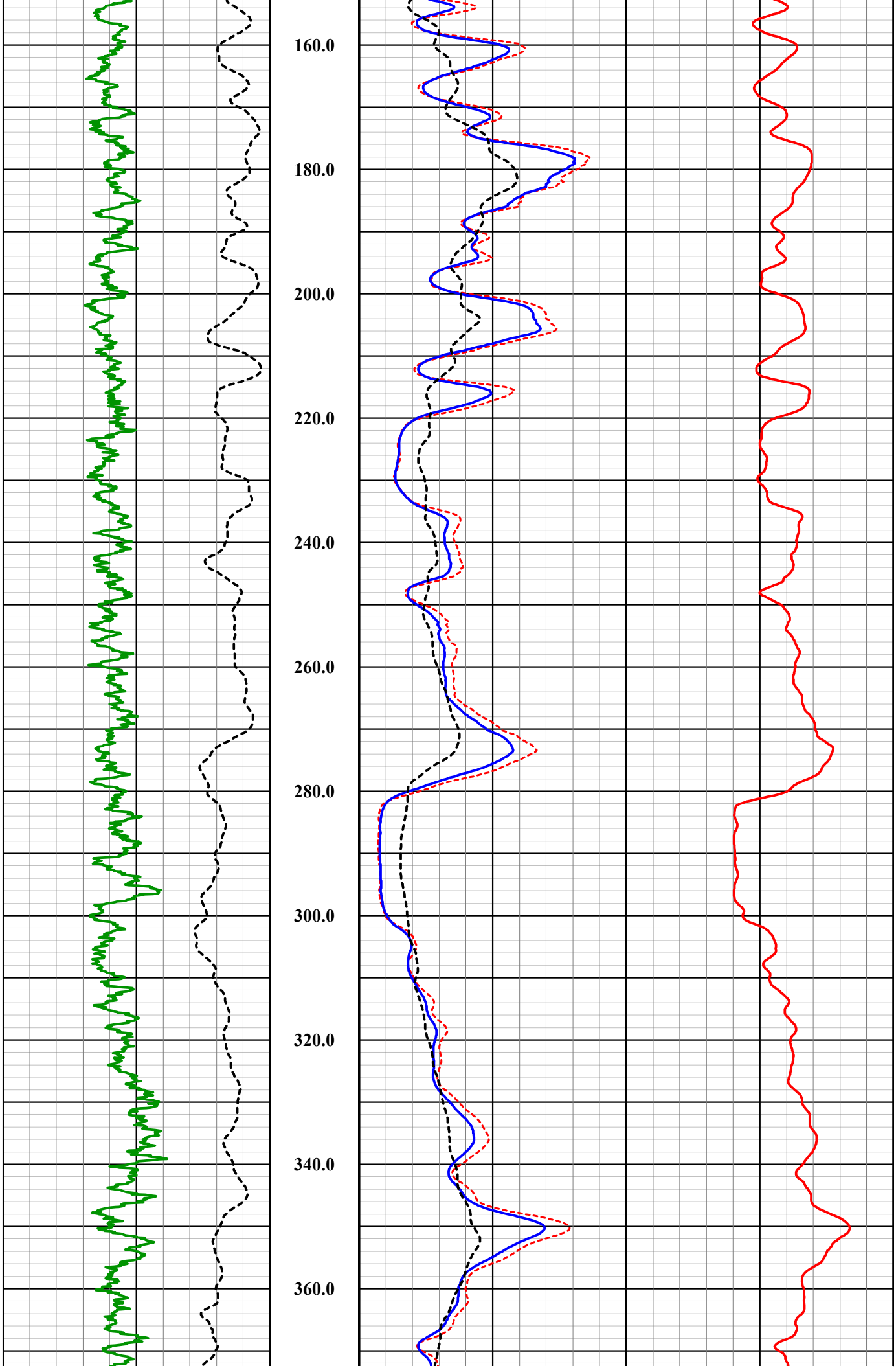
E-Log Calibration Range: 1 - 10,000 OHM-M **Calibration Points:** 1 & 10,000 OHM-M

USED ABI40 IN PLACE OF DEVIATION TOOL. SAME DEVIATION PACKAGE IN BOTH TOOLS SO EITHER WILL WORK FOR A DEVIATION SURVEY

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

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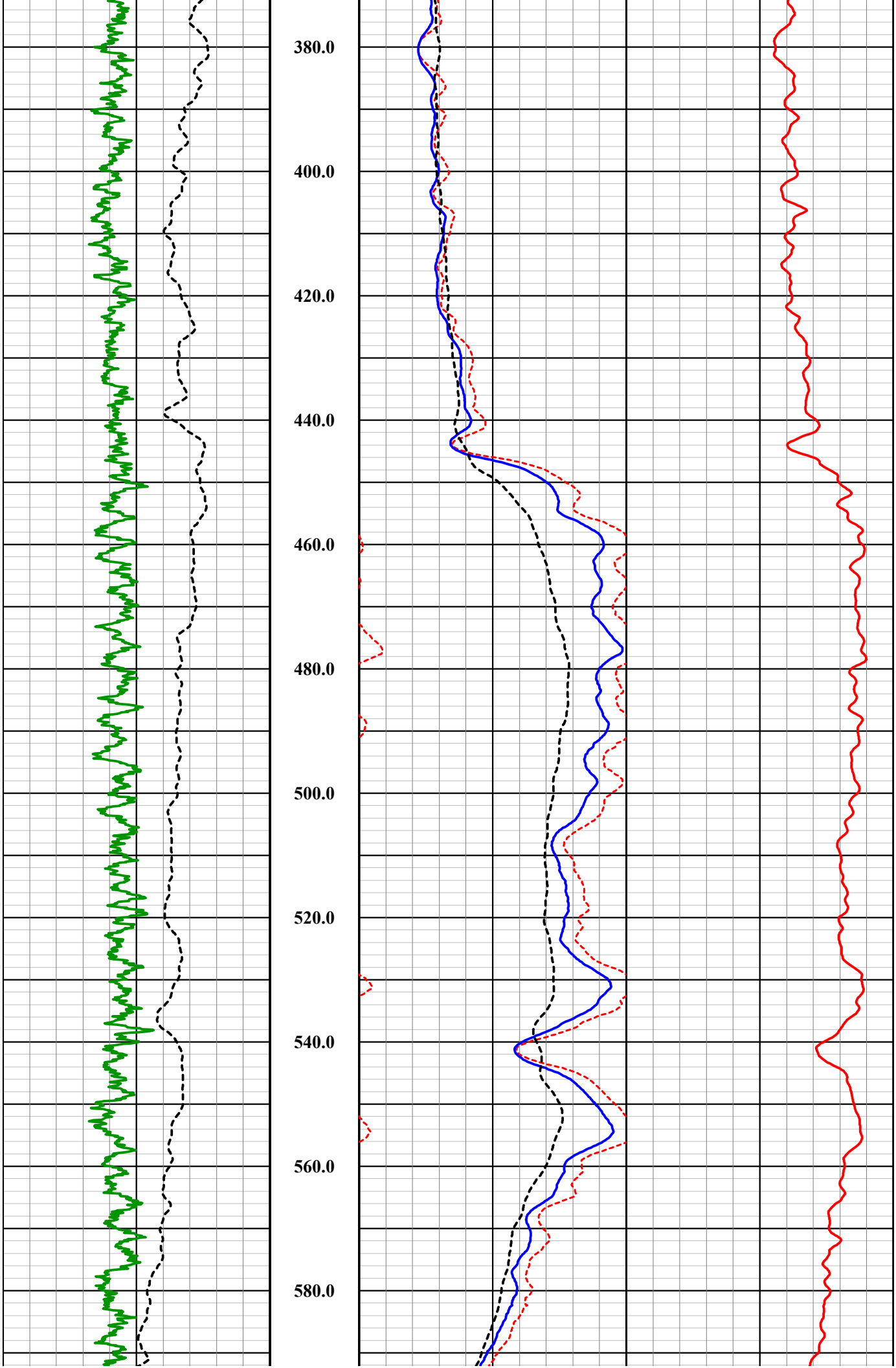
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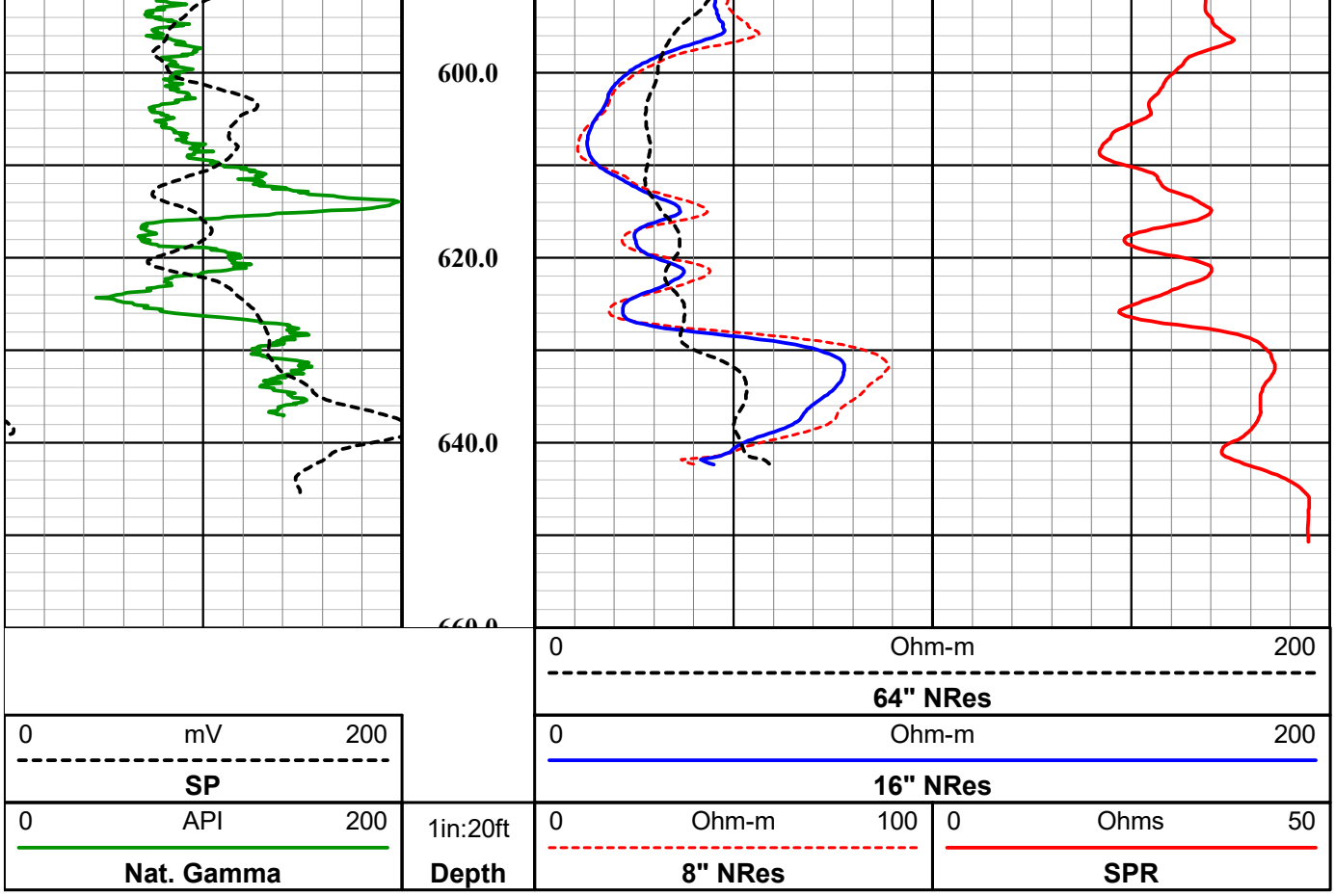
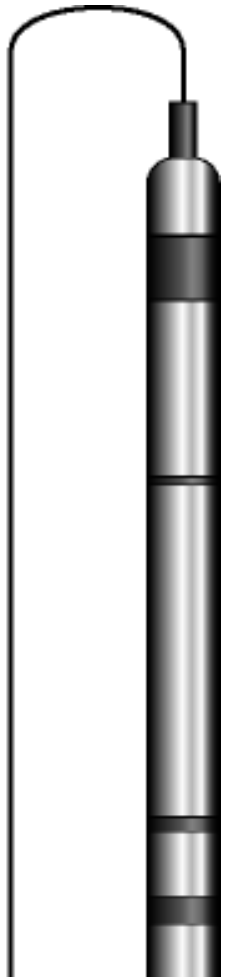


ALT QL E-Log IP Tool

Probe Top = Depth Ref.

Tool SN: 4992, 4784 & 6041



Bridle connects to wireline cablehead: Wireline armor is the B Electrode.

64" Normal Resistivity Electrode/Spontaneous Potential Electrode (M Electrode)

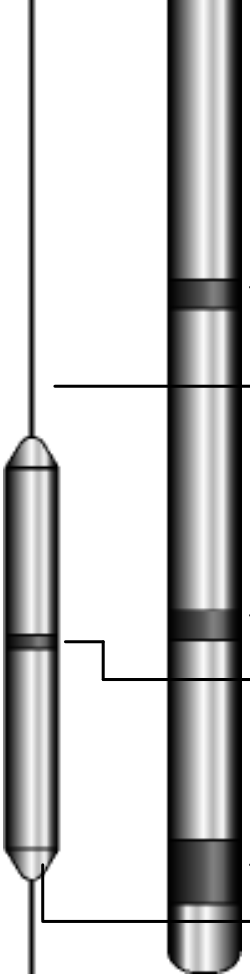
Probe Length = 1.89 m or 6.2 ft
Bridle Length = 7.88 m or 25.86 ft

Probe Weight = 8.8 kg or 19.4 lbs

Can only be collected in fluid
May be stacked with other QL tools
Has an Induced Polarization (IP) mode available

Operating Temperature: 80 Deg C (176 Deg F)
Presure Rating: 200 bar (2900 psi)

32" Normal Resistivity Electrode (M Electrode)



Electrode Measuring Points (from bottom of probe)

- Spontaneous Potential (SP): 1.689 m or 5.54 ft
- 8" Normal Resistivity (8" NRes): 0.164 m or 0.54 ft
- 16" Normal Resistivity (16" NRes): 0.266 m or 0.87 ft
- 32" Normal Resistivity (32" NRes): 0.469 m or 1.54 ft
- 64" Normal Resistivity (64" NRes): 0.875 m or 2.87 ft
- Single Point Resistance (SPR): 0.063 m or 0.21 ft

16" Normal Resistivity Electrode (M Electrode)

Isolation Bridle

8" Normal Resistivity Electrode (M Electrode)

Bridle Electrode (N Electrode)

Current Electrode/Single Point Resistance Electrode (A Electrode)

Four Conductor MSI Probe Top

1.63" or 40 mm Diameter (41.4 mm with neoprene heat shrink and electrical tape)

QL40 Gamma-Caliper-Temperature-Fluid Conductivity

Probe Top = Depth Ref.

Tool SN: 5613, 5979, 6161 & 6292

Four Conductor MSI Probe Top

Probe Length = 3.69 m or 12.12 ft
Probe Weight = 18.195 kg or 40.11 lbs

Caliper arms can only collect data logging up hole

Fluid Temperature/Conductivity and Natural Gamma can be collected logging up and down hole

Temperature Rating: 80 Deg C (176 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 1.07 m (42.12 in)

3-Arm Caliper = 1.78 m (70.27 in)

Available Arm Sizes: 3", 9", and 15"

FTC (Fluid Temperature/Conductivity) = 0.78 m (30.71 in)

1.57" or 40.0 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	FLORENCE COPPER
Well	M61-LBF
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final E-Log Summary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	M61-LBF
FIELD	FLORENCE COPPER
COUNTY	PINAL STATE ARIZONA

TYPE OF LOGS: GAMMA - CALIPER
MORE: TEMP / FLUID COND.

LOCATION

SEC TWP RGE

OTHER SERVICES
E-LOGS
SONIC
DEVIATION

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	04-19-17	TYPE FLUID IN HOLE	FORMATION WATER
RUN No	1	MUD WEIGHT	N/A
TYPE LOG	GAMMA-CALIPER-FTC	VISCOSITY	N/A
DEPTH-DRILLER	642.0 FT	LEVEL	SURFACE
DEPTH-LOGGER	646.0 FT	MAX. REC. TEMP.	34.5 DEG C
BTM LOGGED INTERVAL	646.0 FT	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.1 FT
DRILLER / RIG#	NATIONAL DRILLING	LOGGING TRUCK	TRUCK #800
RECORDED BY / Logging Eng.	E. BEAM / K. MITCHELL	TOOL STRING/SN	QL COMBO TOOL SN 5979
WITNESSED BY	SCOTT - H & A	LOG TIME:ON SITE/OFF SITE	1:00 AM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	17 1/2 IN	SURFACE	40 FT	14 IN	STEEL	SURFACE	40 FT
2	10 5/8 IN	40 FT	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	04-19-17	**Date**	04-19-17	**Date**	04-19-17		
Run No.	1	**Run No.**	2	**Run No.**	3		
Tool Model	QL COMBO TOOL	**Tool Model**	ALT E-LOG IP	**Tool Model**	ALT 4 RX SONIC		
Tool SN	5979	**Tool SN**	4992	**Tool SN**	4572		
From	SURFACE	**From**	SURFACE	**From**	SURFACE		
To	646.0 FT	**To**	646.0 FT	**To**	646.0 FT		
Recorded By	E. BEAM	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM		
Truck No	800	**Truck No**	800	**Truck No**	800		
Operation Check	04-17-17	**Operation Check**	04-17-17	**Operation Check**	04-19-17		
Calibration Check	04-17-17	**Calibration Check**	N/A	**Calibration Check**	N/A		
Time Logged	1:45 AM	**Time Logged**	2:20 AM	**Time Logged**	2:50 AM		

Date	04-19-17	**Date**		**Date**			
Run No.	4	**Run No.**	5	**Run No.**	6		
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**			
Tool SN	143003	**Tool SN**		**Tool SN**			
From	SURFACE	**From**		**From**			
To	646.0 FT	**To**		**To**			
Recorded By	E. BEAM	**Recorded By**		**Recorded By**			
Truck No	800	**Truck No**		**Truck No**			
Operation Check	04-17-17	**Operation Check**		**Operation Check**			
Calibration Check	N/A	**Calibration Check**		**Calibration Check**			
Time Logged	3:25 AM	**Time Logged**		**Time Logged**			

Additional Comments:

Caliper Arms Used: 9" **Calibration Points:** 6" & 12"

E-Log Calibration Range: 1 - 10,000 OHM-M **Calibration Points:** 1 & 10,000 OHM-M

USED ABI40 IN PLACE OF DEVIATION TOOL. SAME DEVIATION PACKAGE IN BOTH TOOLS SO EITHER WILL WORK FOR A DEVIATION SURVEY

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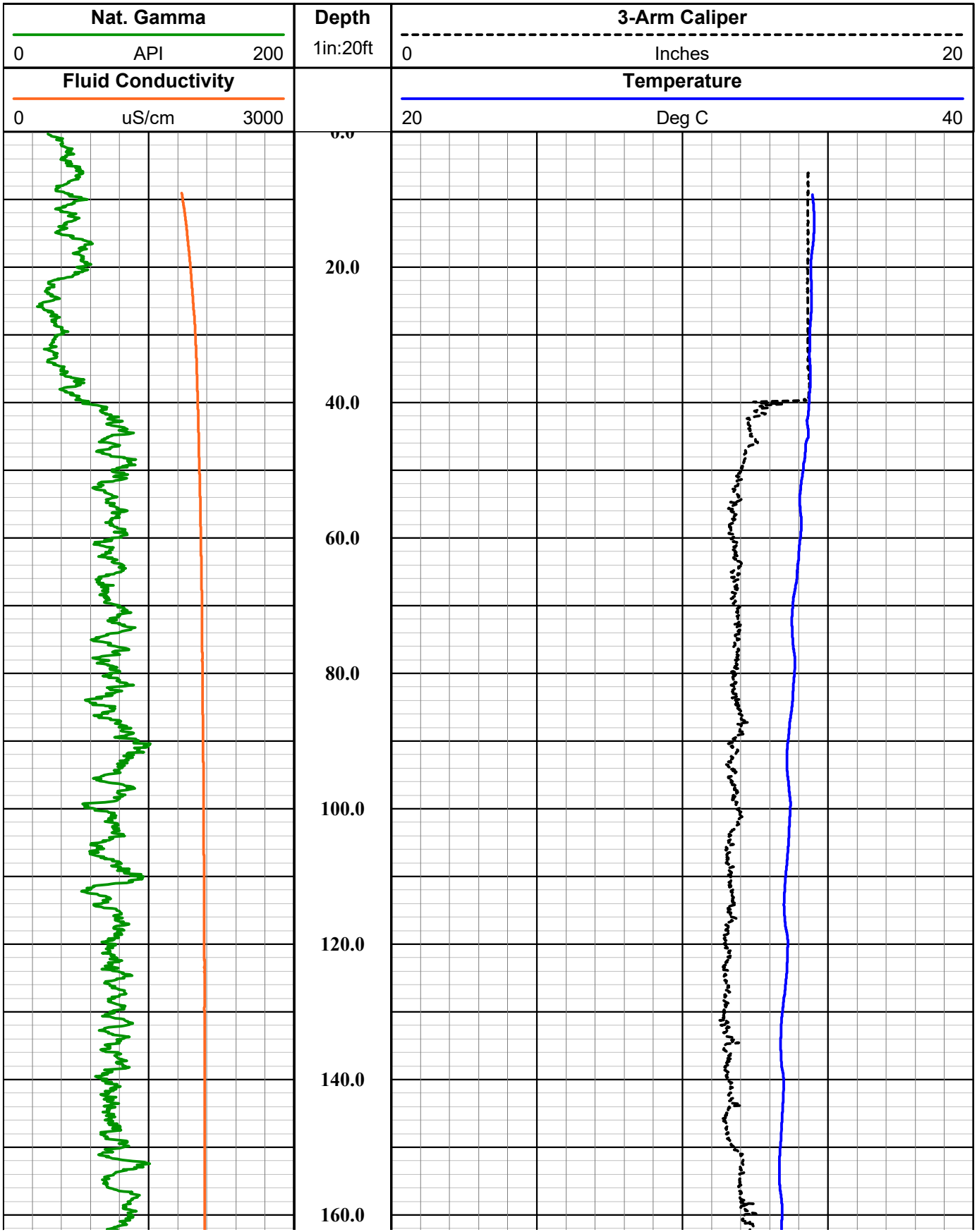

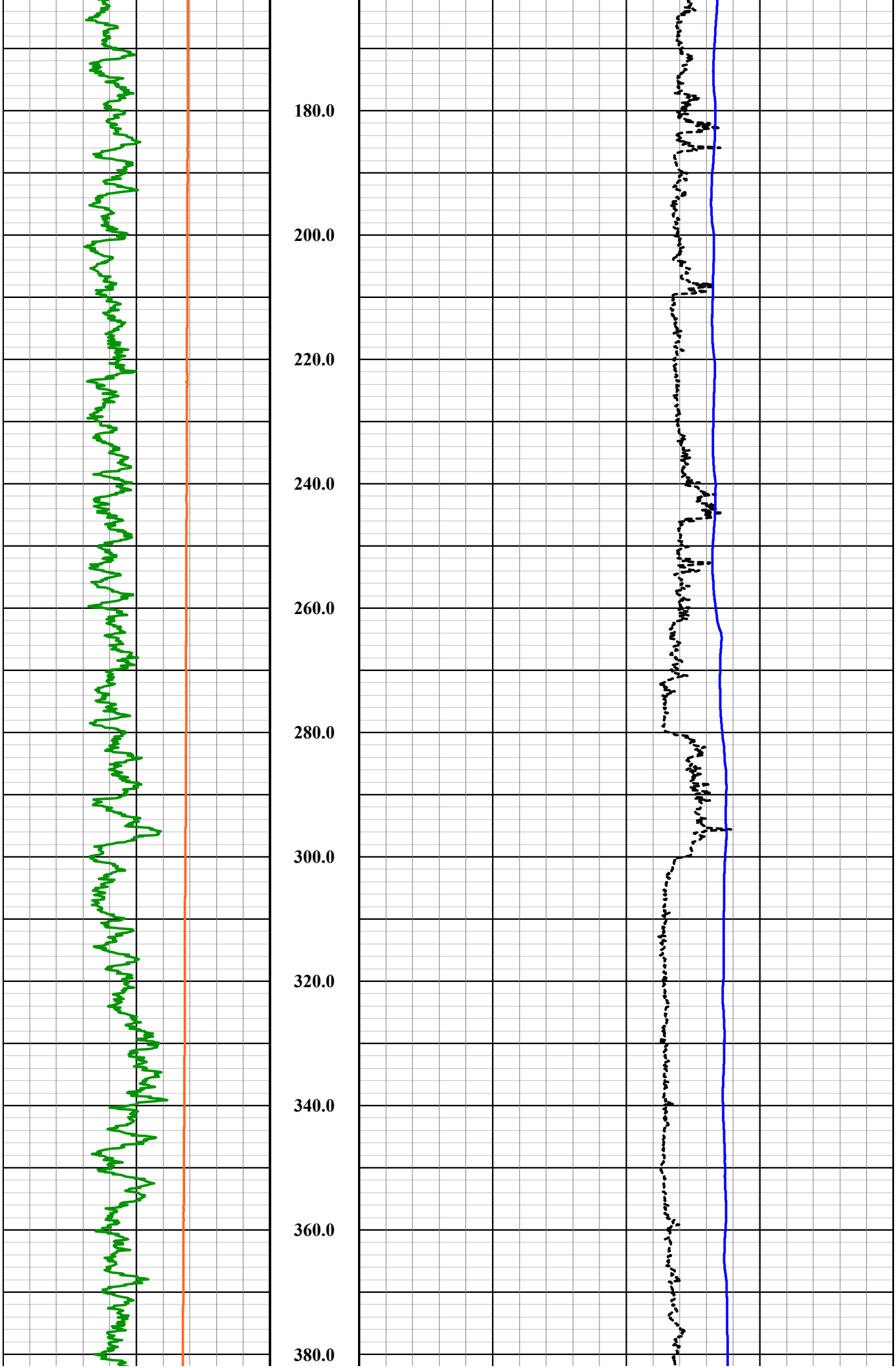
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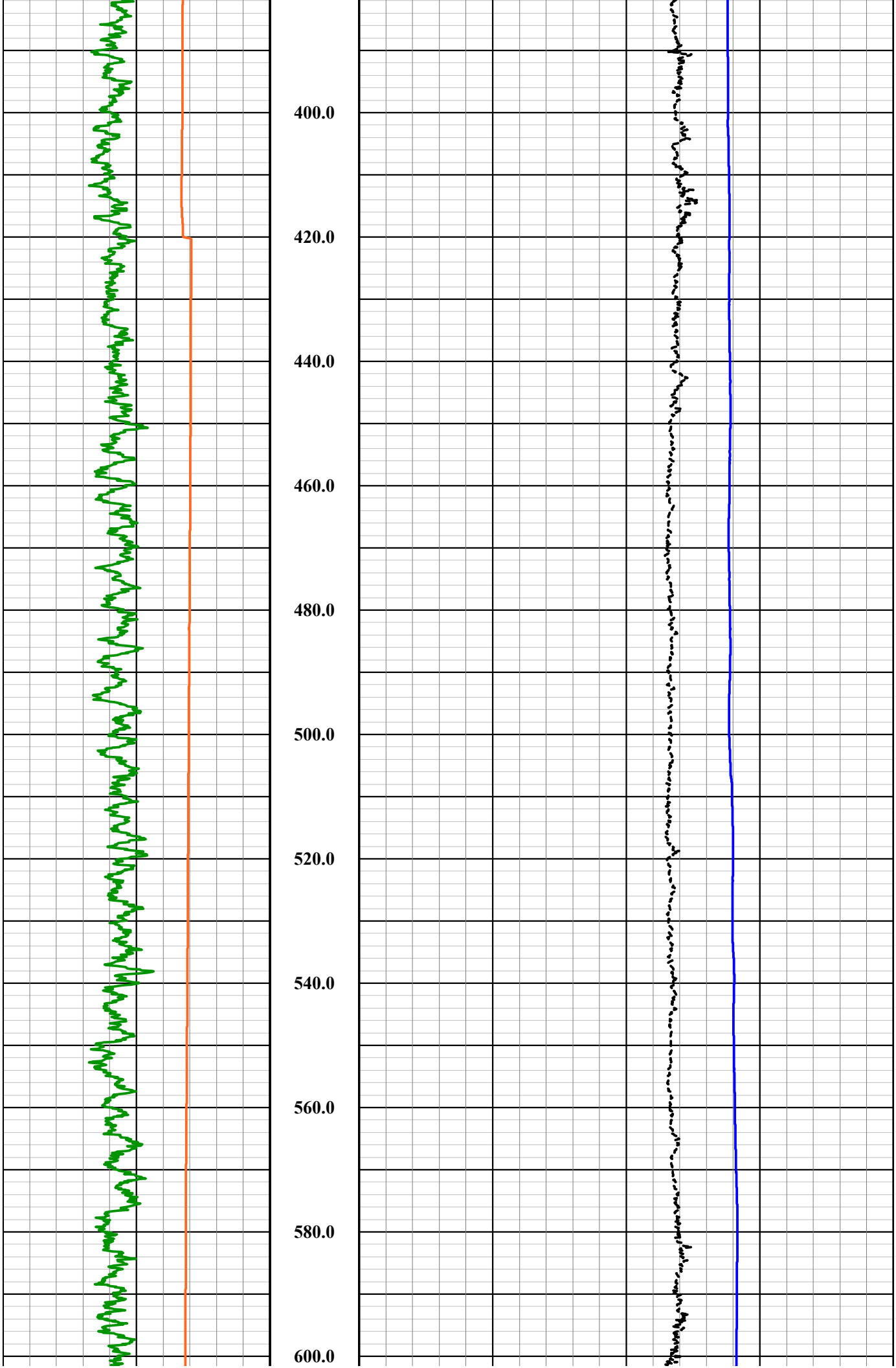
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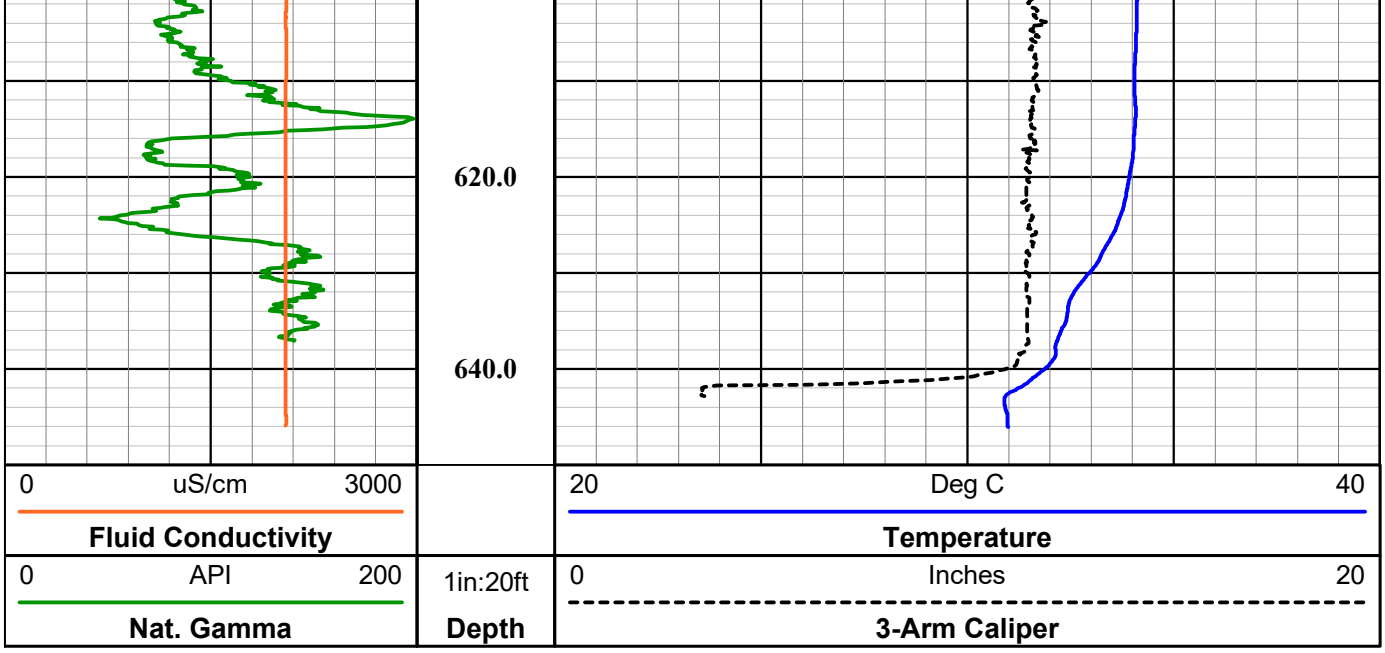

QL40 Gamma-Caliper-Temperature-Fluid Conductivity

Probe Top = Depth Ref.

Tool SN: 5613, 5979, 6161 & 6292

Four Conductor MSI Probe Top

Probe Length = 3.69 m or 12.12 ft
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1.57" or 40.0 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	FLORENCE COPPER
Well	M61-LBF
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final GCFTC Summary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	M61-LBF
FIELD	FLORENCE COPPER
COUNTY	PINAL STATE ARIZONA

TYPE OF LOGS: 4 RX SONIC

MORE: GAMMA - CALIPER

LOCATION

SEC TWP RGE

OTHER SERVICES
E-LOGS
TEMP / FLUID COND.
DEVIATION

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	04-19-17	TYPE FLUID IN HOLE	FORMATION WATER
RUN No	3	MUD WEIGHT	N/A
TYPE LOG	SONIC-GAMMA-CALIPER	VISCOSITY	N/A
DEPTH-DRILLER	642.0 FT	LEVEL	SURFACE
DEPTH-LOGGER	646.0 FT	MAX. REC. TEMP.	34.5 DEG C
BTM LOGGED INTERVAL	646.0 FT	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.25 FT
DRILLER / RIG#	NATIONAL DRILLING	LOGGING TRUCK	TRUCK #800
RECORDED BY / Logging Eng.	E. BEAM / K. MITCHELL	TOOL STRING/SN	ALT 4 RX SONIC SN 4572
WITNESSED BY	SCOTT - H & A	LOG TIME:ON SITE/OFF SITE	1:00 AM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	17 1/2 IN	SURFACE	40 FT	14 IN	STEEL	SURFACE	40 FT
2	10 5/8 IN	40 FT	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	04-19-17	**Date**	04-19-17	**Date**	04-19-17		
Run No.	1	**Run No.**	2	**Run No.**	3		
Tool Model	QL COMBO TOOL	**Tool Model**	ALT E-LOG IP	**Tool Model**	ALT 4 RX SONIC		
Tool SN	5979	**Tool SN**	4992	**Tool SN**	4572		
From	SURFACE	**From**	SURFACE	**From**	SURFACE		
To	646.0 FT	**To**	646.0 FT	**To**	646.0 FT		
Recorded By	E. BEAM	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM		
Truck No	800	**Truck No**	800	**Truck No**	800		
Operation Check	04-17-17	**Operation Check**	04-17-17	**Operation Check**	04-19-17		
Calibration Check	04-17-17	**Calibration Check**	N/A	**Calibration Check**	N/A		
Time Logged	1:45 AM	**Time Logged**	2:20 AM	**Time Logged**	2:50 AM		

Date	04-19-17	**Date**		**Date**			
Run No.	4	**Run No.**	5	**Run No.**	6		
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**			
Tool SN	143003	**Tool SN**		**Tool SN**			
From	SURFACE	**From**		**From**			
To	646.0 FT	**To**		**To**			
Recorded By	E. BEAM	**Recorded By**		**Recorded By**			
Truck No	800	**Truck No**		**Truck No**			
Operation Check	04-17-17	**Operation Check**		**Operation Check**			
Calibration Check	N/A	**Calibration Check**		**Calibration Check**			
Time Logged	3:25 AM	**Time Logged**		**Time Logged**			

Additional Comments:

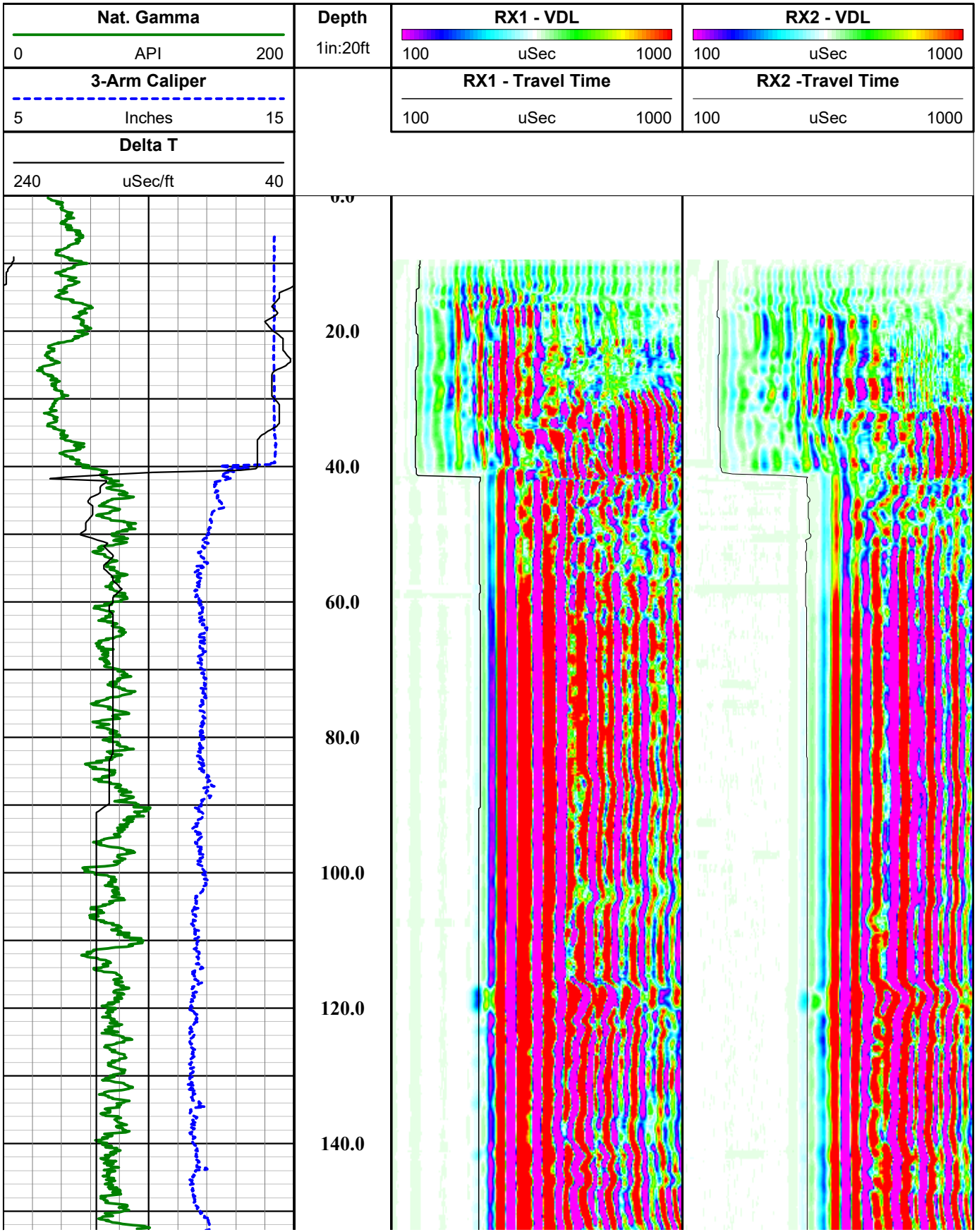
Caliper Arms Used: 9" **Calibration Points:** 6" & 12"

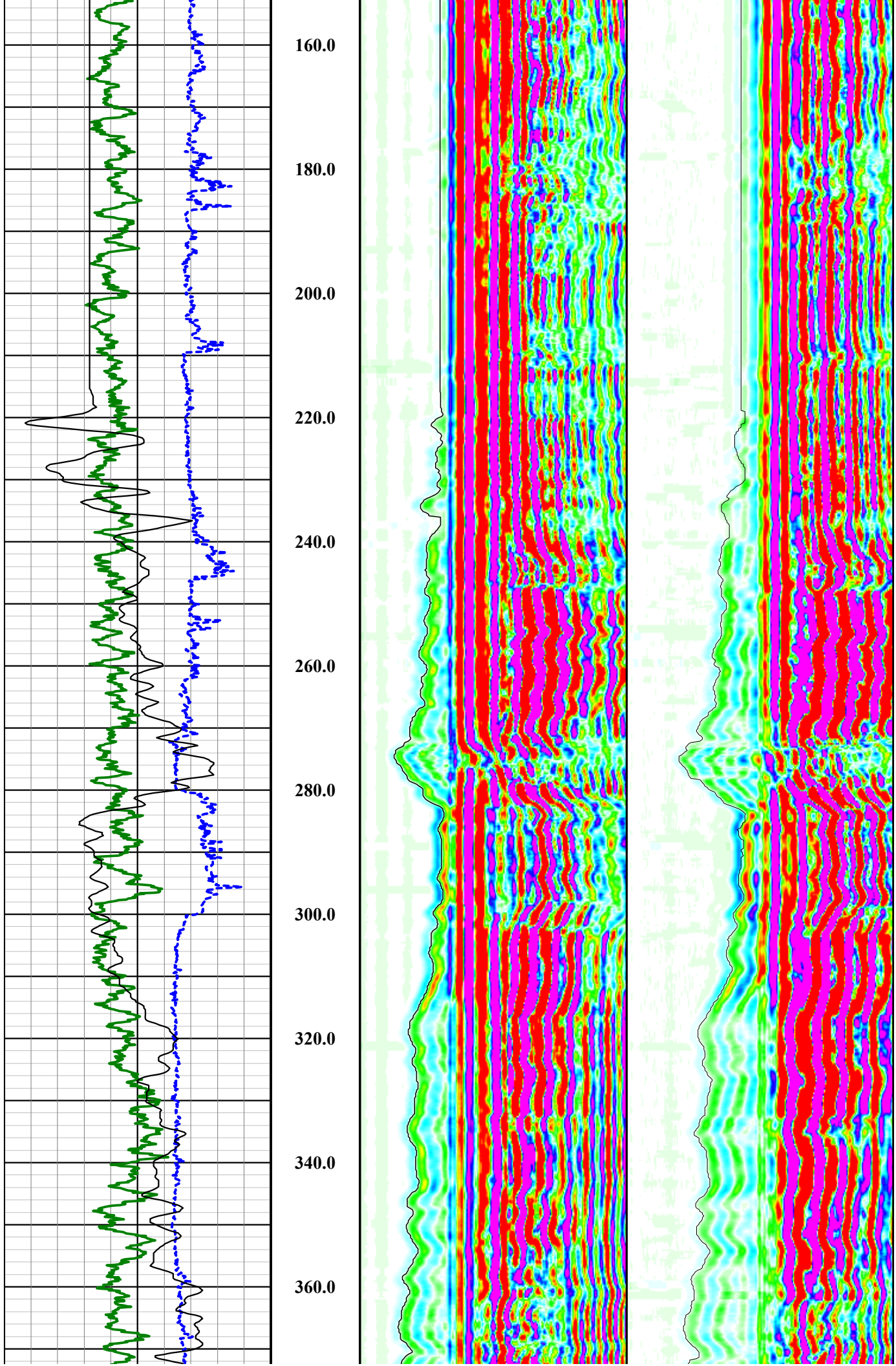
E-Log Calibration Range: 1 - 10,000 OHM-M **Calibration Points:** 1 & 10,000 OHM-M

USED ABI40 IN PLACE OF DEVIATION TOOL. SAME DEVIATION PACKAGE IN BOTH TOOLS SO EITHER WILL WORK FOR A DEVIATION SURVEY

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

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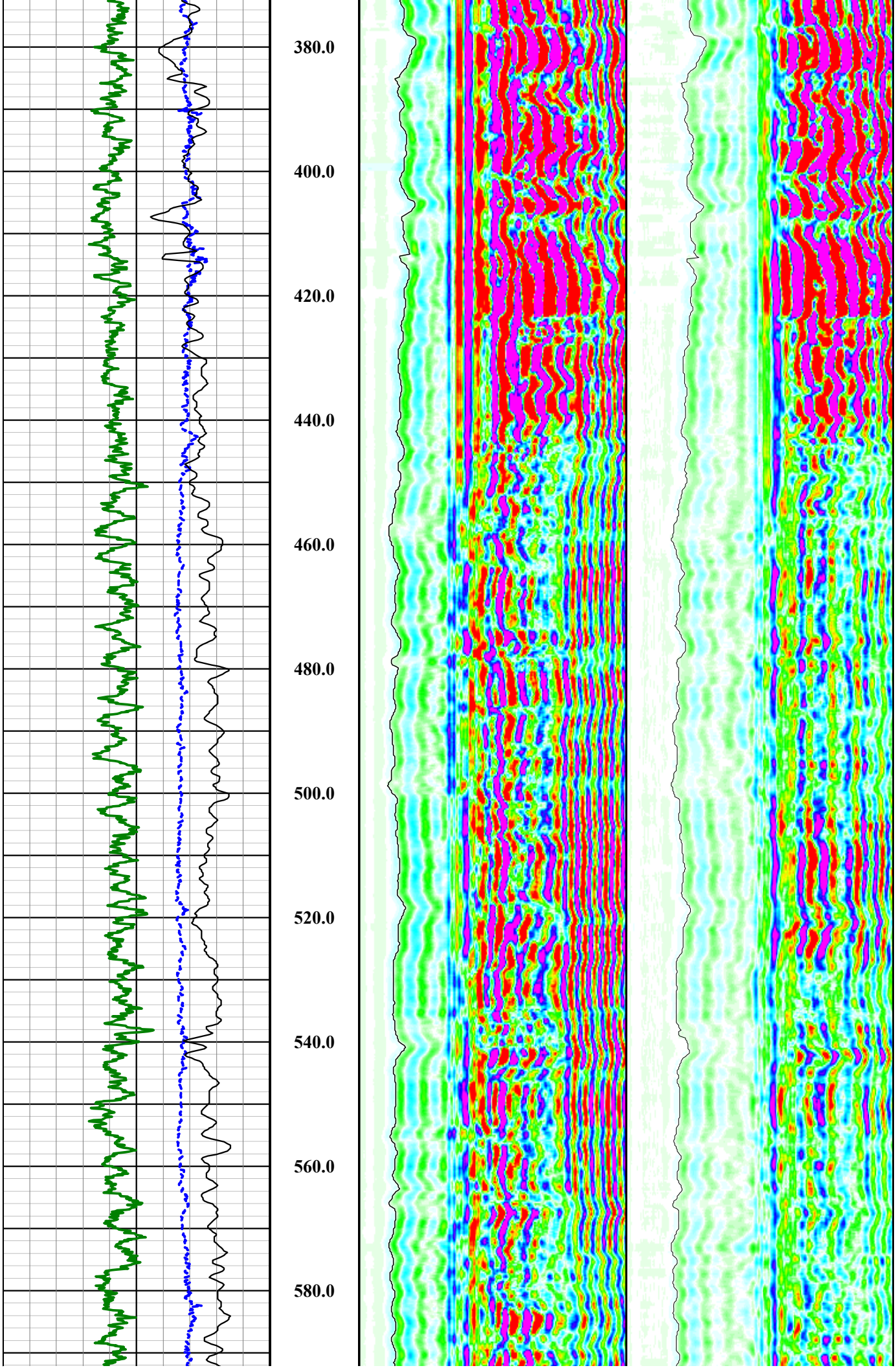
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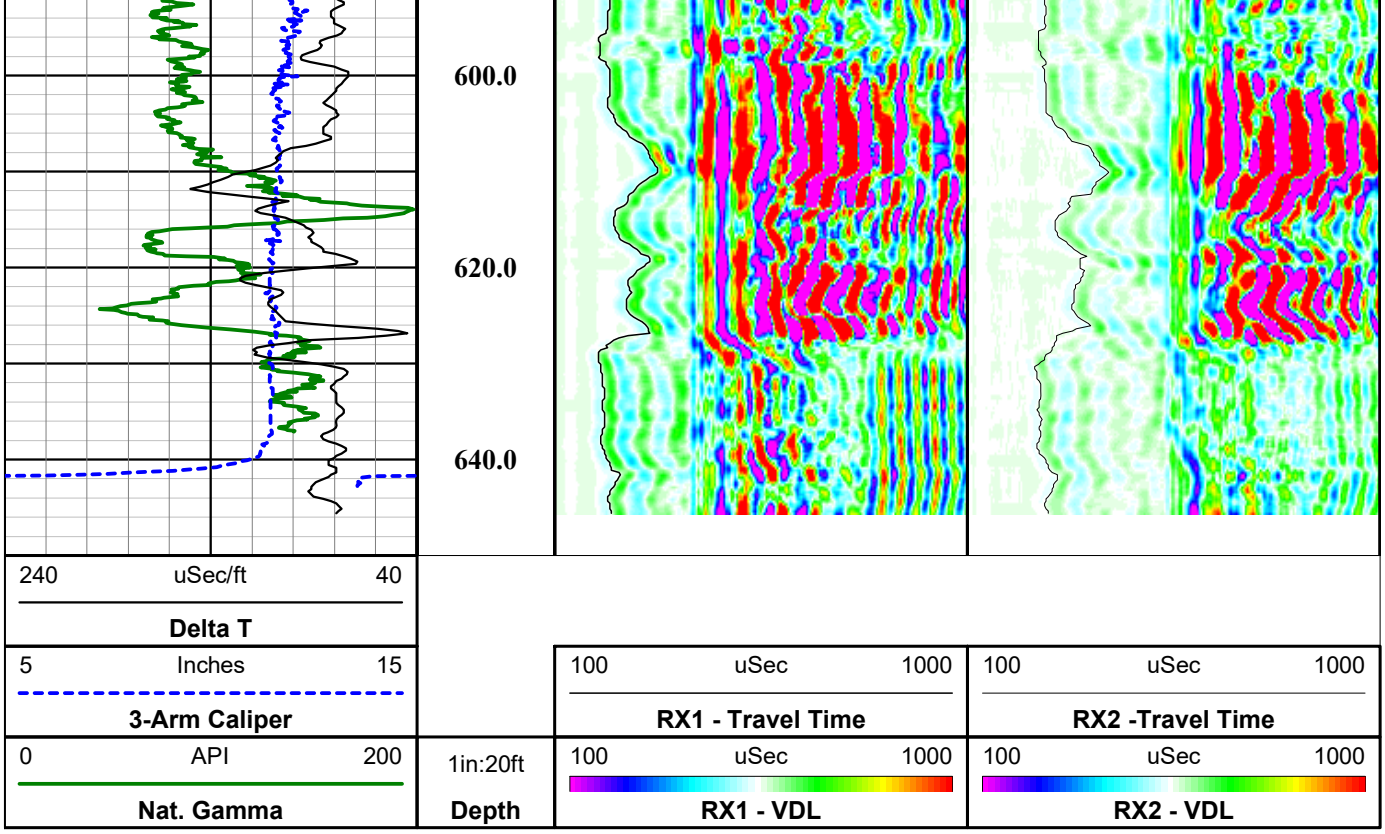

FWS50-4Rx Full Waveform Sonic Tool SN 4572

Probe Top = Depth Ref.

Single Conductor MSI Probe Top

Probe Length = 2.78 m or 9.13 ft
Probe Weight = ~18.0 kg or 39.6 lbs

Sensors: Ceramic Piezoelectric in Polyurethane potting

Transmitter Frequency: ~20 kHz resonant frequency

Rx - Rx Spacing: 0.2 m (7.9 in)

Typically ran centralized with external bow spring centralizers.

Can only be collected in fluid.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Rx-4 Tx - Rx4 Spacing = 1.2 m (47.2 in)

Rx-3 Tx - Rx3 Spacing = 1.0 m (39.4 in)

Rx-2 Tx - Rx2 Spacing = 0.8 m (31.5 in)

Rx-2 Tx - Rx2 Spacing = 0.8 m (31.5 in)

Rx-1 Tx - Rx1 Spacing = 0.6 m (23.6 in)

Acoustic Isolater

Tx = Acoustic Transmitter

0.235 m or 9.25 in. - End of tool to center of Tx

1.97" or 50 mm Diameter

QL40 Gamma-Caliper-Temperature-Fluid Conductivity

Probe Top = Depth Ref.

Tool SN: 5613, 5979, 6161 & 6292

Four Conductor MSI Probe Top

Probe Length = 3.69 m or 12.12 ft
Probe Weight = 18.195 kg or 40.11 lbs

Caliper arms can only collect data logging up hole

Fluid Temperature/Conductivity and Natural Gamma can be collected logging up and down hole

Temperature Rating: 80 Deg C (176 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 1.07 m (42.12 in)

3-Arm Caliper = 1.78 m (70.27 in)

Available Arm Sizes: 3", 9", and 15"

FTC (Fluid Temperature/Conductivity) = 0.78 m (30.71 in)

1.57" or 40.0 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	FLORENCE COPPER
Well	M61-LBF
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final Sonic Summary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	M61-LBF
FIELD	FLORENCE COPPER
COUNTY	PINAL STATE ARIZONA

TYPE OF LOGS: CALIPER W / VOLUME CALCULATION

MORE:

LOCATION

SEC TWP RGE

OTHER SERVICES
E-LOGS
SONIC
DEVIATION
GAMMA
TEMP / FLUID COND.

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	04-19-17	TYPE FLUID IN HOLE	FORMATION WATER
RUN No	1	MUD WEIGHT	N/A
TYPE LOG	CALIPER W/ VOLUME CALC	VISCOSITY	N/A
DEPTH-DRILLER	642.0 FT	LEVEL	SURFACE
DEPTH-LOGGER	646.0 FT	MAX. REC. TEMP.	34.5 DEG C
BTM LOGGED INTERVAL	646.0 FT	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.1 FT
DRILLER / RIG#	NATIONAL DRILLING	LOGGING TRUCK	TRUCK #800
RECORDED BY / Logging Eng.	E. BEAM / K. MITCHELL	TOOL STRING/SN	QL COMBO TOOL SN 5979
WITNESSED BY	SCOTT - H & A	LOG TIME:ON SITE/OFF SITE	1:00 AM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	17 1/2 IN	SURFACE	40 FT	14 IN	STEEL	SURFACE	40 FT
2	10 5/8 IN	40 FT	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	04-19-17	**Date**	04-19-17	**Date**	04-19-17		
Run No.	1	**Run No.**	2	**Run No.**	3		
Tool Model	QL COMBO TOOL	**Tool Model**	ALT E-LOG IP	**Tool Model**	ALT 4 RX SONIC		
Tool SN	5979	**Tool SN**	4992	**Tool SN**	4572		
From	SURFACE	**From**	SURFACE	**From**	SURFACE		
To	646.0 FT	**To**	646.0 FT	**To**	646.0 FT		
Recorded By	E. BEAM	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM		
Truck No	800	**Truck No**	800	**Truck No**	800		
Operation Check	04-17-17	**Operation Check**	04-17-17	**Operation Check**	04-19-17		
Calibration Check	04-17-17	**Calibration Check**	N/A	**Calibration Check**	N/A		
Time Logged	1:45 AM	**Time Logged**	2:20 AM	**Time Logged**	2:50 AM		

Date	04-19-17	**Date**		**Date**			
Run No.	4	**Run No.**	5	**Run No.**	6		
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**			
Tool SN	143003	**Tool SN**		**Tool SN**			
From	SURFACE	**From**		**From**			
To	646.0 FT	**To**		**To**			
Recorded By	E. BEAM	**Recorded By**		**Recorded By**			
Truck No	800	**Truck No**		**Truck No**			
Operation Check	04-17-17	**Operation Check**		**Operation Check**			
Calibration Check	N/A	**Calibration Check**		**Calibration Check**			
Time Logged	3:25 AM	**Time Logged**		**Time Logged**			

Additional Comments:

Caliper Arms Used: 9" **Calibration Points:** 6" & 12"

E-Log Calibration Range: 1 - 10,000 OHM-M **Calibration Points:** 1 & 10,000 OHM-M

USED ABI40 IN PLACE OF DEVIATION TOOL. SAME DEVIATION PACKAGE IN BOTH TOOLS SO EITHER WILL WORK FOR A DEVIATION SURVEY

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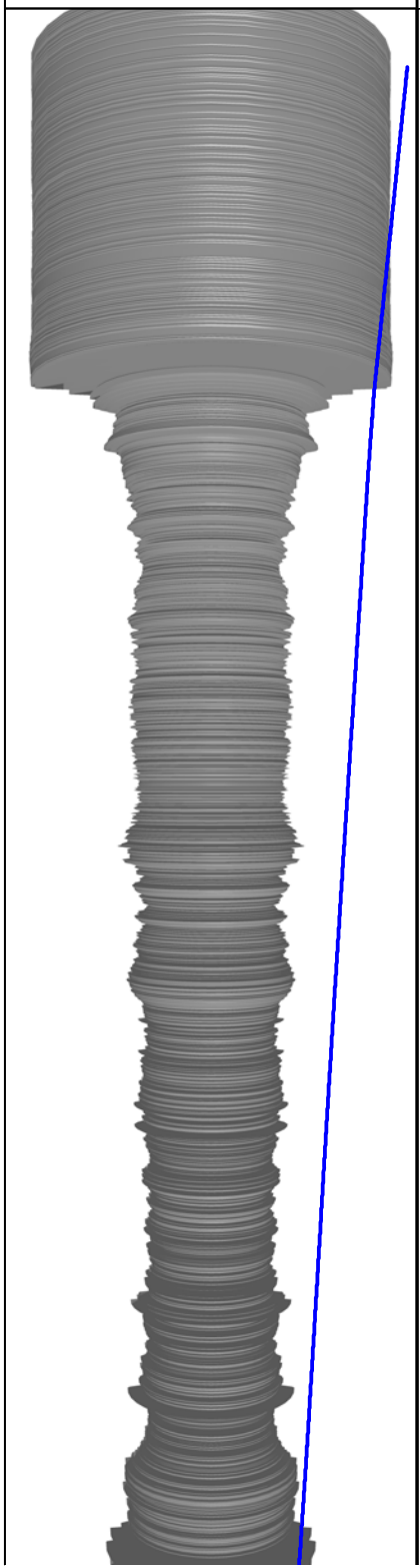
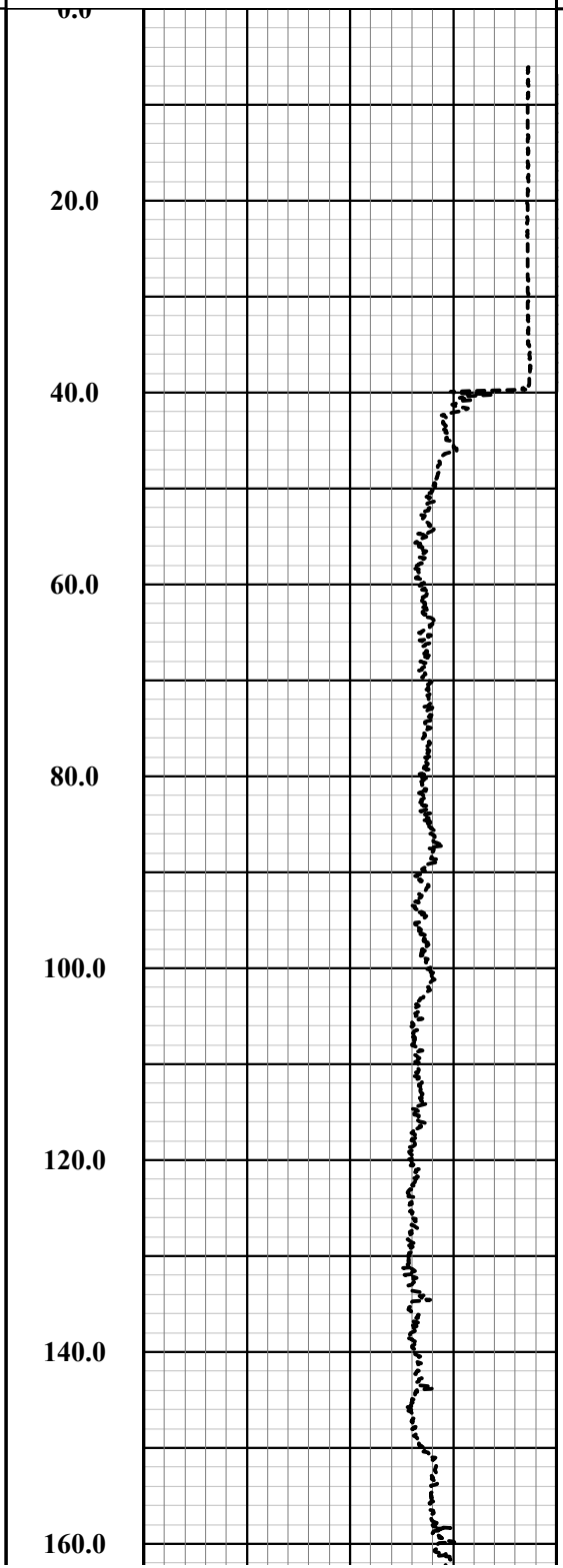
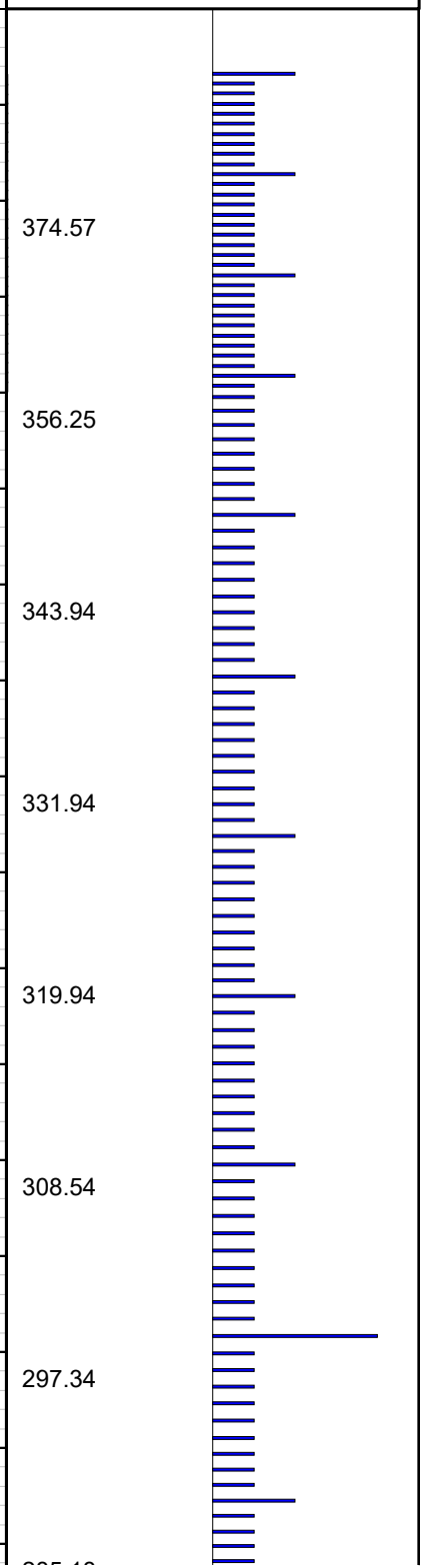
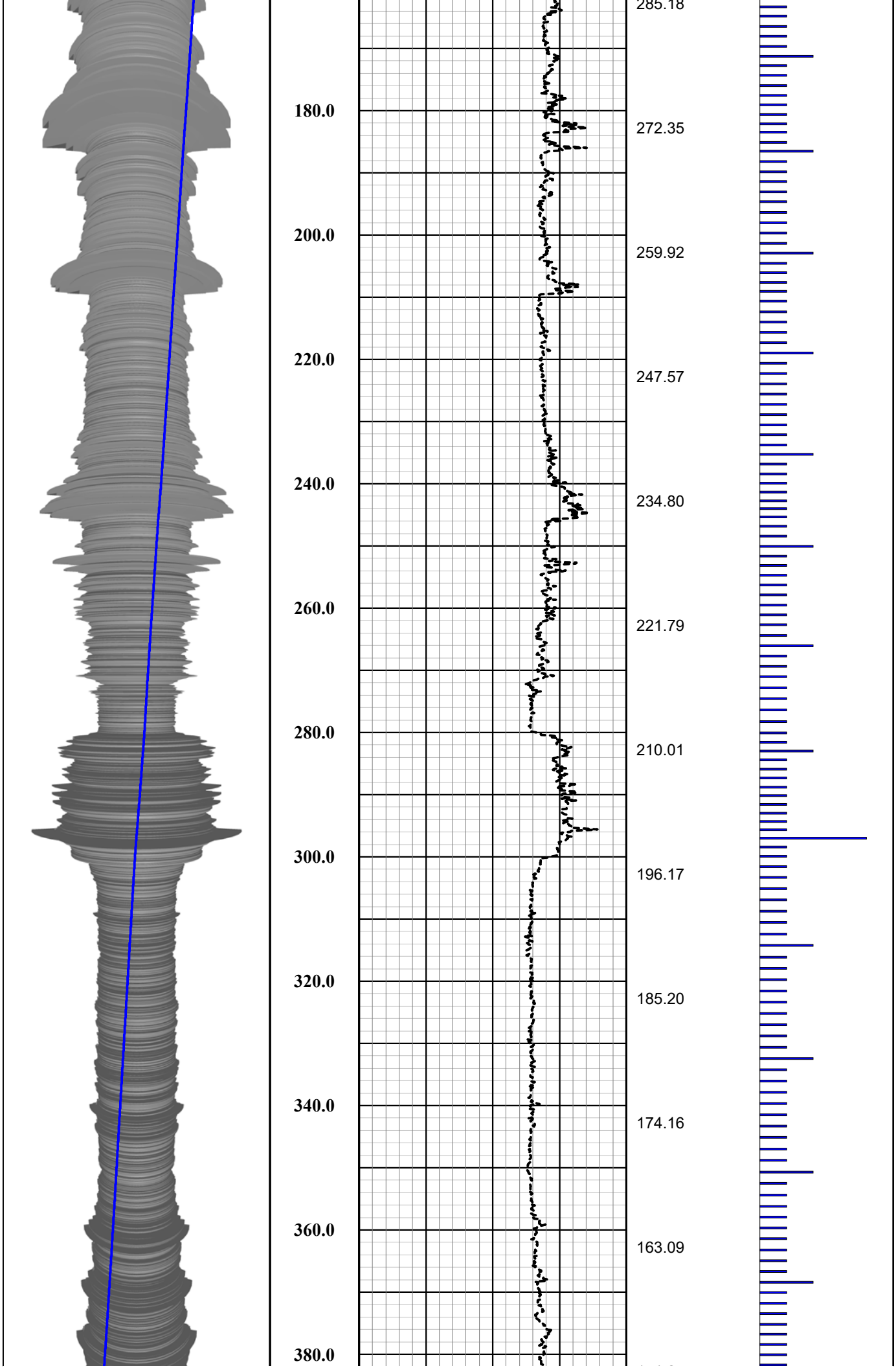
Total Volume	Depth	3-Arm Caliper	Cumulated Volume (cu.ft)
0 cu.ft 400	1in:20ft	5 Inches 15	
3-D View -0°			Based on 5.5" OD Casing





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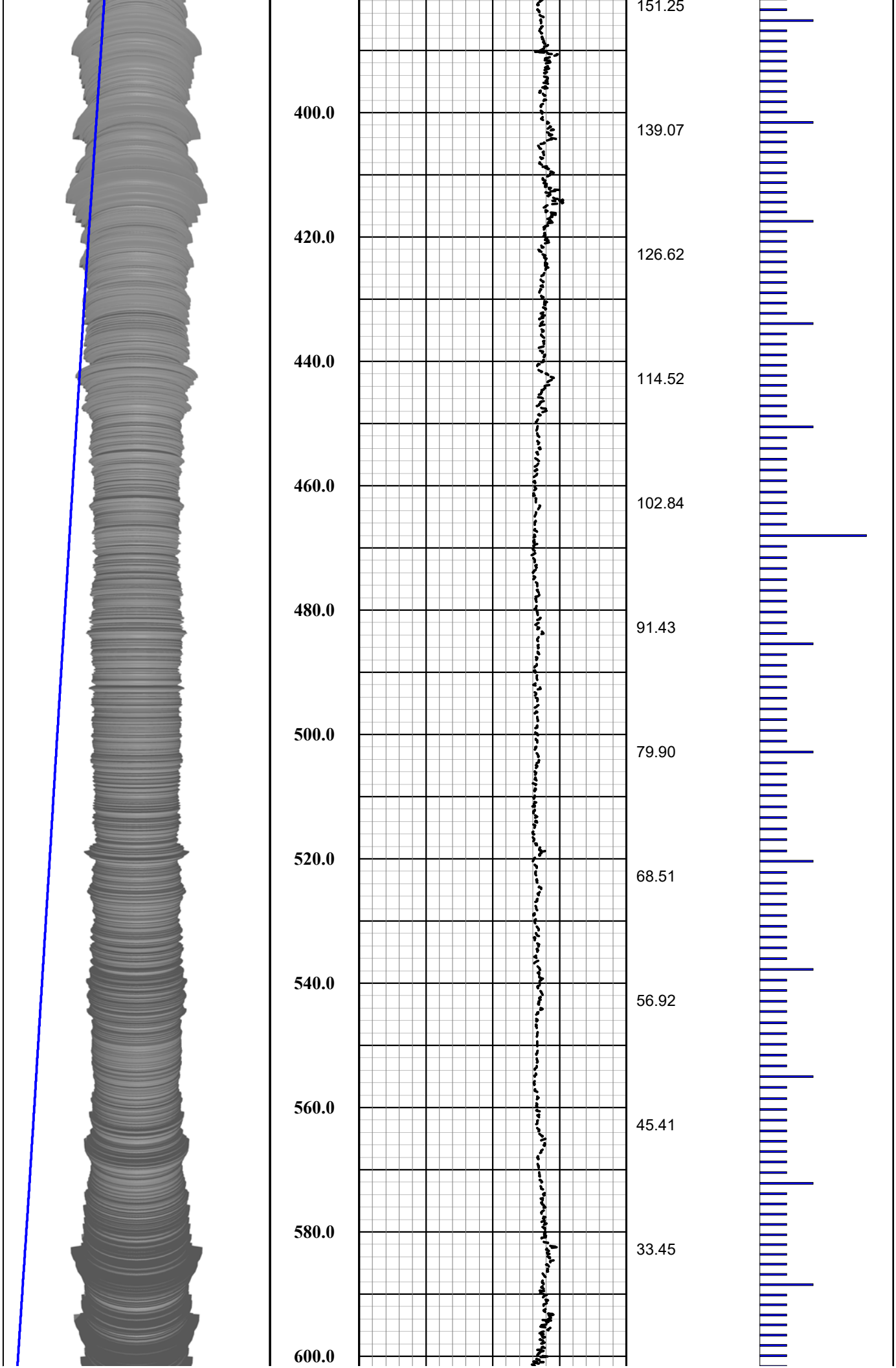
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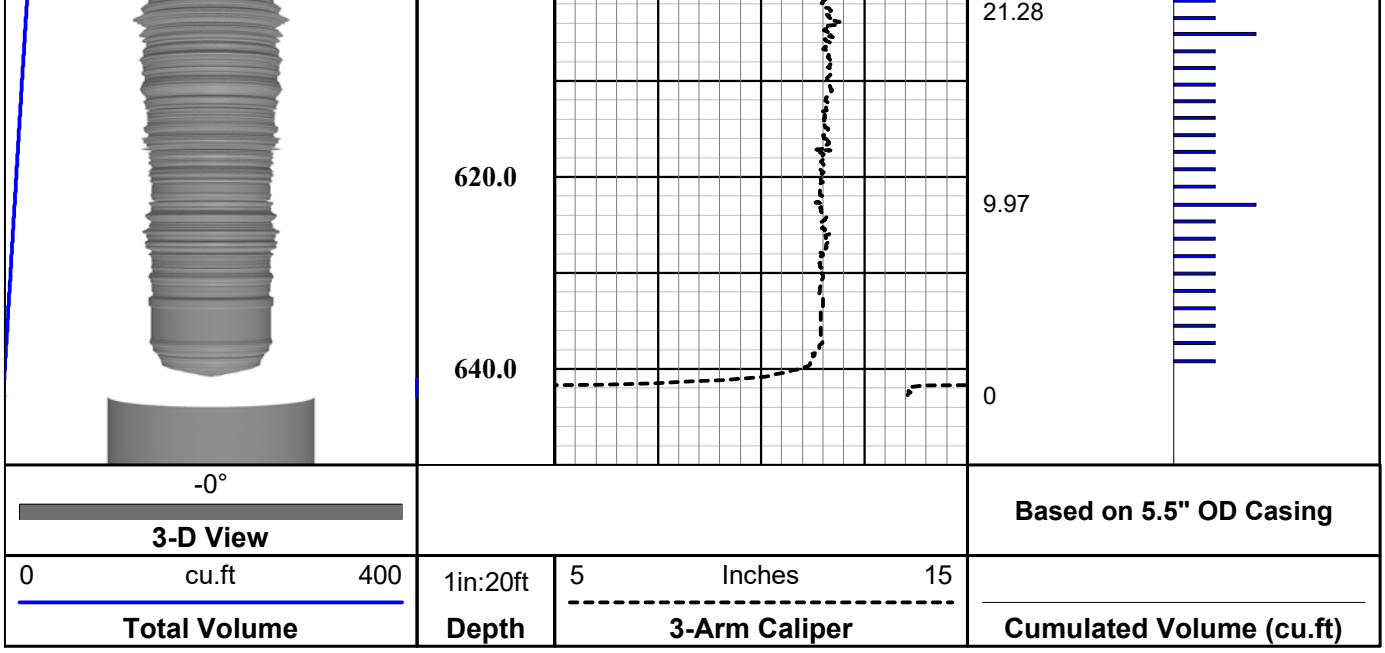
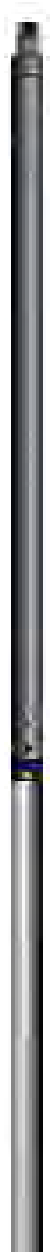


QL40 Gamma-Caliper-Temperature-Fluid Conductivity

Probe Top = Depth Ref.

Tool SN: 5613, 5979, 6161 & 6292



Four Conductor MSI Probe Top

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Available Arm Sizes: 3", 9", and 15"

FTC (Fluid Temperature/Conductivity) = 0.78 m (30.71 in)

1.57" or 40.0 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	FLORENCE COPPER
Well	M61-LBF
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final Caliper w/ Volume Calculation Summary

Drift Report

Wellbore DRIFT Interpretation

PREPARED ESPECIALLY FOR

FLORENCE COPPER and FLORENCE COPPER

M61-LBF

Wednesday - April 19, 2017

Southwest Exploration Services, LLC
borehole geophysics and video services

This Wellbore Interpretation Package represents our best efforts to provide a correct interpretation. Nevertheless, since all interpretations are opinions based on inferences from electrical or other types of measurements, we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by Customer resulting from any interpretation made by this document. We do not warrant or guarantee the accuracy of the data, specifically including (but without limitations) the accuracy of data transmitted by electronic process, and we will not be responsible for accidental or intentional interception of such data by third parties. Our employees are not empowered to change or otherwise modify the attached interpretation. Furthermore, along with Eagle Pro Software we do not warrant or guarantee the accuracy of the programming techniques employed to produce this document. By accepting this Interpretation Package, the Customer agrees to the foregoing, and to our General Terms and Conditions.

Southwest Exploration Services, LLC
(480) 926-4558

WELLBORE DRIFT INTERPRETATION

Southwest Exploration Services, LLC

(480) 926-4558

Company: FLORENCE COPPER **Well Owner:** FLORENCE COPPER

County: PINAL **State:** Arizona **Country:**

Well Number: M61-LBF **Survey Date:** Wednesday - April 19, 2017 **Magnetic Declination:** Declination Correction Not Used

Field: FLORENCE COPPER **Drift Calculation Methodology:** Balanced Tangential Method

Location: FLORENCE COPPER

Remarks:

Witness: SCOTT - H & A **Vehicle No.:** 800 **Invoice No.:** **Operator:** E. BEAM **Well Depth:** 642 Feet **Casing size:** 5.5 Inches

Tool: Compass - 143003 **Lat.:** **Long.:** **Sec.:** **Twp.:** **Rge.:**

MEASURED DATA			DATA COMPUTATIONS						
DEPTHS, feet	INCLINATIONS, degrees	AZIMUTHS, degrees	TVD, feet	T. LATITUDE, feet	T. LONGITUDE, feet	DOGLEG SEV., degrees per 20 Feet	DOGLEG SEV., degrees per 100 feet	DRIFT DIST., feet	DRIFT BGR., degrees
0	0.18	327.32	0.00						
20	0.18	327.32	19.99	0.053	-0.034	1.00	0.00	0.06' (.72")	327.30
40	0.16	327.32	39.98	0.103	-0.066	0.41	0.00	0.12' (1.44")	327.30
60	0.46	327.32	59.97	0.194	-0.124	0.96	0.03	0.23' (2.76")	327.30
80	0.36	343.28	79.96	0.322	-0.185	0.84	1.72	0.37' (4.44")	330.00
100	0.30	206.12	99.96	0.335	-0.226	0.42	11.55	0.40' (4.80")	326.00
120	0.30	309.78	119.95	0.321	-0.289	0.13	9.76	0.43' (5.16")	318.00
140	0.34	307.92	139.94	0.391	-0.376	0.43	0.20	0.54' (6.48")	316.10
160	0.76	350.86	159.93	0.558	-0.444	0.83	4.54	0.71' (8.52")	321.50
180	0.26	086.44	179.92	0.692	-0.420	0.95	9.19	0.81' (9.72")	328.80
200	0.48	352.62	199.91	0.778	-0.385	0.37	9.06	0.87' (10.44")	333.60
220	0.44	349.12	219.90	0.936	-0.410	1.00	0.38	1.02' (12.24")	336.30
240	0.76	021.68	239.89	1.135	-0.375	1.00	3.48	1.20' (14.40")	341.70
260	0.84	341.56	259.88	1.397	-0.372	0.34	4.26	1.45' (17.40")	345.10
280	0.58	014.34	279.87	1.634	-0.393	0.93	3.50	1.68' (20.16")	346.50
300	0.96	009.96	299.86	1.897	-0.339	0.78	0.48	1.93' (23.16")	349.90
320	0.56	006.18	319.85	2.159	-0.299	0.53	0.41	2.18' (26.16")	352.10
340	0.58	011.64	339.84	2.355	-0.268	0.00	0.59	2.37' (28.44")	353.50

Page No. 1 **True Vertical Depth:** 648.68' **Final Drift Distance:** 6.81' (81.72") **Final Drift Bearing:** 16.30°

Note: Magnetic Declination is not used because it is not a factor in the calculation of well drift or alignment. Magnetic Declination is only important if attempting to hit a target or miss another well and then it is included in the calculations.

WELLBORE DRIFT INTERPRETATION

Southwest Exploration Services, LLC

M61-LBF

(480) 926-4558

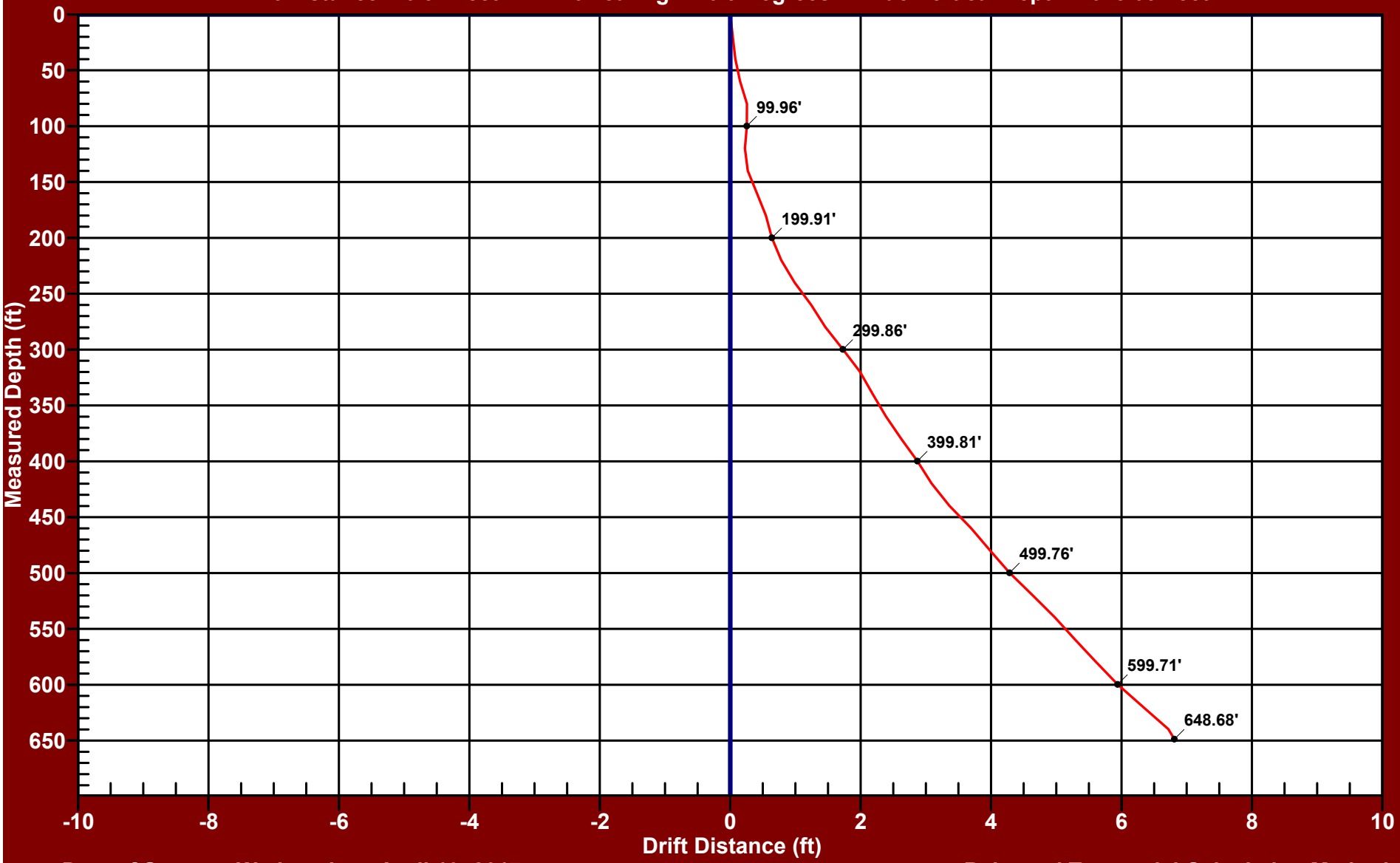
MEASURED DATA			DATA COMPUTATIONS						
DEPTHS, feet	INCLINATIONS, degrees	AZIMUTHS, degrees	TVD, feet	T. LATITUDE, feet	T. LONGITUDE, feet	DOGLEG SEV., degrees per 20 Feet	DOGLEG SEV., degrees per 100 feet	DRIFT DIST., feet	DRIFT BRG., degrees
360	0.62°	035.08°	359.83	2.543	-0.185	0.56	2.52	2.55' (30.60")	355.80
380	0.72°	013.72°	379.82	2.754	-0.093	0.73	2.30	2.76' (33.12")	358.10
400	0.74°	029.40°	399.81	2.989	0.000	0.88	1.69	2.99' (35.88")	000.00
420	0.60°	042.32°	419.80	3.179	0.134	0.20	1.40	3.18' (38.16")	002.40
440	1.12°	041.30°	439.79	3.403	0.334	0.97	0.12	3.42' (41.04")	005.60
460	0.90°	028.44°	459.78	3.688	0.538	0.96	1.39	3.73' (44.76")	008.30
480	0.84°	031.16°	479.77	3.952	0.689	0.12	0.29	4.01' (48.12")	009.90
500	0.94°	033.40°	499.76	4.214	0.855	0.81	0.24	4.30' (51.60")	011.50
520	1.18°	036.80°	519.75	4.516	1.069	0.59	0.37	4.64' (55.68")	013.30
540	0.90°	027.94°	539.74	4.820	1.266	0.73	0.96	4.98' (59.76")	014.70
560	0.92°	032.04°	559.73	5.095	1.425	0.28	0.44	5.29' (63.48")	015.60
580	0.92°	015.20°	579.72	5.386	1.552	0.77	1.82	5.61' (67.32")	016.10
600	1.10°	038.08°	599.71	5.692	1.713	0.49	2.46	5.94' (71.28")	016.70
620	1.16°	017.00°	619.70	6.037	1.891	0.69	2.27	6.33' (75.96")	017.40
640	1.10°	012.52°	639.69	6.418	1.992	0.13	0.49	6.72' (80.64")	017.20
649	1.40°	287.74°	648.68	6.536	1.906	0.50	18.59	6.81' (81.72")	016.30

Page No. 2 **True Vertical Depth: 648.68'** **Final Drift Distance: 6.81' (81.72")** **Final Drift Bearing: 16.30°**

PLANE OF DRIFT VIEW - M61-LBF

FLORENCE COPPER
FLORENCE COPPER

Drift Distance = 6.81 Feet Drift Bearing = 16.3 Degrees True Vertical Depth = 648.68 Feet



Date of Survey: Wednesday - April 19, 2017

Balanced Tangential Calculation Method

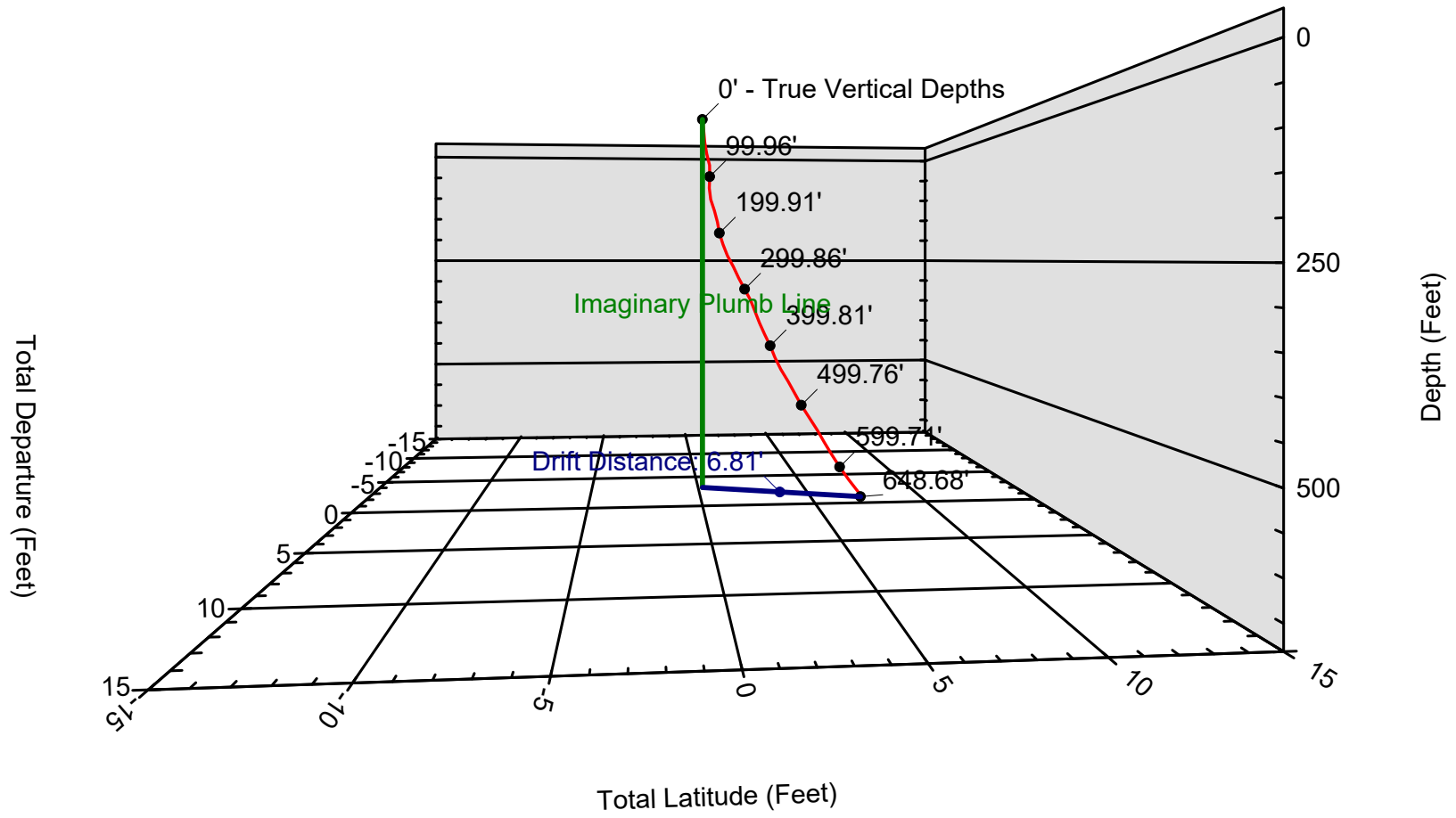
Southwest Exploration Services, LLC (480) 926-4558

3D PROJECTION VIEW - M61-LBF

FLORENCE COPPER
FLORENCE COPPER

Drift Distance = 6.81 Feet Drift Bearing = 16.3 Degrees True Vertical Depth = 648.68 Feet

266.0



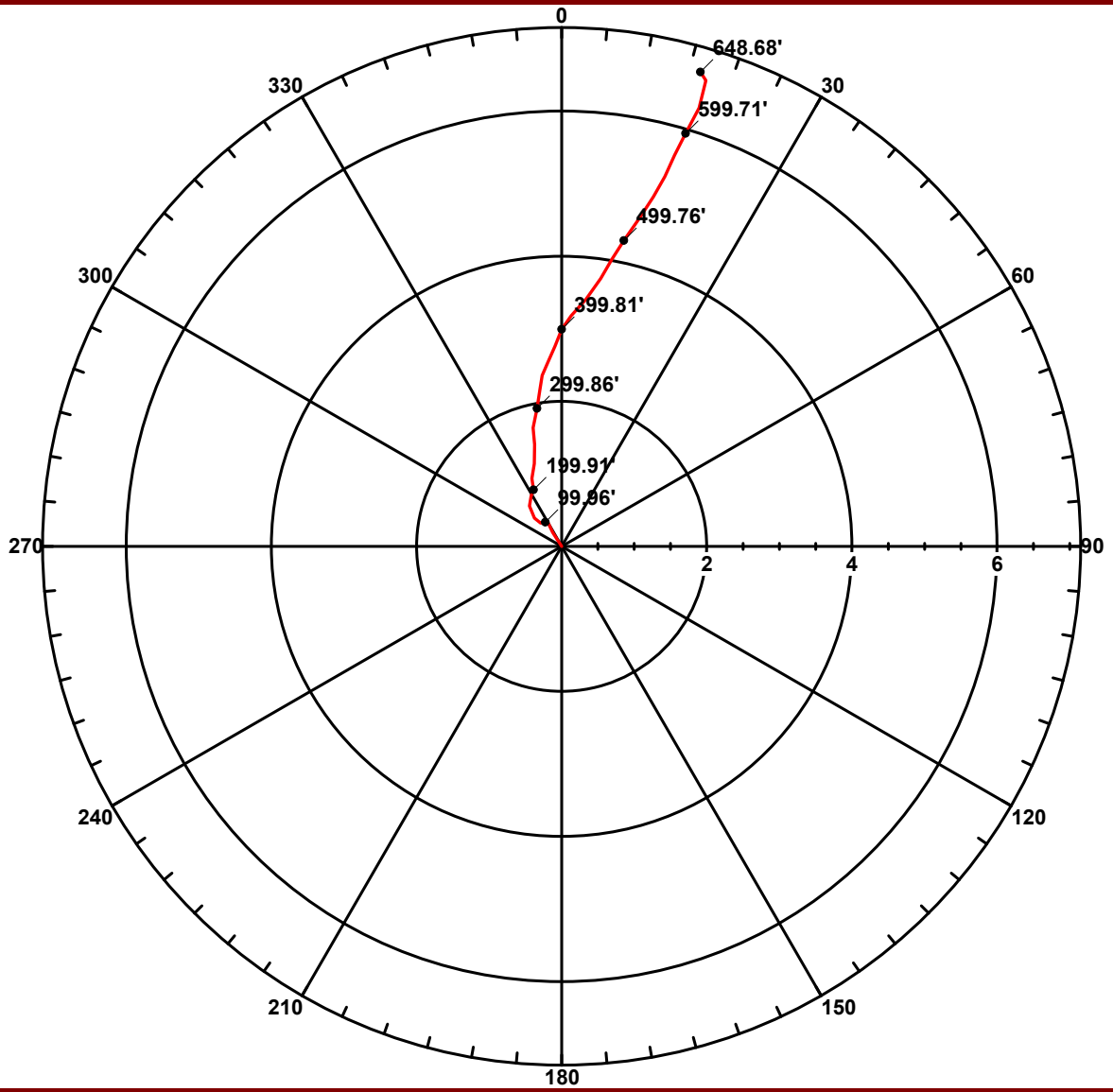
Date of Survey: Wednesday - April 19, 2017 **Balanced Tangential Calculation Method**

Southwest Exploration Services, LLC (480) 926-4558

POLAR VIEW - M61-LBF

FLORENCE COPPER
FLORENCE COPPER

Drift Distance = 6.81 Feet Drift Bearing = 16.3 Degrees True Vertical Depth = 648.68 Feet



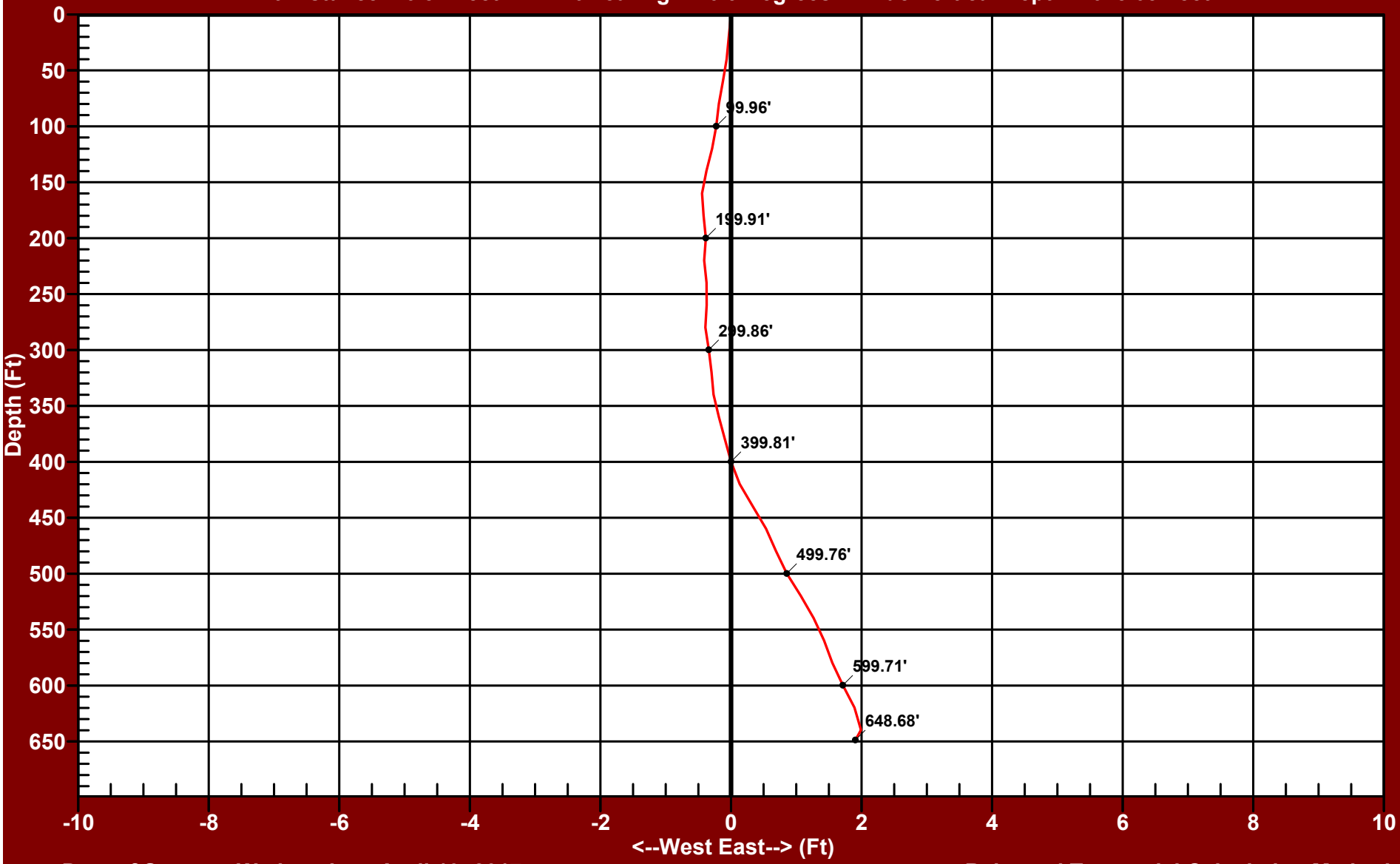
Date of Survey: Wednesday - April 19, 2017 **Balanced Tangential Calculation Method**

Southwest Exploration Services, LLC (480) 926-4558

EASTING RECTANGULAR VIEW - M61-LBF

FLORENCE COPPER
FLORENCE COPPER

Drift Distance = 6.81 Feet Drift Bearing = 16.3 Degrees True Vertical Depth = 648.68 Feet



Date of Survey: Wednesday - April 19, 2017

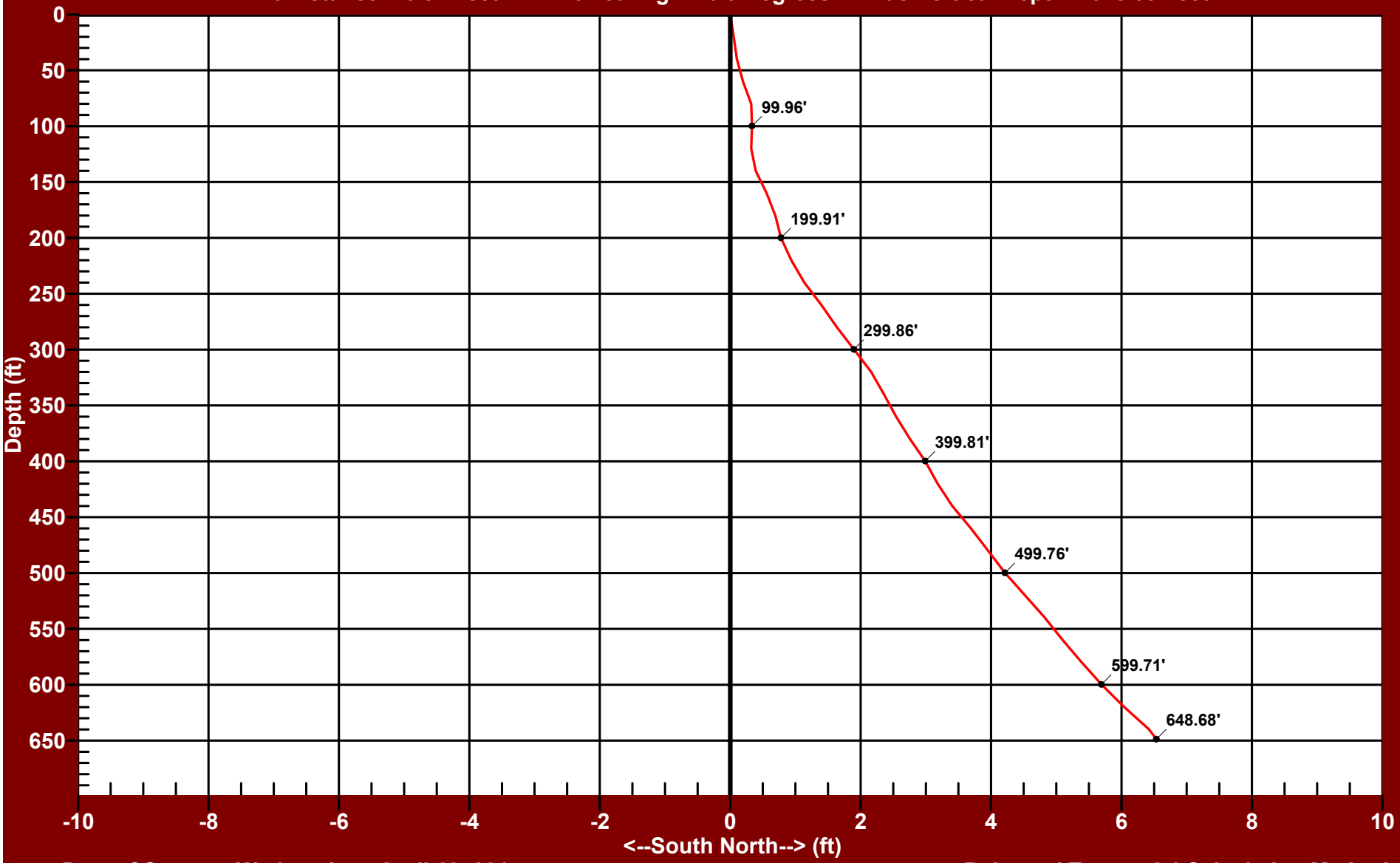
Balanced Tangential Calculation Method

Southwest Exploration Services, LLC (480) 926-4558

NORTHING RECTANGULAR VIEW - M61-LBF

FLORENCE COPPER
FLORENCE COPPER

Drift Distance = 6.81 Feet Drift Bearing = 16.3 Degrees True Vertical Depth = 648.68 Feet



Date of Survey: Wednesday - April 19, 2017

Balanced Tangential Calculation Method

Southwest Exploration Services, LLC (480) 926-4558

APPENDIX F

SAPT Documentation

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STANDARD ANNULAR PRESSURE TEST

Operator FLORENCE COPPER, INC

State Permit No. P-101704

Address 1575 W. HUNT HWY

USEPA Permit No. R9UIC-AZ3-FY11-1

FLORENCE, AZ 85132

Date of Test 6/18/2017

Well Name M61-LBF

Well Type CLASS III SUPPL. MONITORING

LOCATION INFORMATION SE Quarter of the NW Quarter of the SW Quarter of Section 28; Range 9E; Township 4S; County PINAL;

Company Representative IAN REAM; Field Inspector LAUREN CANDREVA;

Type of Pressure Gauge Pressure transducer with data logger inch face; 300 psi full scale; 0.001 psi increments;

New Gauge? Yes ☑ No ☐ If no, date of calibration _____ Calibration certification submitted? Yes ☐ No ☑

TEST RESULTS	
Readings must be taken at least every 10 minutes for a minimum of 30 minutes for Class II, III and V wells and 60 minutes for Class I wells. For Class II wells, annulus pressue should be at least 300 psig. For Class I wells, annulus pressure should be the greater of 300 psig or 100 psi above maximum permitted injection pressure. Original chart recordings must be submitted with this form.	5-year or annual test on time? Yes ☐ No ☑ 2-year test for TA'd wells on time? Yes ☐ No ☑ After rework? Yes ☐ No ☑ Newly permitted well? Yes ☑ No ☐

.

Time	Pressure (in psig) Annulus	Tubing
10:15	142.87	same
10:25	126.25	same
10:35	110.84	same
10:45	97.14	same

Casing size 5" - NOMINAL
Tubing size 2"
Packer type INFLATABLE PACKER
Packer set @ 395.16
Top of Permitted Injection Zone 655 feet
Is packer 100 ft or less above top of Injection Zone ? Yes ☐ No ☑ Monitor well - terminates above injection zone
If not, please submit a justification.
Fluid return (gal.) Not recorded - failed test
Comments: Two tests conducted to confirm results, data for two tests included in attached table and chart

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x 0.05 7.14 psi
Test Period Pressure change 45.73 psi

Test Passed ☐ Test Failed ☑

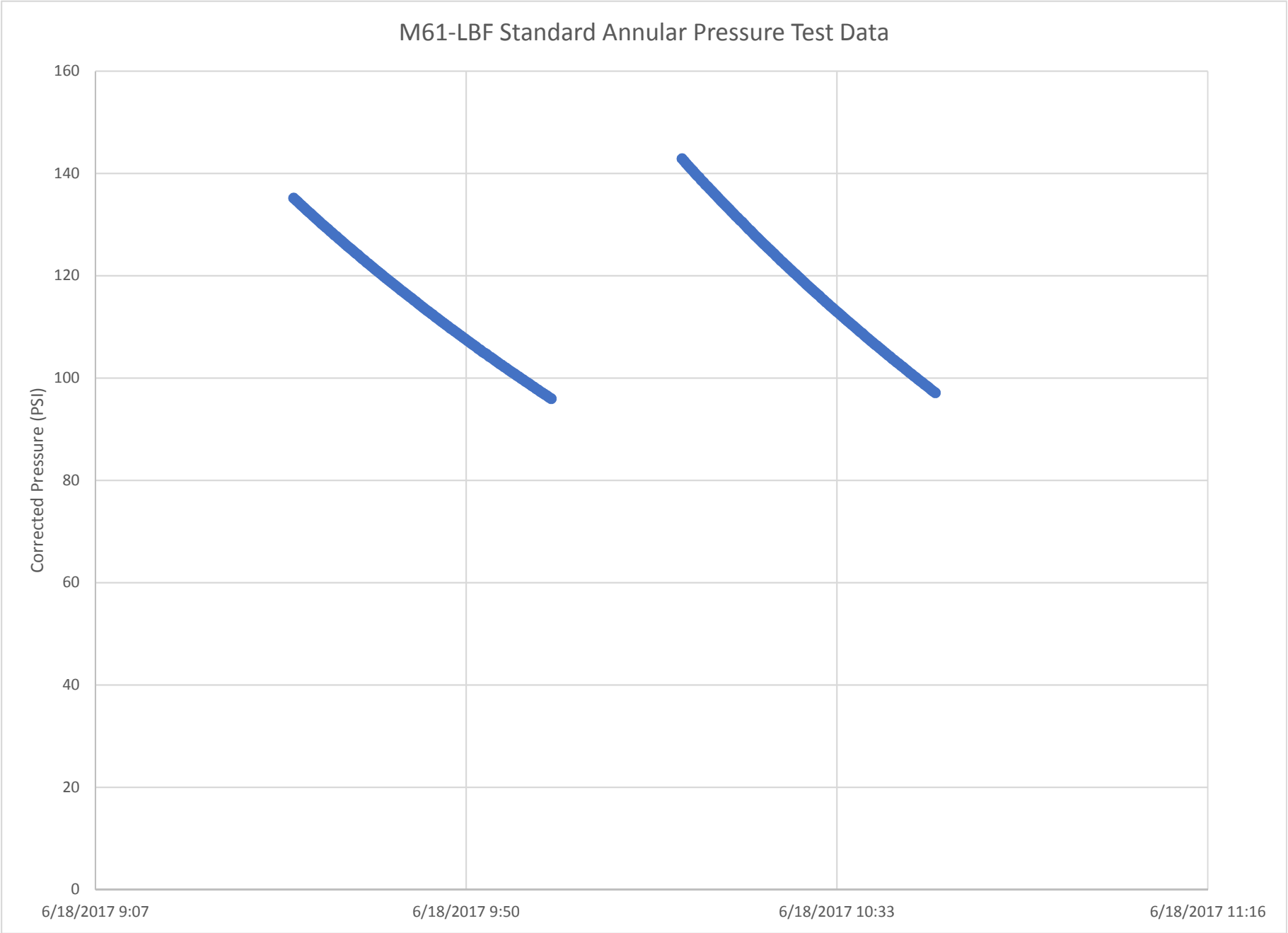
If failed test, well must be shut in, no injection can occur, and USEPA must be contacted within 24 hours. Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

I certify under penalty of law that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (See 40 CFR 144.32(d))

Ian Ream
Printed Name of Company Representative

Signature of Company Representative

9-14-2018
Date


M61-LBF Standard Annular Pressure Test Data
Corrected Pressure (PSI)
160
140
120
100
80
60
40
20
0
6/18/2017 9:07
6/18/2017 9:50
6/18/2017 10:33
6/18/2017 11:16

Well M61-LBF SAPT Data		
Tranducer Serial Number:	519257	
Tranducer Model:	Level TROLL 400 non-vented 300 psi	
Date and Time	Pressure (PSI)	Corrected Presssure (PSI) (Sensor pressure - barometric pressure)
6/18/2017 9:30	148.946	135.176
6/18/2017 9:30	148.535	134.765
6/18/2017 9:30	148.19	134.42
6/18/2017 9:31	147.774	134.004
6/18/2017 9:31	147.395	133.625
6/18/2017 9:31	147	133.23
6/18/2017 9:31	146.61	132.84
6/18/2017 9:32	146.246	132.476
6/18/2017 9:32	145.885	132.115
6/18/2017 9:32	145.482	131.712
6/18/2017 9:32	145.097	131.327
6/18/2017 9:33	144.751	130.981
6/18/2017 9:33	144.358	130.588
6/18/2017 9:33	143.967	130.197
6/18/2017 9:33	143.61	129.84
6/18/2017 9:34	143.234	129.464
6/18/2017 9:34	142.878	129.108
6/18/2017 9:34	142.483	128.713
6/18/2017 9:34	142.114	128.344
6/18/2017 9:35	141.759	127.989
6/18/2017 9:35	141.415	127.645
6/18/2017 9:35	141.032	127.262
6/18/2017 9:35	140.676	126.906
6/18/2017 9:36	140.315	126.545
6/18/2017 9:36	139.923	126.153
6/18/2017 9:36	139.586	125.816
6/18/2017 9:36	139.237	125.467
6/18/2017 9:37	138.885	125.115
6/18/2017 9:37	138.495	124.725
6/18/2017 9:37	138.146	124.376
6/18/2017 9:37	137.823	124.053
6/18/2017 9:38	137.452	123.682
6/18/2017 9:38	137.089	123.319
6/18/2017 9:38	136.763	122.993
6/18/2017 9:38	136.385	122.615
6/18/2017 9:39	136.065	122.295
6/18/2017 9:39	135.724	121.954
6/18/2017 9:39	135.357	121.587
6/18/2017 9:39	135.006	121.236
6/18/2017 9:40	134.638	120.868
6/18/2017 9:40	134.327	120.557
6/18/2017 9:40	133.975	120.205

Well M61-LBF SAPT Data		
Tranducer Serial Number:	519257	
Tranducer Model:	Level TROLL 400 non-vented 300 psi	
Date and Time	Pressure (PSI)	Corrected Presssure (PSI) (Sensor pressure - barometric pressure)
6/18/2017 9:40	133.648	119.878
6/18/2017 9:41	133.281	119.511
6/18/2017 9:41	132.981	119.211
6/18/2017 9:41	132.633	118.863
6/18/2017 9:41	132.311	118.541
6/18/2017 9:42	131.943	118.173
6/18/2017 9:42	131.642	117.872
6/18/2017 9:42	131.3	117.53
6/18/2017 9:42	130.959	117.189
6/18/2017 9:43	130.644	116.874
6/18/2017 9:43	130.308	116.538
6/18/2017 9:43	129.962	116.192
6/18/2017 9:43	129.646	115.876
6/18/2017 9:44	129.335	115.565
6/18/2017 9:44	128.978	115.208
6/18/2017 9:44	128.673	114.903
6/18/2017 9:44	128.325	114.555
6/18/2017 9:45	128.024	114.254
6/18/2017 9:45	127.68	113.91
6/18/2017 9:45	127.357	113.587
6/18/2017 9:45	127.019	113.249
6/18/2017 9:46	126.715	112.945
6/18/2017 9:46	126.397	112.627
6/18/2017 9:46	126.099	112.329
6/18/2017 9:46	125.719	111.949
6/18/2017 9:47	125.447	111.677
6/18/2017 9:47	125.113	111.343
6/18/2017 9:47	124.785	111.015
6/18/2017 9:47	124.481	110.711
6/18/2017 9:48	124.175	110.405
6/18/2017 9:48	123.847	110.077
6/18/2017 9:48	123.523	109.753
6/18/2017 9:48	123.23	109.46
6/18/2017 9:49	122.913	109.143
6/18/2017 9:49	122.616	108.846
6/18/2017 9:49	122.304	108.534
6/18/2017 9:49	121.982	108.212
6/18/2017 9:50	121.686	107.916
6/18/2017 9:50	121.366	107.596
6/18/2017 9:50	121.062	107.292
6/18/2017 9:50	120.76	106.99
6/18/2017 9:51	120.472	106.702

Well M61-LBF SAPT Data		
Tranducer Serial Number:	519257	
Tranducer Model:	Level TROLL 400 non-vented 300 psi	
Date and Time	Pressure (PSI)	Corrected Presssure (PSI) (Sensor pressure - barometric pressure)
6/18/2017 9:51	120.173	106.403
6/18/2017 9:51	119.858	106.088
6/18/2017 9:51	119.536	105.766
6/18/2017 9:52	119.245	105.475
6/18/2017 9:52	118.92	105.15
6/18/2017 9:52	118.651	104.881
6/18/2017 9:52	118.398	104.628
6/18/2017 9:53	118.039	104.269
6/18/2017 9:53	117.781	104.011
6/18/2017 9:53	117.48	103.71
6/18/2017 9:53	117.166	103.396
6/18/2017 9:54	116.867	103.097
6/18/2017 9:54	116.567	102.797
6/18/2017 9:54	116.292	102.522
6/18/2017 9:54	115.99	102.22
6/18/2017 9:55	115.736	101.966
6/18/2017 9:55	115.407	101.637
6/18/2017 9:55	115.12	101.35
6/18/2017 9:55	114.826	101.056
6/18/2017 9:56	114.547	100.777
6/18/2017 9:56	114.274	100.504
6/18/2017 9:56	113.986	100.216
6/18/2017 9:56	113.67	99.9
6/18/2017 9:57	113.416	99.646
6/18/2017 9:57	113.11	99.34
6/18/2017 9:57	112.839	99.069
6/18/2017 9:57	112.57	98.8
6/18/2017 9:58	112.286	98.516
6/18/2017 9:58	111.983	98.213
6/18/2017 9:58	111.702	97.932
6/18/2017 9:58	111.425	97.655
6/18/2017 9:59	111.133	97.363
6/18/2017 9:59	110.863	97.093
6/18/2017 9:59	110.605	96.835
6/18/2017 9:59	110.304	96.534
6/18/2017 10:00	109.995	96.225
6/18/2017 10:00	109.746	95.976
6/18/2017 10:15	156.638	142.868
6/18/2017 10:15	156.18	142.41
6/18/2017 10:16	155.661	141.891
6/18/2017 10:16	155.196	141.426
6/18/2017 10:16	154.761	140.991

Well M61-LBF SAPT Data		
Tranducer Serial Number:	519257	
Tranducer Model:	Level TROLL 400 non-vented 300 psi	
Date and Time	Pressure (PSI)	Corrected Presssure (PSI) (Sensor pressure - barometric pressure)
6/18/2017 10:16	154.304	140.534
6/18/2017 10:17	153.836	140.066
6/18/2017 10:17	153.373	139.603
6/18/2017 10:17	152.959	139.189
6/18/2017 10:17	152.448	138.678
6/18/2017 10:18	152.046	138.276
6/18/2017 10:18	151.569	137.799
6/18/2017 10:18	151.141	137.371
6/18/2017 10:18	150.718	136.948
6/18/2017 10:19	150.298	136.528
6/18/2017 10:19	149.826	136.056
6/18/2017 10:19	149.396	135.626
6/18/2017 10:19	148.946	135.176
6/18/2017 10:20	148.483	134.713
6/18/2017 10:20	148.048	134.278
6/18/2017 10:20	147.642	133.872
6/18/2017 10:20	147.227	133.457
6/18/2017 10:21	146.762	132.992
6/18/2017 10:21	146.326	132.556
6/18/2017 10:21	145.906	132.136
6/18/2017 10:21	145.455	131.685
6/18/2017 10:22	145.066	131.296
6/18/2017 10:22	144.625	130.855
6/18/2017 10:22	144.24	130.47
6/18/2017 10:22	143.801	130.031
6/18/2017 10:23	143.34	129.57
6/18/2017 10:23	142.902	129.132
6/18/2017 10:23	142.531	128.761
6/18/2017 10:23	142.091	128.321
6/18/2017 10:24	141.652	127.882
6/18/2017 10:24	141.242	127.472
6/18/2017 10:24	140.832	127.062
6/18/2017 10:24	140.413	126.643
6/18/2017 10:25	140.024	126.254
6/18/2017 10:25	139.615	125.845
6/18/2017 10:25	139.214	125.444
6/18/2017 10:25	138.827	125.057
6/18/2017 10:26	138.424	124.654
6/18/2017 10:26	138.001	124.231
6/18/2017 10:26	137.568	123.798
6/18/2017 10:26	137.168	123.398
6/18/2017 10:27	136.74	122.97

Well M61-LBF SAPT Data		
Tranducer Serial Number:	519257	
Tranducer Model:	Level TROLL 400 non-vented 300 psi	
Date and Time	Pressure (PSI)	Corrected Presssure (PSI) (Sensor pressure - barometric pressure)
6/18/2017 10:27	136.393	122.623
6/18/2017 10:27	135.984	122.214
6/18/2017 10:27	135.608	121.838
6/18/2017 10:28	135.202	121.432
6/18/2017 10:28	134.777	121.007
6/18/2017 10:28	134.401	120.631
6/18/2017 10:28	134.018	120.248
6/18/2017 10:29	133.644	119.874
6/18/2017 10:29	133.241	119.471
6/18/2017 10:29	132.844	119.074
6/18/2017 10:29	132.448	118.678
6/18/2017 10:30	132.026	118.256
6/18/2017 10:30	131.7	117.93
6/18/2017 10:30	131.303	117.533
6/18/2017 10:30	130.921	117.151
6/18/2017 10:31	130.536	116.766
6/18/2017 10:31	130.175	116.405
6/18/2017 10:31	129.817	116.047
6/18/2017 10:31	129.394	115.624
6/18/2017 10:32	129.028	115.258
6/18/2017 10:32	128.632	114.862
6/18/2017 10:32	128.288	114.518
6/18/2017 10:32	127.885	114.115
6/18/2017 10:33	127.54	113.77
6/18/2017 10:33	127.164	113.394
6/18/2017 10:33	126.802	113.032
6/18/2017 10:33	126.453	112.683
6/18/2017 10:34	126.082	112.312
6/18/2017 10:34	125.7	111.93
6/18/2017 10:34	125.306	111.536
6/18/2017 10:34	124.97	111.2
6/18/2017 10:35	124.614	110.844
6/18/2017 10:35	124.245	110.475
6/18/2017 10:35	123.886	110.116
6/18/2017 10:35	123.534	109.764
6/18/2017 10:36	123.172	109.402
6/18/2017 10:36	122.814	109.044
6/18/2017 10:36	122.475	108.705
6/18/2017 10:36	122.106	108.336
6/18/2017 10:37	121.756	107.986
6/18/2017 10:37	121.402	107.632
6/18/2017 10:37	121.045	107.275

Well M61-LBF SAPT Data		
Tranducer Serial Number:	519257	
Tranducer Model:	Level TROLL 400 non-vented 300 psi	
Date and Time	Pressure (PSI)	Corrected Presssure (PSI) (Sensor pressure - barometric pressure)
6/18/2017 10:37	120.692	106.922
6/18/2017 10:38	120.339	106.569
6/18/2017 10:38	119.992	106.222
6/18/2017 10:38	119.643	105.873
6/18/2017 10:38	119.289	105.519
6/18/2017 10:39	118.943	105.173
6/18/2017 10:39	118.582	104.812
6/18/2017 10:39	118.251	104.481
6/18/2017 10:39	117.915	104.145
6/18/2017 10:40	117.54	103.77
6/18/2017 10:40	117.233	103.463
6/18/2017 10:40	116.886	103.116
6/18/2017 10:40	116.553	102.783
6/18/2017 10:41	116.2	102.43
6/18/2017 10:41	115.874	102.104
6/18/2017 10:41	115.541	101.771
6/18/2017 10:41	115.202	101.432
6/18/2017 10:42	114.855	101.085
6/18/2017 10:42	114.538	100.768
6/18/2017 10:42	114.15	100.38
6/18/2017 10:42	113.872	100.102
6/18/2017 10:43	113.525	99.755
6/18/2017 10:43	113.175	99.405
6/18/2017 10:43	112.874	99.104
6/18/2017 10:43	112.539	98.769
6/18/2017 10:44	112.223	98.453
6/18/2017 10:44	111.894	98.124
6/18/2017 10:44	111.537	97.767
6/18/2017 10:44	111.195	97.425
6/18/2017 10:45	110.906	97.136

APPENDIX G

Cement Bond Log Summary

WELL M61-LBF

Geophysical Log Summary

COMPANY:	FLORENCE COPPER COMPANY	Logging Engineer:	VARIOUS
FIELD:	FLORENCE COPPER SITE	Date Logged:	VARIOUS
WELL ID:	M61-LBF	Processed By:	K.M / B.C.
COUNTY:	PINAL STATE: ARIZONA	Date Processed:	01-18-18

Southwest Exploration Services, LLC
borehole geophysics & video services

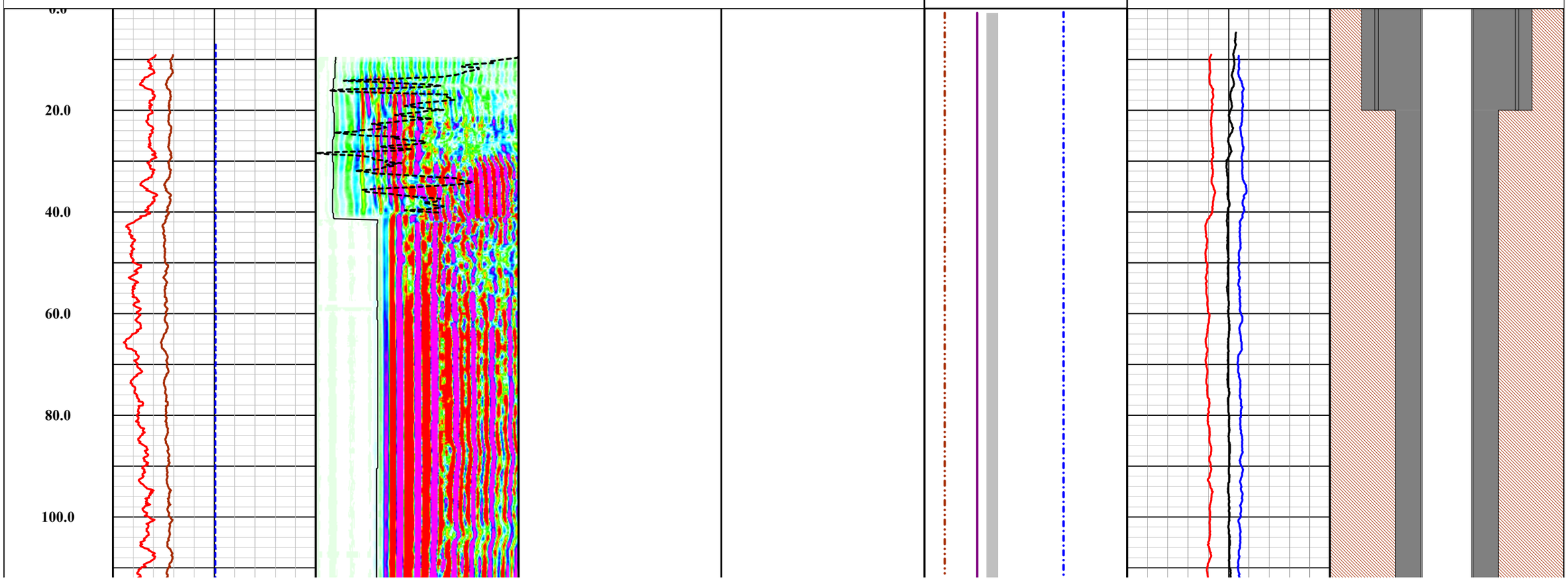
HALEY ALDRICH

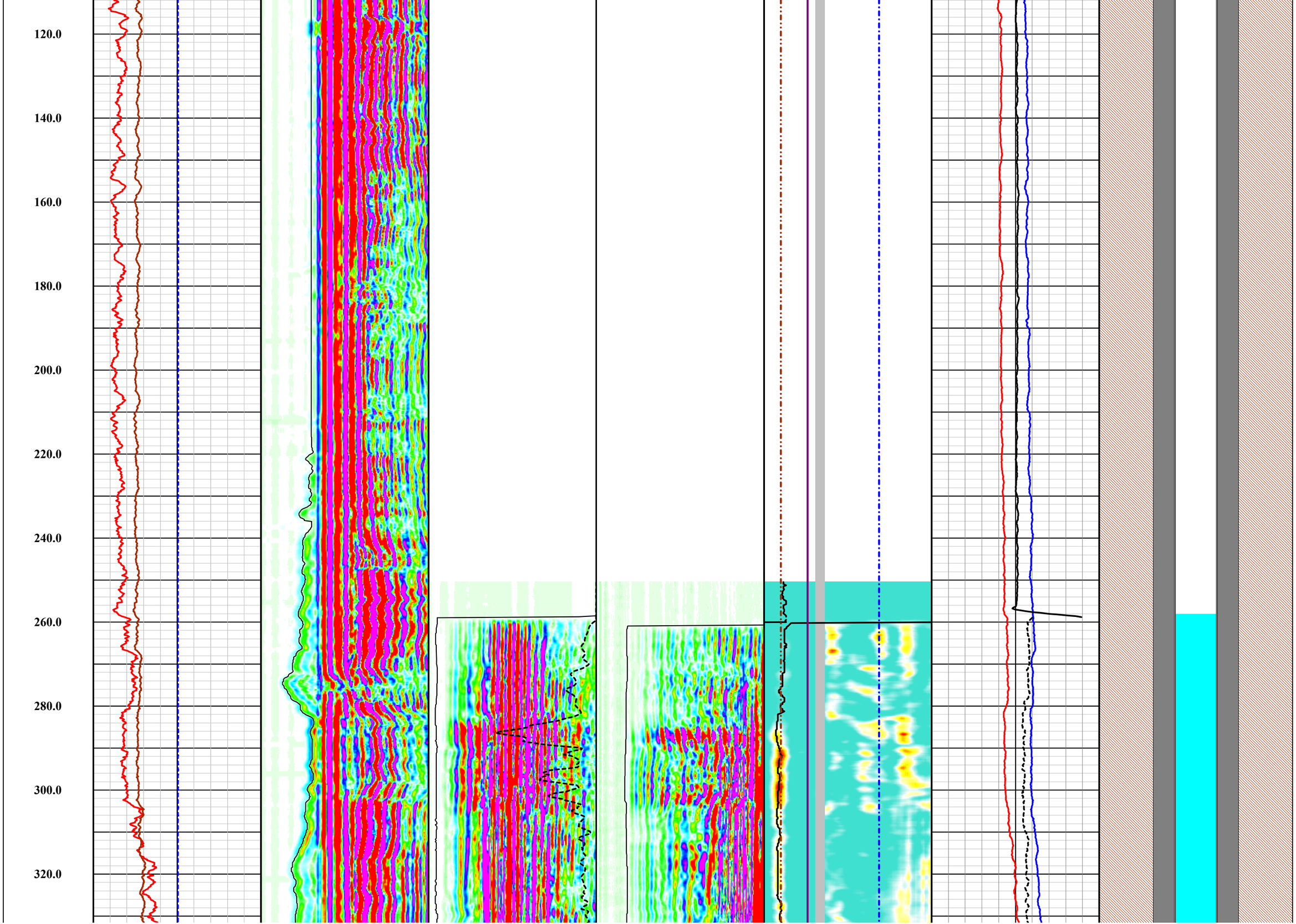
Depth
1in:20ft

M61-LBF Sonic CBL with Density Summary

Track	Curve	Scale	Left	Right
1	1-Arm Caliper	Cased 5-12-17	0 Inches	10
2	RX1 - VDL (60mm)	Open 4-19-17	100 uSec	1000
3	RX1 - VDL	Cased 5-12-17	100 uSec	1020
4	RX4 - VDL	Cased 5-12-17	100 uSec	1020
5	Velocity Analysis	Cased 5-12-17	40 us/ft	220
6	Near Density	Cased 5-12-17	1 g/cc	4
1	Comp Density	Cased 5-12-17	1 g/cc	3
2	RX1 - TT (60mm)	Open 4-19-17	100 uSec	1000
3	RX1 - TT	Cased 5-12-17	100 uSec	1000
4	RX4 - TT	Cased 5-12-17	100 uSec	1000
5	P-Wave Slow	Cased 5-12-17	40 us/ft	220
6	Far Density	Cased 5-12-17	1 g/cc	4
1	Compensation	Cased 5-12-17	-2 g/cc	2
2	Bond Index (60mm)	Open 4-19-17	0 %	100
3	Bond Index	Cased 5-12-17	0 %	100
5	Steel		40 us/ft	220
6	4 Pi Density (Dry)	Cased 5-12-17	800 CPS	0
5	FRP		40 us/ft	220
6	4 Pi Density (Wet)	Cased 5-12-17	150 CPS	0
5	PVC		40 us/ft	220
5	Cement			

Well Diagram

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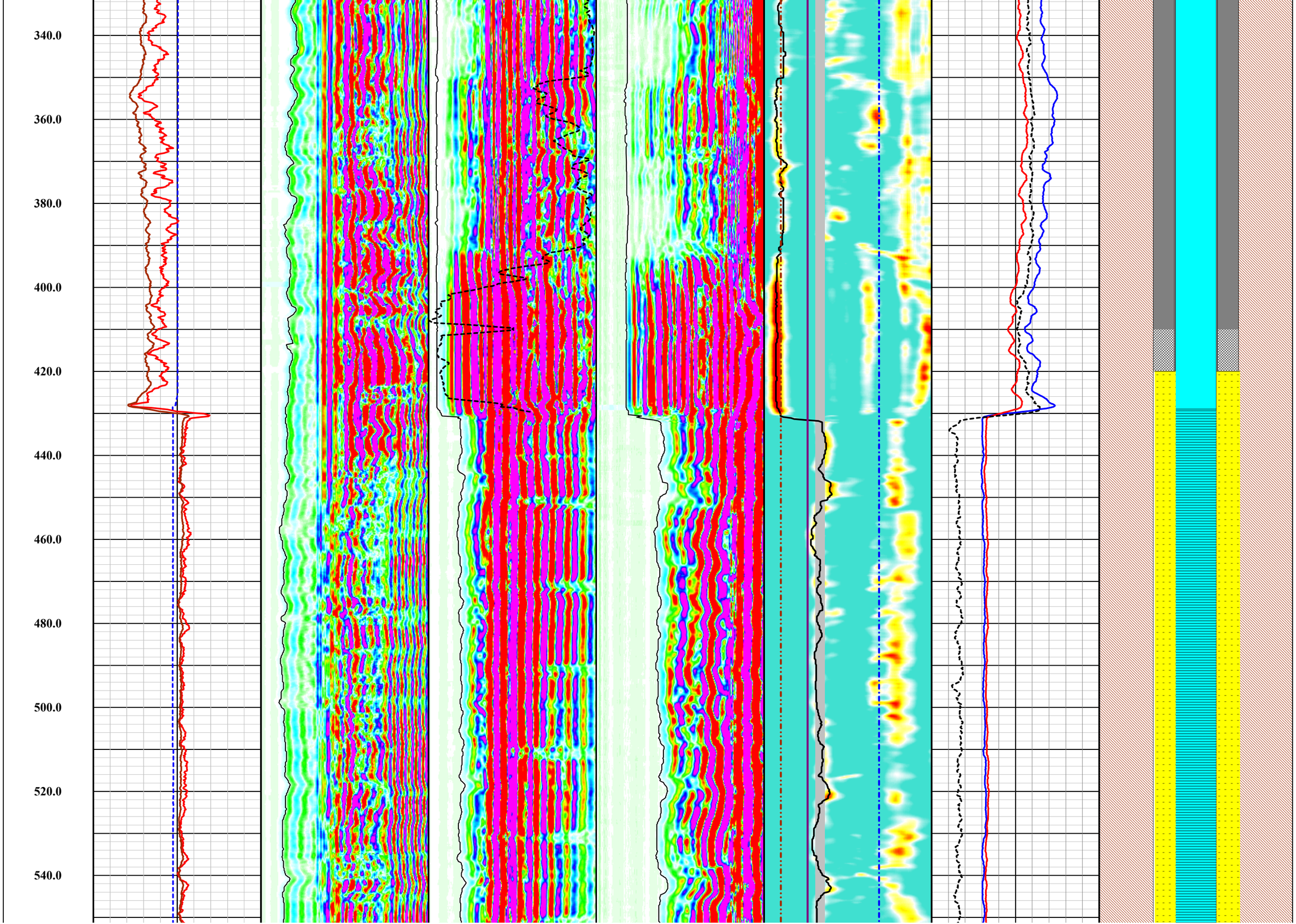
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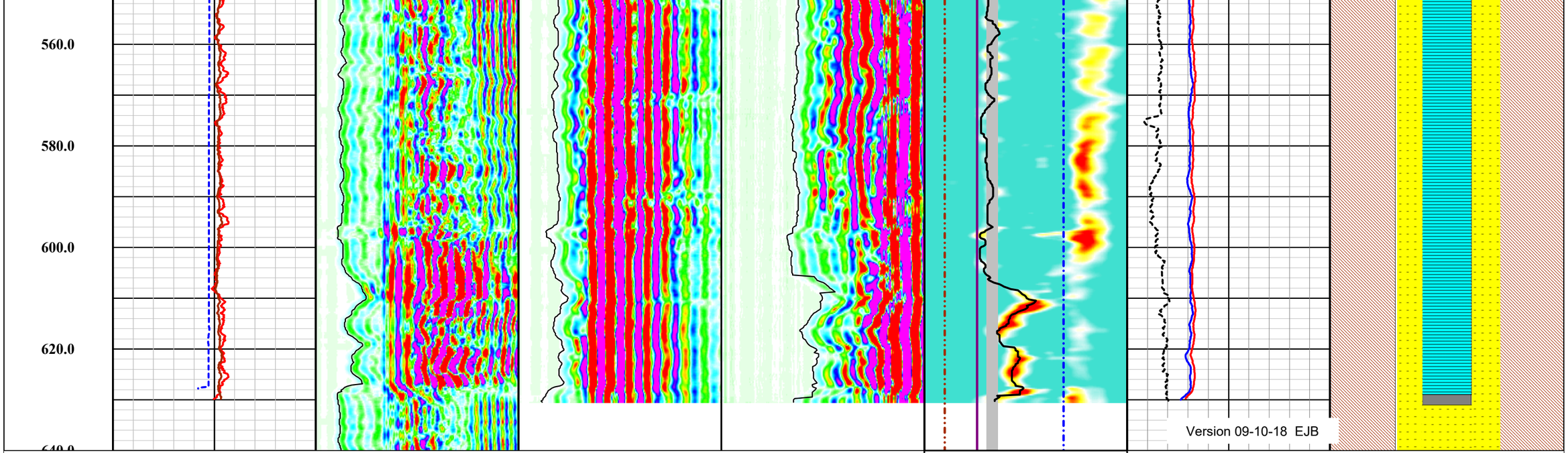

				Cement			
				40 us/ft 220			
				PVC			
				40 us/ft 220	150 CPS 0		
				FRP	Cased 5-12-17		
				40 us/ft 220	4 Pi Density (Wet)		
-2 g/cc 2	0 % 100	0 % 100		Steel	800 CPS 0		
Cased 5-12-17	Open 4-19-17	Cased 5-12-17		40 us/ft 220	Cased 5-12-17		
Compensation	Bond Index (60mm)	Bond Index		Steel	4 Pi Density (Wet)		
1 g/cc 3	100 uSec 1000	100 uSec 1000	100 uSec 1000	40 us/ft 220	1 g/cc 4		
Cased 5-12-17	Open 4-19-17	Cased 5-12-17	Cased 5-12-17	Cased 5-12-17	Cased 5-12-17		
Comp Density	RX1 - TT (60mm)	RX1 - TT	RX4 - TT	P-Wave Slow	Far Density		
0 Inches 10	100 uSec 1000	100 uSec 1020	100 uSec 1020	40 us/ft 220	1 g/cc 4		
Cased 5-12-17	Open 4-19-17	Cased 5-12-17	Cased 5-12-17	Cased 5-12-17	Cased 5-12-17		
1-Arm Caliper	RX1 - VDL (60mm)	RX1 - VDL	RX4 - VDL	Velocity Analysis	Near Density		Well Diagram
1in:20ft Depth	M61-LBF Sonic CBL with Density Summary						

APPENDIX H

Well Development Forms

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI	Project No.: 129687-002
Well No.: M61-LBF	Date: 4-26-17
Location:	Measuring Point:
Total Depth of Well (ft bls): 630	Screen Interval (ft bls): 630-430
Pump Type/Setting (ft bls): Airlift, 627'	Activity: Airlift
How Q Measured:	H&A Personnel: C Price

	Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments
	1430								air on
									no rep @ rig
	1745								air off
4-27-17	0600								air on
	1200	~25			0.1				Brown,
	1400								air off
									1 gal Aqua-Clear
									injected @ 627 +
									527.
									Swab 30 min
5-2-17	1030								air on
	1130				0.1				light brown
	1200								air off
	1230								air on
	1235				0.2				dark brown
	1250				<0.1				light brown
	1300								air off
									end airlift

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI	Project No.: 129687-002
Well No.: M61-LBF	Date: 5-2-17
Location:	Measuring Point: TOM, 2.95' a/s
Total Depth of Well (ft bls): 630	Screen Interval (ft bls): 630-430
Pump Type/Setting (ft bls): Grundfos, 625'	Activity: Development
How Q Measured: Stopwatch, 5Gal bucket	H&A Personnel: C Trixe

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments	NTU
1510		253.36						pump on	
1512		317.54						Flow @ surface.	
1515		317.54		0.2	6.88	799	27.9	Cloudy/brown	293
1520		384.41		<0.1	7.44	784	26.3	light brown	720
1525		420.40		<0.1	7.79	786	26.0	brown	963
1534		454.71		0	8.29	796	25.9	brown	OR
1545		485.56		<0.1	8.45	799	26.0	brown	OR
1600		507.56		0	8.38	788	26.2	brown	OR
1633		524.86		0	7.90	774	26.4	light brown	570
1700		531.04		0	7.90	767	26.8	cloudy	277
1730		534.41		0	7.98	761	26.5	cloudy	132
1745		535.90		0	8.11	764	26.3	cloudy	83.8
1747								pump off	
5-3-17 0600								PUMP ON	
0615		7		0.1	6.79	781	24.3	Light Brown	298
0645	13	506.6		0.1	8.49	773	25.4	light Brown	503
0715	12	512.8		<0.1	8.16	760	26.0	Cloudy	122
0745	12	~517		0	7.94	753	26.4	MILKY	45.0
0845	12	~520		0	6.99	750	26.8	CLEAR	15.5
930	12	~537		0	8.20	752	27.3	CLEAR	12.4
1145	12			0	722	763	28.8	CLEAR	12.4
1300	12	545.1		0	7.98	760	28.1	CLEAR	8.92
1345	12	~546		0	8.32	751	28.2	CLEAR	8.88
1445	12	~546		0	8.36	756	27.8	CLEAR	11.1
1700	12	~550		0	7.99	767	26.7	CLEAR	9.62
1745	12	~550		0	8.02	761	26.6	CLEAR	7.19
1800								PUMP OFF	

Comments:
- NOT ABLE TO GET GOOD READINGS FROM SOUNDER ON 5-3-17

MALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FCF	Project No.: 129687-002
Well No.: MW1-LBF	Date: 5-2-17
Location:	Measuring Point: TOM 2.95 AGS
Total Depth of Well (ft bls): 630	Screen Interval (ft bls): 630-430
Pump Type/Setting (ft bls): GRUNDFOS 625'	Activity: DEVELOPMENT
How Q Measured: Step Weir / Bucket	H&A Personnel: C. Grusel

	Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments	NTU
5-4-17	605								PUMP ON	
	615	12			0	7.98	765	24.3	CLEAR	10.1
	645	12			<0.1	8.37	759	25.3	CLOUDY	159
	715	12			<0.1	8.30	746	26.2	MILKY	40.0
	745	12			<0.1	7.96	741	26.5	MILKY/CLEAR	19.2
	820	12			0	7.31	744	26.5	CLEAR	9.23
	1035	12			0	8.14	751	27.8	CLEAR	4.18
	1045								PUMP OFF	
	1150								PUMP ON	
	1200				0	8.21	756	27.4	CLEAR	5.63
	1215				0	8.21	740	26.9	MILKY/CLEAR	22.0
	1245				<0.1	8.28	746	27.4	MILKY	72.0
	1315	12			<0.1	8.11	734	28.5	CLEAR	15.0
	1345	12			0	8.27	742	28.3	CLEAR	3.39
	1350	12							PUMP OFF	
	1520								PUMP ON	
	1540	12			0	8.38	744	26.9	CLEAR	12.6
	1600	12			<0.1	8.46	758	27.8	MILKY	60.1
	1630	12			0	8.50	746	27.7	CLEAR	17.4
	1700	12			0	8.17	743	27.6	CLEAR	5.63
	1800	12				8.10	748	26.7	CLEAR	4.08
	1805								PUMP OFF	
5-7-17	0708								PUMP ON	
	0711				0	6.51	768	25.0	CLEAR	4.08
	0715	12			<0.1	6.65	767	24.9	CLEAR	10.8
	0725	12			0	8.05	735	24.9	SLIGHTLY CLOUDY	54.7
	0800	12			0	8.42	770	25.3	" "	66.0

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI	Project No.: 124687-002
Well No.: MG1-LBF	Date: 5-7-17
Location:	Measuring Point: TOM 2.95' a/s
Total Depth of Well (ft bls): 630	Screen Interval (ft bls): 630; 430
Pump Type/Setting (ft bls): GrundFos, 625'	Activity: Development
How Q Measured: Stopwatch, 5 gal	H&A Personnel: L Price

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments	NTU
0830	12			0	7.84	756	25.7		21.8
0900	12			0	7.83	756	25.8		11.3
0902								pump off	
0915								pump on	
0918				0	7.85	751	25.3	clear	159
0925	12			0	7.85	750	25.6	clear	7.94
0930	12			0	7.84	740	25.8	clear	7.12
0940	12			0	7.85	742	25.9	clear	19.7
1202	12			0	7.91	746	25.4	clear	6.31
1204								pump off	
5-8-17 0615								pump on	
0617	12			0	6.72	780	20.2	clear	17.5
0620	12			0	6.90	778	23.8	clear	7.26
0625	12			0	7.03	768	24.2	clear	8.62
0630	12			0	7.29	748	24.3	slightly cloudy	50.3
0635	12			0	8.30	746	24.2	slightly cloudy	51.9
0640	12			0	8.78	752	24.1	" "	40.2
0655	12			0	8.70	759	24.6	" "	75.1
0710	12			0	8.23	751	24.9	" "	38.6
0720	12			0	8.01	751	24.8	clear	15.7
0730	12			0	7.93	744	24.8	clear	17.2
0740	12			0	7.89	753	25.1	clear	33.3
0750	12			0	7.90	754	24.4	clear	26.4
0800	12			0	7.87	749	25.1	clear	11.1
0810	12			0	7.88	748	25.8	clear	9.81
0812								pump off	
0922								pump on	

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI	Project No.: 129687-002
Well No.: M61-LBF	Date: 5-8-17
Location:	Measuring Point: TOM 2.95' a/r
Total Depth of Well (ft bls): 630	Screen Interval (ft bls): 630-430
Pump Type/Setting (ft bls): Grundfos, 625	Activity: Development
How Q Measured: Stopwatch	H&A Personnel: C Price

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments	NTU
0924	12			0	7.92	741	24.6	clear	14.2
0926	12			0	7.84	756	25.8	clear	23.9
0935	12			0	7.83	737	25.7	clear	12.7
0940	12			0	8.25	743	25.5	clear	13.6
0945	12			0	8.56	742	25.7	clear	34.6
0950	12			0	8.73	749	25.4	clear	27.3
0958	12			0	8.95	757	25.6	~~clear~~ cloudy	43.5
1005	12			0	8.50	748	25.8	~~clear~~ cloudy	160
1013	12			0	8.18	741	25.8	cloudy	144
1020	12			0	8.02	741	25.6	clear	57.1
1030	12			0	7.95	748	25.8	clear	27.6
1040	12			0	7.93	743	25.6	clear	8.20
1041								pump off	
1142								pump on	
1144	12			0	7.98	738	25.7	clear	9.98
1147	12			0	7.89	756	25.9	cloudy	63.5
1155	12			0	7.90	740	25.8	clear	8.29
1200	12			0	8.30	741	25.6	clear	16.5
1210	12			0	8.81	750	25.8	slightly cloudy	41.9
1220	12			0	8.61	743	25.9	" "	42.7
1230	12			0	8.21	744	25.9	" "	48.3
1240	12			0	8.09	746	25.8	" "	42.1
1250	12			0	8.00	743	26.3	clear	36.1
1300	12			0	8.01	741	25.9	clear	17.6
1310	12			0	7.95	740	26.1	clear	13.6
1320	12			0	7.93	741	26.8	clear	9.81
1330	12			0	7.95	737	26.6	clear	4.13
1345	12			0	7.95	743	26.7	clear	6.85

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: ECF	Project No.: 29687-002
Well No.: M61-LBF	Date: 5-2-17
Location:	Measuring Point: TOM 2.95' a/s
Total Depth of Well (ft bls): 630	Screen Interval (ft bls): 630-430
Pump Type/Setting (ft bls): 625' - grundfos	Activity: Development
How Q Measured: Stopwatch	H&A Personnel: C Price.

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments	
1400	12			0	7.94	745	26.5	clear	3.35
1415	12			0	7.95	739	26.4	clear	3.30
1430	12			0	7.95	741	26.8	clear	4.01
1445	12			0	7.97	741	26.4	clear	5.30
1500	12			0	7.94	748	26.0	clear	3.01
1515	12			0	7.95	747	24.9	clear	4.11
1545	12			0	7.95	741	25.8	clear	2.19
1600	12			0	7.98	742	25.6	clear	4.89
1602								pump off end	

Comments:

HALEY ALDRICH