Hydrogeologic Investigation at the Sumica Site for the Central Florida Water Initiative

Polk County, Florida

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EXECUTIVE SUMMARY

The South Florida Water Management District (SFWMD or District) has been working cooperatively with the Southwest Florida Water Management District (SWFWMD), St. Johns River Water Management District (SJRWMD), Florida Department of Environmental Protection, Florida Department of Agriculture and Consumer Services, regional public water supply utilities, and other stakeholders over the last several years to evaluate the status of traditional water supplies and plan for the future of water supply in Central Florida. As part of this Central Florida Water Initiative (CFWI; https://www.cfwiwater.com/), the Data Monitoring and Investigations Team (DMIT) identified several areas lacking adequate monitoring and information on the hydraulic properties of the subsurface throughout the CFWI Planning Area, particularly in the deeper portions of the Floridan aquifer system (FAS). Consequently, the DMIT developed a work plan for the construction and testing of new data collection sites to meet future data needs within the CFWI Planning Area. This report documents one component of that work plan: the District's exploratory drilling and construction of FAS monitor wells POF-31 and POF-32 at the Sumica site, located southwest of State Road 60 approximately 12 miles west of the Kissimmee River in Polk County, Florida. Land surface elevation at the Sumica site is approximately 67.5 feet (ft) using the North American Vertical Datum of 1988 (NAVD88) or 68.68 ft using the National Geodetic Vertical Datum of 1929 (NGVD29). The Sumica site was selected for a number of reasons. First, it filled a data gap in the northwest part of the SFWMD in Polk County where FAS data are sparse, and questions about the productivity and water quality of the Lower Floridan aquifer (LFA) have persisted. Second, the Sumica site is located at the site of two existing surficial aquifer system (SAS) wells, which meant that a more complete picture of the interactions between the SAS, Upper Floridan aquifer (UFA), Avon Park permeable zone (APPZ), and LFA could be developed with reduced cost. Third, the site was publicly accessible, so no time-consuming access agreements or land acquisitions were required.

Exploratory drilling at the Sumica site reached a maximum depth of 2,000 ft below land surface (bls). The hydrogeologic investigation of this site (also known as the Walk-in-Water site) included collection of split-spoon samples, drill cuttings, wireline coring, hydraulic testing, geophysical logging, optical borehole imaging (OBI), and borehole water quality sampling. Data from these activities were used to identify hydrostratigraphic and lithologic unit boundaries and evaluate variations in water quality and aquifer parameters with depth (**Table ES-1**).

Table ES-1. Hydrostratigraphic units at the Sumica site.

Hydrostratigraphic Unit		Unit Boundaries	
		Top (ft bls)	Bottom (ft bls)
Surficial Aquifer System		0	87
Intermediate Confining Unit		87	250
Upper Floridan Aquifer	UFA-upper	250	410
	OCAPlpz	410	800
	APPZ	800	1,113
Middle Confining Unit	MCU_I	1,113	1,410
Lower Floridan Aquifer	LFA-upper	1,410	1,833
	GLAUClpu	1,833	Not Encountered

APPZ = Avon Park permeable zone; ft bls = feet below land surface; GLAUClpu = low-permeability glauconitic marker unit; LFA-upper = upper permeable zone of the Lower Floridan aquifer; MCU_I = middle confining unit I; OCAPlpz = Ocala–Avon Park low-permeability zone; UFA-upper = upper permeable zone of the Upper Floridan aquifer.

Table ES-2. Lithologic units at the Sumica site.

Lithologic Unit	Unit Boundaries	
	Top (ft bls)	Bottom (ft bls)
Undifferentiated Holocene, Pleistocene, and Pliocene Sediments	0	87
Hawthorn Group–Peace River Formation	87	155
Hawthorn Group–Arcadia Formation	155	250
Ocala Limestone	250	330
Avon Park Formation	330	1,871
Oldsmar Formation	1,871	Not Encountered

ft bls = feet below land surface.

Table ES-3. Flow zones within the Avon Park permeable zone and the upper permeable zone of the Lower Floridan aquifer at the Sumica site.

Flow Zone	Top (ft bls)	Bottom (ft bls)
APhpz-1	800	857
APhpz-2	958	1,023
LF1	1,410	1,463
LF2	1,603	1,669
LF3	1,722	1,833

APhpz-1 and APhpz-2 = Avon Park high-permeability flow zones; ft bls = feet below land surface; LF1, LF2, and LF3 = flow zones within the upper permeable zone of the LFA-upper.

Table ES-4. Well construction summary at the Sumica site.

Corehole Name	Well ID	Total Drilled Depth (ft bls)	Top of Open Interval (ft bls)	Bottom of Open Interval (ft bls)	Hydrostratigraphic Zone
POF-31	POF-31U	1,500	275	594	UFA and OCAPlpz
	POF-31L	1,500	800	900	APPZ
POF-32	POF-32	2,000	1,407	1,840	LFA-upper and GLAUClpu

APPZ = Avon Park permeable zone; ft bls = feet below land surface; GLAUClpu = low-permeability glauconitic marker unit; LFA-upper = upper permeable zone of the Lower Floridan aquifer; OCAPlpz = Ocala–Avon Park low-permeability zone; UFA = Upper Floridan aquifer.

The results of this investigation include the following:

- Hydrostratigraphic unit boundaries were established for the SAS, intermediate confining unit (ICU), the upper permeable zone of the Upper Floridan aquifer (UFA-upper), Ocala–Avon Park low-permeability zone (OCAPlpz), APPZ, middle confining unit I (MCU_I), upper permeable zone of the Lower Floridan aquifer (LFA-upper), and the top of the low-permeability glauconitic marker unit (GLAUClpu) as shown in **Table ES-1**. These boundaries are based on review of split-spoon samples and cuttings from the SAS and ICU, continuous wireline coring and packer testing through the FAS, geophysical and OBI logs, and groundwater chemistry.
- The lithologic units encountered include the undifferentiated Holocene, Pleistocene, and Pliocene sediments, the Peace River and Arcadia formations of the Hawthorn Group, the Ocala Limestone, the Avon Park Formation, and the Oldsmar Formation. The Suwannee Limestone was not encountered. The depths at which the lithologic units were encountered are shown in **Table ES-2**.

- Based on the packer testing results, two significant production zones referred to as Avon Park high-permeability zones 1 and 2 (Aphpz-1 and Aphpz-2) were identified within the APPZ between 800 and 857 ft bls and between 958 and 1,023 ft bls, respectively (**Table ES-3**). These two intervals have relatively higher packer test hydraulic conductivity than other portions of the APPZ.
- MCU_I was the only middle confining unit present at the site and was characterized by relatively lower packer test transmissivities as compared to the overlying APPZ and underlying LFA-upper.
- Within the LFA-upper, three significant production zones were identified: 1,410 to 1,463 ft bls, 1,603 to 1,669 ft bls, and 1,722 to 1,833 ft bls (**Table ES-3**). These are referred to as LF1, LF2, and LF3, respectively.
- The top of the GLAUClpu was encountered at a depth of 1,833 ft bls in the POF-32 corehole (**Table ES-1**) and was characterized by relatively low hydraulic conductivities. The bottom of this unit was not encountered.
- The exploratory corehole for POF-31 was completed to 1,500 ft bls. This corehole was converted into a dual-zone monitoring well. The UFA-OCAPlpz monitoring well was named POF-31U and was completed with an annular monitoring zone from 275 to 594 ft bls. The APPZ monitoring well, named POF-31L, was completed with an open-hole monitoring interval from 800 to 900 ft bls (**Table ES-4**).
- The exploratory corehole for POF-32 was completed to 2,000 ft bls. This corehole was converted into an LFA-upper/GLAUClpu monitoring well, named POF-32, completed with an open-hole interval from 1,407 to 1,840 ft bls. The well's open interval extends approximately 7 ft into the GLAUClpu (**Table ES-4**).

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ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
µS/cm	microsiemens per centimeter
APhpz	Avon Park high-permeability zone
APPZ	Avon Park permeable zone
bls	below land surface
CFWI	Central Florida Water Initiative
CTD	conductivity, temperature, and depth
District	South Florida Water Management District
DMIT	Data Monitoring and Investigations Team
ECFTX	East Central Florida Transient Expanded (model)
FAS	Floridan aquifer system
ft	foot or feet
GLAUClpu	low-permeability glauconitic marker unit
gpm	gallons per minute
ICU	intermediate confining unit
LFA	Lower Floridan aquifer
LFA-upper	upper permeable zone of the Lower Floridan aquifer
MCU	middle confining unit
mg/L	milligrams per liter
NGVD29	National Geodetic Vertical Datum of 1929
OBI	optical borehole imaging
OCAPlpz	Ocala–Avon Park low-permeability zone
psi	pounds per square inch
PVC	polyvinyl chloride
SAS	surficial aquifer system
SCADA	supervisory control and data acquisition
SFWMD	South Florida Water Management District
SJRWMD	St Johns River Water Management District
SMCL	secondary maximum contaminant levels
SWFWMD	Southwest Florida Water Management District
SPT	standard penetration test
TDS	total dissolved solids
UFA	Upper Floridan aquifer

UFA-upper	upper permeable zone of the Upper Floridan aquifer
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VSMOW	Vienna standard mean ocean water
XRD	X-ray diffraction

INTRODUCTION

The South Florida Water Management District (SFWMD or District) has been working cooperatively with the Southwest Florida Water Management District (SWFWMD), St. Johns River Water Management District (SJRWMD), Florida Department of Environmental Protection, Florida Department of Agriculture and Consumer Services, regional public water supply utilities, and other stakeholders evaluating the status of traditional water supplies and planning for the future of water supply in Central Florida. As part of this Central Florida Water Initiative (CFWI; https://www.cfwiwater.com/), the Data Monitoring and Investigations Team (DMIT) identified several areas lacking adequate groundwater monitoring. In addition, further characterization of the hydraulic properties of the deeper portions of the Floridan aquifer system (FAS) are needed. Consequently, the DMIT developed a work plan for the construction and testing of new wells to meet future hydrogeologic data collection needs within the CFWI Planning Area. The work plan, *DMIT Hydrogeologic Annual Work Plan (FY2018-FY2025),* is available on the CFWI website at https://www.cfwiwater.com/data.html.

This report documents one component of that work plan: the District's exploratory drilling, testing, and well construction activities completed at the Sumica site, also known as the Walk-in-Water site. The Sumica site is in Polk County, Florida within a nature preserve that was jointly purchased by Polk County and the District. The site is located approximately 12 miles west of the Kissimmee River and southwest of State Road 60 (**Figure 1**). Land surface elevation at the site is approximately 67.5 feet (ft) using the North American Vertical Datum of 1988 (NAVD88) or 68.68 ft using the National Geodetic Vertical Datum of 1929 (NGVD29). The District survey report for the site is provided in **Appendix A**. The Sumica site was selected for numerous reasons. First, it filled a data gap in the northwest part of the SFWMD in Polk County where FAS data are sparse, and questions about the productivity and water quality of the Lower Floridan aquifer (LFA) have persisted. Second, the Sumica site is located at the site of two existing surficial aquifer system (SAS) wells, which meant that a more complete picture of the interactions between the SAS, Upper Floridan aquifer (UFA), Avon Park permeable zone (APPZ), and LFA could be developed with reduced cost. Third, the site was publicly accessible, so no time-consuming access agreements or land acquisitions were required.

Prior to the start of this project, two shallow monitoring wells (POS-20 and POS-21) were installed at the Sumica site as part of the CFWI initiative for evaluating impacts to wetlands. POS-20 was installed in the vicinity of the FAS wells constructed as part of this project, and POS-21 was installed approximately 4,150 ft south of POS-20 (**Figure 1**). POS-20 and POS-21 were constructed of 4-inch-diameter polyvinyl chloride (PVC) well casing and screens and were screened from 25 to 30 ft below land surface (bls). The risers are stainless steel to protect the wells during controlled and uncontrolled burns. POS-20 and POS-21 are equipped with pressure transducers and telemetry connected to the District's supervisory control and data acquisition (SCADA) system and have been continuously collecting groundwater elevation data since October 2019.

Project Objectives

The project objectives were divided into two categories: hydrogeologic data collection and groundwater monitoring as described below.

The hydrogeologic data collection objectives were to

1. evaluate the lithology, productivity, and groundwater quality of the FAS to a depth of 2,000 ft bls; and

2. identify hydrogeologic unit boundaries through the FAS to the top of the low-permeability glauconitic marker unit (GLAUClpu).

The groundwater monitoring objectives were to

1. construct a new dual-zone upper permeable zone of the Upper Floridan aquifer (UFA-upper)/Avon Park permeable zone (APPZ) monitor well;

2. construct a new upper permeable zone of the Lower Floridan aquifer (LFA-upper) monitor well;

3. connect these new FAS monitoring wells to the District SCADA system for collection of continuous groundwater elevation measurements; and

4. analyze groundwater samples.

Figure 1. Sumica site location.

EXPLORATORY CORING AND WELL CONSTRUCTION

The District contracted with Huss Drilling, Inc. for exploratory coring, packer testing, and monitor well construction services at the Sumica site in February 2020 (CN#4600003906-WO04). Huss mobilized a Failing 1500 Hole Master drill rig to the site in March 2020 to install a makeup water well named SUMICAN-PW (**Figure 1**) that was continuously sampled between depths of 35 to 87 ft bls using a 24-inch-long standard penetration test (SPT) sampler. The boring for POS-21 was previously sampled using SPT methods from 5 to 31 ft bls. The sieve analyses data from these two borings were used to characterize the SAS sediments at the site.

In March 2020, Huss mobilized a Versa Drill 2000 drill rig to the site to start drilling the exploratory corehole for FAS well POF-31. A nominal 22-inch-diameter borehole was drilled using mud-rotary drilling methods from land surface to a depth of 81 ft bls, at which point a 16-inch-diameter steel surface casing was installed and cemented into place. A nominal 6-inch-diameter pilot hole was then advanced using mud-rotary drilling methods from the base of the surface casing (at 81 ft bls) to a depth of 285 ft bls. At that point, the borehole was geophysically logged.

These geophysical logs were used in conjunction with the SPT samples and drill cuttings to identify the bottom of the intermediate confining unit (ICU) and to determine a suitable casing seat for a 10-inch-diameter conductor casing intended to stabilize the unconsolidated ICU sediments and prevent those sediments from sloughing into the borehole during wireline coring in the FAS. To achieve this, the borehole was reamed to a nominal diameter of 15 inches to a depth of 275 ft bls. Next, a 10-inch-diameter PVC conductor casing was cemented in place to a depth of 275 ft bls. After installation of the conductor casing, the borehole was advanced to a depth of 290 ft bls to clear the cement plug at the bottom of the conductor casing. Next, temporary 5-inch-diameter and 4-inch-diameter steel casings were installed to a depth of 290 ft bls. On April 4, 2020, work was suspended due to the coronavirus pandemic. The drill rig was demobilized from the site, and the site was secured.

Work resumed on June 1, 2020, with the mobilization of a Failing 1500 rig to the site due to the Versa Drill 2000 still being serviced and repaired. HQ wireline coring started at a depth of 290 ft bls. The HQ wireline coring produced 2.5-inch-diameter cores and an approximately 4-inch-diameter corehole. Drilling mud was not used during wireline coring. Packer tests were conducted at 30-foot depth intervals to obtain groundwater samples for laboratory analyses and for calculation of aquifer parameters. Before each packer test was started, the corehole was airlifted to remove sediment and drilling fluids from the corehole.

Starting at approximately 590 ft bls, unconsolidated material began sloughing into the corehole from shallower depths. This slowed drilling and packer testing operations and required additional airlifting to remove the accumulated sediment. On July 2, 2020, at a depth of 964 ft bls, wireline coring was suspended until the Versa Drill 2000 could be remobilized to the site so that additional temporary casing could be installed in the corehole to control the sediment sloughing into the corehole from above. However, flooding at the site prevented the Versa Drill from being mobilized. The District then authorized Huss to place fill to elevate the work area above the standing water so that work could continue. Ten truckloads of fill and road base material were delivered and spread across the site. The Versa Drill was repositioned on top of the new fill, and 50 ft of temporary 5-inch-diameter steel casing was added to the corehole to extend the length of installed casing to a depth of 340 ft bls. The corehole was reamed to approximately 5 inches in diameter to a depth of 960 ft bls, and 4-inch-diameter temporary casing was installed to 960 ft bls. On July 16, 2020, the temporary 5-inch steel casing fell deeper downhole to an unknown depth but would not have been able to fall deeper than 960 ft bls. The temporary 5-inch steel casing was unable to be removed and was left in place until all casings were removed and wireline coring operations had reached a depth of 1,500 ft bls. Wireline coring and packer testing resumed on July 20, 2020. Artesian conditions were observed in the annular space between the temporary 5-inch-diameter and 4-inch-diameter steel casings.

When drilling reached the LFA-upper on August 12, 2020, there was a 9.2 ft drop in the static water level as measured in the corehole. Coring and testing continued to a depth of 1,500 ft bls on August 14, 2020. At that point it was decided to stop wireline coring due to concerns that continued downward flow of water would contaminate the LFA-upper and compromise its use as an LFA monitor well. Work shifted to converting this well into a dual-zone monitor well with open intervals completed in the UFA-upper/Ocala–Avon Park low-permeability zone (OCAPlpz) and the APPZ. A total of 40 packer tests were completed in the POF-31 corehole.

Well construction activities at well POF-31 began with the placement of gravel from 1,500 to 1,407 ft bls, topped with bentonite pellets in order to backfill the corehole to the top of the UFA-upper. This bentonite seal was intended to prevent downward flow of water into the LFA-upper. Then, after the core casing was removed, a tremie pipe was installed to the bottom of the corehole and cement grout was placed from 1,400 to 1,128 ft bls to provide a seal through the middle confining unit (MCU).

The tremie pipe, core casing, and temporary casings were then removed, and the corehole was reamed to approximately 10-inches in diameter to a depth of 900 ft bls. Cuttings produced during reaming were allowed to settle within the corehole, filling the corehole from 1,128 to 900 ft bls. At that point, the drill rod was removed, and the borehole was prepared for geophysical logging. Two attempts were made to complete the geophysical logging on August 31, 2020. However, an obstruction was encountered at 380 ft bls. After that obstruction was cleared, another obstruction was encountered at 428 ft bls. At that point, the geophysical logger demobilized from the site. Geophysical logging was successfully completed on September 12, 2020 after the corehole had been cleaned out.

Following the completion of geophysical logging, 4-inch-diameter PVC Certa-Lok casing was installed to a depth of 816 ft bls and grouted in place using cement baskets. Pea gravel was placed from 816 to 800 ft bls using free-fall placement. Next, cement-bentonite grout was placed on top of the pea gravel in the annular zone from 800 to 594 ft bls using a tremie pipe. This resulted in the final APPZ open-hole monitoring zone extending from 800 to 900 ft bls, at the top of the APPZ within the uppermost flow zone of the APPZ.

The annular zone from 275 to 594 ft bls was left open as the UFA and OCAPlpz monitoring zone. Both monitoring zones were developed for 1 hour using airlifting and centrifugal pumping methods. A wellhead (modified from the initial design because of the artesian conditions encountered) was then installed.

The two monitored zones were designated POF-31U (open to the UFA and OCAPlpz) and POF-31L (open to the APPZ). The as-built well completion diagram for POF-31U and POF-31L is provided in **Figure 2**, and a photograph of the completed wellhead is shown in **Figure 3**.

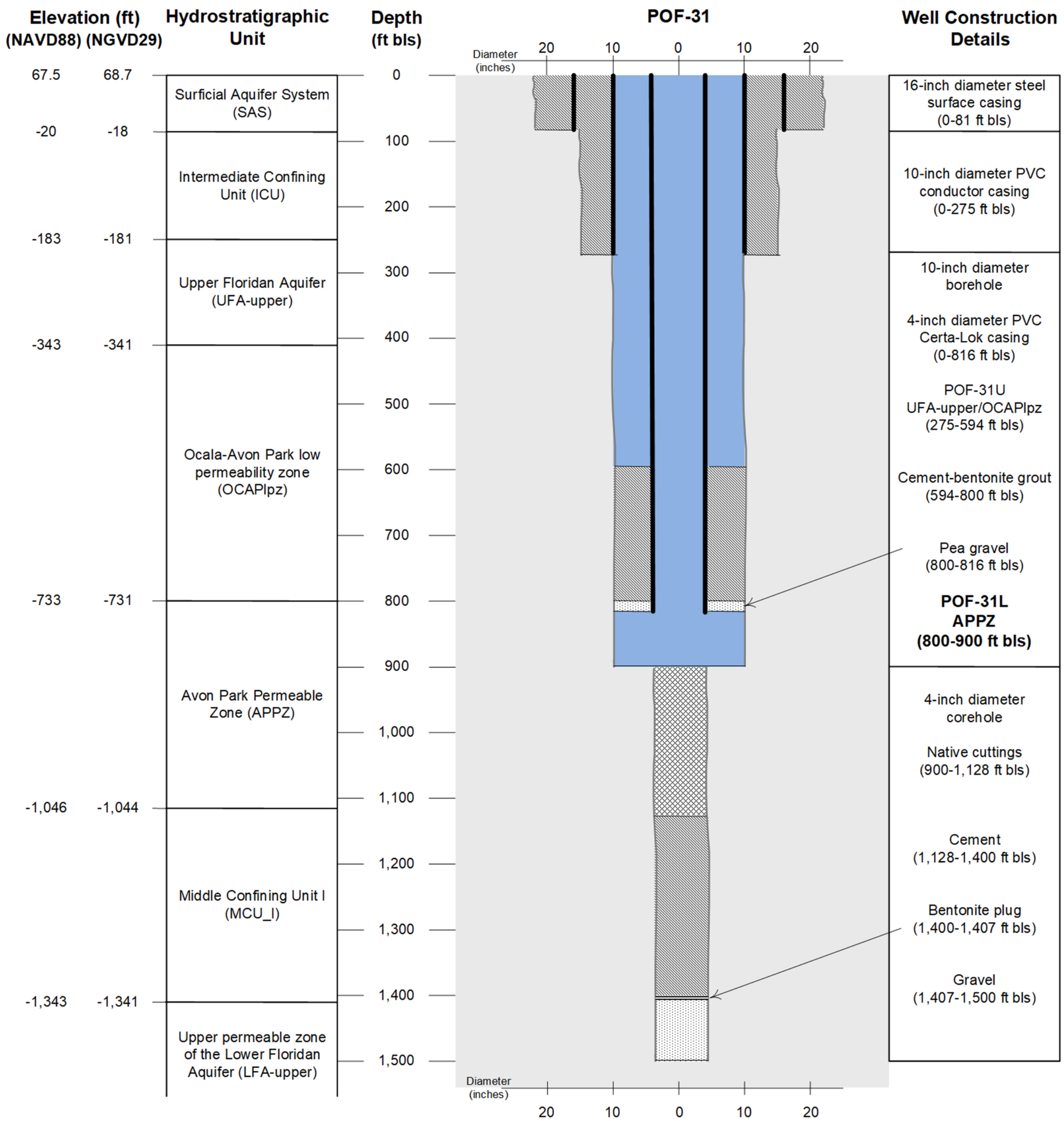


Figure 2. POF-31 well completion diagram.

Figure 3. POF-31 wellhead.

The second well to be constructed on the site (POF-32) was planned to be completed as an LFA monitoring well, with the upper zones cased off to prevent the downhole groundwater flow due to a strong downward hydraulic gradient experienced during the construction of POF-31 (discussed later in this report). Following completion of POF-31, the drill rig was moved to the proposed location for POF-32. Mud-rotary drilling of POF-32 started on September 20, 2020. A 22-inch-diameter borehole was drilled to a depth of 84 ft bls, and a 16-inch-diameter steel surface casing was installed and grouted in place. Next, a 15-inch-diameter borehole was advanced to 270 ft bls. Ten-inch-diameter PVC casing was installed to a depth of 270 ft bls and grouted in place using cement-bentonite grout.

Reverse-air drilling methods were then used to advance a 10-inch-diameter borehole to a depth of approximately 1,407 ft bls, near the top of the LFA. At that point, geophysical logging was completed, and the United States Geological Survey (USGS) performed optical borehole imaging (OBI). After these logs were competed, 1,411 ft of 6-inch-diameter steel casing was hung in the borehole using the drill rig and grouted in place using cement-bentonite grout to a total depth of 1,407 ft bls.

The week of November 23, 2020, was spent drilling out the cement-bentonite grout plug at the bottom of the 6-inch-diameter steel casing and removing a section of stuck tremie pipe. Reverse-air drilling resumed on November 30, 2020, and a 6-inch-diameter borehole was advanced to 1,440 ft bls, at which point the tricone bit lost one of the cones. An attempt to drill through the lost cone was unsuccessful, as was an attempt to retrieve the cone using a magnet. Ultimately, the tricone bit cone was removed using wireline coring methods, and reverse-air drilling resumed, advancing the borehole to a depth of 1,500 ft bls. The corehole was then cored to a total depth of 2,000 ft bls. Sixteen packer tests were completed during wireline coring at 30-foot depth intervals between depths of 1,500 and 2,000 ft bls.

A total of 16 packer tests were completed in the POF-32 corehole. After completing wireline coring and packer testing to a depth of 2,000 ft bls, geophysical logs were completed to total depth, except for sonic porosity which was unable to be completed in the small-diameter portions of the hole. The final open-hole interval (1,407 to 1,840 ft bls) was reamed to an approximate diameter of 6 inches. The cuttings produced during reaming were allowed to settle within the corehole, filling the corehole from 2,000 to 1,840 ft bls. A second OBI log was then completed in the reamed borehole. Following the completion of the OBI logging, the well was pump developed until groundwater parameters stabilized, and the wellhead was installed. The as-built well completion diagram for POF-32 is provided as **Figure 4**.

Pressure transducers were installed in all three monitor zones in both wells (POF-31U, POF-31L, and POF-32) and were connected to the District's SCADA system. Groundwater elevation data acquisition began on June 2, 2021. A photograph of the completed wells at the Sumica site is shown in **Figure 5**. A chronological summary of well construction activities is presented in **Appendix B**. Well completion reports were filed with the appropriate agencies and are in **Appendix C**. Geophysical logs are provided in **Appendix D**, and OBI logs are in **Appendix E**.

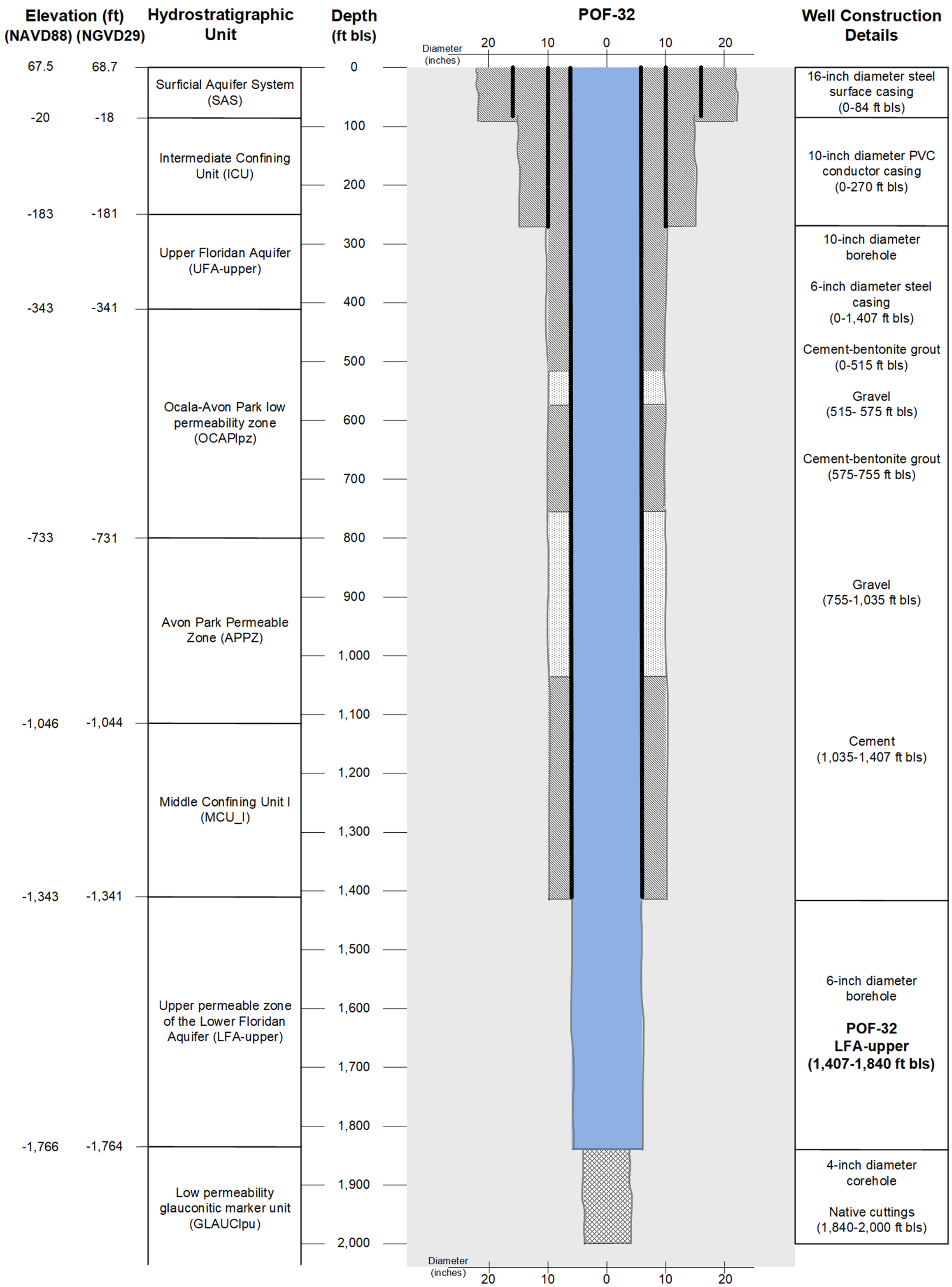


Figure 4. POF-32 well completion diagram.

Figure 5. Photograph of wells at the Sumica site.
(Note: The location of POS-21 is shown in **Figure 1**.)

STRATIGRAPHIC FRAMEWORK

SAS sediment samples were collected from SUMICAN-PW (installed during this project as a makeup water well for drilling POF-31 and POF-32) and from POS-21 by District hydrogeologists. POS-20 was installed as part of a separate project. The District also collected cuttings and rock core samples during the drilling of the POF-31 and POF-32 pilot holes.

At POF-31, cuttings were collected from 87 to 290 ft bls, and wireline core samples were continuously collected from 290 to 1,500 ft bls. Wireline core samples were then collected between 1,500 and 2,000 ft bls at POF-32. District hydrogeologists described the core samples based on the dominant lithologic, textural, and porosity characteristics using the expanded Dunham classification (Embry and Klovan 1971). These lithologic descriptions are presented in **Appendix F**. **Table 1** is a summary of the stratigraphic units encountered during this investigation.

Table 1. Sumica site stratigraphy.

Stratigraphic Unit	Top Depth (ft bls)	Bottom Depth (ft bls)
Undifferentiated Tertiary–Quaternary Sediment	0	87
Tamiami Formation	Not Present	
Hawthorn Group: Peace River Formation	87	155
Hawthorn Group: Arcadia Formation	155	250
Suwannee Limestone	Not Present	
Ocala Limestone	250	330
Avon Park Formation	330	1,871
Oldsmar Formation	1,871	Not Encountered

ft bls = feet below land surface.

Holocene, Pleistocene, and Pliocene Series

The undifferentiated Holocene, Pleistocene, and Pliocene Series extends to a depth of 87 ft bls. Split-spoon SPT samples were collected from ground surface to 87 ft bls from the POS-21 borehole and the borehole for makeup water well SUMICAN-PW. These samples were used to describe the shallow sediments. The soil samples were sieved by District hydrogeologists and were composed almost entirely of poorly graded sand with clay (SP-SC) and poorly graded sand (SP). One sample (from 17 to 19 ft bls) was a clayey sand (SC). These results are presented in **Appendix G**.

Miocene Series

The Hawthorn Group at the Sumica site was composed of clay, silt, calcareous clay, quartz sand, phosphatic sand, shell and clayey shell beds, limestone, and dolostone and extends from 87 to 250 ft bls. The Hawthorn Group consists of the Peace River Formation and the Arcadia Formation. The deposition of the Hawthorn Group occurred in shallow to moderately deep marine waters where deposition rates of clastic material were high. According to Miller (1986), the consensus is that the phosphate was deposited by upwelling of cold marine waters.

Peace River Formation

The Peace River Formation was encountered between depths of 87 and 155 ft bls at the site. The Peace River Formation at the site was composed of gray and dark gray clay, gray and greenish gray sandstone, very pale orange and light brownish gray shell fragments, trace quartz sand, and trace amounts of phosphate grains. The lithology was dominated by sandy clay from 87 to 100 ft bls, where it transitioned to primarily shell fragments.

Arcadia Formation

The Arcadia Formation can be differentiated from the Peace River Formation by its relatively lower siliciclastic sediment content (Scott 1988). A transition from the clay, sand, and shell beds of the overlying Peace River Formation to light gray to gray phosphatic dolostone occurred at 155 ft bls at the site and marked the top of the Arcadia Formation. The Arcadia Formation was encountered between 155 and 250 ft bls at the site. The lithology of the Arcadia Formation was composed predominantly of light gray phosphatic dolostone from 155 to 205 ft bls, where the lithology changed to dark gray clay. At 245 ft bls, the lithology changed to light gray dolostone and light green clay. Phosphatic dolostone composed up to 20% of the cuttings. Shark tooth fragments were also identified in the Arcadia Formation. The base of the Arcadia Formation was identified at 250 ft bls, where light gray dolostone and very pale orange limestone, along with the foraminifera *Lepidocyclina ocalana* (indicative of the Ocala Limestone) were observed. The base of the Arcadia Formation and Hawthorn Group was also associated with a large decrease in gamma ray response in the geophysical logs collected at the Sumica site.

Oligocene Series

Suwanee Limestone

The Suwanee Limestone was not encountered at the site.

Eocene Series

Ocala Limestone

The Upper Eocene Ocala Limestone was encountered between depths of 250 and 330 ft bls. Between 250 and 270 ft bls, the Ocala Limestone was composed of light gray dolostone and clayey dolostone containing shell fragments and *Lepidocyclina* fossils. From 275 to 285 ft bls, very pale orange shell fragments, very pale orange limestone, and *Lepidocyclina* were found. Below 285 ft bls, the lithology consisted of poorly to moderately indurated, very pale orange, fossiliferous wackestone and packstone with bivalve fragments, gastropods, and foraminifera, including *Lepidocyclina* and miliolids. The Ocala Limestone at the site had moderate to high intergranular and moldic porosity. Porosity increased with depth.

The Ocala Limestone was deposited on a warm, shallow, carbonate bank, similar to the modern-day Bahamas (Miller 1986). This low-energy environment probably had low to moderate water circulation (Tucker and Wright 1990).

Avon Park Formation

The top of the Middle Eocene Avon Park Formation was encountered at a depth of 330 ft bls, where an increase in gamma ray activity was recorded in the geophysical logs and the lithology transitioned from fossiliferous wackestone and packstone characteristic of the Ocala Limestone to a mudstone lacking fossils. This very pale orange, low to moderate porosity mudstone interval extended from 330 to 340 ft bls. The Avon Park Formation at the site was poorly to moderately indurated and porosity estimates ranged from high intergranular and moldic porosity to no observable porosity.

Fallotella cookei (formerly *Dictyconus cookei*) can be diagnostic of the Avon Park Formation. These foraminifera were first identified in POF-20 at a depth of 578.5 ft bls. However, other lithologic features characteristic of the Avon Park Formation were observed above this depth.

From 334 to 429 ft bls, the lithology was composed of very pale orange to pale brown interbedded wackestone, mudstone, and minor amounts of packstone containing foraminifera, gastropods, bivalves, and echinoids.

Below an approximately 6-inch-thick layer of light greenish gray clay at 429 ft bls, the lithology changed to wackestone, mudstone, and packstone with thin interbedded clay and dolostone that continued to a depth of 612.5 ft bls. The white, yellowish gray, very pale orange, and pale yellowish brown clay layers found in this interval ranged from 0.8 ft thick to 2.85 ft thick. Organic laminations were common through this interval of poorly indurated rock. Echinoids, gastropods, and foraminifera including *Fallotella cookei* were observed. The estimated porosity was low to moderate, intergranular, and moldic. Approximately 20% of this interval had no observable porosity. Some fractures were present, becoming more common with depth.

From 612.5 to 811.3 ft bls, the lithology remained the same, but the porosity became moderate to high, intergranular, and moldic, and the rock became more indurated. Chert was observed between 750 and 763.6 ft bls.

Dolostone with interbeds of dolomitic limestone and calcareous dolostone were the dominant lithologies encountered between 811.3 and 1,493 ft bls. The rock in this interval was very pale orange to dark yellowish orange, moderately to well indurated, with low to high pinpoint, moldic, and vuggy porosity. The rock texture varied from microcrystalline to sucrosic. Fractures and organic laminations were common. The fossil assemblage in this interval consisted of gastropods, mollusks, and bryozoans. Accessory minerals included calcite, celestine, and chert. From 970 to 1,151 ft bls, crystalline calcite was found in vugs and as coatings on fracture surfaces. From 1,330 to 1,476 ft bls, celestine occurred as euhedral, vug-filling crystals.

Between 1,493 and 1,520 ft bls, interbedded moderate yellow brown to very pale orange packstone and wackestone with interbeds of microcrystalline dolostone were encountered. This interval had moderate to low, intergranular, moldic, pinpoint, and vuggy porosity. Induration was moderate to good. Echinoid and bivalve fossils were present. Calcite crystals were present on fracture surfaces and inside vugs and molds.

From 1,520 to 1,535.1 ft bls, fractured, well indurated, moderate yellowish brown microcrystalline dolostone and calcareous dolostone was encountered. This interval had moderate to high pinpoint and vuggy porosity.

From 1,535.1 to 1,598.5 ft bls, the lithology changed to very pale orange to pale yellowish brown clayey wackestone and packstone. This interval had low intergranular porosity, with some strata having no observable porosity. Induration was moderate to poor, and bivalve and gastropod shell fragments were abundant. Limonite and pyrite were present, and a calcite vein was found at 1,538.6 ft bls.

From 1,598.5 to 1,668.3 ft bls, the rock was composed of grayish orange to dark yellowish brown microcrystalline dolostone with interbedded calcareous dolostone, packstone, and wackestone. The packstone and wackestone beds were encountered near the bottom of this interval. The rock had low to moderate pinpoint and vuggy porosity and was moderately indurated to well indurated and fractured. Limonite and pyrite were found throughout the interval. The limonite could be the result of the oxidization and weathering of pyrite, but it is not known if this oxidization occurred before or after cores were brought to the surface.

From 1,668.3 to 1,716.2 ft bls, the rock consisted of very pale orange to grayish orange wackestone and packstone with low intergranular porosity and moderate induration. Limonite, pyrite, and bivalve and echinoid shell fragments were observed.

From 1,716.2 to 1,823.1 ft bls, the rock was primarily composed of grayish orange to moderate yellowish brown, highly fractured microcrystalline dolostone with a few packstone, and wackestone interbeds. The dolostone had moderate to high pinpoint and vuggy porosity and was moderately indurated to well indurated. The limestone interbeds were very pale orange and had low intergranular porosity and moderate induration. Organics, limonite, pyrite, and glauconite were found within this interval.

From 1,823.1 to 1,871.1 ft bls, the rock was composed of yellowish gray to moderate yellowish brown microcrystalline dolostone and calcareous dolostone with low to moderate pinpoint and vuggy porosity. A total of 18.3 ft of this 40-foot-long interval was microcrystalline with no porosity. Induration was moderate to good with some fractures. From 1,850 to 1,868.3 ft bls, the rock contained abundant organic laminations. Accessory minerals included limonite, glauconite, and milky, white quartz with a globular, rounded habit. This white quartz was observed fully or partially filling vugs. This could reduce porosity and permeability in this interval. Similar occurrences of white quartz have also been found by the SWFWMD during the exploratory drilling for well ROMP-115. White quartz with this habit was referred to as “snowball quartz” in the report for ROMP-115 (Zydek 2020). Similar snowball quartz crystals from POF-32 are shown in **Figure 6**. Previous work (Zydek 2020) noted that the vugs and molds appeared to have been initially filled with gypsum and/or anhydrite which later dissolved, allowing the formation and growth of quartz in these spaces when the geochemical conditions were right for their growth. At ROMP-115, the quartz was identified in both the Avon Park and Oldsmar formations. At the Sumica site, quartz was only encountered near the base of the Avon Park Formation.

Figure 6. Photo of “snowball” quartz samples collected from various depths between 1,850 and 1,868.3 ft bls within the Avon Park Formation in the POF-32 corehole.

Oldsmar Formation

The top of the Oldsmar Formation was encountered at a depth of approximately 1,871 ft bls and extended to the bottom of the corehole at 2,000 ft bls. The base of the unit was not encountered. The contact between the Avon Park Formation and the Oldsmar Formation at POF-32 was gradational. At a depth of 1,848.5 ft bls, the dolostone of the Avon Park Formation became more calcareous and clayey until it transitioned to a clean foraminiferal wackestone at a depth of 1,871.1 ft bls.

From the top of the Oldsmar Formation to 1,915.1 ft bls, the rock was very pale orange to pale yellowish brown wackestone and mudstone, with thin beds of clay near the top of the interval. Porosity was primarily intergranular and ranged from none to moderate. The only fossils encountered were unidentifiable foraminifera. A variety of accessory minerals were encountered in this interval and included white quartz, limonite, organics, and glauconite. Anhydrite and gypsum, although commonly found as infillings in vugs in the Oldsmar Formation, were not found at the Sumica site.

The lithology changed to clayey, interbedded wackestone, packstone, and mudstone from 1,915.1 ft bls to the total coring depth of 2,000 ft bls. These rocks had moderate to poor induration and low to moderate intergranular porosity. Rock colors varied from white, gray, light gray, light olive gray, greenish gray, pale yellowish brown, and very pale orange. Limonite, pyrite, glauconite, laminations of organics, and limestone intraclasts were common. The intraclasts indicate reworking of the sediments after deposition.

Like the overlying Avon Park Formation, the Oldsmar Formation was deposited in a shallow, warm water carbonate bank environment (Miller 1986).

HYDROSTRATIGRAPHIC FRAMEWORK

The SAS and FAS are the two aquifer systems intersected by POF-31 and POF-32, with the FAS being the primary subject of this investigation. The FAS is subdivided into aquifers of moderate to high permeability where dissolution features and fractures are common, separated by zones of lower permeability that offer varying degrees of confinement. The nomenclature assigned to these aquifers and confining units varies in the literature as well as between neighboring water management districts as shown in **Figure 7**.

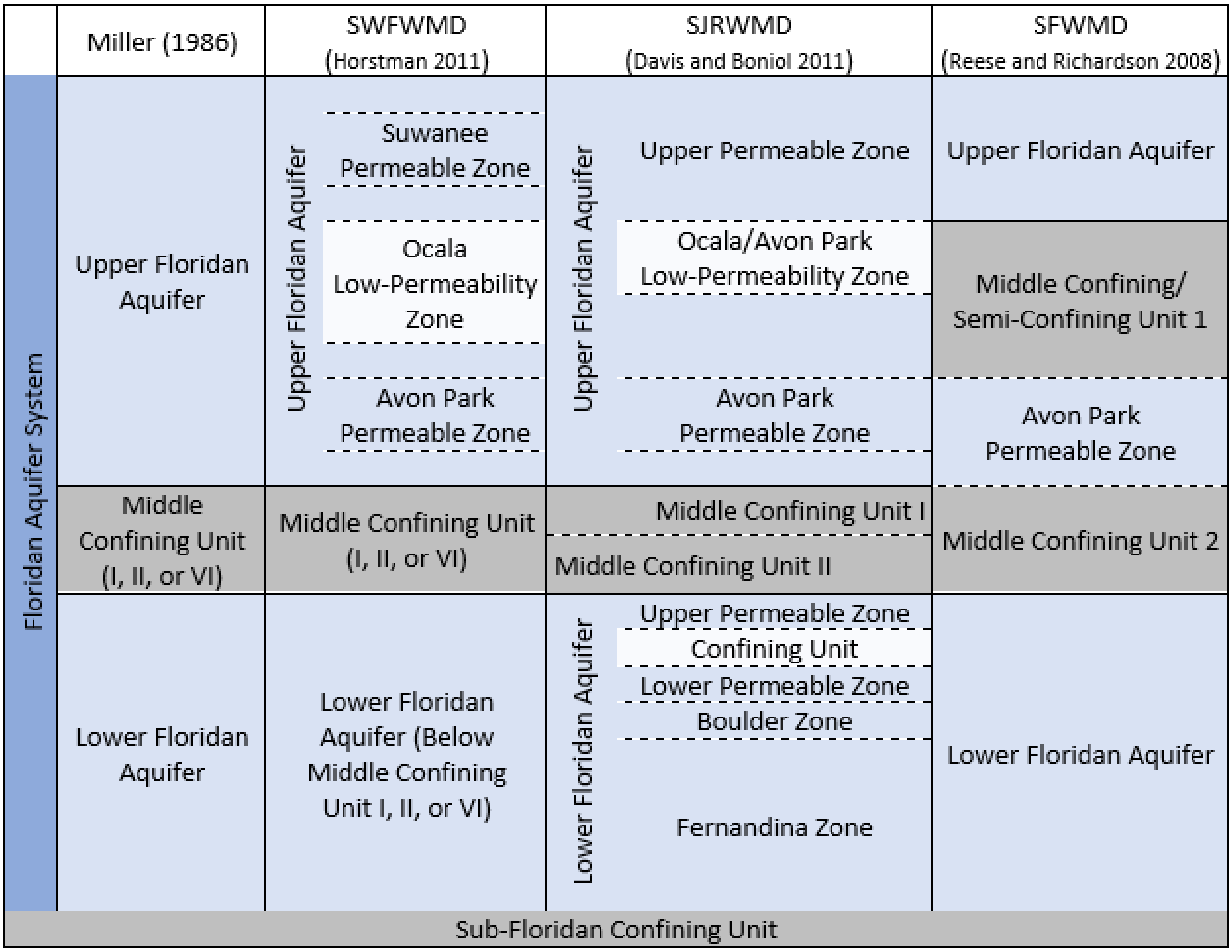


Figure 7. Comparison of the hydrostratigraphic unit names for the FAS. This shows the names used by Miller (1986), the SFWMD, and the neighboring CFWI water management districts, SJRWMD and SWFWMD.

To remain consistent within the CFWI Planning Area, the cooperating water management districts agreed on a slightly modified hydrogeologic conceptualization (**Figure 8**) as the basis for development of the East Central Florida Transient Expanded (ECFTX) groundwater model, which is being used to evaluate groundwater availability in the region. As a component of the CFWI, this report follows the hydrostratigraphic names shown in **Figure 8** for the units intersected by the exploratory drilling at the Sumica site. A representative hydrogeologic section, with hydrogeologic units conforming most closely to the Sumica site, is presented in **Figure 8**.

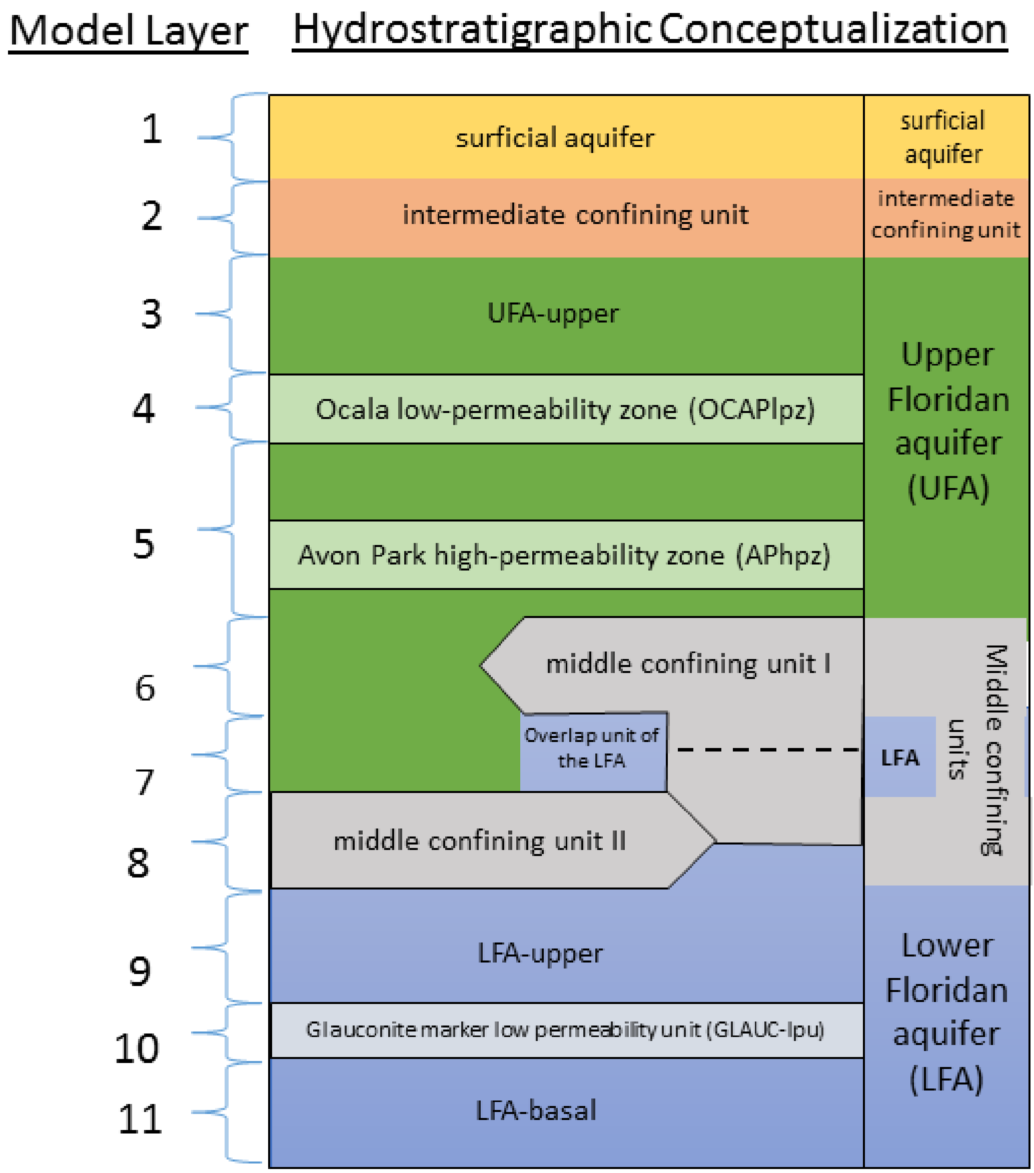


Figure 8. Groundwater model layer numbers, hydrostratigraphic conceptualization, and vertical discretization of the ECFTX model (CFWI Hydrologic Analysis Team 2020).

Surficial Aquifer System (0 to 87 ft bls)

The SAS at the site consisted of unconsolidated, predominantly fine quartz sand with varying amounts of silt, clay, shell, and heavy minerals. The top of the Hawthorn Group often was selected as the base of the SAS. However, lower-permeability sediments were found at much shallower depths, so the bottom of this unit was gradational. A depth of 87 ft bls was selected as the bottom of the SAS, based on sieve analyses of sediment samples from POS-31 and SUMICAN-PW.

Intermediate Confining Unit (87 to 250 ft bls)

The ICU separates the SAS from the FAS and was encountered between depths of 87 and 250 ft bls. At the Sumica site, the ICU was composed of clay, sandy clay, sandy and clayey shell beds, sandstone, and clayey dolostone. Phosphate grains were present throughout as were trace amounts of shark's teeth.

Floridan Aquifer System (250 to 2,000 ft bls)

The FAS consists of Tertiary-age limestone and dolostone. At Sumica, the FAS included permeable sedimentary strata of the Ocala Limestone, Avon Park Formation, and Oldsmar Formation. Regionally, the base of the FAS occurs in the Paleocene Cedar Keys Formation, which was not penetrated at the site.

The hydrogeologic units within the FAS were delineated based on the exploratory coring, drilling, and geophysical logging, as well as the hydraulic testing and water quality analyses from 56 packer tests completed during exploration drilling at the site.

An estimate of hydraulic conductivity was calculated using the Cooper-Jacob equation (see Hydraulic Parameters section below). This equation is empirically derived and is based on the drawdowns corrected for head losses and the pumping rates of each packer test. **These hydraulic conductivities are intended to show the relative changes in productivity as drilling progressed through the corehole and are not intended to be used as absolute values.** Hydraulic conductivities obtained from aquifer testing are more representative of an entire aquifer than an individual packer test or set of packer tests, which only pumps from a small portion of a larger aquifer, for a short period of time and at relatively low pumping rates (as compared to an aquifer performance test) that likely do not significantly stress the aquifer as a whole. A complete description of the packer testing methods, data analyses, and results is provided later in this report. For comparison with previous SFWMD reports, the hydraulic conductivities discussed in this section are based on the Cooper-Jacob equation.

Upper Floridan Aquifer

The UFA typically occurs at the base of the Hawthorn Group although it locally may include permeable units within the lower Arcadia Formation. The UFA at the Sumica site included the Ocala Limestone and portions of the Avon Park Formation. The UFA generally consists of several thin, highly permeable water bearing zones interbedded with thicker, lower-permeability zones. The CFWI Hydrologic Analysis Team (2016) used three regionally mappable units to represent the vertical heterogeneity of the UFA: UFA-upper, OCAPlpz, and APPZ.

UFA-upper (250 to 410 ft bls)

The UFA-upper is the uppermost permeable zone of the FAS. At this site, the UFA-upper consisted of poorly to moderately consolidated wackestone and packstone. A solutioned flow zone often is observed near the contact between the Hawthorn Group and Ocala Limestone. Although this boundary was concealed by the temporary casing during OBI logging, the boundary was observed during lithologic logging at 250 ft bls. Four packer tests were completed within the UFA-upper. The first packer test (from 290 to 320 ft bls) had excessive drawdown, indicating that the pumping rate was too high for the tested interval, negating the results from this test. The remaining three packer test results had average calculated hydraulic conductivities of less than approximately 7 ft/day (refer to **Table 6**). Water quality from this interval (refer to **Table 7**) was the freshest in the corehole, with total dissolved solids (TDS) concentrations that ranged from 96 to 103 mg/L. A typical example of the appearance of the UFA-upper in the OBI log is shown in **Figure 9**.

The UFA-upper is highly productive in the northern portion of the CFWI Planning Area, but previous investigations and reports have found that productivity tends to decline to the south (Richardson et al. 2020a). Reported transmissivities of the UFA-upper typically range from less than 10,000 to more than 100,000 ft^2/day in Central Florida (CFWI Hydrologic Analysis Team 2016). Nine UFA-upper packer tests completed at nearby OSF-113 (located approximately 11.6 miles to the southeast near the S65 locks) resulted in hydraulic conductivities that averaged approximately 9 ft/day, similar to what was calculated for the UFA-upper at the Sumica site. At OSF-113 the estimated bulk transmissivity was approximately 2,500 ft^2/day, which falls within the low end of the reported regional range (Richardson et al. 2020a).

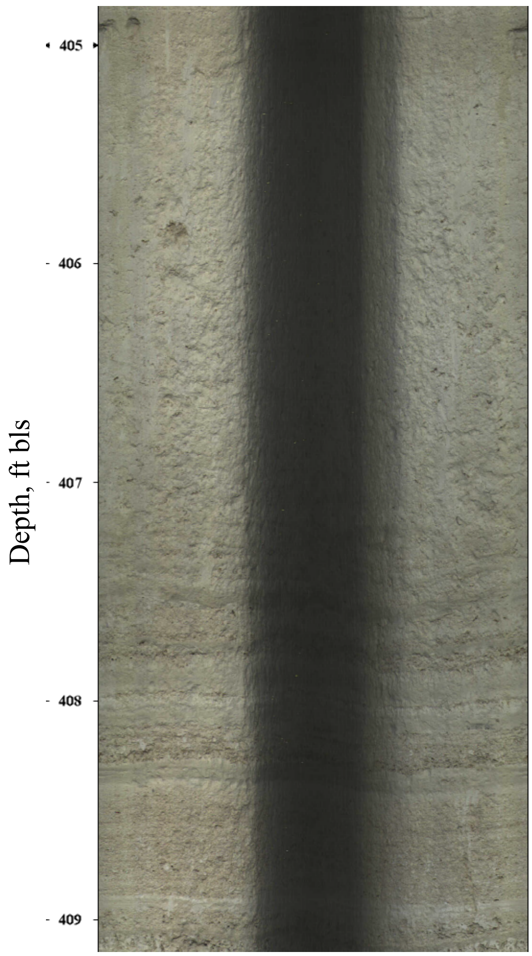


Figure 9. Typical appearance of the UFA-upper at POF-32 from 405 to 409 ft bls in the OBI log. Laminations, bedding, and vuggy texture are visible.

OCAPlpz (410 to 800 ft bls)

The OCAPlpz is generally distinguished from the UFA-upper by a reduction in secondary permeability. The lithology of the OCAPlpz is similar to the UFA-upper and is characterized by interbedded mudstone, wackestone, and packstone. Although the OCAPlpz is generally semiconfining, minor permeable zones can be found within the OCAPlpz (CFWI Hydrologic Analysis Team 2020). The OCAPlpz at the Sumica site contained significantly more structural deformation features than the overlying UFA-upper which could increase secondary porosity and permeability within localized zones of deformation. These features included significant faulted bedding, folded bedding, and brecciated zones as compared to other hydrostratigraphic units encountered at the site. In addition, laminations were more common and better-developed than in the UFA-upper. Packer tests within the OCAPlpz yielded hydraulic conductivities of approximately 1 to 16 ft/day with an average of approximately 6 ft/day. Similar to what was seen in the UFA-upper, these hydraulic conductivities were comparable to those calculated from packer tests completed at OSF-113 which yielded an average hydraulic conductivity of approximately 5 ft/day for the OCAPlpz. TDS for the OCAPlpz was similar to the UFA, with TDS concentrations ranging from 94 mg/L (test 17 from 770 to 800 ft bls) to 109 mg/L (test 9 from 530 to 560 ft bls). Examples of structural features observed in the OCAPlpz are shown in **Figure 10**.

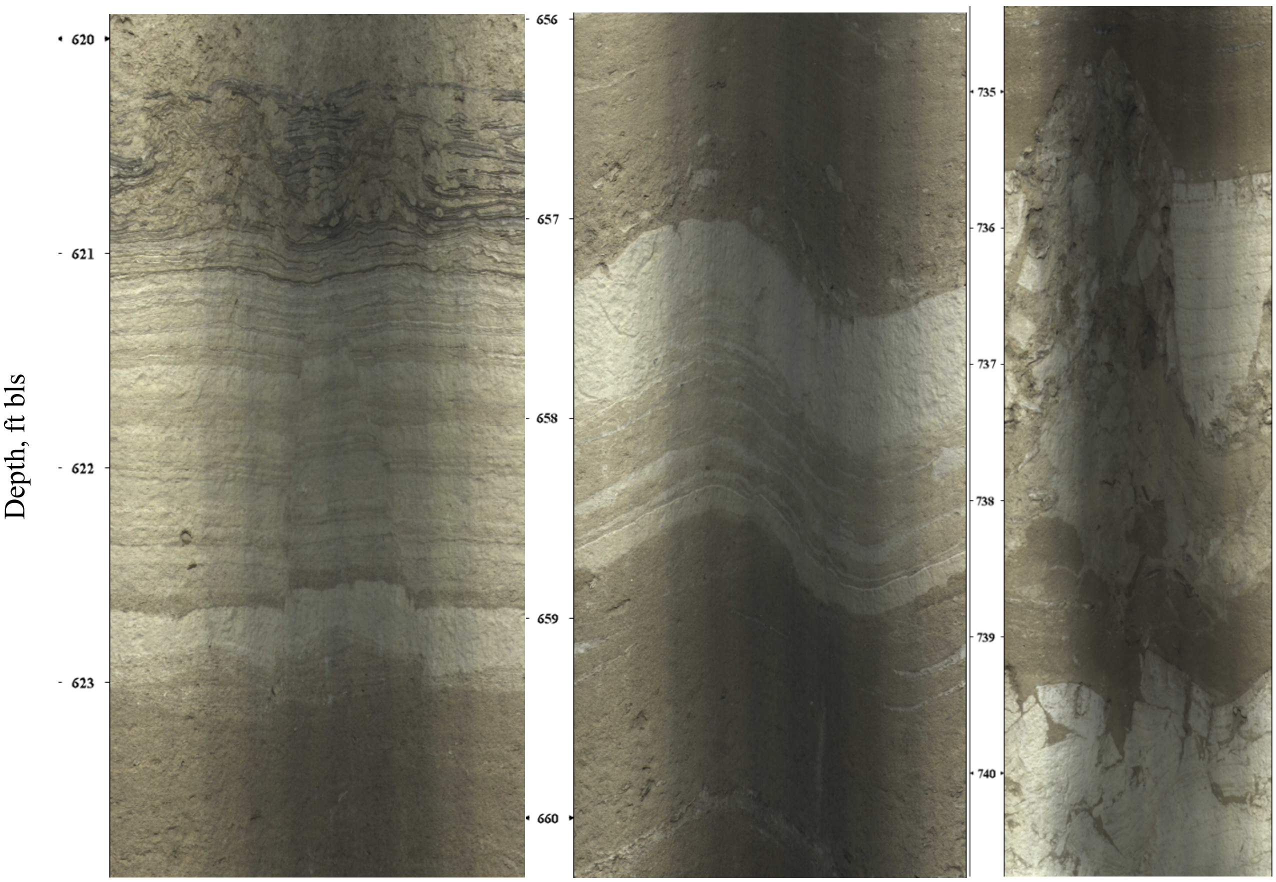


Figure 10. Examples (from left to right) of faulted bedding, folded bedding, and brecciated bedding from depths of 620 ft bls, 598 ft bls, and 735 ft bls, respectively, within the OCAPlpz. Photos are from the OBI log.

APPZ (800 to 1,113 ft bls)

Reese and Richardson (2008) described the APPZ as a regionally mappable, high-permeability zone within the Avon Park Formation, characterized by relatively brittle dolostone or interbedded dolostone and dolomitic limestone with zones of secondary fracture permeability. Within the APPZ, cavernous or karstic, intergranular, and intercrystalline permeability may also be present. As mapped by Reese and Richardson (2008), the APPZ includes all the geologic materials from the base of the OCAPlpz to the top of the middle confining unit I (MCU_I). At the site, the APPZ was composed predominantly of hard microcrystalline dolostone, interbedded with lesser amounts of dolomitic limestone and calcareous dolostone. On the geophysical logs, the APPZ lies within very high formation resistivity and highly variable sonic porosity. The APPZ's upper boundary is at 800 ft bls where the first occurrence of fracture flow was noted. Permeability and groundwater flow in this unit are primarily controlled by fractures, but between fractured zones, pinpoint vugs, and bedding plane solutioning also contribute to productivity.

APhpz-1 and APhpz-2 (800 to 857 ft bls and 958 to 1,023 ft bls)

The CFWI Hydrologic Analysis Team (2016) adopted the term Avon Park high-permeability zone (APhpz) to differentiate the most productive fractured intervals from the more confining, lower-productivity portions of the APPZ. The APPZ is equivalent to ECFTX model layer 5 (CFWI Hydrologic Analysis Team 2020), and the APhpz is a subset of that unit (**Figure 8**). At the Sumica site, there was a slight increase in TDS concentrations (from 94 to 100 mg/L) at the OCAPlpz/APPZ boundary, a shift from calcium bicarbonate ($CaHCO_3$) water type to sodium chloride (NaCl) water type, and a significant increase in hydraulic conductivity calculated from packer tests, from 10 ft/day in packer test 17 (770 to 800 ft bls) in the OCAPlpz, to 24 ft/day in test 18 (800 to 830 ft bls) in the APPZ.

The APhpz at the site is composed of two discrete fractured zones occurring at depth intervals of 800 to 857 ft bls (referred to here as APhpz-1) and 958 to 1,023 ft bls (referred to here as APhpz-2). The hydraulic conductivities calculated from the packer tests completed in these two zones were the highest values calculated from all the packer tests completed in the APPZ during this investigation (see Hydraulic Parameters section and **Table 6**). The hydraulic conductivities calculated for the tests completed in these fracture zones ranged from approximately 24 ft/day to approximately 117 ft/day. The uncertainty of the higher hydraulic conductivities is due to the minimal amount of drawdown produced when testing high-permeability rock at a relatively low pumping rate in a small corehole. Examples of the APhpz-1 and APhpz-2 flow zones are shown in the images from the OBI logs in **Figure 11**.

Figure 11. APhpz-1 flow zones as shown in these images from the OBI log. From left to right, a large vertical solution-enhanced fracture from 800 to 805 ft bls; a zone of fractured rock bounded on the top by an open bedding plane solution zone from 820 to 825 ft bls; and bedding plane solution, vertical fractures, and contorted, laminated bedding with bedding plane solution from 854 to 857.5 ft bls.

Hydraulic conductivities calculated for the unfractured zones within the APPZ were variable, but generally lower than the two fractured zones (APhpz-1 and APhpz-2). Hydraulic conductivities ranged from approximately 3 to 26 ft/day. Typical appearance of the lower-productivity, less-fractured zones of the APPZ is shown below in **Figure 12**.

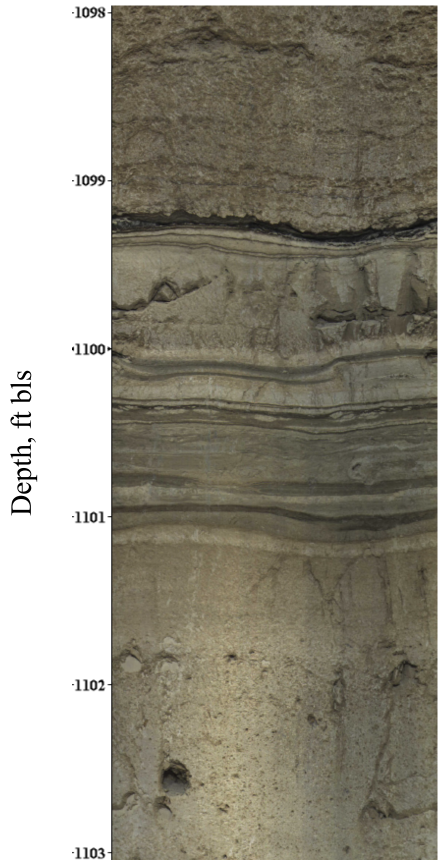


Figure 12. Typical appearance of relatively lower-transmissivity zones within the APPZ as seen in the OBI log. Partially open/solutioned bedding plane and vuggy texture above and below the finer-grained, laminated interval are visible. This image extends from 1,098 to 1,103 ft bls.

The degree of hydraulic connection between the fractured intervals within the APPZ in the CFWI region is a subject of interest and debate. Some CFWI exploratory coreholes within the District have shown strong evidence for hydraulic connection between the APPZ's fractured intervals, while other data are more ambiguous. At the Sumica site, the recovery water levels measured at the end of each packer test were similar in both APhpz-1 and APhpz-2. The groundwater chemistry of both fracture zones at the site is classified here as magnesium-bicarbonate, Frazee FW-I/FW-II water types (Frazee 1982). While the water levels and water quality for these flow zones were similar, the degree of connection between these zones was unable to be determined. The similarities may be coming from regional geologic hydraulic connections between these fracture sets or from nearby wells that are connecting the zones. Conversely, a hydraulic separation may exist that cannot be determined under an absence of pumping stresses. The low TDS concentrations in the APPZ groundwater samples from the Sumica site (84 to 108 mg/L, **Table 7**) suggest that there is likely little to no hydraulic connection between the APPZ and the underlying elevated-TDS groundwater of the LFA. Due to the large downward hydraulic gradient, saline water from deeper zones in the LFA is unlikely to migrate upward under unpumped conditions, even if the MCU is a poor confining unit at the Sumica site.

Middle Confining Units I and II

Miller (1986) first defined the MCU and subdivided it into eight regional units designated by Roman numerals I through VIII. The CFWI Hydrologic Analysis Team (2016) recognized two of these units (MCU_I and MCU_II) within the ECFTX model domain. MCU_I separates the UFA from the LFA.

MCU_I, the shallower unit, is generally composed of dolostone and micritic limestone and is the leakier of the two confining units. MCU_II is composed of hard, microcrystalline dolostone to dolomitic limestone, characterized by evaporite beds and evaporitic pore infillings, which greatly reduces the unit's permeability.

MCU_I is absent from the western portion of the ECFTX model domain, while MCU_II is absent from the eastern portion. Along the western reaches of the Kissimmee River Valley and Lake Wales Ridge, the two units overlap, greatly increasing the thickness of the MCU in that area. MCU_I was encountered at the Sumica site and is described below. MCU_II was not encountered, but the significant deposits of the evaporite mineral celestine encountered in the corehole suggest it once existed. This is discussed below.

MCU_I (1,113 to 1,410 ft bls)

MCU_I at the Sumica site was composed almost entirely of dolostone. As compared to the APPZ, the rock comprising MCU_I was poorly indurated and had a granular texture. MCU_I generally tends to be higher in porosity than the APPZ but lacks significant fracturing or vuggy permeability. As seen in **Figure 28**, there was a gradual increase in TDS concentrations across MCU_I from 104 mg/L at the top of the unit to 308 mg/L at the bottom of the unit. An example of the typical appearance of MCU_I is shown in **Figure 13**.

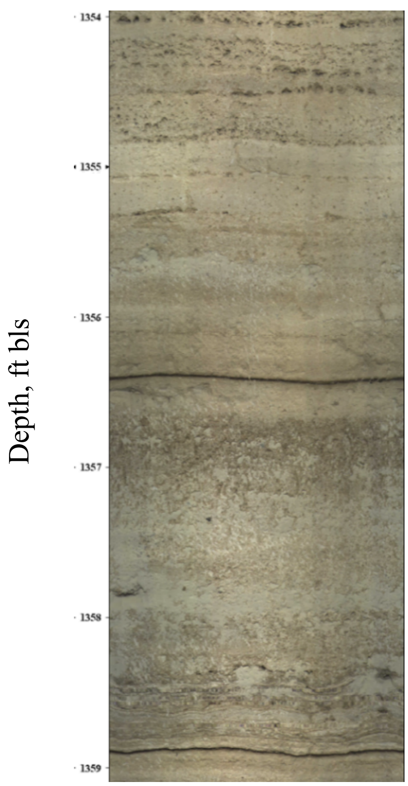


Figure 13. Typical appearance of MCU_I at the Sumica site from the OBI log. Tight to partially open bedding planes, laminations, granular texture, and vugs are visible. This image extends from 1,354 to 1,359 ft bls.

Ten packer tests (tests 28 through 37) were completed within MCU_I at the Sumica site, resulting in hydraulic conductivities that ranged from approximately 2 to 15 ft/day, with an average of approximately 6 ft/day, similar to the hydraulic conductivities of the relatively unfractured portions of the APPZ. These MCU_I hydraulic conductivities are comparable to those estimated from packer tests completed within MCU_I at nearby well OSF-113 where hydraulic conductivities ranged from approximately 2 to 20 ft/day with an average of approximately 9 ft/day.

The depth-to-water measurements collected at the end of each packer test recovery period increased between the upper part of MCU_I and the lower part of MCU_I, indicating a downward gradient through MCU_I. In the upper portion of MCU_I between 1,110 ft bls (top of test 28) and 1,290 ft bls (bottom of test 33), the recovery depth-to-water measurements were relatively shallow and showed little variation, averaging 1.06 ft above land surface. For the bottom portion of MCU_I, between 1,320 ft bls (top of test 35) and 1,410 ft bls (bottom of test 37), the recovery depth-to-water measurements were all greater (deeper) than those measured in the upper part of the MCU, averaging 5.80 ft bls, with a transition occurring during test 34 (1,290 to 1,320 ft bls) where the depth to water was 2.22 ft bls.

MCU_II

An objective of this project was to evaluate the MCU at the Sumica site. The ECFTX model layers in **Figure 14** show the extent of the MCU_II boundary near the site. MCU_II, typically characterized by evaporite beds and infillings of anhydrite and gypsum, was not encountered at the Sumica site. The evaporite celestine was encountered as euhedral to subhedral and vug filling crystals from 1,330 to 1,476 ft bls. This interval overlapped the base of MCU_I and the top of the LFA-upper. Groundwater samples collected from this interval had elevated strontium concentrations (22.3 to 34.6 mg/L) and saturation indices near equilibrium (-0.08 to 0.4). Crystalline celestine has been encountered previously in the corehole for CFWI well OSF-64R (Coonts 2021) and in other FAS coreholes as grains within the host rock (McCartan et al. 1988). **Figure 15** provides photographs of the large celestine crystals found in the Sumica coreholes at three different depths.

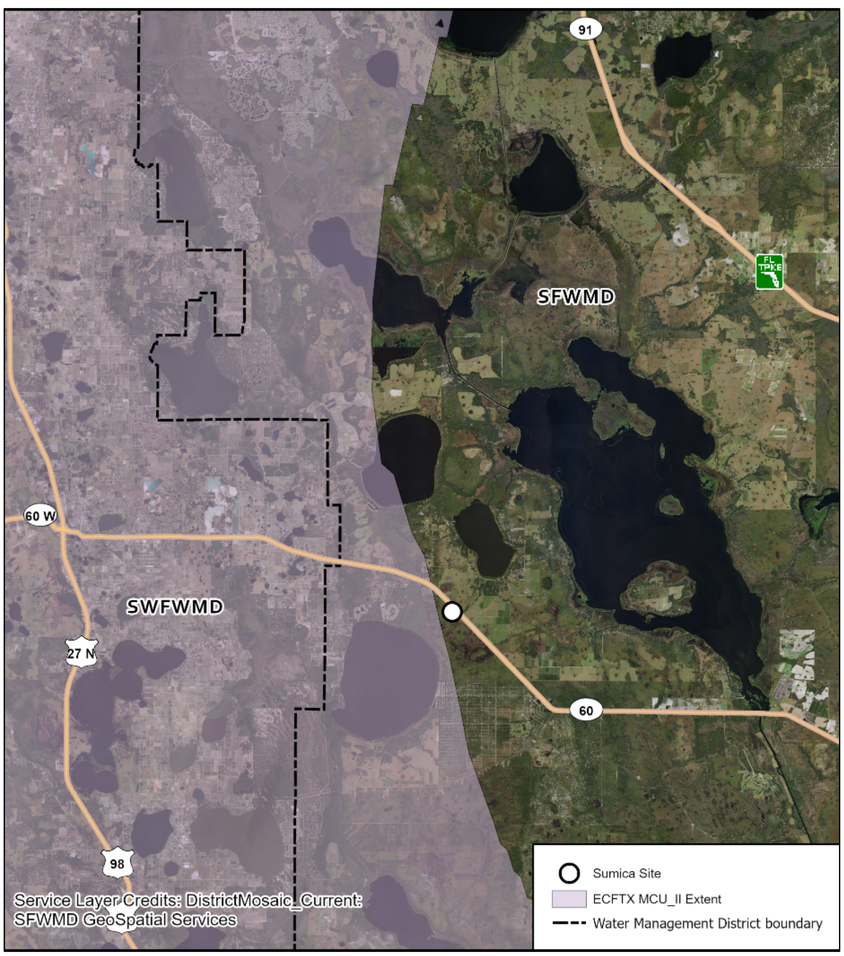


Figure 14. Extent of MCU_II from the ECFTX model.

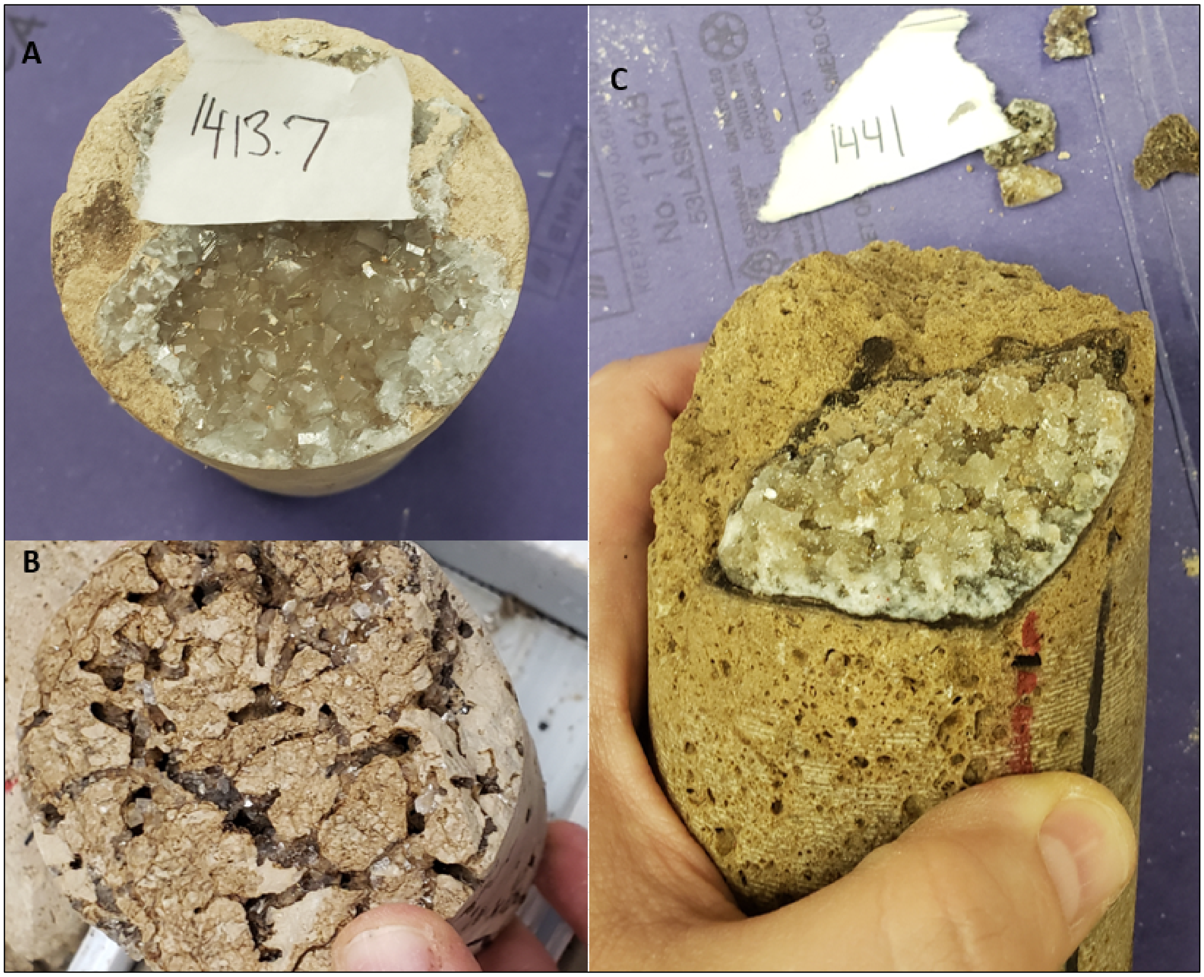


Figure 15. Celestine in core samples collected at the Sumica site. A. 1,413.7 ft bls. B. 1,417 ft bls. C. 1,441 ft bls.

Celestine can form through the replacement of gypsum and anhydrite due to the relatively higher solubility of the calcium sulfate minerals. Strontium ions in the groundwater will react with soluble deposits of calcium sulfate to create the less soluble celestine. The presence of celestine as an indicator of evaporite dissolution is a well-documented association (West 1973, Warren 2006). In a bicarbonate-rich environment, diagenesis can eventually convert the celestine to strontianite (Salter and West 1965). Strontianite was identified at the Sumica site at a depth of 1,380 ft bls.

Dissolution breccias can develop as beds of evaporites are dissolved. Dissolution breccias were not observed in the OBI logs or the recovered rock cores at the Sumica site. Evidence of the former presence of evaporite nodules was present at the site in the form of vugs with irregular edges. Some of these vugs were infilled with celestine, while others were empty and had a cauliflower-mold-like appearance. Examples of these vugs are shown in **Figure 16**. It is unclear how abundant the evaporites were before their dissolution, and how confining the rock was prior to evaporite dissolution. However, there are signs (**Figure 16**) that anhydrite or gypsum previously infilled the vugs between the depths of 1,330 and 1,476 ft bls. Evaporite dissolution increased the vuggy porosity near the top of the LFA-upper and the depth of the top of the aquifer likely changed over time as more evaporites dissolved.

Figure 16. Typical appearance of vugs with shapes suggesting they were previously filled by nodules of anhydrite or gypsum. This image extends from 1,403 to 1,404 ft bls.

Lower Floridan Aquifer

The LFA consists of a sequence of permeable zones separated by lower-permeability units. Some permeable zones, including the Boulder Zone of South and east Central Florida, are regionally mappable (CFWI Hydrologic Analysis Team 2020). The LFA can be more than 1,000 ft thick within the CFWI area and includes highly productive zones and confining units with salinities ranging from fresh water to seawater. Discretizing the LFA into less hydraulically diverse subdivisions was one of the objectives of the ECFTX model CFWI Hydrologic Analysis Team (2020).

For the ECFTX model, the LFA was subdivided into upper (LFA-upper) and basal (LFA-basal) permeable zones separated by the regionally mappable GLAUClpu (CFWI Hydrologic Analysis Team 2016). The exploratory corehole at the Sumica site was terminated within the GLAUClpu, and provides needed information on the thicknesses, depths, and productivities of the LFA-upper, GLAUClpu, and the upper part of the LFA-basal. Reported transmissivities of the LFA range from more than 500,000 ft^2/day in metropolitan Orlando, to less than 500 ft^2/day in southwestern Polk County. This is potentially attributable to evaporitic infilling of pore spaces (CFWI Hydrologic Analysis Team 2020).

LFA-upper (1,410 to 1,833 ft bls)

The top of the LFA-upper was identified at 1,410 ft bls, coinciding with a change in packer test recovery water levels, an increase in packer test transmissivity, and a notable change in groundwater chemistry. The depth to water at the end of each packer test recovery period increased between the MCU and the LFA-upper, indicating a downward gradient between the hydrostratigraphic units. The lower portion of MCU_I had recovery depth-to-water measurements that averaged 5.8 ft bls. In contrast, the LFA-upper, between 1,410 ft bls (top of test 38) and 1,833 ft bls (bottom of test 51) had an average recovery depth to water of 10 ft bls.

Packer test hydraulic conductivities increased by an order of magnitude between MCU_I and the LFA-upper, from approximately 2 ft/day (test 37 at the base of the MCU) to approximately 17 ft/day (test 38 at the top of the LFA-upper).

Productivity in the LFA-upper at the Sumica site appears to come from multiple, discrete zones of fractured or vuggy rock interbedded with very low-permeability dolostone. Three significant productive zones were identified based on the packer test data. For discussion purposes, these three productive zones are named and numbered sequentially from shallow to deep as LF1 (1,410 to 1,463 ft bls), LF2 (1,603 to 1,669 ft bls), and LF3 (1,722 to 1,833 ft bls). These three zones had hydraulic conductivities ranging from approximately 17 to 40 ft/day, which were greater than the hydraulic conductivities of the intervening, relatively lower-productivity zones within the LFA-upper which ranged from approximately 1 to 6 ft/day. These hydraulic conductivity values are lower overall than those estimated from packer testing at nearby OSF-113 which also showed three higher productivity zones and had an overall range of approximately 1 to 172 ft/day throughout the LFA-upper.

The three high productivity zones correlate with elevated gamma-ray counts and elevated long-normal resistivity readings. Although the OBI log quality was poor through this interval, and the corehole walls were often coated with black material, a representative image of the LF3 flow zone is presented below in **Figure 17**. This image shows the typical large, open vugs that are found in the LFA-upper.

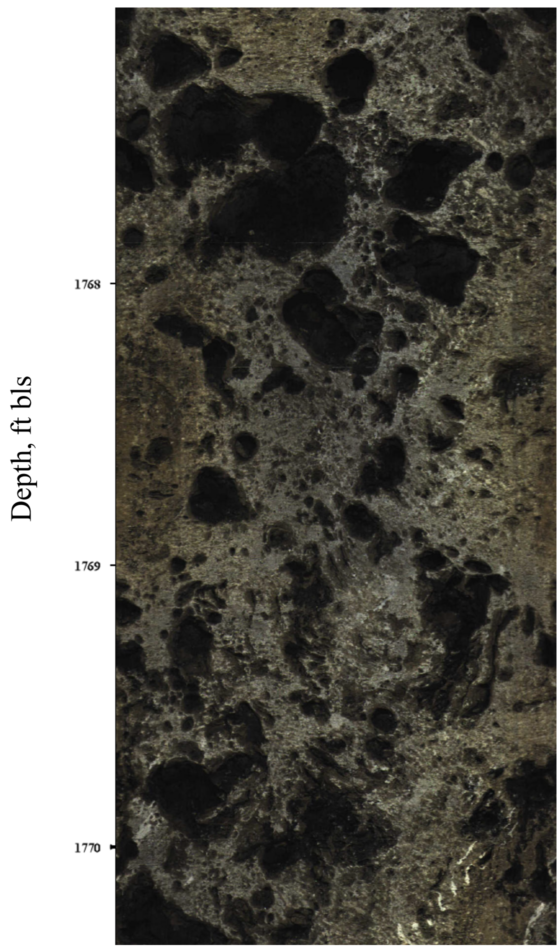


Figure 17. A portion of LF3 with abundant, large vugs and granular texture. This image extends from approximately 1,767 to 1,770 ft bls.

All three flow zones had similar TDS concentrations (ranging from 500 to 650 mg/L). Groundwater samples from the LFA-upper, collected at depths shallower than 1,560 ft bls plotted between Frazee's water type FW-IV, whereas LFA-upper samples collected from depths greater than 1,560 ft bls plotted within the connate water category (Frazee 1982), indicating some degree of ionic heterogeneity between the high flow zones.

GLAUClpu (1,833 to 2,000 ft bls)

Following the ECFTX model mapping protocol (CFWI Hydrologic Analysis Team 2016), the base of the LFA-upper should coincide with the base of the last productive zone above the natural gamma log marker for the GLAUClpu. As described in the model documentation report for the ECFTX model (CFWI Hydrologic Analysis Team 2020), Duncan et al. (1994) first noted a distinctive gamma log signature from an interbedded series of wackestone and dolostone near the top of the Oldsmar Formation. They associated the gamma signature with the presence of glauconite, clay, and collophane accessory minerals within that rock assemblage, and made use of it to correlate the wells across their study area in Brevard and Indian River counties. Duncan et al. (1994) referred to the gamma signature as the "glauconitic zone marker," and this name has remained, despite the marker being identifiable in numerous wells where no glauconite was observed. At Sumica, glauconite was first observed at a depth of 1,770 ft bls and last observed at a depth of approximately 1,988 ft bls. A zone of elevated gamma-ray activity and relatively lower long-normal resistivity readings was recorded between depths of 1,872 and 1,940 ft bls. This gamma-ray log signature matches the gamma signature of the GLAUClpu elsewhere in the CFWI region, and the most easily correlated point in the gamma signature is the large natural gamma spike recorded on the geophysical logs at a depth of 1,883 ft bls. Because the natural gamma log marker for the GLAUClpu was identified at a depth of 1,883 ft bls, the base of the LFA-upper was placed at 1,833 ft bls, at the base of LF3, close to the bottom of the last productive packer test (test 51) as discussed below.

Below 1,833 ft bls, packer tests 52 through 56 had hydraulic conductivities that averaged approximately 3 ft/day. However, these GLAUClpu packer test hydraulic conductivities were not accurate because the water levels drew down to the pump intake causing the pump to be turned off shortly after the pumping had started (steady state drawdown had not been achieved), or in the case of test 56 at the bottom of the corehole, the packer was leaking or had other hydraulic issues. This information is indicative of a relatively unproductive unit when compared to the packer test data from the overlying LFA-upper, which were performed at the same pumping rate or higher pumping rate than the tests performed in the GLAUClpu.

The top of the GLAUClpu coincides with the bottom of LF3 at 1,833 ft bls. The base of the GLAUClpu was below the depth of investigation. From the top of the unit to a depth of approximately 1,871 ft bls, the unit was composed predominantly of pale yellowish brown dolostone, followed by a sequence of interbedded clay and wackestone beds to 1,875 ft bls, which in turn were underlain by interbedded clayey wackestone, mudstone and packstone.

SITE DATA

Standard Penetration Testing and Soil Sieving

SPT sampling methods provide information on the penetration resistance of the soil being sampled as well as representative soil samples for mechanical sieve analyses or other physical properties tests. At the Sumica site, SPT sampling methods were used to collect sediment samples and accompanying blow count data. Refer to **Appendix G** for the complete list of analytical methods used, their limitations, the soil gradation distribution curves, and the complete list of hydraulic conductivities calculated for each sample.

The boring for POS-21 was previously installed as part of a wetlands investigation at the Sumica site and was sampled using SPT methods from 7 to 33 ft bls. During the FAS investigation that is the subject of this report, SPT samples were collected at 5-foot depth intervals from the borehole for SUMICAN-PW between depths of 34 and 85 ft bls. The sieve analyses data from these two borings were combined and used to characterize the SAS sediments at the site. All the sieved samples were coarse-grained soils (refer to **Appendix G**), with most of the samples falling into the poorly graded sand with clay (SP-SC) and poorly graded sand (SP) categories. Only one sample contained more than 20% fines (sample from 17 to 19 ft bls). This sample was classified as a clayey sand (SC). Due to sample acquisition issues, no data are available from the interval of 31 to 33 ft bls. As shown in **Appendix G**, the range of mean hydraulic conductivities of the tested sediments from the SAS ranged from 14 to 46 ft/day, based on the results of the sieve analyses.

Packer Testing

Fifty-six single packer tests were completed within the continuously cored portions of the exploratory coreholes for POF-31and POF-32. The packer tests were conducted using a wireline packer assembly, and submersible pump to obtain data for calculation of the hydraulic conductivity of each 30-foot-long packer test interval, to collect representative groundwater samples for laboratory analysis, and to collect recovery water levels that are representative of each tested interval.

Figure 18 illustrates the setup used for POF-31 and POF-32 packer testing. Generally, after every 30 ft of coring was completed, the drill casing was pulled up from the maximum cored depth to the base of the previous packer test interval to expose the test interval. Test 56 was the only test with a tested interval longer than 30 ft. Test 56 tested a 40-foot-long interval from 1,960 to 2,000 ft bls. The intervals from 950 to 960 ft bls and 1,770 to 1,780 ft bls were not tested due to probable voids and concerns that the packer would not be able to seal across these voids. Each packer test interval was then developed using airlifting methods for a minimum of 1 hour to remove rock debris and drilling fluids. After development was complete, the packer assembly was attached to a support cable and lowered into place. A submersible pump was then attached to steel drop pipe and suspended inside the core casing, generally at a depth of 80 to 100 ft bls. The packer assembly was then inflated using compressed nitrogen. The water level in the packed off test interval was allowed to stabilize for approximately 15 minutes before pumping started.

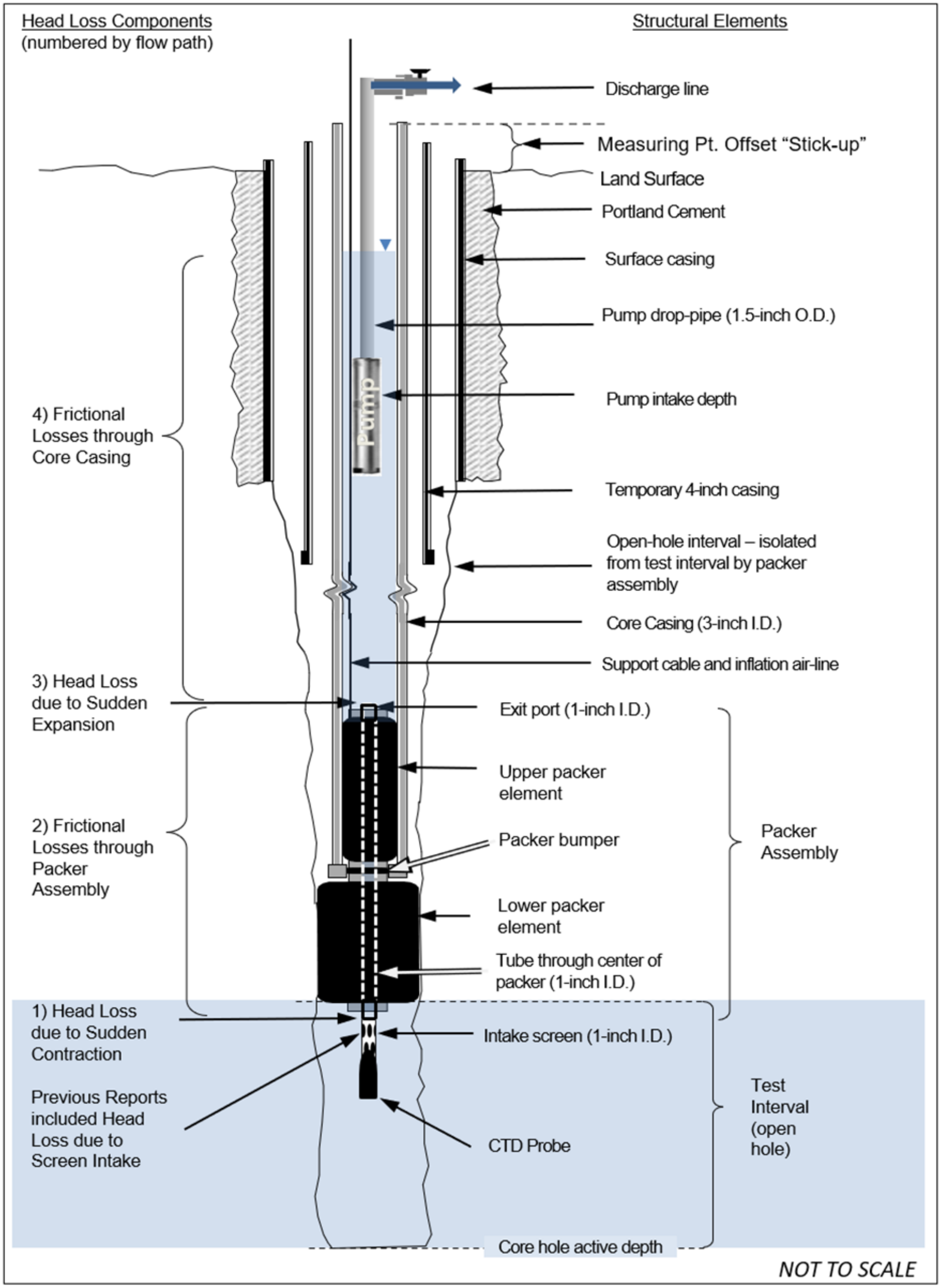


Figure 18. Head loss components, general schematic of the packer assembly, and test interval used during this investigation.

The narrow (approximately 3-inch) inner diameter of the core casing did not provide sufficient space to accommodate installation of a pressure transducer to the drop pipe after the pump, pump wiring, drop-pipe, and packer assembly support cabling were in place. Therefore, depth-to-water measurements were collected manually using an electric depth-to-water tape. Manual depth-to-water measurements were collected by the drill crew at 1-minute intervals for the first 5 minutes of both the drawdown and recovery portions of the test, and at 5-minute intervals thereafter. Exceptions to this process included tests which terminated early due to the pumping rate being too high for the tested interval, resulting in the water level dropping to the pump intake (tests 1, 6, 45, 47, 52, 53, 54, and 55), or test 28 where a lightning storm prevented collection of manual measurements during recovery. The packer assembly was configured so a conductivity-temperature-depth (CTD) probe could be installed within the tested interval, attached to the bottom of the intake screen below the packer (**Figure 18**).

The standard procedure for each packer test was to pump three corehole volumes at the maximum producible rate, typically between 4 and 30 gallons per minute (gpm), while monitoring and recording water quality parameters (temperature, pH, and specific conductance), followed by collection of a groundwater sample for laboratory analyses. The pump was then shut off and water levels were monitored until they stabilized. For test intervals in which low-permeability rock did not allow removal of three corehole volumes of water, pumping continued until both the drawdown and water quality parameters had stabilized, or until water levels neared the pump intake. **Table 2** is a summary of all the packer tests completed during this investigation. Problems encountered during individual packer testing are noted next to specific test numbers in the table and described in the table's notes.

Table 2. Packer test summary at the Sumica site.

Packer Test #	Test Date	Test Interval (ft bls)		Pumping Rate (gpm)	Pumping Duration (hh:mm)	Recovery Depth to Water (ft bls)	Comments
		Top Depth	Bottom Depth				
1[a,b]	6/2/2020	290	320	--	0:04	3.71	No sample, pumped dry
2	6/3/2020	320	350	18	1:10	2.70	
3	6/3/2020	350	380	32	0:57	2.71	
4	6/4/2020	380	410	32	0:56	2.64	
5	6/5/2020	410	440	8	2:50	1.27	
6[c]	6/8/2020	440	470	9	0:25	--	Packer seal broke and test stopped early
7	6/10/2020	470	500	21	1:10	1.91	
8	6/10/2020	500	530	6	1:55	1.60	
9	6/11/2020	530	560	32	0:45	2.21	
10	6/12/2020	560	590	34	1:05	2.37	
11	6/15/2020	590	620	20	1:15	0.90	
12	6/16/2020	620	650	20	1:15	0.09	
13	6/17/2020	650	680	32	0:55	1.00	
14	6/17/2020	680	710	25	1:15	1.00	
15	6/18/2020	710	740	32	1:05	0.96	
16	6/19/2020	740	770	15	1:55	3.17	
17	6/22/2020	770	800	32	0:55	1.30	
18	6/23/2020	800	830	32	1:00	0.67	
19[d]	6/24/2020	830	860	35	2:26	0.50	
20	6/25/2020	860	890	20	1:40	0.42	
21	6/29/1930	890	920	20	1:45	0.50	

Table 2. Continued.

Packer Test #	Test Date	Test Interval (ft bls)		Pumping Rate (gpm)	Pumping Duration (hh:mm)	Recovery Depth to Water (ft bls)	Comments
		Top Depth	Bottom Depth				
22	6/30/2020	920	950	32	1:20	0.89	
23[d]	7/16/2020	960	990	32	1:00	1.27	
24[d]	7/20/2020	990	1,020	32	1:16	1.12	
25	7/21/2020	1,020	1,050	23	1:40	2.00	
26	7/23/2020	1,050	1,080	31	1:15	1.19	
27	7/24/2020	1,080	1,110	32	1:15	1.17	
28[e]	7/27/2020	1,110	1,140	32	1:25	--	Lightning storm
29	7/28/2020	1,140	1,170	32	1:30	3.65	
30	7/29/2020	1,170	1,200	29	1:35	4.05	
31	7/30/2020	1,200	1,230	32	1:30	3.74	
32	7/30/2020	1,230	1,260	32	1:30	4.13	
33	8/3/2020	1,260	1,290	12	3:10	2.82	
34	8/4/2020	1,290	1,320	18	2:30	6.92	
35	8/5/2020	1,320	1,350	11	2:05	10.44	
36	8/6/2020	1,350	1,380	17	1:45	10.23	
37	8/10/2020	1,380	1,410	14	1:40	9.96	
38	8/11/2020	1,410	1,440	31	1:20	15.06	
39	8/12/2020	1,440	1,470	31	1:35	14.37	
40	8/13/2020	1,470	1,500	9	0:55	14.69	
41	12/11/2020	1,500	1,530	18	2:10	14.08	
42[c]	12/14/2020	1,530	1,560	20	2:10	13.95	Possible surge in pumping rate?
43	12/15/2020	1,560	1,590	19	1:45	13.85	
44	12/16/2020	1,590	1,620	31	1:20	13.54	
45[b,f]	12/17/2020	1,620	1,650	30	0:01	14.54	No sample, pumped dry
46	12/18/2020	1,650	1,680	31	1:25	13.85	
47[b]	1/4/2021	1,680	1,710	10	0:05	14.80	No sample, pumped dry
48[d]	1/5/2021	1,710	1,740	31	1:25	14.05	
49[d]	1/6/2021	1,740	1,770	30	1:50	14.22	
50[d]	1/7/2021	1,780	1,810	30	1:45	14.09	
51[d]	1/11/2021	1,810	1,840	30	2:00	14.52	
52[b,c]	1/12/2021	1,840	1,870	30	0:02	14.87	No sample, pumped dry
53[b]	1/13/2021	1,870	1,900	25	0:02	15.05	No sample, pumped dry
54[b]	1/14/2021	1,900	1,930	22	0:01	15.11	No sample, pumped dry
55[a,b]	1/18/2021	1,930	1,960	--	0:03	15.49	No sample, pumped dry
56[c]	1/19/2021	1,960	2,000	14	4:05	14.75	

ft bls = feet below land surface; gpm = gallons per minute; hh:mm = hours: minutes.

[a] Pumping rate noted as 0 gpm.

[b] Pumping rate was too high for open interval; water level dropped to a point where pump had to be shut off.

[c] Packer leaking or other hydraulic issue.

[d] Drawdown calculated from CTD data was within the propagated margin of error (±0.67 ft).

[e] Drawdown was overestimated (lightning storm prevented manual measurements).

[f] No depth-to-water measurements were collected during pumping.

HYDRAULIC ANALYSES

An Idronaut brand CTD probe was installed directly below the packer assembly, within the open borehole test interval (**Figure 18**), so its measurements were not subject to the effects of well losses across the packer testing assembly. Because of the probe's location in the borehole, the Idronaut CTD data were assumed in previous SFMWD reports (Richardson et al. 2020a,b, Coonts 2021) to be the best representation of the *in situ* drawdowns in the formation, unaffected by pipe losses. The Idronaut CTD probe uses a highly sensitive pressure sensor with an accuracy of 0.01% and a precision of up to 0.002% of its full pressure range. To operate across the complete depth of the FAS, a large pressure range is required. The Idronaut CTD probe was outfitted with a 100-bar (1,450.38 pounds per square inch) pressure transducer. Given the groundwater density encountered in the borehole, this equates to a rated accuracy of ±0.335 ft. The manual depth-to-water readings, by contrast, have an expected accuracy of ±0.01 ft. However, the Idronaut CTD probe was installed and operated correctly in only 62% of the packer tests. The manual depth-to-water readings, by contrast, were collected during every packer test.

To estimate the horizontal hydraulic conductivity for all the packer tests, head loss components of the measured drawdown need to be accounted for, including those caused by friction as water travels through the packer assembly and core casing, and pressure losses due to a sudden expansion or reduction of water flowing into or out of the packer testing assembly. The four components of total head loss accounted for in the analyses are shown in **Figure 18** and listed below in order of the water's flow path through the packer testing assembly and borehole:

1. Head losses due to the sudden contraction of the system as pumped water travels from the test interval (open hole) into the packer assembly (component 1 in **Figure 18**).

2. Frictional losses as the pumped water flows through the packer assembly (component 2 in **Figure 18**).

3. Head losses due to the sudden expansion of the system as pumped water exits the top of the narrow-diameter packer assembly and flows into the larger-diameter core casing (component 3 in **Figure 18**).

4. Frictional losses due to the pumped water flowing through the core casing (component 4 in **Figure 18**).

Previous CFWI related reports produced by the District (see for example Richardson et al. 2020a,b, Coonts 2021) included frictional losses (components 2 and 4), and an estimate of head loss due to the intake screen (**Figure 18**) but did not include head losses due to sudden expansion or sudden contraction (components 1 and 3). The revised methodology presented and used here includes the head losses due to sudden expansion and contraction.

Total Head Loss Components

Head Losses Due to Sudden Contraction (1)

When water flows from a large-diameter pipe into an abruptly smaller-diameter pipe, there is an increase in velocity and a loss of energy due to turbulent eddies which form along the inside edge of the large-diameter pipe adjacent to where it meets the smaller-diameter pipe (**Figure 19**). In addition, an hourglass-shaped constriction of flow, called the *vena contracta*, forms within the smaller-diameter pipe. The *vena contracta*'s diameter is smaller than the diameter of the small-diameter pipe. The turbulent eddies and expansion after the *vena contracta* cause a loss of energy/head loss.

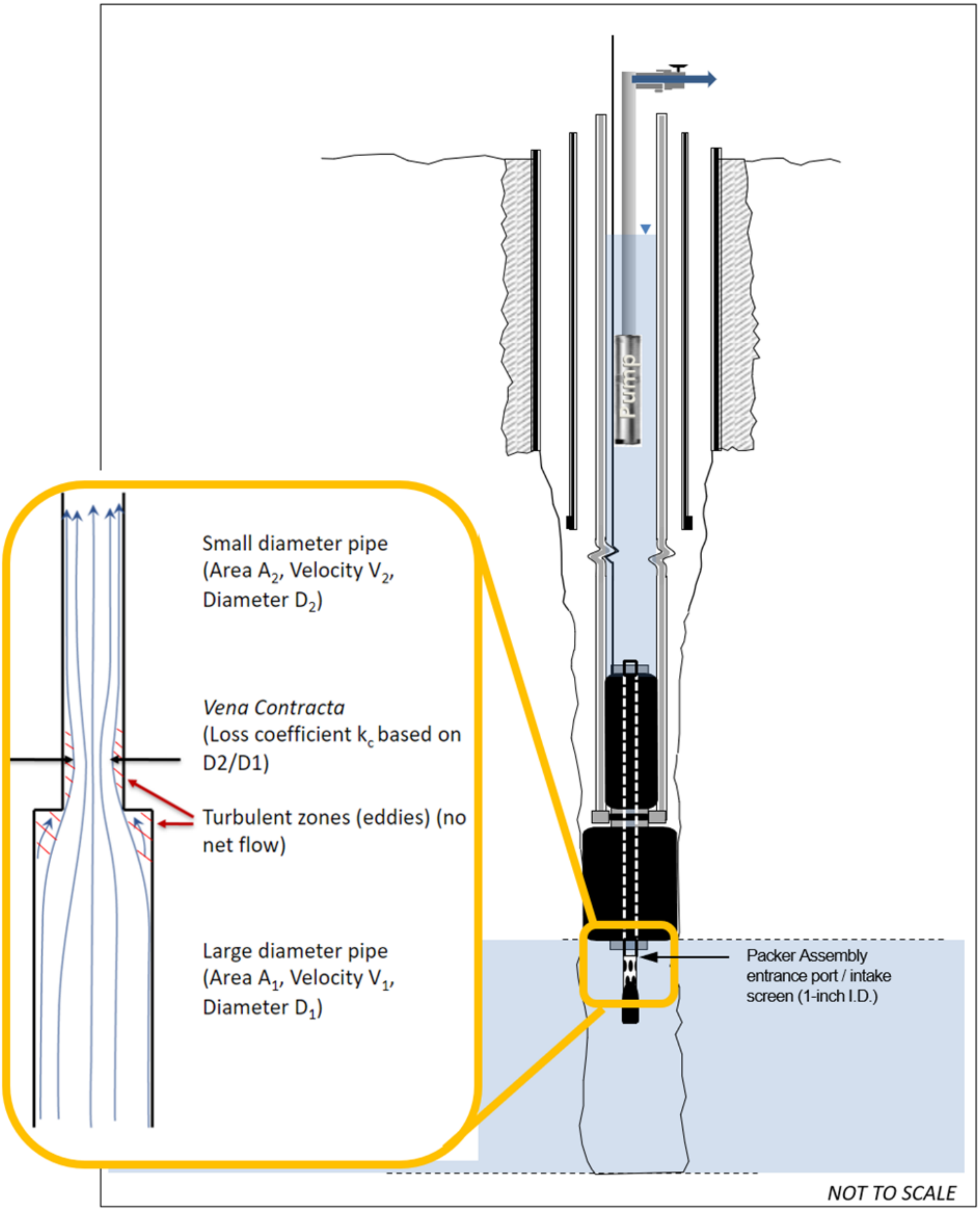


Figure 19. Sudden contraction.

The head loss equation for sudden contraction is (Finnemore and Franzini 2002, p. 306, eq. 8.75):

$$h_{ft} = k_c * \frac{V_2^2}{2 \cdot g} \qquad \text{Equation (1)}$$

Where:

h_{ft} = head loss (ft of water)
k_c = loss coefficient for a sudden contraction (dimensionless) (taken as 0.39 for this packer assembly setup)
V_2 = flow velocity through smaller-diameter pipe (ft/sec)
g = gravitational acceleration (32.2 ft/s^2)

Frictional Losses Through Packer Assembly (2) and Core Casing (4)

There are multiple methods for calculating head losses due to pipe friction including those developed from theory (such as the Darcy-Weisbach equation which is derived primarily from dimensional analysis), and empirical calculations based on observations (such as the Hazen-Williams equation). Although the Hazen-Williams equation is easier to calculate, in theory it is only applicable to the flow of water through pipes with inside diameters greater than 2 inches with water velocities less than 10 ft per second (Finnemore and Franzini 2002, p. 299). Because of these pipe diameter and velocity restrictions, the Hazen-Williams equation is only applicable for calculation of the frictional losses through the core casing (**Table 3**). However, for comparison purposes, both the Hazen-Williams and the Darcy-Weisbach equations were used to calculate head losses through both the packer assembly and core casing.

Table 3. Pipe information for well loss calculations.

Pipe Section	Inside Diameter (inches)	Length (feet)	Roughness Coefficient[a]
Core Casing	3.1	Top of Test Interval – Depth to Water	130[b]
Packer Assembly	1.1	9.0	130[b]

[a] Hazen-Williams roughness coefficient listed in Finnemore and Franzini 2002, p. 299.
[b] A Hazen-Williams roughness coefficient of 140 was found to result in the closest match with the Darcy-Weisbach results.

The empirical Hazen-Williams equation (using Finnemore and Franzini 2002, p. 300, eq. 8.67 substituted into eq. 8.65) to calculate the pressure loss due to friction is as follows:

$$h_{ft} = \frac{4.727 * L * Q^{1.852}}{C_{HW}^{1.852} * D^{4.87}} \qquad \text{Equation (2)}$$

Where:

h_{ft} = head loss (ft of water)
L = pipe length (ft)
Q = discharge rate (ft^3/sec)
C_{HW} = Hazen-Williams roughness coefficient
D = inside pipe diameter (ft)

For comparison against the empirically derived (and theoretically limited) Hazen-Williams frictional head losses, the dimensional analysis-based Darcy-Weisbach equation (Finnemore and Franzini 2002, p. 300, eq. 8.66 substituted into eq. 8.65) was used to calculate the frictional pressure loss:

$$h_{ft} = \frac{8 * f * L * Q^2}{\pi^2 * g * D^5} \qquad \text{Equation (3)}$$

Where:

h_{ft} = head loss (ft of water)
f = Darcy friction factor (dimensionless)
L = pipe length (ft)
Q = discharge rate (ft^3/sec)
g = acceleration due to gravity (32.2 ft/sec^2)
D = inside pipe diameter (ft)

The Darcy-Weisbach equation uses a Darcy friction factor (f), calculated using the Swamee-Jain equation (Swamee and Jain 1976):

$$f = \frac{0.25}{[\log\left(\frac{\varepsilon}{3.7d}+\frac{5.74}{\boldsymbol{R}^{0.9}}\right)]^2} \qquad \text{Equation (4)}$$

Where:

f = Darcy friction factor (dimensionless)
$\boldsymbol{R}$ = Reynolds number (dimensionless)
ε = absolute roughness (inches, taken as 0.006 inches for existing steel)
d = inside diameter of pipe (inches)

As shown in Equation 4, the Darcy friction factor depends on a Reynolds number ($\boldsymbol{R}$), calculated (Finnemore and Franzini 2002, p. 256, eq. 8.11) using the following:

$$\boldsymbol{R} = \frac{D * V}{\nu} \qquad \text{Equation (5)}$$

Where:

$\boldsymbol{R}$ = Reynolds number (dimensionless)
D = pipe diameter (ft)
V = velocity (ft/sec)
ν = kinematic viscosity (taken as 0.00001 ft^2/sec for the specific conductivities measured during packer testing at this site)

A total of 56 packer tests were completed during the wireline coring of the POF-31 and POF-32 coreholes. The frictional losses through the packer assembly calculated using the empirical Hazen-Williams equation resulted in an average difference of approximately 23% when compared to the dimensional analysis-based Darcy-Weisbach equation.

For the frictional losses through the core casing, the difference was approximately 3% (**Table 4**). These results confirm the limitations of the Hazen-Williams equations for the small inside diameter (1 inch) packer assembly discharge pipe. Therefore, this report uses the Darcy-Weisbach equation results for the frictional head losses.

Table 4. Comparison of Hazen-Williams and Darcy-Weisbach results from packer tests at the Sumica site.

Packer Test#	Discharge Rate (gpm)	Head Loss Across Packer Assembly (ft)			Head Loss Across Core Casing (ft)		
		Hazen-Williams	Darcy-Weisbach	% Difference	Hazen-Williams	Darcy-Weisbach	% Difference
1[a,b]	--	--	--	--	--	--	--
2	18.0	1.52	1.86	20.1	0.35	0.34	2.9
3	32.0	4.40	5.75	26.6	1.11	1.08	2.7
4	32.0	4.40	5.75	26.6	1.20	1.17	2.5
5	8.2	0.35	0.41	15.8	0.10	0.10	0.0
6[c]	9.3	0.45	0.52	14.4	0.14	0.14	0.0
7	20.7	1.97	2.44	21.3	0.66	0.64	3.1
8	6.0	0.20	0.22	9.5	0.07	0.07	0.0
9	32.0	4.40	5.75	26.6	1.68	1.63	3.0
10	33.7	4.85	6.36	26.9	1.95	1.90	2.6
11	20.0	1.84	2.28	21.4	0.78	0.76	2.6
12	20.0	1.84	2.28	21.4	0.82	0.79	3.7
13	31.6	4.30	5.61	26.4	2.01	1.95	3.0
14	25.0	2.79	3.54	23.7	1.36	1.32	3.0
15	31.6	4.30	5.61	26.4	2.19	2.13	2.8
16	15.0	1.08	1.30	18.5	0.58	0.56	3.5
17	31.5	4.28	5.57	26.2	2.36	2.30	2.6
18	31.5	4.28	5.57	26.2	2.46	2.39	2.9
19[d]	35.0	5.20	6.86	27.5	3.10	3.02	2.6
20	20.0	1.84	2.28	21.4	1.14	1.10	3.6
21	20.0	1.84	2.28	21.4	1.18	1.14	3.4
22	31.5	4.28	5.57	26.2	2.82	2.75	2.5
23[d]	31.5	4.28	5.57	26.2	2.95	2.87	2.7
24[d]	31.5	4.28	5.57	26.2	3.04	2.95	3.0
25	23.0	2.39	3.00	22.6	1.75	1.69	3.5
26	31.0	4.15	5.40	26.2	3.13	3.04	2.9
27	32.0	4.40	5.75	26.6	3.41	3.32	2.7
28[e]	32.0	4.40	5.75	26.6	3.50	3.40	2.9
29	32.0	4.40	5.75	26.6	3.60	3.50	2.8
30	28.5	3.55	4.58	25.3	2.98	2.89	3.1
31	31.5	4.28	5.57	26.2	3.68	3.57	3.0
32	31.5	4.28	5.57	26.2	3.77	3.66	3.0
33	12.0	0.72	0.85	16.6	0.65	0.63	3.1
34	18.0	1.52	1.86	20.1	1.40	1.35	3.6
35	11.0	0.61	0.71	15.2	0.57	0.56	1.8
36	17.0	1.36	1.66	19.9	1.31	1.27	3.1
37	14.4	1.00	1.20	18.2	0.99	0.96	3.1
38	30.8	4.10	5.33	26.1	4.11	3.99	3.0
39	31.0	4.15	5.40	26.2	4.25	4.13	2.9
40	8.8	0.40	0.46	14.0	0.42	0.42	0.0
41	17.6	1.46	1.78	19.8	1.55	1.50	3.3
42[c]	20.0	1.84	2.28	21.4	2.00	1.94	3.0

Table 4. Continued.

Packer Test#	Discharge Rate (gpm)	Head Loss Across Packer Assembly (ft)			Head Loss Across Core Casing (ft)		
		Hazen-Williams	Darcy-Weisbach	% Difference	Hazen-Williams	Darcy-Weisbach	% Difference
43	19.0	1.68	2.07	20.8	1.86	1.80	3.3
44	30.7	4.08	5.30	26.0	4.61	4.48	2.9
45[b,f]	30.0	3.91	5.06	25.6	4.50	4.37	2.9
46	30.8	4.10	5.33	26.1	4.81	4.67	3.0
47[b]	10.0	0.51	0.59	14.5	0.61	0.60	1.7
48[d]	30.9	4.13	5.36	25.9	5.02	4.87	3.0
49[d]	30.0	3.91	5.06	25.6	4.83	4.69	2.9
50[d]	30.1	3.93	5.09	25.7	4.98	4.83	3.1
51[d]	30.0	3.91	5.06	25.6	5.03	4.88	3.0
52[b,c]	30.0	3.91	5.06	25.6	5.11	4.96	3.0
53[b]	25.0	2.79	3.54	23.7	3.71	3.59	3.3
54[b]	22.0	2.20	2.75	22.2	2.97	2.87	3.4
55[a,b]	--	--	--	--	--	--	--
56[c]	14.0	0.95	1.14	18.2	1.33	1.29	3.1
Average Percent Difference				22.9			2.7

ft = feet; gpm = gallons per minute.
[a] Pumping rate noted as 0 gpm.
[b] Pumping rate too high for open interval, water level dropped to a point where pump had to be shut off.
[c] Packer leaking or other hydraulic issue.
[d] Drawdown calculated from CTD data was within the propagated margin of error (±0.67 ft).
[e] Drawdown was overestimated (lightning storm prevented manual measurements).
[f] No depth-to-water measurements were collected during pumping.

Head Losses Due to Sudden Expansion (3)

When water is pumped from a small-diameter pipe into an abruptly larger-diameter pipe, turbulent eddies form at the sudden enlargement of the pipe (**Figure 20**). The formation of eddies at this enlargement causes a loss of energy in the form of heat, which is dispersed to the surroundings.

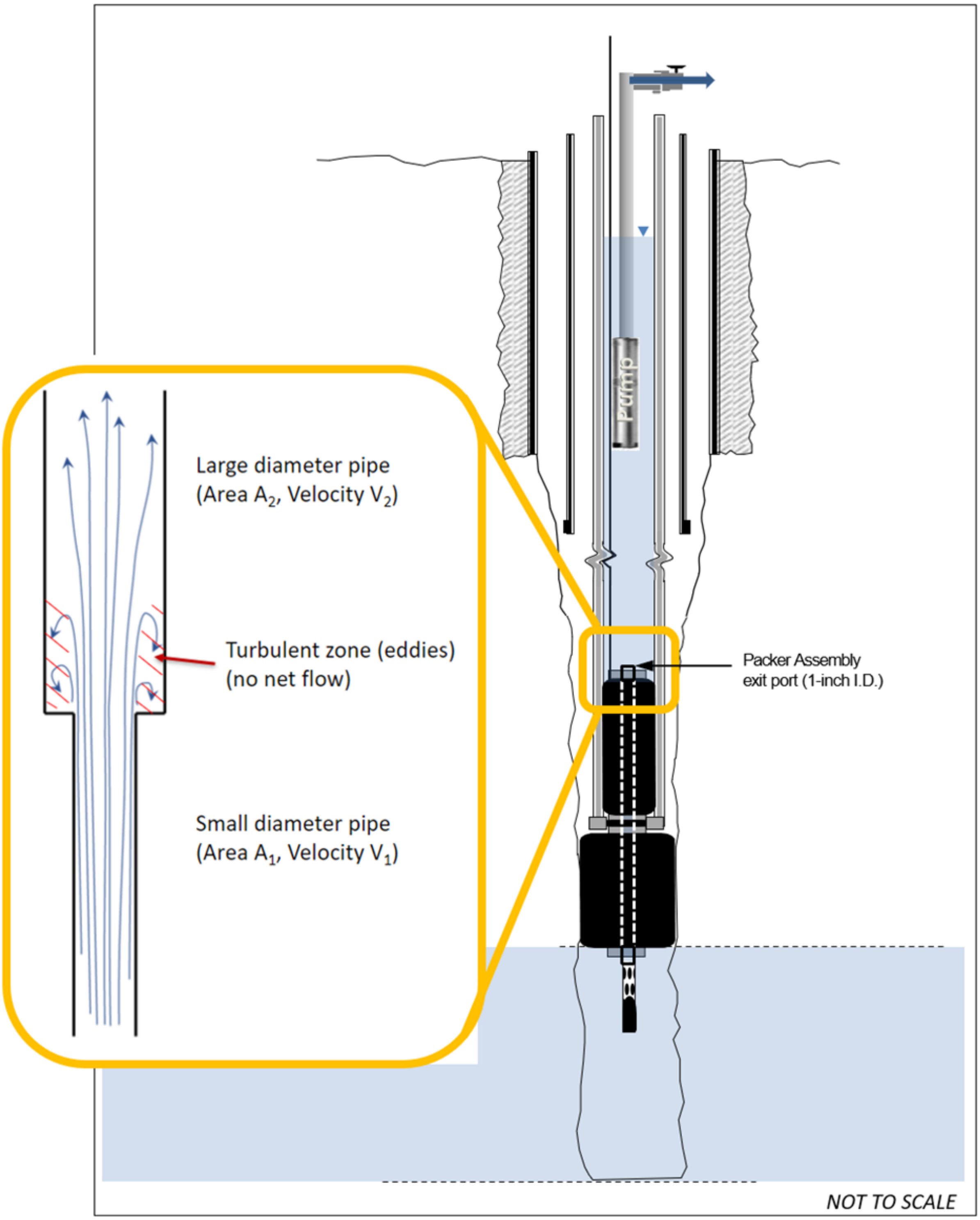


Figure 20. Sudden expansion.

The head loss equation for sudden expansion is (Finnemore and Franzini 2002, p. 309, eq. 8.76):

$$h_{ft} = \frac{(V_1 - V_2)^2}{2 * g} \qquad \text{Equation (6)}$$

Where:

h_{ft} = head loss (ft of water)
V_1 = flow velocity through smaller-diameter pipe (ft/s)
V_2 = flow velocity through larger-diameter pipe (ft/s)
g = gravitational acceleration (32.2 ft/s^2)

Head Losses Due to Screen Intake

Previous efforts by District hydrogeologists to quantify head losses from packer testing (Richardson et al. 2020 a,b, Coonts 2021) included a head loss factor for the intake screen located below the packer assembly (to which the Idronaut CTD probe was attached). A method to empirically estimate head losses due to the intake screen as a function of pumping rate was developed during the initial deployment of the intake screen and Idronaut CTD probe (Richardson et al. 2020b). The development of this method included a set of step tests, one with the intake screen installed and one without the intake screen, which were conducted on November 15, 2017 during packer testing at OSF-112. A third-order polynomial trend line was fitted to the resultant head difference between the two tests versus the pumping rate. However, attempts to reproduce the results on December 15 and 16, 2021 and March 7 and 8, 2022 during packer testing at OSF-114 were unsuccessful. Because of this, the improvements to the packer test head loss calculations and analyses methods were made (including calculation of the head losses due to sudden expansion and sudden contraction) as described in this report. The previously used method to determine the head losses due to the screen intake is not utilized in this report.

Corrected Drawdown

For the Sumica packer tests, the corrected drawdown was calculated as the raw drawdown minus the head loss components:

$$s_{corr} = s_{raw} - h_c - h_{pa} - h_e - h_{cc} \qquad \text{Equation (7)}$$

Where:

S_{corr} = corrected drawdown (ft)
S_{raw} = raw drawdown (ft)
h_c = head loss due to sudden contraction (ft)
h_{pa} = frictional losses through packer assembly (calculated using Darcy-Weisbach equation) (ft)
h_e = head loss due to sudden expansion (ft)
h_{cc} = frictional losses through core casing (calculated using Darcy-Weisbach equation) (ft)

Table 5 includes the head loss components used to calculate the corrected drawdown along with the drawdown calculated from the CTD data—which in theory should be more accurate given the position of the CTD probe below the packer assembly (**Figure 18**). The corrected drawdown appears to be a reasonable substitute for tests where the pumping rate was less than approximately 30 gpm. However, for packer tests where the pumping rate was greater than 30 gpm, the relationship falls apart (**Figure 21**). This might indicate that the turbulence created when pumping near or above 30 gpm is not all being accounted for by the head loss calculations. Alternatively, it is possible that the turbulence induced at these higher pumping rates affected the pressure measured by the CTD probe as turbulent water flowed into the packer assembly, resulting in lower pressures being measured by the probe.

Table 5. Packer testing drawdown summary at the Sumica site.

Packer Test #	Discharge Rate (gpm)	Drawdown – Measured and Calculated from the Surface (ft)							Drawdown calculated from CTD probe (ft) (for comparison)	% Difference of drawdown
		Raw drawdown calculated from manual measurements	Head Loss Components				Corrected drawdown (raw calculated head losses)			
			(1) Head loss due to sudden contraction	(2) Friction loss across packer assembly (Darcy-Weisbach equation)	(3) Head loss due to sudden expansion	(4) Friction loss across core casing (Darcy-Weisbach equation)				
1[a,b]	--	122.29	--	--	--	--	--		--	--
2	18.0	77.84	0.22	1.86	0.44	0.34	74.98		--	--
3	32.0	36.79	0.71	5.75	1.39	1.08	27.86		--	--
4	32.0	34.71	0.71	5.75	1.39	1.17	25.69		--	--
5	8.2	79.73	0.05	0.41	0.09	0.10	79.08		--	--
6[c]	9.3	89.25	0.06	0.52	0.12	0.14	88.41		87.66	0.9
7	20.7	75.09	0.30	2.44	0.58	0.64	71.13		--	--
8	6.0	64.87	0.02	0.22	0.05	0.07	64.51		63.10	2.2
9	32.0	29.14	0.71	5.75	1.39	1.63	19.66		--	--
10	33.7	28.88	0.78	6.36	1.54	1.90	18.30		16.26	11.8
11	20.0	74.95	0.28	2.28	0.54	0.76	71.09		--	--
12	20.0	43.18	0.28	2.28	0.54	0.79	39.29		--	--
13	31.6	40.25	0.69	5.61	1.35	1.95	30.65		--	--
14	25.0	57.86	0.43	3.54	0.85	1.32	51.72		--	--
15	31.6	45.27	0.69	5.61	1.35	2.13	35.49		--	--
16	15.0	65.69	0.16	1.30	0.30	0.56	63.37		--	--
17	31.5	36.30	0.69	5.57	1.34	2.30	26.40		22.31	16.8
18	31.5	21.05	0.69	5.57	1.34	2.39	11.06		7.20	42.3
19[d]	35.0	15.03	0.85	6.86	1.66	3.02	2.64		0.60	--
20	20.0	68.49	0.28	2.28	0.54	1.10	64.29		61.23	4.9
21	20.0	49.50	0.28	2.28	0.54	1.14	45.26		43.17	4.7
22	31.5	25.51	0.69	5.57	1.34	2.75	15.16		10.60	35.4
23[d]	31.5	15.03	0.69	5.57	1.34	2.87	4.56		0.54	--
24[d]	31.5	15.54	0.69	5.57	1.34	2.95	4.99		0.54	--
25	23.0	65.80	0.37	3.00	0.72	1.69	60.02		57.35	4.5

Table 5. Continued.

Packer Test #	Discharge Rate (gpm)	Drawdown – Measured and Calculated from the Surface (ft)						Drawdown calculated from CTD probe (ft) (for comparison)	% Difference of drawdown
		Raw drawdown calculated from manual measurements	Head Loss Components				Corrected drawdown (raw calculated head losses)		
			(1) Head loss due to sudden contraction	(2) Friction loss across packer assembly (Darcy-Weisbach equation)	(3) Head loss due to sudden expansion	(4) Friction loss across core casing (Darcy-Weisbach equation)			
26	31.0	20.46	0.66	5.40	1.30	3.04	10.06	1.61	144.8
27	32.0	32.87	0.71	5.75	1.39	3.32	21.70	12.55	53.4
28[e]	32.0	29.38	0.71	5.75	1.39	3.40	18.13	7.16	99.9
29	32.0	35.23	0.71	5.75	1.39	3.50	23.88	--	--
30	28.5	68.04	0.56	4.58	1.10	2.89	58.91	--	--
31	31.5	37.73	0.69	5.57	1.34	3.57	26.56	--	--
32	31.5	34.95	0.69	5.57	1.34	3.66	23.69	--	--
33	12.0	67.62	0.10	0.85	0.19	0.63	65.85	--	--
34	18.0	46.97	0.22	1.86	0.44	1.35	43.10	--	--
35	11.0	59.59	0.08	0.71	0.16	0.56	58.08	59.00	1.6
36	17.0	55.88	0.20	1.66	0.39	1.27	52.36	48.95	6.7
37	14.4	74.20	0.14	1.20	0.28	0.96	71.62	74.39	3.8
38	30.8	26.69	0.66	5.33	1.28	3.99	15.43	7.76	66.1
39	31.0	21.61	0.66	5.40	1.30	4.13	10.12	2.36	124.4
40	8.8	78.31	0.05	0.46	0.10	0.42	77.28	77.46	0.2
41	17.6	70.92	0.21	1.78	0.42	1.50	67.01	64.72	3.5
42[c]	20.0	35.58	0.28	2.28	0.54	1.94	30.54	27.18	11.6
43	19.0	64.42	0.25	2.07	0.49	1.80	59.81	57.14	4.6
44	30.7	18.31	0.65	5.30	1.28	4.48	6.60	2.91	77.6
45[b,f]	30.0	--	0.62	5.06	1.22	4.37	--	--	--
46	30.8	23.55	0.66	5.33	1.28	4.67	11.61	3.00	117.9
47[b]	10.0	90.20	0.07	0.59	0.14	0.60	88.80	85.90	3.3
48[d]	30.9	20.95	0.66	5.36	1.29	4.87	8.77	0.23	--
49[d]	30.0	21.78	0.62	5.06	1.22	4.69	10.19	0.45	--
50[d]	30.1	21.61	0.63	5.09	1.23	4.83	9.83	0.17	--

Table 5. Continued.

Packer Test #	Discharge Rate (gpm)	Drawdown – Measured and Calculated from the Surface (ft)							Drawdown calculated from CTD probe (ft) (for comparison)	% Difference of drawdown
		Raw drawdown calculated from manual measurements	Head Loss Components				Corrected drawdown (raw calculated head losses)			
			(1) Head loss due to sudden contraction	(2) Friction loss across packer assembly (Darcy-Weisbach equation)	(3) Head loss due to sudden expansion	(4) Friction loss across core casing (Darcy-Weisbach equation)				
51[d]	30.0	19.86	0.62	5.06	1.22	4.88	8.08		--	--
52[b,c]	30.0	90.13	0.62	5.06	1.22	4.96	78.27		75.00	4.3
53[b]	25.0	89.95	0.43	3.54	0.85	3.59	81.54		83.23	2.1
54[b]	22.0	89.89	0.33	2.75	0.66	2.87	83.28		60.51	31.7
55[a,b]	--	89.51	--	--	--	--	--		--	--
56[c]	14.0	25.82	0.14	1.14	0.27	1.29	22.98		22.18	3.5

ft = feet; gpm = gallons per minute.
[a] Pumping rate noted as 0 gpm.
[b] Pumping rate too high for open interval, water level dropped to a point where pump had to be shut off.
[c] Packer leaking or other hydraulic issue.
[d] Drawdown calculated from CTD data was within the propagated margin of error (±0.67 ft).
[e] Drawdown was overestimated (lightning storm prevented manual measurements).
[f] No depth-to-water measurements were collected during pumping.

Hydraulic Parameters

Calculated total drawdown for the 56 packer tests at the Sumica site ranged from 0 to 88.21 ft, depending on the pumping rate and depth of the tested interval. The pumping rates varied from 6 gpm to at least 35 gpm, with two tests having pumping rates so great (relative to the permeability of the test zone) that the water level dropped to the pump before a pumping rate could be measured. The packer tests were conducted at depths ranging from 290 to 1,960 ft bls.

Previous SFWMD reports calculated hydraulic conductivity based on transmissivity, which was solved using the Cooper-Jacob method (converted to ft/day), divided by the thickness of the tested interval (Driscoll 1986, p. 219, eq. 9.6 rearranged):

$$K = \left(\frac{\left(\frac{Q}{s}\right) * 264 * \log\left(\frac{0.3 * T * t}{r^2 * S}\right)}{b} \right) \qquad \text{Equation (8)}$$

Where:

K = hydraulic conductivity (ft/day)
Q = pumping rate (gpm)
s = drawdown (ft)
T = transmissivity in the log function is assumed "typical" and equal to 30,000 gallons per day/ft
t = duration of pumping (day)
S = storage coefficient of a confined aquifer, taken as 1×10^{-3}
r = radius of the tested interval (ft)
b = thickness of the tested interval (ft)

Results and Discussion

A summary of the raw drawdown, head loss corrected drawdown, and the hydraulic conductivity calculated for each packer test using both the corrected drawdown and the CTD probe data are presented in **Table 6**. Hydraulic conductivity varied by three orders of magnitude at the Sumica site, from approximately 1 ft/day in OCAPlpz (tests 5, 6, and 8) to greater than 117 ft/day in the fractured dolostone of the APPZ (test 19). A plot of the resultant transmissivities in relation to the hydrostratigraphic units is presented in **Figure 22**. Limitations of the packer testing hydraulic parameter calculations include the following:

- Tests which lasted less than 1 hour had not reached steady state drawdown; therefore, any calculations of hydraulic conductivity (calculated using CTD data or the calculated head losses) would be overestimated. At the Sumica site this included tests 1, 6, 45, 47, 52, 53, 54, and 55. Therefore, any hydraulic conductivity calculated from these tests should not be relied upon to be accurate.
- Hydraulic conductivity could not be calculated (with any degree of certainty) from packer tests where the drawdown was within the CTD's propagated accuracy (±0.67 ft total). This included tests 19, 23, 24, 48, 49, and 50. Therefore only the calculation based on the drawdown corrected for head losses could be used for these tests.
- The velocity component of total head ($v^2/2g$) was not accounted for when calculating the head loss from the CTD probe. In highly productive zones, where the drawdown was limited and the velocity was large, this accounted for a relatively large component of total head. Therefore, it is likely that hydraulic conductivities calculated from the CTD probe would be overestimated.

The head loss components described in this section adhere to Bernoulli's theorem. Bernoulli's theorem essentially states that the total energy of a flowing fluid remains constant and is comprised of energy associated with the fluid pressure, the kinetic energy of the fluid, and the potential energy component (elevation head).

The head form of the Bernoulli equation is defined as follows:

$$h = \frac{P_1}{\rho g} + \frac{v_1^2}{2g} + h_1 \qquad \text{Equation (9)}$$

Where:

h = total head (ft of water)
h_1 = pressure head (ft above some datum)
P = pressure (pounds per square inch)
V_1 = flow velocity (ft/s)
ρ = density (lb/ft^3)
g = gravitational acceleration (32.2 ft/s^2)

The first term ($\frac{P_1}{\rho g}$) in Equation 9 is the pressure component of head (pressure head). The second term ($\frac{v_1^2}{2g}$) is the kinetic energy component of head (velocity head). The third term (h_1) is the potential energy component of head (elevation head). Because the elevation change across the packer intake screen is minimal, this term can reasonably be ignored.

The CTD probe only measures pressure. The velocity head is not measured by the CTD probe. Therefore, data from the CTD probe can only account for the pressure head (term 1 in Equation 9). In previous investigations by the SWFMD (Richardson et al. 2020a,b, Coonts 2021), pressure changes induced by pumping were understood to be equivalent to total head change (drawdown). For relatively unproductive zones, where the change in pressure is relatively large and the velocity head is relatively small, this is likely an acceptable assumption.

A pumping rate of 30 gpm equates to a velocity head of approximately 0.15 ft in a 4-inch-diameter corehole. For example, if there are two hypothetical packer tests that are both pumped at 30 gpm, the velocity head would be 0.15 ft for both packer tests. If the first packer test resulted in a drawdown of 1 foot, then the velocity head would be 0.15 ft, or 15% of the total drawdown. If the second hypothetical packer test resulted in a drawdown of 20 ft, then the velocity head would only be 0.8% of the total drawdown. Ignoring the velocity head for the hypothetical packer test with 20 ft of drawdown is less consequential to the final hydraulic conductivity calculation than if the velocity head were ignored for the packer test with a small total drawdown. This means there is a larger uncertainty in the small-drawdown packer tests because the velocity head is a larger component of the total head.

In addition, during this investigation, the CTD probe was installed within the turbulent zone that forms during pumping at the packer assembly intake screen (**Figure 16**). In general, higher packer test pumping rates result in larger amounts of turbulence than lower pumping rate tests. This turbulence results in a reduction in pressure as measured by the CTD probe.

High pumping rates (with relatively high velocity heads and high turbulence) in highly productivity zones (small pressure change) invalidate the assumption that CTD-measured pressure change data are the best representation of the *in situ* drawdowns in the formation unaffected by pipe losses.

The relationship between the CTD-measured pressure change based drawdown and the corrected drawdown (from the calculated head losses) indicates that the corrected drawdown is reasonable for those packer tests where the pumping rate was less than approximately 30 gpm and the corrected drawdown (from the calculated head losses) was more than 15 ft. However, for packer tests where the pumping rate was greater than or equal to 30 gpm and the corrected drawdown was more than 15 ft, the relationship falls apart. **Figure 21** is a plot of packer test pumping rates versus the drawdown relative percent difference values presented in **Table 5**. The orange points in **Figure 21** are those packer tests that had less than 15 ft of corrected drawdown and displayed a much higher relative percent difference between the drawdown measured by the CTD probe and the corrected drawdown values. This may indicate that the turbulence created when pumping at or above approximately 30 gpm is not all being accounted for by the head loss calculations. An alternative explanation is that the CTD probe is affected by the turbulent flow, and the drawdown calculated from the CTD-measured pressure change is not accounting for the velocity head. Therefore, the CTD data might not represent the best *in situ* drawdown at these higher pumping rates (at or above 30 gpm) in highly transmissive zones.

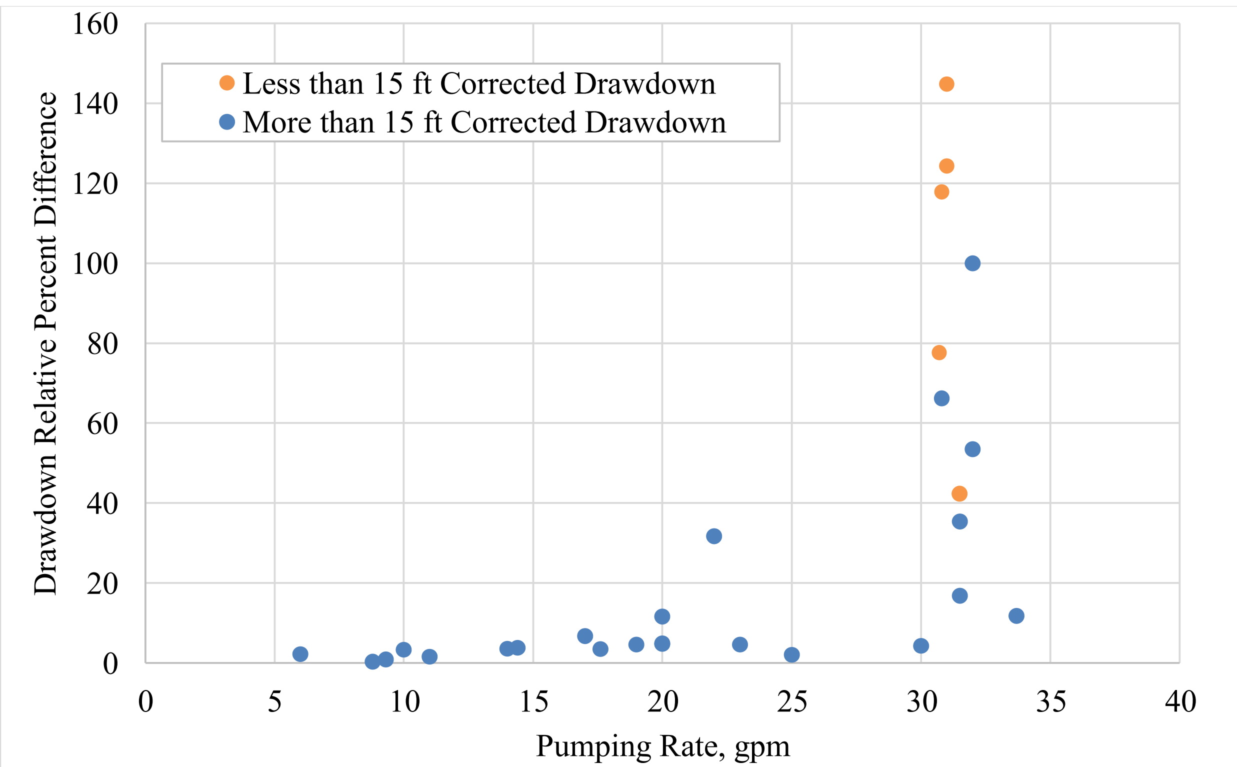


Figure 21. Packer test drawdown relative percent differences versus packer test pumping rates at the Sumica site.

Because of the turbulence-related issues with the CTD pressure measurements, and the fact that the CTD probe could not account for the velocity head, the hydraulic conductivities calculated using the head loss corrected drawdowns and the Cooper-Jacob method are considered the most representative packer test derived hydraulic conductivities. For completeness, the hydraulic conductivities calculated from both the CTD probe pressure data and the corrected manual drawdown data are presented in **Table 6**. **Figure 22** is a graphical representation of the packer test hydraulic conductivities calculated using the head loss corrected drawdown data.

Table 6. Summary of results from the hydraulic analyses of POF-31/POF-32 packer tests.

Packer Test #	Hydrostratigraphic Unit	Test Interval		Based on Manual Measurements			Based on CTD Probe Data	
		Top Depth (ft bls)	Bottom Depth (ft bls)	Raw Drawdown (ft)	Corrected Drawdown (ft)*	K (ft/day)	Drawdown (ft)	K (ft/day)
1[a,b]	UFA-upper (250-410 ft bls)	290	310	122.29	--	--	--	--
2		320	350	77.84	74.98	2.03	--	--
3		350	380	36.79	27.86	9.60	--	--
4		380	410	34.71	25.69	10.40	--	--
5	OCAPlpz (410-800 ft bls)	410	440	79.73	79.08	0.92	--	--
6[c]		440	470	89.25	88.41	0.84	87.66	0.84
7		470	500	75.09	71.13	2.46	--	--
8		500	530	64.87	64.51	0.81	63.10	0.83
9		530	560	29.14	19.66	13.41	--	--
10		560	590	28.88	18.30	15.52	16.26	17.47
11		590	620	74.95	71.09	2.39	--	--
12		620	650	43.18	39.29	4.33	--	--
13		650	680	40.25	30.65	8.60	--	--
14		680	710	57.86	51.72	4.11	--	--
15		710	740	45.27	35.49	7.50	--	--
16		740	770	65.69	63.37	2.06	--	--
17		770	800	36.3	26.40	9.95	22.31	11.78
18	APPZ (800-1,113 ft bls)	800	830	21.05	11.06	23.89	7.20	36.69
19[d]		830	860	15.03	2.64	117.21	0.60	515.72
20		860	890	68.49	64.29	2.69	61.23	2.82
21		890	920	49.5	45.26	3.83	43.17	4.02
22		920	950	25.51	15.16	17.73	10.60	25.36
23[d]		960	990	15.03	4.56	57.93	0.54	489.22
24[d]		990	1020	15.54	4.99	53.70	0.54	499.31
25		1,020	1,050	65.8	60.02	3.31	57.35	3.47
26		1,050	1,080	20.46	10.06	26.19	1.61	163.68
27		1,080	1,110	32.87	21.70	12.54	12.55	21.67
28[e]	MCU_I (1,113-1,410 ft bls)	1,110	1,140	29.38	18.13	15.12	7.16	45.30
29		1,140	1,170	35.23	23.88	11.52	--	--
30		1,170	1,200	68.04	58.91	4.17	--	--
31		1,200	1,230	37.73	26.56	10.19	--	--
32		1,230	1,260	34.95	23.69	11.43	--	--
33		1,260	1,290	67.62	65.85	1.64	--	--
34		1,290	1,320	46.97	43.10	3.70	--	--
35		1,320	1,350	59.59	58.08	1.66	59.00	1.63
36		1,350	1,380	55.88	52.36	2.82	48.95	3.01
37		1,380	1,410	74.2	71.62	1.74	74.39	1.67

Table 6. Continued.

Packer Test #	Hydrostratigraphic Unit	Test Interval		Based on Manual Measurements			Based on CTD Probe Data	
		Top Depth (ft bls)	Bottom Depth (ft bls)	Raw Drawdown (ft)	Corrected Drawdown (ft)*	K (ft/day)	Drawdown (ft)	K (ft/day)
38	LFA-upper (1,410-1,833 ft bls)	1,410	1,440	26.69	15.43	17.03	7.76	33.87
39		1,440	1,470	21.61	10.12	26.41	2.36	113.25
40		1,470	1,500	78.31	77.28	0.95	77.46	0.95
41		1,500	1,530	70.92	67.01	2.31	64.72	2.39
42[c]		1,530	1,560	35.58	30.54	5.75	27.18	6.46
43		1,560	1,590	64.42	59.81	2.76	57.14	2.88
44		1,590	1,620	18.31	6.60	39.69	2.91	90.03
45[b,f]		1,620	1,650	--	--	--	--	--
46		1,650	1,680	23.55	11.61	22.72	3.00	87.93
47[b]		1,680	1,710	90.2	88.80	0.80	85.90	0.83
48[d]		1,710	1,740	20.95	8.77	30.18	0.23	1,135.81
49[d]		1,740	1,770	21.78	10.19	25.60	0.45	579.75
50[d]		1,780	1,810	21.61	9.83	26.56	0.17	1,535.55
51[d]		1,810	1,840	19.86	8.08	32.45	--	--
52[b,c]	GLAUClpu (1,833-2,000 ft bls)	1,840	1,870	90.13	78.27	2.55	75.00	2.66
53[b]		1,870	1,900	89.95	81.54	2.04	83.23	2.00
54[b]		1,900	1,930	89.89	83.28	1.66	60.51	2.29
55[a,b]		1,930	1,960	89.51	--	--	--	--
56[c]		1,960	2,000	25.82	22.98	4.16	22.18	4.31

APPZ = Avon Park permeable zone; CTD = conductivity, temperature, and depth; ft = feet; ft bls = feet below land surface; GLAUClpu = low-permeability glauconitic marker unit; K = hydraulic conductivity; LFA-upper = upper permeable zone of the Lower Floridan aquifer; MCU_I = middle confining unit I; OCAPlpz = Ocala–Avon Park low-permeability zone; UFA-upper = upper permeable zone of the Upper Floridan aquifer.

[a] Pumping rate noted as 0 gpm.
[b] Pumping rate was too high for open interval, water level dropped to a point where pump had to be shut off.
[c] Packer leaking or other hydraulic issue.
[d] Drawdown calculated from CTD data was within the propagated margin of error (±0.67ft).
[e] Drawdown was overestimated (lightning storm prevented manual measurements).
[f] No depth-to-water measurements were collected during pumping.
* The absolute value of the calculated drawdown was used to calculate hydraulic conductivity.

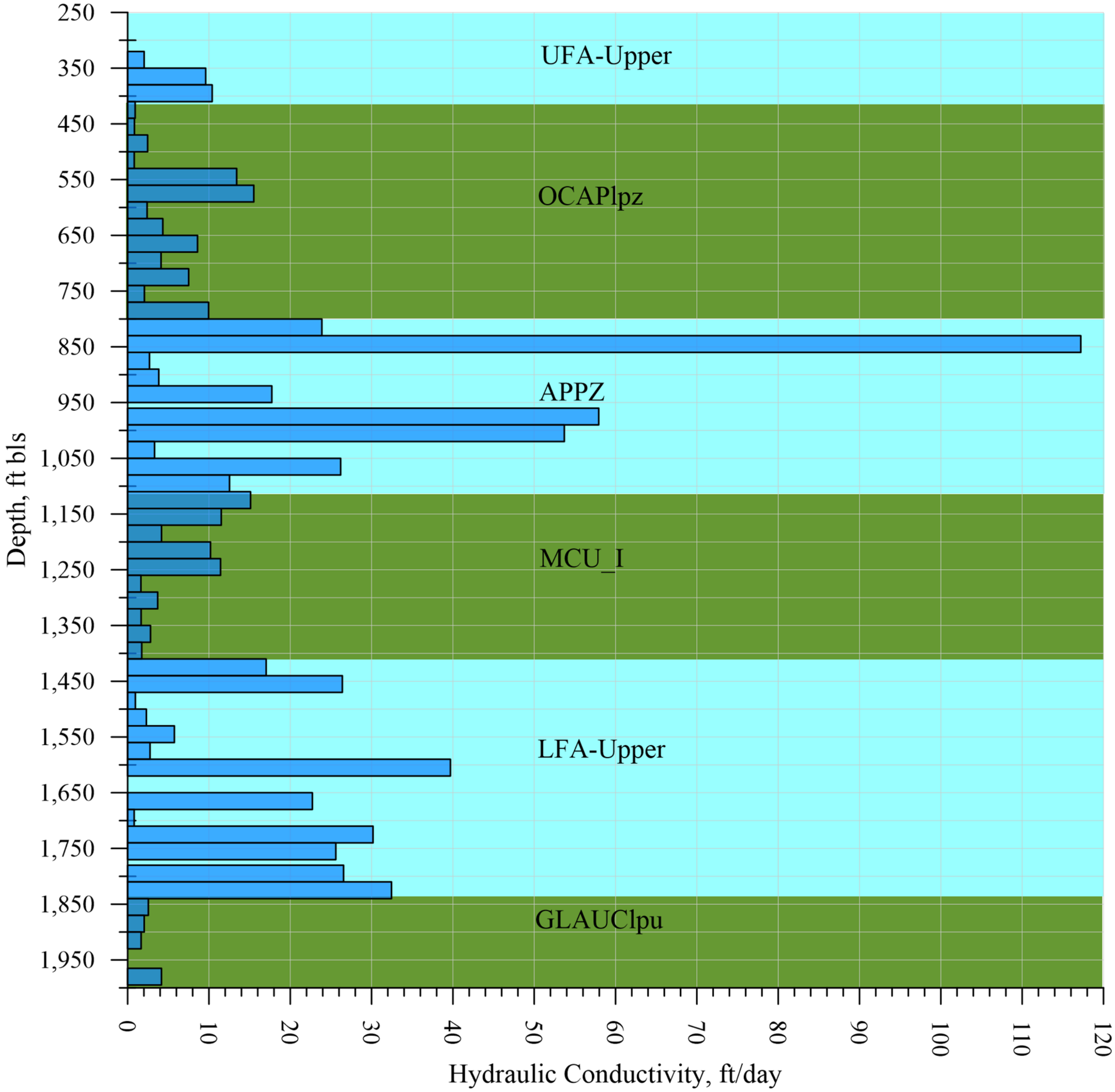


Figure 22. Hydraulic conductivity calculated using the Cooper-Jacob method overlain on the Sumica site hydrostratigraphic units.

WATER QUALITY AND INORGANIC CHEMISTRY

Forty-nine groundwater samples were collected during packer testing to characterize the water chemistry of the FAS. Packer tests 1 through 39 were completed during exploratory drilling for POF-31, and tests 40 through 56 during exploratory drilling for POF-32. Field parameters (temperature, pH, oxidation-reduction potential [ORP], and specific conductance) were measured during packer test groundwater purging and sampling using a Yellow Springs Instruments (YSI) 600XL multiprobe or a YSI EXO1 multiparameter sonde and recorded by a District hydrogeologist.

Each groundwater sample was collected by a District hydrogeologist and submitted to the District's laboratory in West Palm Beach, Florida for analyses in accordance with the project's Water Quality Monitoring Plan (SFWMD 2019). Major cations and anions, TDS, and total strontium were analyzed by a District hydrogeologist. The stable isotopes of oxygen and hydrogen (^{18}O and ^{2}H) were analyzed in each packer test groundwater sample by the University of Arizona's Environmental Isotope Laboratory in Tucson, Arizona.

Water quality field parameters are summarized in **Appendix H**, charge balance errors are presented in **Appendix I**, and major ion analytical results are summarized in **Table 7**. A plot of field specific conductance with depth is presented in **Figure 23**. A complete tabulation of all groundwater analytical results is presented in **Appendix J**.

Seven of the samples yielded charge balance errors greater than 10%, exceeding the project threshold for acceptance. All but one of these charge balance exceedances were from samples collected from the upper, predominantly limestone portion of the borehole (in the MCU and above), where bicarbonate is the dominant anion. One of the exceedances was from the groundwater sample collected during packer test 37 at the base of MCU_I (10.95% charge balance error). In all samples with high charge balance errors, there was an overabundance of cations relative to anions. Given these conditions, the most likely source of the error is an underestimation of bicarbonate ion concentration. Bicarbonate concentrations were not directly measured; rather, they were derived from laboratory measurements of alkalinity as $CaCO_3$. Although alkalinity has a 14-day holding time, groundwater samples collected from the FAS are often unstable because they undergo rapid changes in temperature and pressure as the groundwater is pumped to the surface for collection. Carbon dioxide can be released from solution during this process, causing pH and alkalinity to drop in the groundwater. District field sampling protocols attempt to mitigate this effect by collecting alkalinity samples with zero headspace to limit atmospheric contact. Placing the samples in an ice-filled cooler after sampling is a second protocol followed by the field geologists that is intended to further slow degassing reactions. Even with these precautions, a loss of alkalinity could still be significant.

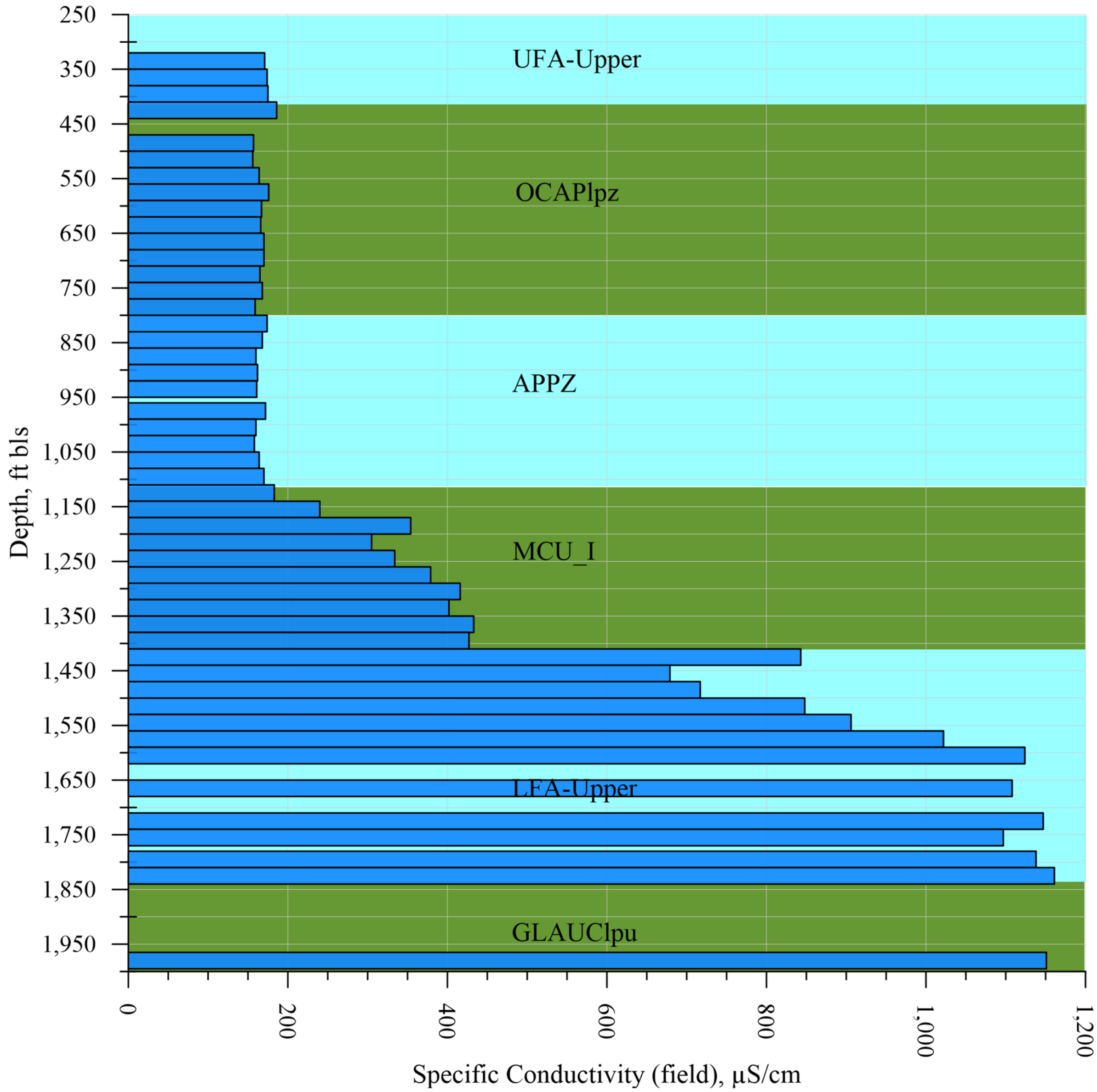


Figure 23. Field-measured specific conductance with depth at the Sumica site.

The United States Environmental Protection Agency (USEPA) established National Secondary Drinking Water Regulations that set nonmandatory water quality standards for 15 contaminants. The USEPA does not enforce these "secondary maximum contaminant levels" (SMCLs). They were established as guidelines to assist public water systems in managing their drinking water for aesthetic considerations such as taste, color, and odor. These contaminants are not considered to present a risk to human health at the SMCL (USEPA 2024). The SMCL for TDS is 500 mg/L. Twelve of the groundwater samples collected below a depth of 1,410 ft bls exceeded the TDS SMCL (**Appendix J**), and five groundwater samples exceeded the sulfate SMCL (250 mg/L) in **Table 7**. All the sulfate SMCL exceedances were from samples collected between depths of 1,410 and 1,610 ft bls (**Table 7**).

Table 7. Major ion analytical results, total dissolved solids, and field parameters for the Sumica site groundwater samples. (Note: Bolded results exceeded the USEPA SMCL for sulfate (250 mg/L.)

Sample Depth, ft bls	Packer Test #	Hydrostratigraphic Unit	Anions (mg/L)			Cations (mg/L)				Sr*	pH	Temp. (°C)	Specific Cond. (µS/cm)	TDS (mg/L)
			Cl	HCO_3	SO_4	Na	Mg	Ca	K					
320-350	2	UFA-upper (250-410 ft bls)	5.0	92.66	4.3	3.6	6.3	23.8	< 1	1.56	7.9	24.8	171	96
350-380	3		4.9	93.88	4.2	3.6	7.0	23.6	< 1	1.70	7.9	24.7	174	103
380-410	4		5.0	96.32	4.4	3.6	7.0	28.3	1	1.70	7.9	24.7	175	99
410-440	5	OCAPlpz (410-800 ft bls)	5.4	95.10	5.7	3.8	8.2	24.2	1	2.02	8	24.4	186	104
470-500	7		4.5	87.78	4.9	3.0	7.6	17.6	< 1	1.85	8.3	25.5	157	96
500-530	8		4.4	90.22	4.9	3.0	7.7	26.8	1	1.89	8.2	26.5	156	108
530-560	9		4.8	92.66	4.4	3.4	7.1	23.6	< 1	1.81	8.1	25.0	164	109
560-590	10		4.8	92.66	4.6	3.4	7.2	26.9	< 1	1.81	8.1	25.1	176	102
590-620	11		4.9	86.56	5.2	3.2	7.8	18.3	< 1	2.31	8.2	25.9	167	105
620-650	12		5.0	85.35	4.8	3.2	7.5	17.8	< 1	2.33	8.1	26.2	166	110
650-680	13		5.3	87.78	5.5	3.4	7.1	19.2	< 1	2.83	8.1	25.9	170	104
680-710	14		5.2	87.78	5.8	3.4	6.6	19.2	< 1	4.29	8.1	26.1	170	99
710-740	15		4.9	85.35	5.6	3.2	6.4	20	< 1	3.87	8	26.2	165	99
740-770	16		4.9	86.56	6.0	3.5	6.5	21.4	< 1	4.63	8.2	26.4	168	106
770-800	17		4.4	89.00	2.7	3.0	6.4	28.9	< 1	2.90	8.1	26.5	159	94
800-830	18	APPZ (800-1,113 ft bls)	4.4	98.76	2.4	3.5	8.6	41.2	< 1	2.31	8.1	26.5	174	100
830-860	19		4.4	96.32	1.6	3.1	8.1	26.4	< 1	2.17	8.3	26.5	168	97
860-890	20		4.4	91.44	1.6	3.0	9.6	31.8	< 1	1.81	8.2	26.8	160	108
890-920	21		4.4	90.22	1.8	2.9	6.8	19.6	< 1	1.82	8	26.7	162	82
920-950	22		4.4	89.00	1.6	3.0	6.6	19.3	< 1	1.67	8.2	26.8	161	88
960-990	23		4.3	96.32	1.2	3.3	7.4	19.8	< 1	1.25	8	26.8	172	92
990-1,020	24		4.3	87.78	< 1	2.9	7.4	20	< 1	1.76	8.3	27.4	160	84
1,020-1,050	25		4.4	85.35	1.8	2.9	6.7	19.4	< 1	1.15	8.2	27.1	158	86
1,050-1,080	26		4.4	84.13	6.1	2.9	6.8	20	< 1	2.21	8.3	27	164	98
1,080-1,110	27		4.4	85.35	6.2	3.0	7.6	20.1	< 1	2.48	8.3	27.1	170	95

Table 7. Continued.

Sample Depth, ft bls	Packer Test #	Hydrostratigraphic Unit	Anions (mg/L)			Cations (mg/L)				Sr*	pH	Temp. (°C)	Specific Cond. (µS/cm)	TDS (mg/L)
			Cl	HCO_3	SO_4	Na	Mg	Ca	K					
1,110-1,140	28	MCU_I (1,113-1,410 ft bls)	4.4	86.56	12.4	2.9	8.3	19.4	< 1	5.98	8	26.9	183	104
1,140-1,170	29		4.6	85.35	41.6	3.1	10.3	22.9	< 1	14.99	8	27.3	240	151
1,170-1,200	30		4.8	82.91	99.9	3.1	15.0	31.3	< 1	35.93	7.8	27.2	354	247
1,200-1,230	31		4.8	85.35	73.6	3.2	14.9	31.9	< 1	25.82	7.9	27.2	305	202
1,230-1,260	32		5.3	85.35	87	3.4	13.1	29.8	< 1	33.05	7.9	27.4	334	231
1,260-1,290	33		5.5	86.56	109	3.6	15.9	36.7	1.1	35.47	8	27.8	379	281
1,290-1,320	34		5.5	86.56	127	3.8	17.2	41.9	1.2	33.79	7.9	27.4	416	292
1,320-1,350	35		5.4	85.35	123	3.8	17.6	42.4	1.2	34.65	7.9	27.1	402	296
1,350-1,380	36		5.5	87.78	127	3.9	18.3	42.2	1.2	32.83	8	27.7	433	304
1,380-1,410	37		5.3	91.44	123	4.2	21.8	49.4	1.2	33.71	7.8	27.5	427	308
1,410-1,440	38	LFA-upper (1,410-1,833 ft bls)	6.1	87.78	**344**	4.7	44.1	99.9	1.6	23.26	7.6	27.6	843	626
1,440-1,470	39a		5.2	90.22	177	4.0	25.8	59.5	1.2	21.36	7.8	27.4	679	498
1,440-1,470	39b		5.6	86.56	**251**	4.2	33.5	76.5	1.4	22.11	7.9	27.6	717	534
1,470-1,500	40		6.6	85.35	**286**	4.5	39.2	78.4	1.6	23.90	7.9	27.4	848	634
1,500-1,530	41		13.7	87.78	**349**	7.6	45.4	88.3	1.8	21.16	8	27.8	906	662
1,530-1,560	42		25.9	93.88	**362**	14.4	48.5	109.7	1.9	20.17	7.8	27.9	1022	628
1,560-1,590	43		123	96.32	244	65.5	37.4	69.7	3.3	17.15	8	28.4	1124	628
1,590-1,620	44		180	101.19	170	103.9	31.9	61.4	4.5	9.15	8	27.3	1108	641
1,650-1,680	46		177	106.07	171	101.0	33.5	66.5	4.5	8.43	7.9	28.4	1147	663
1,710-1,740	48		180	99.98	170	104.1	33.2	62.6	4.4	9.72	7.8	28.7	1097	623
1,740-1,770	49		179	99.98	169	96.6	31.5	58.9	4.2	9.26	7.8	28.8	1138	650
1,780-1,810	50		190	103.63	169	107.8	32.4	60.6	4.5	9.67	8	28.8	1161	656
1,810-18,40	51		191	103.63	152	112.4	33.2	61.8	5.0	9.85	7.8	28.5	1151	647

°C = degrees Celsius; µS/cm = microsiemens per centimeter; APPZ = Avon Park permeable zone; Ca = calcium; Cl = chloride; ft bls = feet below land surface; HCO_3 = bicarbonate; K= potassium; LFA-upper = upper permeable zone of the Lower Floridan aquifer; MCU_I = middle confining unit I; Mg = magnesium; mg/L = milligrams per liter; Na = sodium; OCAPlpz = Ocala–Avon Park low-permeability zone; SO_4 = sulfate; Specific Cond. = specific conductance; Sr = strontium; Temp. = temperature; TDS = total dissolved solids; UFA-upper = upper permeable zone of the Upper Floridan aquifer.

* Most strontium concentrations exceeded the USEPA's 2014 proposed health reference level for strontium (1.5 mg/L).

Of the 56 packer tests completed during this project, six packer tests (tests 1, 47, 52, 53, 54, and 55) were flagged because they yielded insufficient water for sampling due to the low transmissivity of those intervals. The groundwater sample collected during packer test 40 (1,470 to 1,500 ft bls) had a low charge balance error, but the results for this sample are considered questionable due to the low purge volume caused by the low-permeability rock in that interval.

Packer test 39 is also flagged due to an inadequate purge volume, but the reasons this test necessitated the qualification are very different. Packer test 39 (1,440 to 1,470 ft bls) was conducted in high-permeability rock of the LFA-upper. However, the field-measured specific conductance measured during LFA-upper packer test 39 (464 microsiemens per centimeter [µS/cm]) after three borehole volumes had been purged was significantly lower than the specific conductance (843 µS/cm) measured during LFA-upper packer test 38 (from 1,410 to 1,440 ft bls).

A salinity inversion between two vertically adjacent productive zones occurs when relatively saltier, higher specific conductivity is found on top of relatively fresher water. The relatively fresher water measured during test 39 (464 µS/cm) as compared to test 38 (843 µS/cm) was noted as irregular by a District hydrogeologist. At the Sumica site, a downward vertical hydraulic gradient exists between the APPZ and the LFA-upper. A head drop of 13.86 ft was measured across MCU_I using the recovery water levels measured at the end of packer test 27 (last test from the APPZ with an open interval from 1,080 to 1,110 ft bls) and packer test 38 (first test from the LFA-upper with an open interval from 1,410 to 1,440 ft bls).

The relatively lower specific conductance measured during packer test 39 as compared to packer test 38 was likely due to downhole annular flow, which allowed the relatively fresher groundwater from the overlying APPZ (800 to 1,113 ft bls) to comingle with the packer test 39 water of the LFA-upper. To evaluate this, the packers were kept inflated, and the packer test 39 interval was purged overnight. A second sample (sample 39b) was collected in the morning after 25 borehole volumes had been pumped from the test interval. When this sample was collected, the specific conductance of the groundwater had increased to 679 µS/cm. Data from the CTD probe provide the clearest picture of conditions in the formation (**Figure 24**). The CTD probe was installed below the packer and pump intake piping during purging and collection of groundwater samples 39a and 39b.

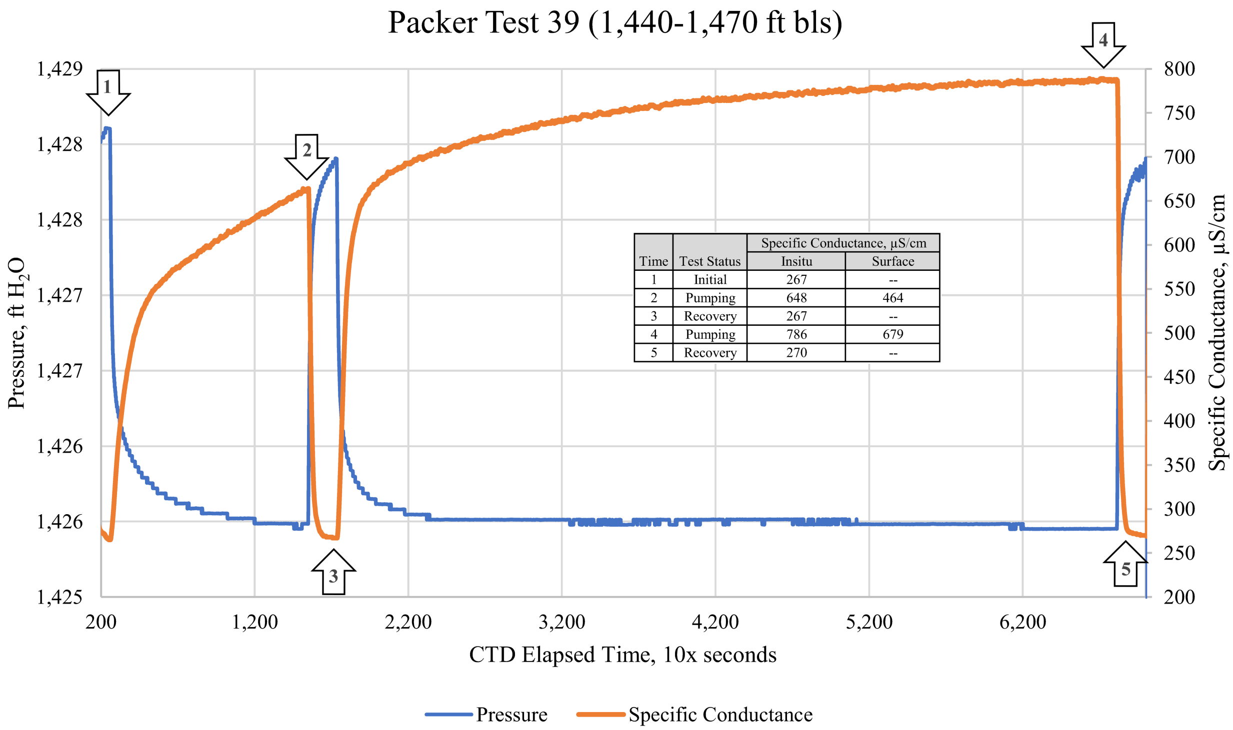


Figure 24. Pressure and specific conductance measured by the CTD probe during Sumica site packer test 39. Pressure (ft of water) is represented by the blue line, and specific conductance (µS/cm) is represented by the orange line. Events denoted by numbered arrows are discussed in the text.

Figure 24 shows that at the start of test 39 (at time 1, denoted by the arrow with "1" inside of it) the specific conductance was 267 µS/cm, which was fresher than the preceding nine packer tests. At time 2, when sample 39a was collected after a three-borehole volume purge, the *in situ* specific conductance of 648 µS/cm (i.e., as measured by the CTD probe installed within the tested interval) was significantly higher than the specific conductance measured at the surface (464 µS/cm). That difference in specific conductance was not a measurement discrepancy between the two instruments. The screen intake below the packer was located approximately 18 inches above the sensors on the CTD probe. The specific conductance difference between the surface and *in situ* measurements reflects the fresher water from above that, due to the pressure head produced by 1,430 ft of water above the packer assembly (a minimum of approximately 620 pounds per square inch [psi]) and the downward vertical hydraulic gradient, traveled past (outside) the packer assembly, then through the packer assembly and on to the pump, bypassing the CTD probe (see **Figure 25**). Therefore, the groundwater pumped to land surface was a mixture of formation water from the test interval and relatively fresher water from above. When the pump was briefly shut down and water levels had recovered (at time 3 in **Figure 24**), the *in situ* specific conductance immediately returned to pre-pumping concentrations, indicating that the overlying water was pushing past the packer assembly and displacing water in the test zone to an extent that it fully enveloped the CTD probe. Specific conductance rose continuously during the overnight purging but appeared to be leveling off by time 4 when sample 39b was collected.

When the pump was shut down, and water levels were allowed to recover (at time 5 in **Figure 24**), the *in situ* specific conductance immediately returned to pre-purge concentrations, again indicating that the overlying water was pushing past the packer assembly and displacing water in the test zone to an extent that it fully enveloped the CTD probe.

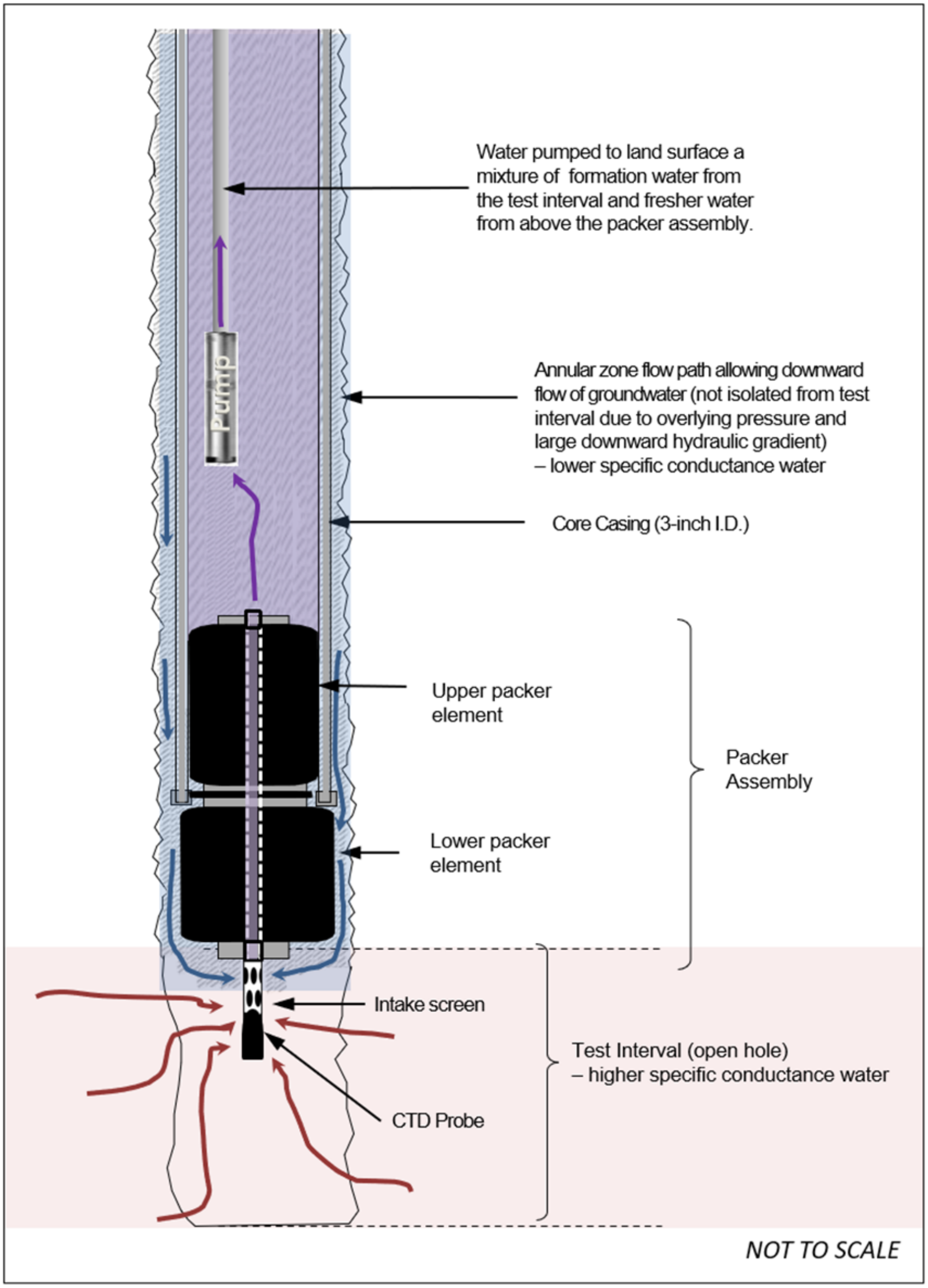


Figure 25. Illustration of groundwater bypassing the packer assembly during packer test 39.

It is likely that the packer assembly did not adequately seal against an irregular corehole during test 39 at POF-31. A review of the POF-32 caliper log shows an irregular borehole with deviations of up to 2 inches between the depths of 1,430 to 1,440 ft bls, indicating that similar conditions may have been encountered at POF-31. This interval corresponds with the packer seating depth for test 39 at POF-31. The interval at

POF-32 immediately below the packer set depth was a relatively gauge borehole. However, it is clear from **Figure 25** and the approximately 14-foot decline in static water levels between the APPZ and the LFA-upper that downward flow would continue as coring continued, resulting in downhole groundwater flow during drilling, coring, and packer installation, causing mixing between APPZ and LFA-upper groundwater as coring progressed into the underlying units. To prevent further groundwater mixing between the APPZ and LFA-upper, the corehole for POF-31 was grouted to the base of the APPZ at 1,113 ft bls. Packer testing resumed in the POF-32 corehole once a permanent casing had been installed to the top of the LFA.

In situ measurements of pressure (P) in psi, ORP in millivolts, pH, temperature in degrees Celsius, and specific conductance at 25ºC in µS/cm are available for 36 of the 56 packer tests conducted at the Sumica site. The *in situ* ORP was used to calculate the reduction potential (Eh) for each test interval. Having both the *in situ* measurements of the water quality parameters and those same measurements as collected by a District hydrogeologist while sampling at the ground surface offers an opportunity to compare the two sets of measurements.

As seen in **Figure 26**, specific conductance showed the highest correlation between surface and *in situ* measurements. In practice, if a packer testing interval is adequately purged, the two readings will fall within the error range of the instrumentation. It is also clear from this figure that it is more difficult to capture a representative measurement of *in situ* groundwater temperatures within the formation after the water has been pumped up to land surface. The packer test data represent a depth range of 1,710 ft, but also a time range of 231 days (June 2020 to January 2021). The larger deviations in surface temperature measurements in the deeper portions of the borehole illustrate the difficulty in compensating for the effect of cooler air temperatures on the surface readings. While the surface readings fluctuated somewhat with air temperature, *in situ* readings increased consistently with depth. A local geothermal gradient of 0.38ºC/100 ft (0.68ºF/100 ft) was calculated from linear regression of the CTD temperature data (**Figure 27**).

The regression also implies a mean annual surface temperature of 23.3ºC (73.9ºF), comparable to the reported local average of 23.4ºC (74.2ºF) from Lake Wales (National Oceanic and Atmospheric Administration [NOAA] 2023).

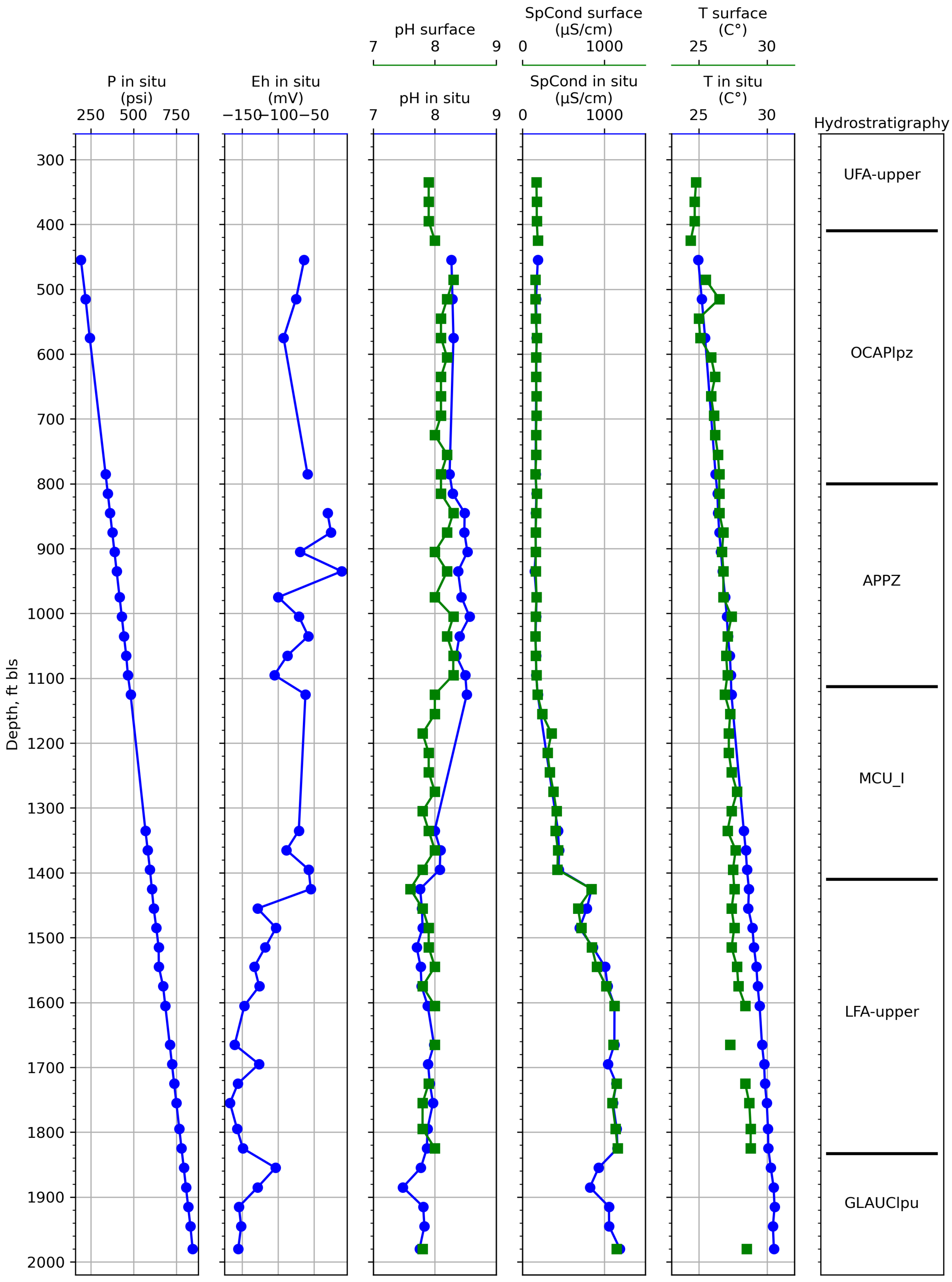


Figure 26. Vertical profile of field parameters measured at land surface by the Yellow Springs Instruments EXO1 probe (green square symbols) and measured *in situ* by the Idronaut CTD probe (blue circle symbols) at the Sumica site.

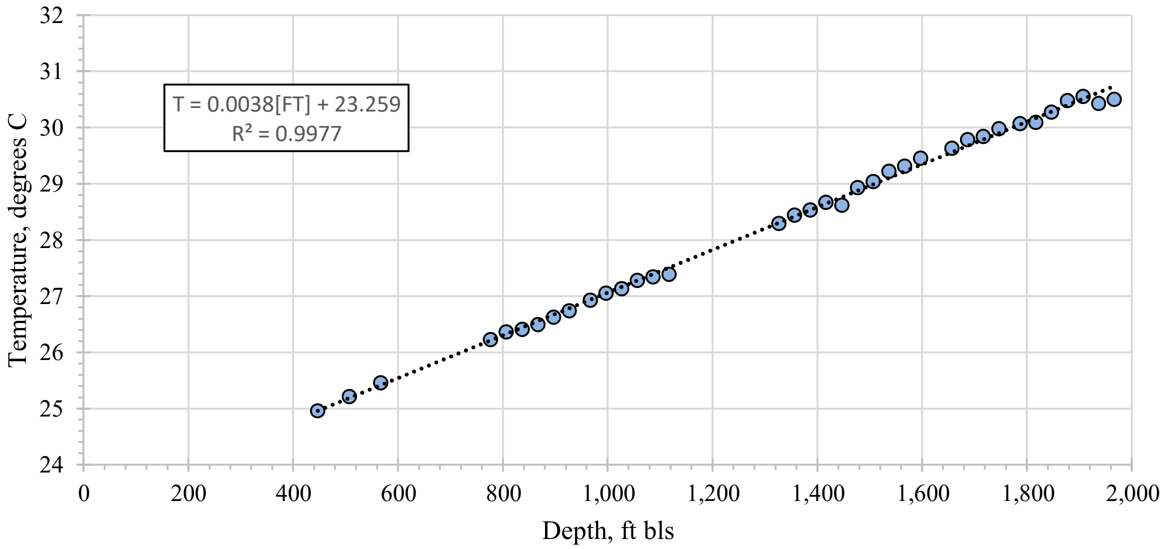


Figure 27. Local geothermal gradient at the Sumica site.

The surface and *in situ* measurements of pH differed from 0.01 to 0.53 pH units across all tests where both values were available. Discrepancies in pH between surface and *in situ* readings occur because the concentration of [H+] is controlled by the chemical reactions which produce or consume it. Many of these reactions, like the disassociation of carbonate species and oxidation of sulfides, are affected by depressurization when groundwater is pumped to the surface for collection. The CTD data indicated that pH was slightly depressed, and Eh was slightly more reducing below the MCU_I in comparison with groundwater from above the MCU_I. From 320 to 1,110 ft bls, fresh water was encountered, with a median specific conductance of 167 µS/cm with minimal spread in the data, as measured by both surface and *in situ* instrumentation. Through MCU_I, from 1,110 to 1,410 ft bls, the specific conductance gradually increased to approximately 430 µS/cm. Test 37 was the last packer test located fully within the MCU_I. Below this depth, as the corehole advanced into the LFA-upper, there was an abrupt increase in specific conductance to 843 µS/cm. Excluding the questionable results from tests 39 and 40, specific conductance gradually increased to 1,190 µS/cm at the total corehole depth of 2,000 ft bls. The boundary between fresh water and brackish water is approximately 1,500 µS/cm, or 1,000 mg/L TDS (Kasenow 2001). It was unexpected to find fresh water at this depth. Although the water was fresh, all the LFA-upper groundwater samples exceeded the 500 mg/L USEPA SMCL for TDS. Because specific conductance is easily measured in the field, it is a useful surrogate for salinity. However, the relationship between electrical conductivity and ion concentration is not the same for all ion species and all ion concentrations (Hem 1985). Unless the ion concentrations and relationships to specific conductance are known, laboratory analysis is required to evaluate changes in salinity. **Figure 28** shows the variation in ionic species concentrations, hydraulic conductivity, Frazee water types, and hydrostratigraphic units with depth at the Sumica site. The colors in the packer test column of **Figure 28** represent where the groundwater samples plot on the Piper diagram with Frazee water types overlain on the diagram (**Figure 29**).

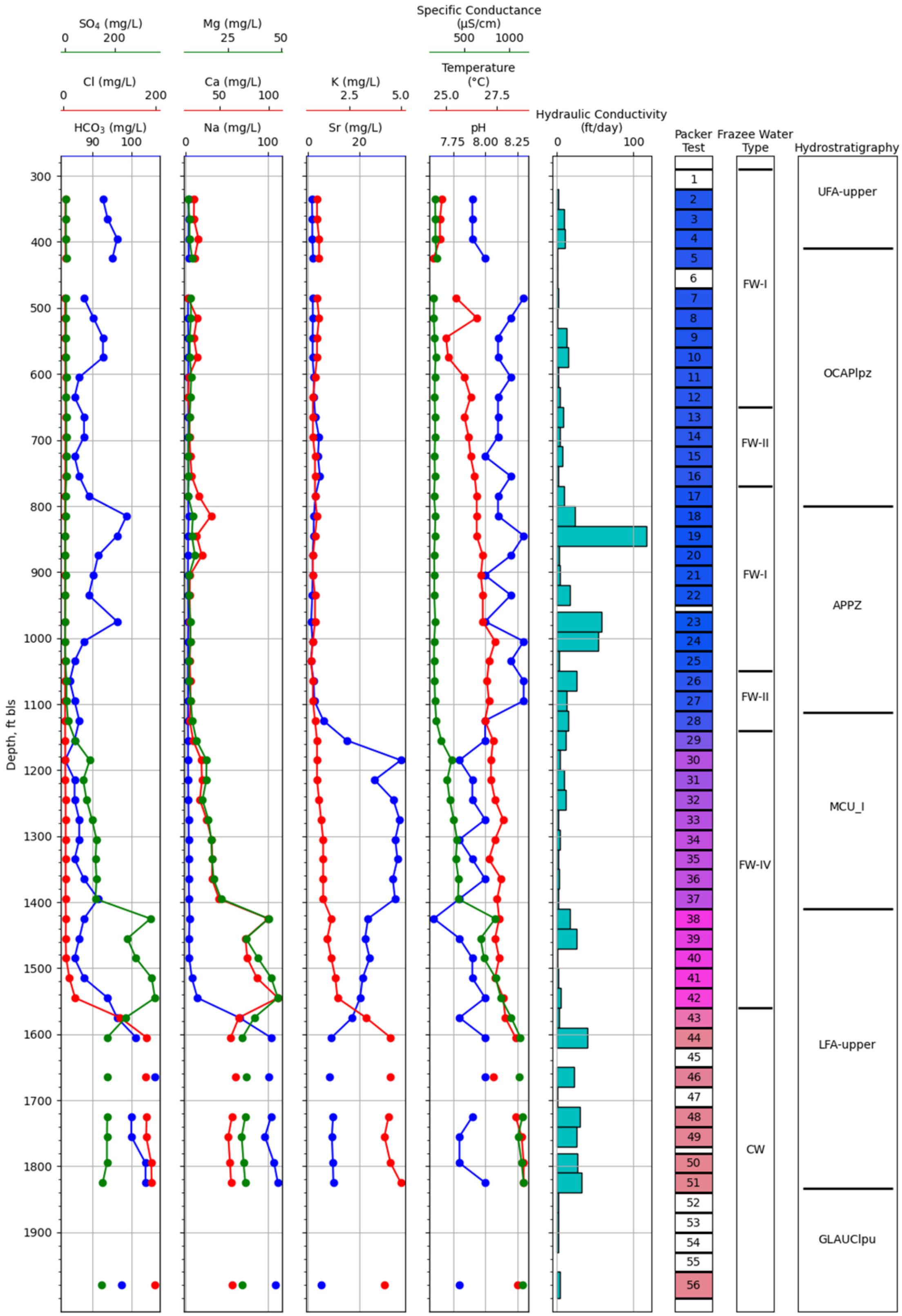


Figure 28. Concentrations of ionic species, pH, temperature, specific conductance, and hydraulic conductivity from packer tests, Frazee water types, and hydrostratigraphic units at the Sumica site.

- Above a depth of 1,110 ft bls (which is close to the top of the MCU_I), groundwater at the site was of the calcium-bicarbonate water type and is dominated by those two ions. The concentrations of chloride and sulfate were near their respective minimum detection limits in this portion of the borehole.
- From 1,110 to 1,530 ft bls (within the MCU_I and uppermost permeable zone of the LFA), there was an overall increase in mineral content and a shift to calcium-sulfate water type. There was no reduction in bicarbonate concentration below this depth, but a major increase in sulfate drove the change in classification. Calcium, magnesium, and strontium also increased significantly in this interval.
- Below 1,530 ft bls, the groundwater was sodium-chloride water-type.

A wide range of ions and elements can become dissolved in groundwater because of interactions with the atmosphere, soil, and rock. Waters with similar chemical compositions are assumed to have a similar history. Differences in hydrochemical facies between samples collected from a single location from different depths can be an indication of differences in source water and hydraulic separation between those depths. The packer test groundwater samples were evaluated using the geochemical water types developed for the FAS by Frazee (1982). Frazee's geochemical water types relate the ionic compositions of a groundwater sample to recharge sources, residence time, and saltwater intrusion. The Frazee water types are defined in **Table 8**. **Figure 29** is a Piper diagram for the packer test groundwater samples with Frazee's water types overlain on the diagram.

Table 8. Frazee (1982) water types.

Abbreviation	Description	Characteristics
FW-I	Fresh Recharge Water Type I	Rapid infiltration through sands, high calcium bicarbonate ($CaHCO_3$).
FW-II	Fresh Recharge Water Type II	Infiltration through sands and clay lenses, $CaHCO_3$ with sodium (Na), sulfate (SO_4), and chloride (Cl). Marginal type II waters are beginning to transition toward FW-IV.
FW-III	Fresh Recharge Water Type III	Infiltration through clay-silt estuarine depositional environment, high sodium bicarbonate ($NaHCO_3$).
FW-IV	Fresh Formation Water Type IV	Fresh water, low calcium (Ca), magnesium (Mg), SO_4, and Cl. Vertical infiltration insignificant. Older form of FW-II or FW-III.
TW-I	Transitional Water Type I	Seawater begins to dominate source water; Cl begins to dominate bicarbonate (HCO_3) with increasing sodium chloride (NaCl) percentage.
TW-II	Transitional Water Type II	Transitional water with source water still dominant, HCO_3 – SO_4 mixing zone with increasing Cl.
TCW	Transitional Connate Water	Connate water dominates source water, SO_4 begins to dominate HCO_3 with increasing Cl.
TRSW	Transitional Seawater	Transitional water with seawater dominating source water.
CW	Connate Water	Highly mineralized fresh water with high TDS and calcium sulfate ($CaSO_4$) dominance. Presence of highly soluble minerals; hydrogen sulfide (H_2S) gas prevalent.
RSW*	Relict Seawater	Unflushed seawater with NaCl.

* Strongly NaCl-dominant waters may plot in this category even if the overall salinity is substantially less than seawater.

A groundwater sample's position on the Piper diagram (**Figure 29**) is also represented by the colored background of the Piper diagram. Using a continuous/gradational color scheme on the Piper diagram allows for easy visualization of gradual changes in groundwater chemical composition with depth. This gradation is missed with the uncolored Piper diagram with the overlain Frazee water types, especially for Frazee water types that cover a large area on the central diamond of the Piper diagram. Conversely, Frazee water types are useful for grouping samples that came from common source waters and underwent similar histories. The color gradient Piper plot was developed using the diagrams and Python code of Peeters (2014) and Yang et al. (2022). The Piper diagram in this report has a different color scheme due to most of the Sumica site samples plotting in the $CaCO_3$ (left) and $CaSO_4$ (top) regions of the central diamond. The previous color scheme resulted in samples grading from red to pink, which made it difficult to discern changes in chemistry. The modified colors are a gradient from blue to pink in these regions and provide better visualization for samples that plot in these portions of the central diamond.

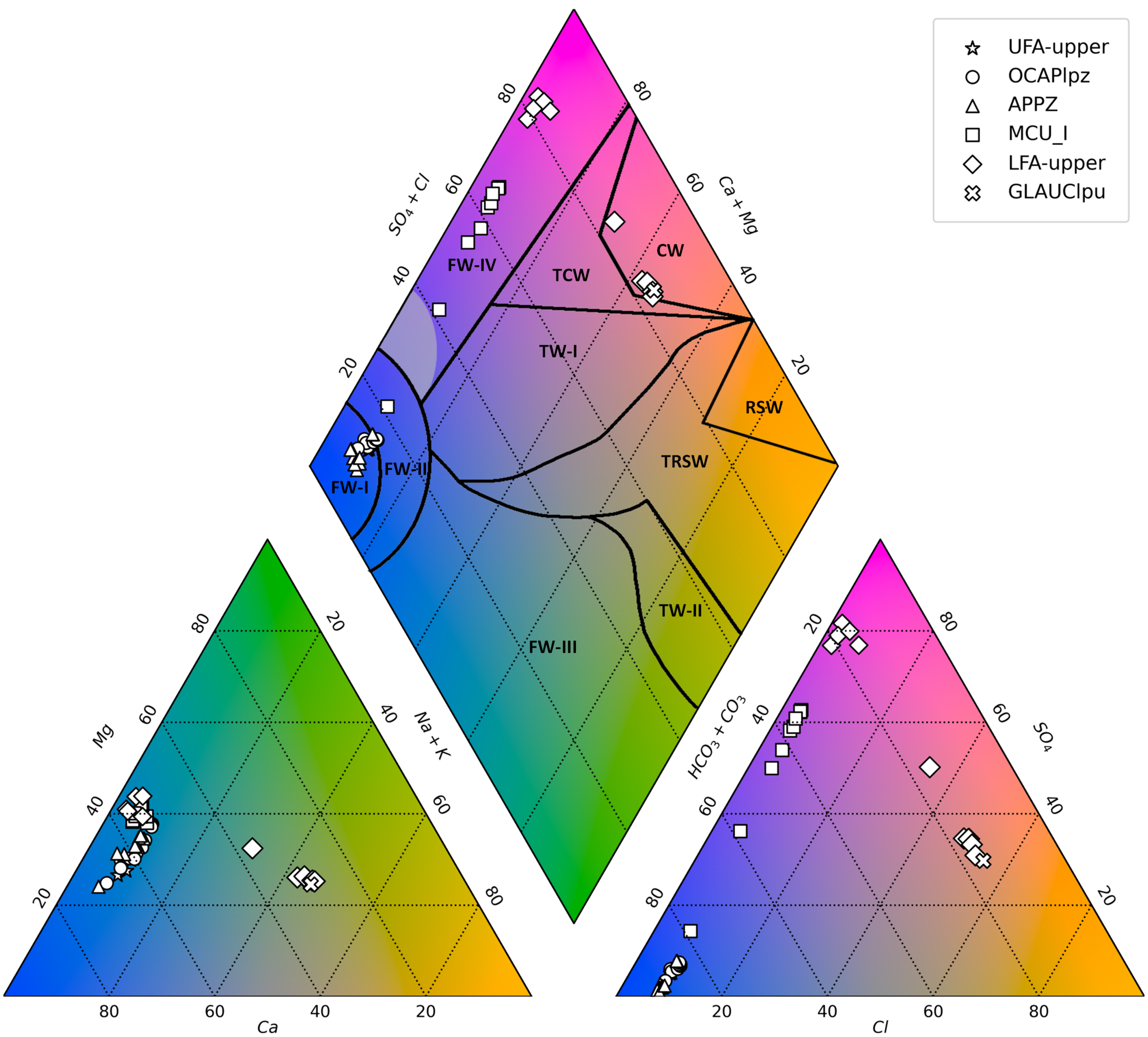


Figure 29. Piper diagram for Sumica site packer test groundwater samples with Frazee water type classifications.

All the packer test samples collected above the MCU_I were categorized as fresh recharge water using Frazee's classification (**Figure 29**). The subtypes (I or II) are indicative of the relative rate of infiltration, with type I indicative of rapid infiltration rates. The FW-IV subtype is groundwater that is still fresh according to the Frazee water types classification, but vertical infiltration is no longer significant, and the primary driver for chemical composition is mineral dissolution.

As shown in the Piper diagram (**Figure 29**) and the plot of ionic species with depth (**Figure 28**), groundwater in the UFA-upper, OCAPlpz, and APPZ can be classified as fresh recharge water that infiltrated through sand and clay lenses (FW-I and FW-II). Most of the samples collected from the MCU_I and all the samples collected from the LFA-upper above 1,560 ft bls fall in the Fresh Formation Water Type IV (FW-IV) category, which is characterized by insignificant vertical infiltration, and described as an older form of FW-II or FW-III (**Table 8**). Within the lower portion of LFA-upper (below 1,560 ft bls) and through the entirety of the GLAUClpu, all the groundwater samples were categorized as the connate water (CW) subtype. Connate water is highly mineralized fresh water (per the definition for connate water by Frazee 1982) containing hydrogen sulfide gas, indicating extended storage and the presence of highly soluble minerals.

Sulfate in carbonate systems forms either from the dissolution of evaporite minerals, predominantly anhydrite ($CaSO_4$) or gypsum ($CaSO_4 \cdot H_2O$), or by carbonate neutralization of acidic waters (Hounslow 1995). Given that assumption, Hounslow (1995) offered the following rule-of-thumb indicators for source rocks for sulfate in groundwater:

$Ca^{2+} = SO_4^{2-}$ ➔ source rock likely evaporite minerals
$Ca^{2+} > SO_4^{2-}$ ➔ calcium input from some source other than evaporites (e.g., limestone or dolostone)
$Ca^{2+} < SO_4^{2-}$ ➔ pyrite oxidation or calcium removal by precipitation

It has been noted in several recent exploratory wells in the region that the evaporite celestine ($SrSO_4$) is a more common component in the FAS than previously thought. If the only evaporites are gypsum and anhydrite, then only calcium and sulfate need to be considered. Revising the Hounslow (1995) rule-of-thumb to include the consideration of strontium, the comparison of ($Ca^{2+} + Sr^{2+}$) versus SO_4^{2-} yields a more accurate result (**Figure 30**). Using this comparison, evaporite mineral dissolution was the primary sulfate source rock for the sulfate in the groundwater samples collected during the packer tests completed below a depth of 1,170 ft bls.

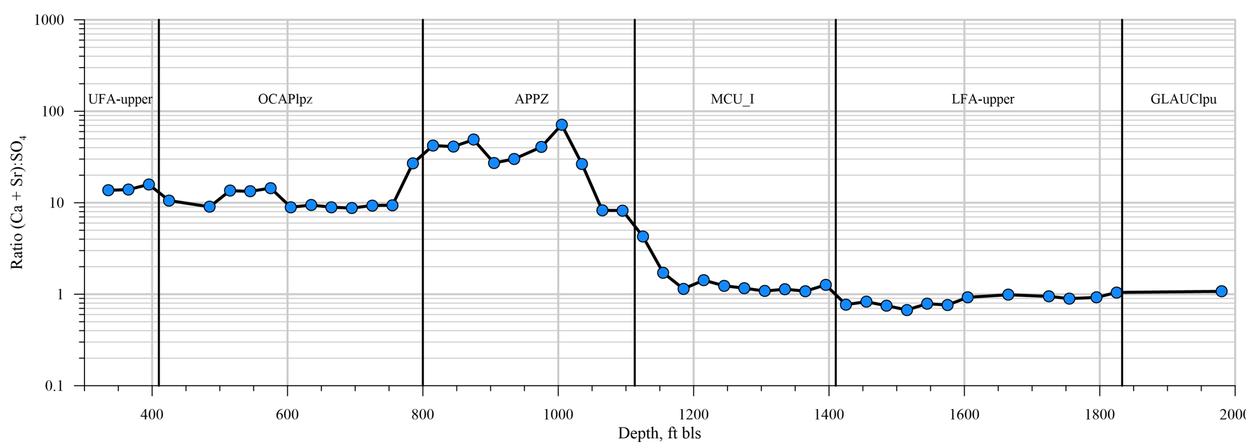


Figure 30. Ionic ratios for sulfate source rock evaluation at the Sumica site.

The saturation indices for the carbonate minerals calcite, aragonite, dolomite, and strontianite and the evaporite minerals anhydrite, gypsum, and celestite were calculated using PHREEQC, Version 3 (Parkhurst and Appelo 2013). The saturation index (SI) is the log of the ratio of ion activity product (IAP) and the solubility product constant (K_{sp}):

$$SI = \log\left(\frac{IAP}{K_{sp}}\right) \qquad \text{Equation (10)}$$

Where:

SI = saturation index (unitless)
IAP = ion activity product (unitless)
K_{sp} = solubility product constant (unitless)

IAP is calculated using the ionic concentrations of groundwater samples corrected for field temperature and the ionic strength of the solution (Parkhurst and Appelo 1999). K_{sp} is a constant based on thermodynamics for the dissolved mineral at equilibrium from reported laboratory measurements. Reported K_{sp} assumes a temperature of 25°C, so a correction was later applied to account for the field-measured groundwater temperatures. A more detailed description of the SI calculation methodology can be found in Coonts (2021, Appendix D). The SI is a quantitative measure of the degree of saturation with respect to a specific mineral:

SI < 0 ➔ *Undersaturated* (more mineral can be dissolved into solution)
SI = 0 ➔ Sample is at *Equilibrium* with the mineral
SI > 0 ➔ *Supersaturated* (mineral has potential to precipitate out of solution)

Figure 31 shows the saturation indices for dolomite, strontianite, calcite, aragonite, celestine, gypsum, and anhydrite for groundwater samples collected during each packer test, listed from least soluble (on the left side of the diagram) to most soluble (on the right side of the diagram), relative to the hydrostratigraphic units at the site. Blue bars represent packer test groundwater samples that are undersaturated for a particular mineral, and red bars represent packer test groundwater samples that are supersaturated. The SI temperature corrections were calculated using both surface sample temperatures and estimated formation temperatures based on the local geothermal gradient presented above. The results differed, but not sufficiently to change the SI classifications.

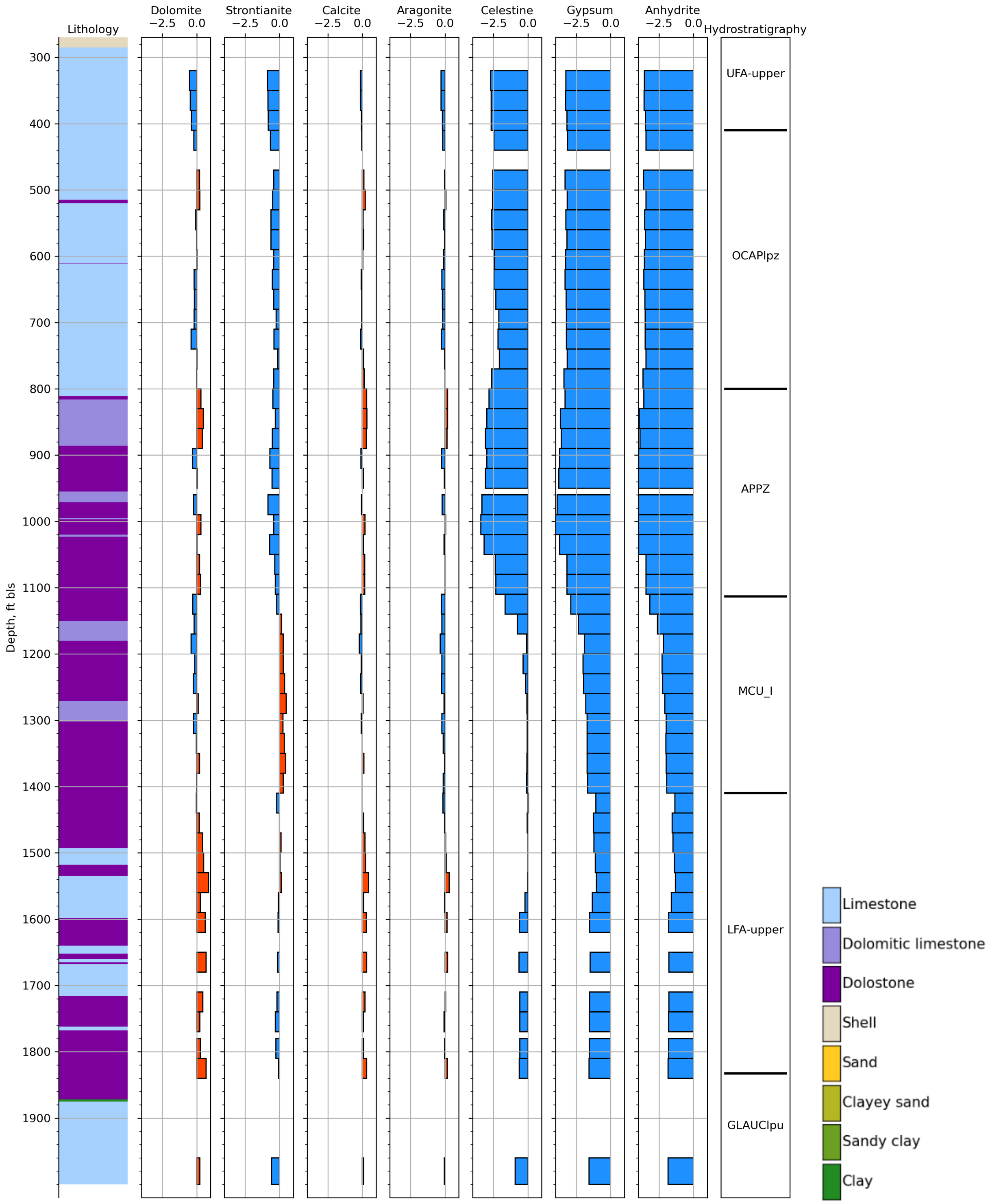


Figure 31. Lithology and calculated saturation indices for primary carbonate and sulfate minerals in the FAS at the Sumica site.

Calcite and its polymorph, aragonite, were close to chemical equilibrium (within +/- 0.5 SI) across the entire explored depth. Dolomite exhibited a similar pattern but was slightly more saturated within the LFA-upper. Strontianite was slightly more undersaturated than the other carbonate minerals above the MCU_I, and more saturated within it. A 1.5-inch-wide layer of strontianite was described in the core at a depth of 1,380 ft bls. Evaporite minerals gypsum and anhydrite were undersaturated across the entire explored depth. Celestine was undersaturated in all samples but became very close to equilibrium within the MCU_I and the upper part of the LFA. Subhedral crystals of celestine were identified in the recovered core between depths of 1,330 and 1,475 ft bls.

STABLE ISOTOPES

Isotopes are atoms of the same element that have the same numbers of protons and electrons but different numbers of neutrons. The difference in the number of neutrons between the various isotopes of an element means that the various isotopes have similar charges but different masses. The stable isotopic compositions of low-mass (light) elements such as oxygen, hydrogen, carbon, nitrogen, and sulfur are normally reported as "delta" (δ) values in parts per thousand (denoted as ‰) enrichments or depletions relative to a standard of known composition. The symbol ‰ is spelled out in several different ways: permil, per mil, per mill, or per mille. The term "per mill" is the International Organization for Standardization term but is not yet widely used (Kendall and Caldwell 1998).

δ values (in ‰) are calculated by

$$\delta = (R_{sample}/R_{standard} - 1)1{,}000 \qquad \text{Equation (11)}$$

where "R" is the ratio of the heavy to light isotope in the sample or standard. A positive δ value means that the sample contains more of the heavy isotope than the standard; a negative δ value means that the sample contains less of the heavy isotope than the standard (Kendall and Caldwell 1998). Various isotope standards are used for reporting isotopic compositions; the compositions of each of the standards have been defined as 0‰. Stable oxygen and hydrogen isotopic ratios are normally reported relative to the SMOW standard, "Standard Mean Ocean Water," (Craig 1961) or the virtually equivalent VSMOW (Vienna-SMOW) standard (Kendall and Caldwell 1998). There are several commonly used ways for making comparisons between δ values. According to Kendall and Caldwell (1998), the three ways shown below are preferred:

- higher versus lower values
- heavier versus lighter (the "heavier" material is the one with the higher value)
- more/less positive versus more/less negative (e.g., -10‰ is more positive than -20‰)

Two stable isotopes of hydrogen (^{1}H and ^{2}H) and three stable isotopes of oxygen (^{16}O, ^{17}O, and ^{18}O) are naturally occurring in water. Of these five stable isotopes, ^{1}H, ^{2}H, ^{16}O, and ^{18}O are abundant in nature and can be easily measured in a laboratory using mass spectrometry.

During phase changes, the ratio of heavy to light isotopes in the molecules in the two phases changes. During evaporation, the heavier isotopes (^{18}O and ^{2}H) are preferentially left behind, and the lighter isotopes are concentrated in the water vapor. As water vapor condenses, the heavier water isotopes (^{18}O and ^{2}H) become enriched in the liquid phase, while the lighter isotopes (^{16}O and ^{1}H) concentrate in the vapor phase (Kendall and Caldwell 1998). This is because the atomic bonds between the heavier isotopes (such as ^{18}O) are stronger than the atomic bonds between lighter isotopes (such as ^{16}O), allowing the lighter isotopes to be preferentially evaporated over the heavier isotopes due to the lower amount of energy required to break those atomic bonds.

Stable isotope data from precipitation samples fall on a line referred to as a meteoric water line. This line is usually plotted with data from local, regional, or global precipitation samples, but can also include surface and groundwater samples (Diamond 2022). When the isotopic compositions of precipitation samples from all over the world are plotted relative to each other on δ ^{18}O versus δ ^{2}H plots, the data form a linear band that can be described by the equation (Craig 1961):

$$^{2}H = 8\ ^{18}O + 10 \qquad \text{Equation (12)}$$

When relatively more of the heavy isotope (e.g., ^{18}O) is present in the sample than the SMOW or VSMOW standard, then the δ value will be greater than zero, whereas samples relatively depleted in the heavy isotope will have negative δ values (Diamond 2022). The δ ^{18}O and δ ^{2}H values of the standard are equal to 0.

For this project, groundwater samples collected during each packer test were submitted to the University of Arizona's Environmental Isotope Laboratory in Tucson, Arizona for analyses of stable isotopes of oxygen and hydrogen (^{18}O and ^{2}H). The results of these analyses (**Appendix J**) can be used to characterize the evaporative history of and possible mixing relationships between the source waters comprising the various FAS hydrostratigraphic units encountered during the POF-31/32 exploratory drilling.

All the Sumica site packer test groundwater samples were depleted relative to VSMOW and all the samples plotted below the global meteoric water line (**Figure 32**). Overall, the groundwater samples from the younger hydrostratigraphic units (OCAPlpz and UFA-upper) were the most depleted relative to VSMOW, and the groundwater samples from the oldest hydrostratigraphic units (GLAUClpu and the LFA-upper) were the least depleted relative to VSMOW, with the remaining samples falling in between these two end member groups.

The ranges of stable water isotope ratios in the groundwater samples from the Sumica are as follows: δ ^{18}O ranged from -2.5 to -1.6 ‰, and δ ^{2}H ranged from -12.8 to -5.6 ‰. The stable water isotope results mostly cluster by hydrogeologic unit, indicating that the climatic conditions during recharge to each hydrostratigraphic unit were not identical. **Figure 32** shows that δ ^{18}O and δ ^{2}H become increasingly positive in the GLAUClpu and the majority of the LFA-upper samples, and are more enriched than the OCAPlpz, UFA-upper, MCU_I, and APPZ samples, possibly indicating that the LFA-upper and GLAUClpu source waters underwent more evaporation than the water in the OCAPlpz, UFA-upper, MCU_I, and APPZ.

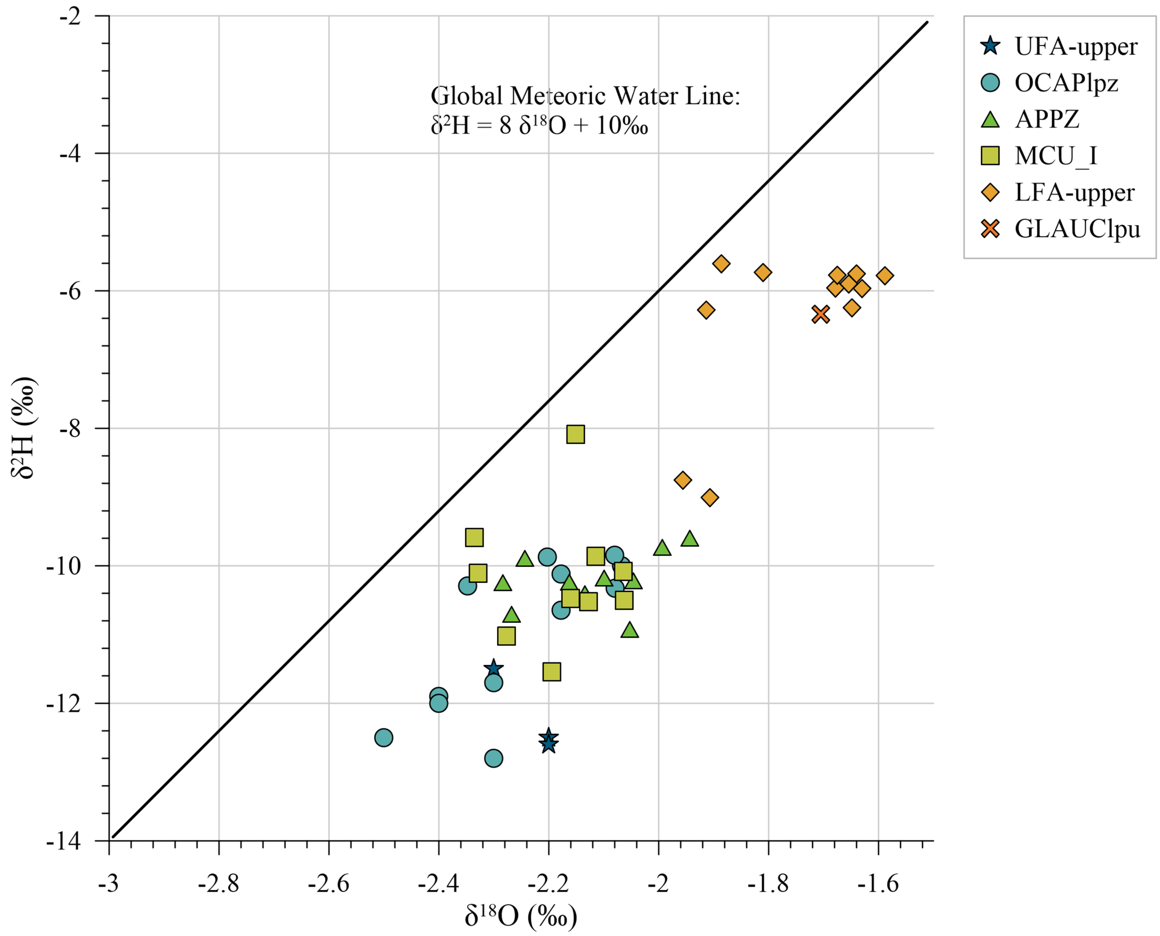


Figure 32. Stable isotopic ratios of ^{2}H and ^{18}O at the Sumica site.

GEOPHYSICAL AND OPTICAL BOREHOLE IMAGING LOGGING

Geophysical logging was completed by RMBaker, LLC to provide a continuous record of the geophysical properties of the borehole. These data were used for casing seat depth selection, identification of potential production and confining zones, and identification and characterization of hydrostratigraphic units.

OBI logging was completed by the USGS at POF-31 and POF-32, providing a visual record that clearly shows the structural characteristics of the rock exposed along the borehole walls. The OBI logs provided additional information on the rock's porosity, flow zones, confining zones, and structure that may not be as evident in the recovered core.

Table 9 summarizes the geophysical and OBI logs completed during this investigation. All the geophysical and OBI logs are provided in **Appendices D** and **E**. Brief descriptions of key information from the logging program are in the following sections.

Table 9. Geophysical log inventory for the Sumica site investigation.

	POF-31		POF-32				
Date	Mar 24, 2020	Sep 10, 2020	Oct 30, 2020	Nov 3, 2020	Jan 28, 2021	Feb 16, 2021	Apr 9, 2021
Logging Company	RMBaker	RMBaker	USGS	RMBaker	RMBaker	USGS	RMBaker
Corehole Diameter, inches	6	10	10	10	4	6	6
Logged Interval, ft bls	0–285	270–900	270–1,409	0–1,409	1,410–2,000	1,410–1,840	1,410–1,840
Caliper	✓	✓		✓	✓		✓
Natural Gamma	✓	✓		✓	✓		✓
Single-Point Resistivity	✓	✓		✓	✓		✓
Normal Resistivity	✓	✓		✓	✓		✓
Dual Induction/ Spontaneous Potential	✓	✓		✓	✓		
Sonic Porosity	✓	✓		✓			✓
Flow Meter		✓		✓			✓
Temperature		✓		✓	✓		✓
Fluid Resistivity		✓		✓	✓		✓
Downhole Video		✓		✓			✓
Optical Borehole Imaging			✓			✓	
	✓	Logged under flowing artesian conditions		✓	Logged under static conditions		

ft bls = feet below land surface; USGS = United States Geological Survey.

Figure 33 is a composite of the key geophysical logs collected from the POF-31/32 corehole. Phosphate in the Hawthorn Group was the most likely source for the large spikes on the natural gamma log from approximately 72 to 247 ft bls. Gamma ray counts in this interval averaged 207 counts per second, with spikes up to 828 counts per second. Below 247 ft bls, there was an abrupt decrease in the gamma ray counts, indicative of the base of the Hawthorn Group. The sonic porosity log indicates relatively high porosity at the base of the ICU/Hawthorn Group and through the UFA, with an overall decrease in sonic porosity through the underlying OCAPlpz.

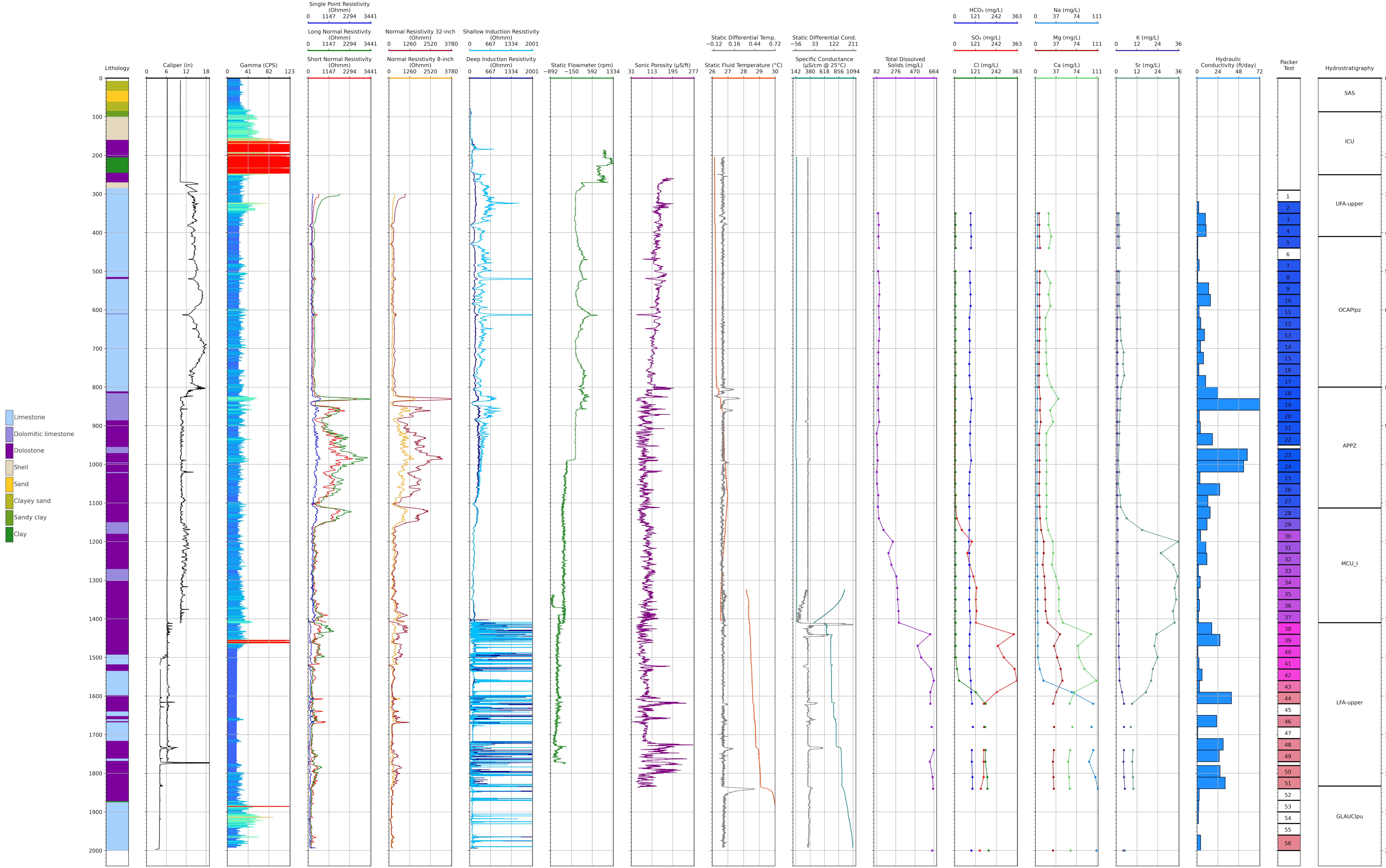


Figure 33. Selected Sumica site geophysical logs, packer test hydraulic conductivities, groundwater ionic trends, and hydrostratigraphic units.

Above the top of the APPZ, from 300 ft bls to approximately 800 ft bls, most of the geophysical logs show consistent, relatively low readings (**Figure 33**). The caliper log shows enlarged zones within softer and/or fractured intervals. The sonic porosity log shows some variability through this zone, and an overall decrease in porosity to 800 ft bls, and fluid temperature remained consistent. Fluid conductivity remained relatively constant at approximately 140 µS/cm to a depth of approximately 885 ft bls. Long-normal resistivity increases from a fairly constant resistivity of approximately 340 ohm-m until it reaches its maximum value recorded at the Sumica site, which was approximately 3,400 ohm-m at a depth of approximately 830 ft bls. From 830 to 1,175 ft bls, within the APPZ, the long-normal resistivity and resistivity logs remain elevated with a few decreased resistivity intervals at 837 ft bls, 885 ft bls, and 1,100 ft bls. Below a depth of approximately 1,175 ft bls, the resistivity and long-normal resistivity logs both decrease and become more consistent, with long-normal resistivities remaining close to approximately 400 ohm-m with only minor fluctuations.

From 800 ft bls to approximately 1,120 ft bls, the sonic log shows an increase in variability with rapid cycling between high and low readings as compared to the readings from shallower depths (**Figure 33**). Spikey caliper deviations increased in magnitude and frequency through this interval, indicating fractured, well indurated rock. These changes are caused by a change in lithology from mudstone to hard, brittle dolostone of the APPZ. From approximately 850 to 1,150 ft bls, the dual induction log also shows an increase in resistivity. From 987 to 1,100 ft bls, fluid conductivity increased from approximately 765 to 1,170 µS/cm, before decreasing to approximately 920 µS/cm at 1,400 ft bls. The fluid temperature also increased from 26.28 °C at 800 ft bls, then increased to a maximum of 27 °C at 1,077 ft bls, followed by a decrease to 26.88 °C at 1,113 ft bls. The bottom 38 ft of this interval, from 1,112 to 1,150 ft bls, provides vertical confinement due to its very low porosity and lack of significant fracturing.

From 1,150 to 1,400 ft bls, sonic porosity is more consistent and slightly higher than in the APPZ, and the gamma log is consistent (**Figure 33**). The variability in caliper deviation increases in this interval, indicative of varying degrees of induration. The rock in this interval was well indurated to poorly indurated dolomitic limestone, limestone, and dolostone. Starting at approximately 1,415 ft bls, the fluid conductivity steadily increased from a low of 472 µS/cm in a stair-stepped pattern to the bottom of the corehole, where it reached a maximum of approximately 1,206 µS/cm.

In the upper portion of the LFA-upper, more changes were recorded on the geophysical logs. Between 1,425 and 1,535 ft bls, the shallow and deep dual induction logs rapidly cycled between very high resistivity readings and low to moderate resistivities, as opposed to the curves recorded above and below this interval which recorded less rapid cycling in the resistivity measurements (**Figure 33**). This overall zone of rapid cycling between low and very high dual induction resistivities is grouped into three intervals when the entire interval is looked at as a whole. The shallow dual induction profiles in this interval reflect the invaded zone of the rock, whereas the deep dual induction curves should represent the "true" resistivity for the uninvaded rock. These three intervals of rapid cycling in the dual induction logs extend from 1,405 to 1,535 ft bls, 1,598 to 1,673 ft bls, and 1,715 to 1,802 ft bls and roughly coincide with the three flow zones identified in the LFA-upper (1,410 to 1,463 ft bls, 1,603 to 1,669 ft bls, and 1,722 to 1,833 ft bls). In addition, the bottom two intervals of elevated dual induction resistivities (1,598 to 1,673 ft bls, and 1,715 to 1,802 ft bls) correspond with zones of relatively high sonic porosity and were (mostly) described as dolostone, both of which could cause elevated resistivity responses, depending on how fresh the groundwater is that is contained in the rock's pore spaces. The sonic porosity shows longer, higher travel times that correlate with the elevated deep dual induction log traces for the deepest two LFA-upper flow zones (1,603 to 1,669 ft bls, and 1,722 to 1,833 ft bls), indicating fluid-filled porosity in these two productive intervals. These described changes in the dual induction, resistivity, and sonic porosity logs also correlate with the changes in packer test hydraulic conductivities through this interval (**Figure 33**).

The long-normal resistivity log also recorded relatively higher resistivities and variable readings between approximately 1,410 and 1,437 ft bls, where it reached a maximum of 1,432 ohm-m, and between 1,442 to 1,450 ft bls, and 1,470 to 1,500 ft bls (**Figure 33**). These elevated resistivity zones were followed by a significant decrease in resistivity to 9 ohm-m at 1,519 ft bls. Below this depth, the long-normal resistivity increased and remained fairly constant at approximately 190 to 200 ohm-m, with slightly elevated long-normal resistivity zones from 1,657 to 1,662 ft bls, 1,740 to 1,755 ft bls, and 1,780 to 1,832 ft bls. All these elevated long-normal resistivity intervals are found within the rapid cycling, elevated deep dual induction resistivity zones. The sonic porosity through this interval (1,405 to 1,715 ft bls) was slightly lower than in the zones above and below, with slightly more variability and rapid cycling in the porosity measurements.

From 1,454 to 1,465 ft bls, there are two closely spaced spikes in the gamma log (**Figure 33**). These spikes are associated with a significant increase in dark, black organic layers observed in the recovered core (**Figure 34**).

From 1,475 to 1,778 ft bls, there is a significant reduction in gamma ray counts coupled with increased sonic porosity readings and variability (**Figure 33**). The caliper log is nearly gauge (indicative of hard, well indurated rock), with major deviations at 1,615, 1,733 and 1,773 ft bls where the rock is fractured or where there is dissolution along bedding planes. The highest porosity is associated with these dissolution features. Below a depth of 1,905 ft bls, only the shallow induction resistivity displays the rapid cycling and high resistivities. The deep induction logs do not record elevated resistivities as they did in the LFA, possibly indicating that the shallow induction resistivity recorded fluid infiltration into the rock, whereas the deep induction is recording values closer to the "true" resistivity for the uninvaded portion of the limestone below 1,900 ft bls. The diameter of the sonic porosity tool limited data collection to the final reamed borehole, so sonic porosity was not able to be collected below 1,836 ft bls.

The characteristic gamma log signature of the glauconitic marker unit (Duncan 1994) was recorded between depths of 1,778 and 2,000 ft bls (**Figure 33**). At the Sumica site, the glauconitic marker horizon correlation point on the gamma log (after Reese and Richardson 2008) was identified at a depth of 1,883 ft bls. Two spikes in the dual induction log were recorded in the GLAUClpu at approximately 1,850 and 1,880 ft bls. Fluid temperature showed a steady increase with depth between the base of the MCU_I until near the top of the GLAUClpu, where the fluid temperature increased from about 26.64 °C to 26.97 °C at a depth of 1,843 ft bls. From that depth to the bottom of the corehole, the fluid temperature increased steadily to 27.35 °C. The long-normal resistivity decreased at 1,835 ft bls and remained relatively low at around 120 ohm-m through the remainder of the GLAUClpu.

Figure 34. Soft, black organic layers between 1,460 and 1,470 ft bls at POF-31.

The November 3, 2020 geophysical logs were collected under artesian conditions. A natural discharge rate of approximately 860 gpm was calculated for the well based on the vertical height of the water jet above the top of the 10-inch-diameter casing (Driscoll 1986, App. 16.F). **Figure 35** shows the flow produced from the base of the casing (270 ft bls) to a depth of approximately 1,080 ft bls. The caliper adjusted down dynamic flowmeter logs show several intervals of flow. The flows are given as gpm and as a percentage of the artesian flow observed at the surface. Upward flow as recorded by a downward descending flowmeter is shown as a reduction in the flowmeter's spinner rate, so the intervals that show a decrease in flow are the intervals that are contributing to the artesian flow. When adding up the percentage of flow for these zones contributing flow, it is 122% of the artesian flow seen at the surface. From 388 to 461 ft bls, the flowmeter recorded an increase in the tool's spinner rate, indicating that the extra 22% of the recorded flow goes back into the formation at this depth.

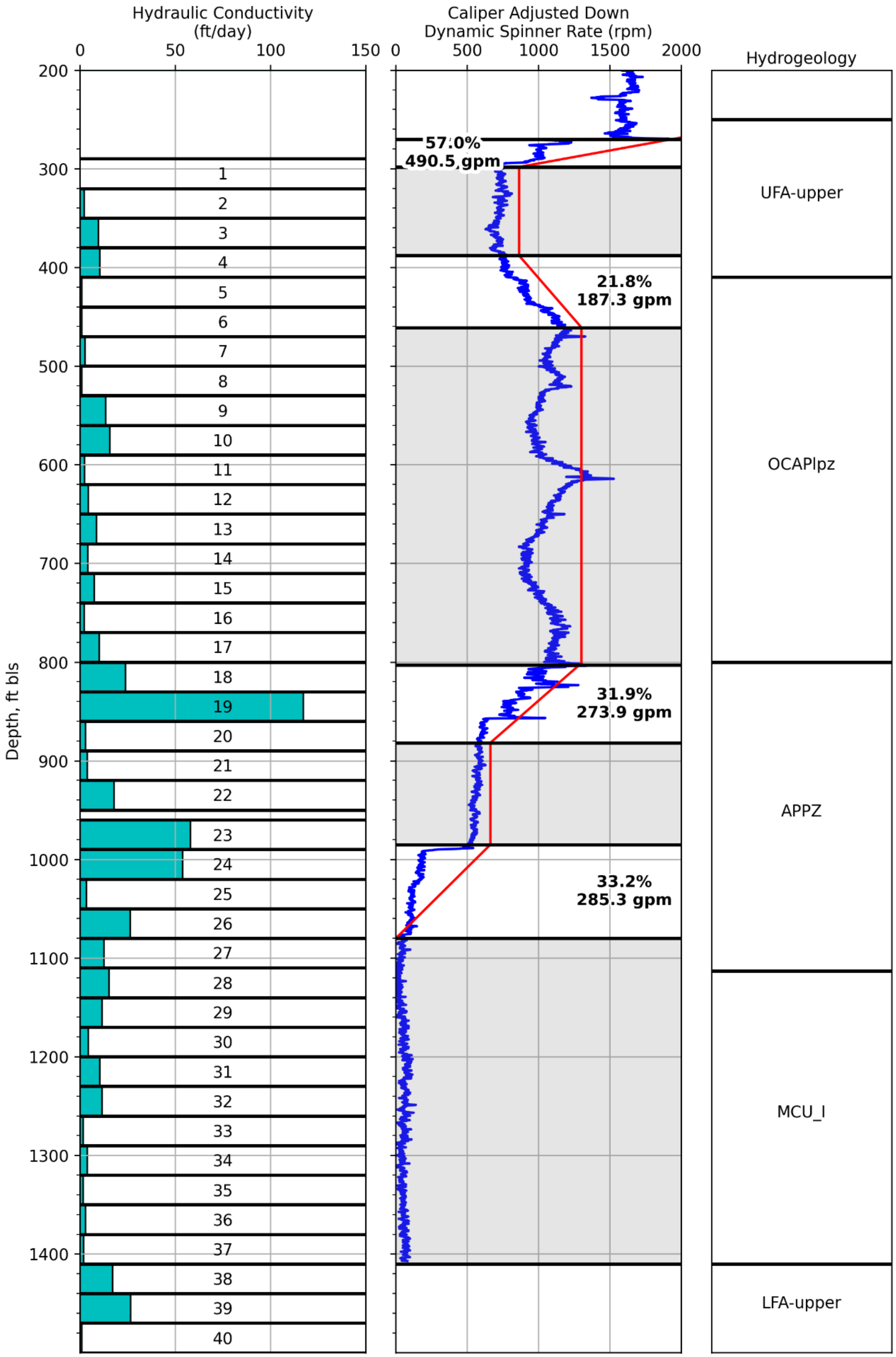


Figure 35. Relative artesian flow contributions versus the distribution of packer test hydraulic conductivities at the Sumica site.

CORE ANALYSES

Seven core samples from lower-permeability sections of the POF-31 and POF-32 coreholes were analyzed by Core Labs in Houston, Texas for horizontal and vertical permeability, porosity, and grain density (**Table 10**). Core Labs analyzed five additional samples for mineralogic composition using X-ray diffraction (XRD) as shown in **Table 11**. Photographs of each sample are presented in **Appendix K**.

Table 10. Summary of Sumica site core analyses and comparison with sonic log porosity.

Sample Depth, ft bls	Lithology	Grain Density, g/cm^3	Percent Porosity			Hydraulic Conductivity	
			Horizontal	Vertical	Sonic Log	Horizontal, ft/d	Vertical, ft/d
642.5	Limestone - Wackestone	2.692	40.14	40.12	41	0.12	0.15
705.0[a]	Limestone - Wackestone	2.701	42.20	48.70	36	1.66	N/A
1,277.8[b]	Dolostone	2.836	37.29	34.46	40	0.29	0.11
1291.3[b]	Dolomitic - Limestone	2.837	29.64	36.30	27	0.21	0.74
1,310.9	Dolomitic - Limestone	2.846	28.81	N/A	29	0.01	N/A
1,891.9	Limestone - Wackestone	2.696	27.74	28.93	N/A	0.02	0.02
1,984.3	Clayey Limestone - Wackestone	2.701	26.33	23.17	N/A	0.09	0.01

d = day; ft = feet; ft bls = feet below land surface; g/cm^3 = grams per cubic centimeter.
[a] Vertical sample was too short: porosity less reliable.
[b] Vuggy sample.

Omitting the questionable vertical porosity from 705 ft bls due to the sample being too short for accurate testing, porosity ranged from 23% to 43%. Those values are typical for the FAS, which generally falls on the high end of the porosity spectrum for carbonate rocks. The generally high porosity was comparable to that derived from the sonic porosity log (available above 1,840 ft bls) using the Hunt-Raymer correction for limestone or dolostone. Except for the 705 ft bls sample, permeabilities were less than 1 ft/d. The laboratory core analyses results represent matrix permeability for each sample, in contrast to the packer test results, which represent the bulk permeability of the matrix and secondary dissolution features. The horizontal permeabilities from these seven laboratory analyses are 84% lower on average than was calculated for the packer test intervals they represent. While dramatic, this is not entirely unexpected, as the packer test intervals span 30-foot-long sections of rock, whereas the tested core samples are less than 1 foot long, which could cause the laboratory results to be significantly higher (or lower) than the “bulk” hydraulic conductivities obtained from analyses of packer test data.

Table 11 summarizes the XRD whole rock and clay mineralogy results. The 1,278.2 ft bls sample (transmissivity of 49 ft^2/day) was from one of the lower-permeability packer test intervals within the MCU_I. It was expected from regional mapping that the lithologically distinct evaporitic facies of the MCU (MCU_II) would be found at the Sumica site close this depth. However, significant amounts of evaporites were not identified in the Sumica site cores, and tested hydraulic conductivities were generally higher than observed in MCU_II samples. Because it was possible that evaporites might be present within the rock’s pores and not visible to the naked eye, a sample collected from 1,278.2 ft bls was analyzed using XRD. The XRD results did not indicate that evaporitic material was present; rather, the sample was composed almost entirely of pure dolomite with no evaporitic components.

Table 11. Whole rock and clay mineralogy XRD results for the Sumica site samples.

Hydrogeologic Unit	Sample depth, ft bls	Whole Rock Mineralogy (Weight %)							Clay Mineralogy (Weight %)	
		Quartz	Strontianite	K-Feldspar	Calcite	Dolomite (Mg-Fe)	Pyrite	Total Clay	Illite and Mica	Chlorite
MCU_I	1,278.2	0.6	0.0	0.0	0.0	99.4	0.0	0.0	--	--
MCU_I	1,380.0	0.9	93.7	0.0	0.0	5.4	0.0	0.0	--	--
GLAUClpu	1,907.8 (bulk)	2.2	0.0	1.0	96.2	0.0	0.5	0.0	--	--
	1,907.8 (white mineral only)	60.9	0.0	3.2	0.0	35.9	0.0	0.0	--	--
GLAUClpu	1,911.4	0.6	0.0	0.0	30.7	67.6	0.0	1.1	1.1	0.0

Fe = iron; ft bls = feet below land surface; GLAUClpu = low-permeability glauconitic marker unit; K= potassium; MCU_I = middle confining unit I; Mg = magnesium.

Two mineral samples collected from vugs at depths of 1,380 and 1,907 ft bls (**Figure 36**) were analyzed using XRD to identify the crystals within the vugs at those depths. Calcite, anhydrite, and gypsum are the most frequently identified minerals within the FAS, but less common minerals may also be present. XRD analysis identified the mineral in the 1,380 ft bls sample as strontianite ($SrCO_3$). The mineral occurred as a nodule (~1" in diameter) within microcrystalline dolostone. The mineral had a vitreous luster and fluoresced yellow under ultraviolet light. Groundwater samples collected from this portion of the corehole were supersaturated with respect to strontianite as discussed earlier. Field tests for hardness led to a preliminary identification of the vug-filling white mineral in the 1,907.8 ft bls sample as quartz. XRD analysis confirmed that the mineral was quartz. Zydek (2020) reported crystalline quartz as an accessory mineral within the Avon Park and Oldsmar Formations in a Sumter County corehole and noted that the quartz appeared to occupy vugs previously infilled with gypsum.

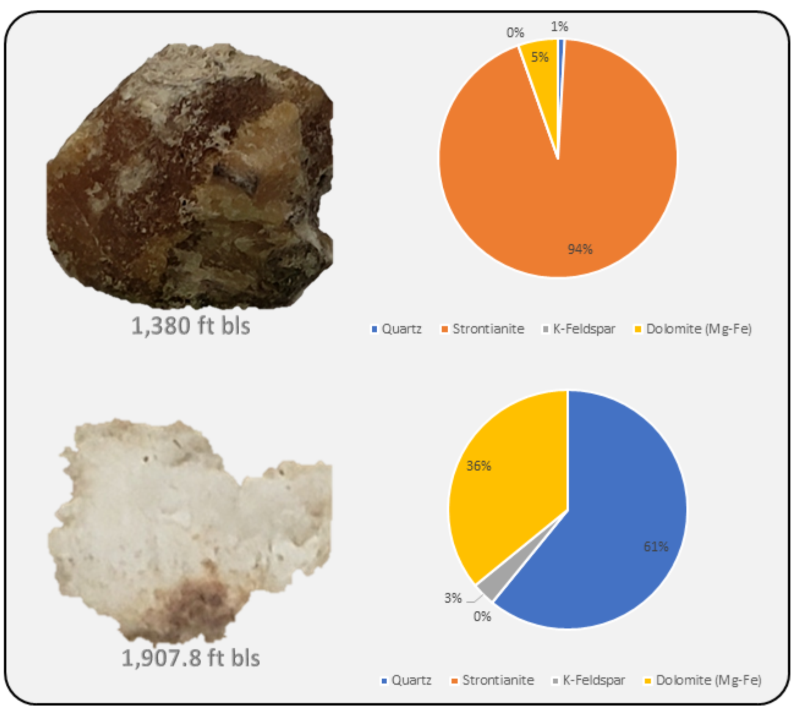


Figure 36. Composition of Sumica site crystal samples.

WATER LEVELS

At the end of each packer test, the depth to water in the drill pipe was measured using a water level meter once the water levels had stabilized. These recovery water levels reflect the static water levels within each tested interval. Changes in recovery water levels can indicate changes in confinement and vertical gradients. Groundwater elevations calculated from recovery depth-to-water measurements collected at the end of each packer test are represented by the black-colored time series in **Figure 37**. To compare these recovery water levels with local water levels in the FAS, the recovery water levels were converted to elevations (ft NGVD29) and compared to the groundwater elevations from the closest cluster of FAS monitoring wells. The closest FAS well cluster POF-27U, POF-27L, and POF-29 (refer to Richardson et al. 2013) is located at Camp Mack Road site (Site B), approximately 8 miles north of the Sumica site (**Figure 38**). Wells POF-27U, POF-27L, and POF-29 monitor the UFA-upper, APPZ, and LFA-upper, respectively. The groundwater elevations that were recorded in these monitor wells at the same time as the packer test recovery water levels collected at the Sumica site are plotted at the midpoint depth of each packer test in **Figure 37**.

The hydrostratigraphic units at the Sumica site are shown as vertical shaded bars in **Figure 37**, with the UFA-upper shaded blue to match the blue-colored time series for UFA-upper monitor well POF-27U. Similarly, the Sumica APPZ interval and the APPZ monitor well POF-27U are shown in green, and the Sumica LFA-upper interval and the LFA-upper monitor well time series are shown in red.

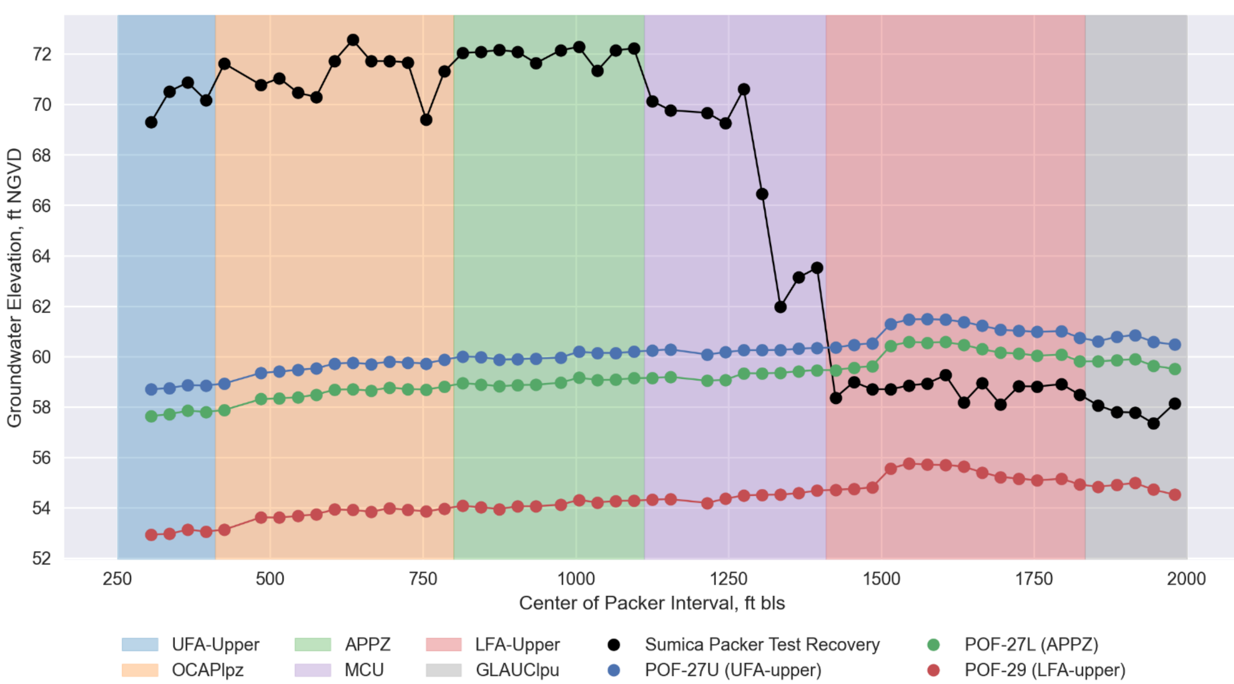


Figure 37. POF-31/32 packer test recovery groundwater elevations compared to POF-27 and POF-29 groundwater elevations collected during the same time period.

Through the UFA-upper and the upper half of the OCAPlpz (test 1 through test 10, from 290 to 590 ft bls), the packer test recovery groundwater elevations at POF-31/32 (**Figure 37**) showed consistent elevations that varied between approximately 70 and 71 ft NGVD29. The variations in recovery groundwater elevations within the OCAPlpz likely reflect the relatively heterogenous lithologic and hydraulic characteristics of this unit, with some portions of this unit acting more strongly as confining units than other portions of the OCAPlpz.

From 590 ft bls through the remainder of the OCAPlpz and APPZ (through the ending depth of 1,110 ft bls in test 27), the recovery groundwater elevations rose slightly and remained relatively constant at an elevation of approximately 72 ft NGVD29, except for the recovery groundwater elevation of 69.41 ft NGVD29 recorded at the end of test 16 (740 to 770 ft bls). This groundwater elevation was lower than the other recovery groundwater elevations measured through the lower part of the OCAPlpz and into the APPZ. This is likely due to the relatively lower transmissivity of that interval (64 ft^2/day) as compared to the surrounding intervals, which ranged from 84 to 3,589 ft^2/day.

The first recovery groundwater elevation measured within MCU_I (test 28) was approximately 2 ft higher than the elevation recorded in the last packer test within the overlying APPZ (test 27). The recovery groundwater elevations measured within MCU_I showed a pattern of decreasing, stepped recovery groundwater elevations through the entire unit. A downward hydraulic gradient was present through MCU_I, with recovery groundwater elevations decreasing by a maximum of 8.16 ft between packer test 28 (at the top of MCU_I) and packer test 35 (1,320 to 1,350 ft bls) near the bottom of MCU_I. The recovery groundwater elevations for the last two packer tests completed to the base of MCU_I (between 1,350 and 1,410 ft bls) rose 1.55 ft as compared to the other MCU_I recovery groundwater elevations. This stepping groundwater elevations pattern roughly followed the changes in the calculated transmissivities of each packer test, with relatively higher transmissivity tests corresponding with relatively higher recovery groundwater elevations, and lower transmissivity tests corresponding with relatively lower recovery groundwater elevations.

Within the LFA-upper, the recovery water levels once again stabilized at an average elevation of 58.74 ft NGVD29, only varying by 1.16 ft.

Within the GLAUClpu, the recovery groundwater elevations declined slightly, averaging 57.94 ft NGVD29 with only 1.13 ft of variation in recovery groundwater elevations during the final six packer tests.

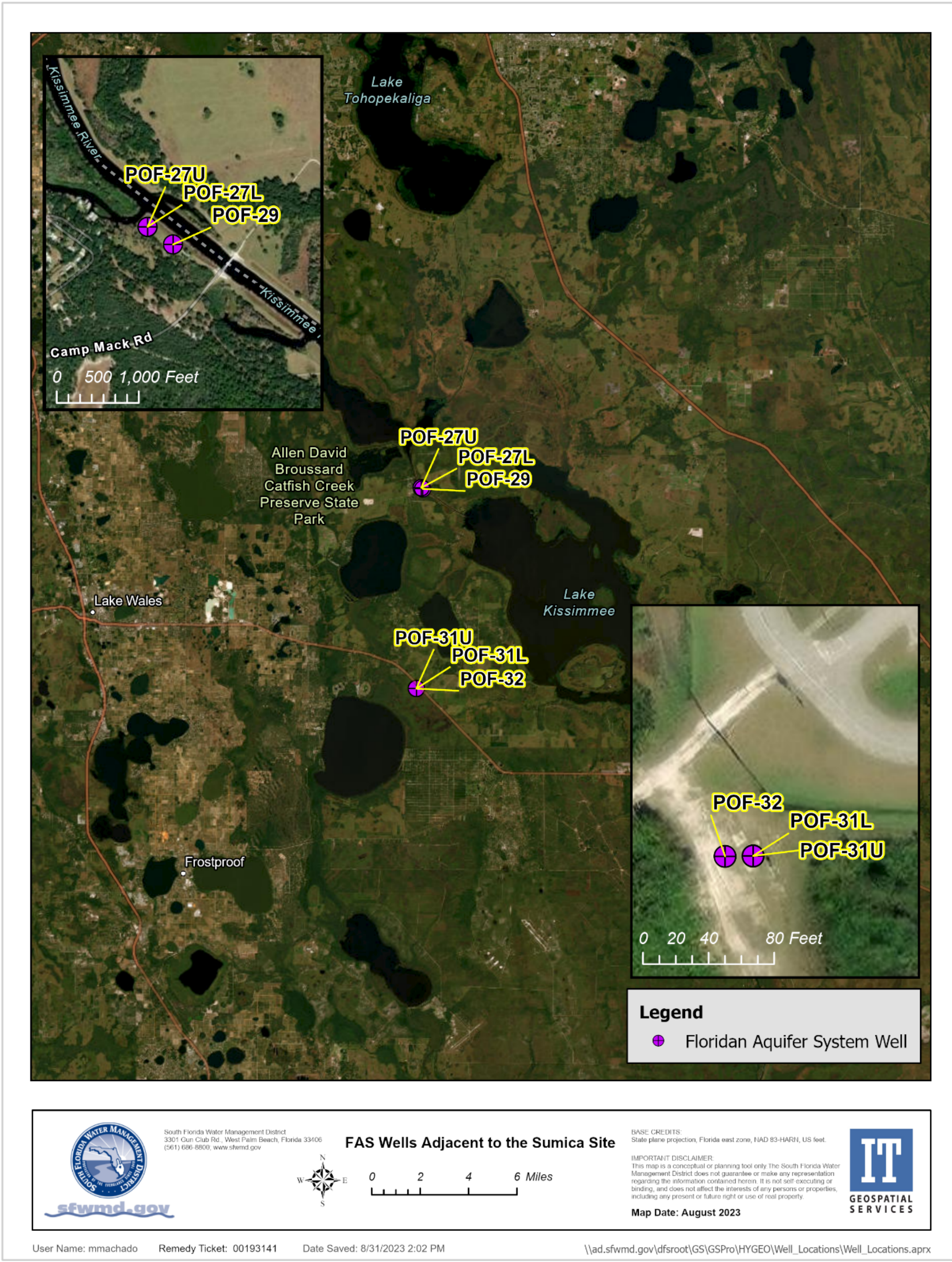


Figure 38. Locations of FAS wells at the Sumica site and nearby FAS wells POF-27U, POF-27L, and POF-29 at the Camp Mack Road site.

After construction, pressure transducers were installed in all three of the new monitoring zones, programmed to collect groundwater elevations at 15-minute intervals, and wired into the District's SCADA system. **Figure 39** is a groundwater elevation time-series plot for Sumica site wells POF-31U, POF-31L, and POF-32 combined with groundwater elevations from nearby FAS wells at the Camp Mack Road site (wells POF-27U, POF-27L, and POF-29, **Figure 38**). **Figure 39** shows seasonal variations in groundwater elevations, with the highest groundwater elevations being recorded during the wet season of each year (September 2021 and October 2022 in **Figure 39**), followed by declining groundwater elevations during the dry season. CFWI groundwater potentiometric surface maps for the UFA produced by the SFWMD for the CFWI region show that groundwater elevations decrease to the east-northeast in the vicinity of the Sumica and Camp Mack Road sites, which is why the Sumica site UFA groundwater elevations are higher than the Camp Mack Road site UFA groundwater elevations.

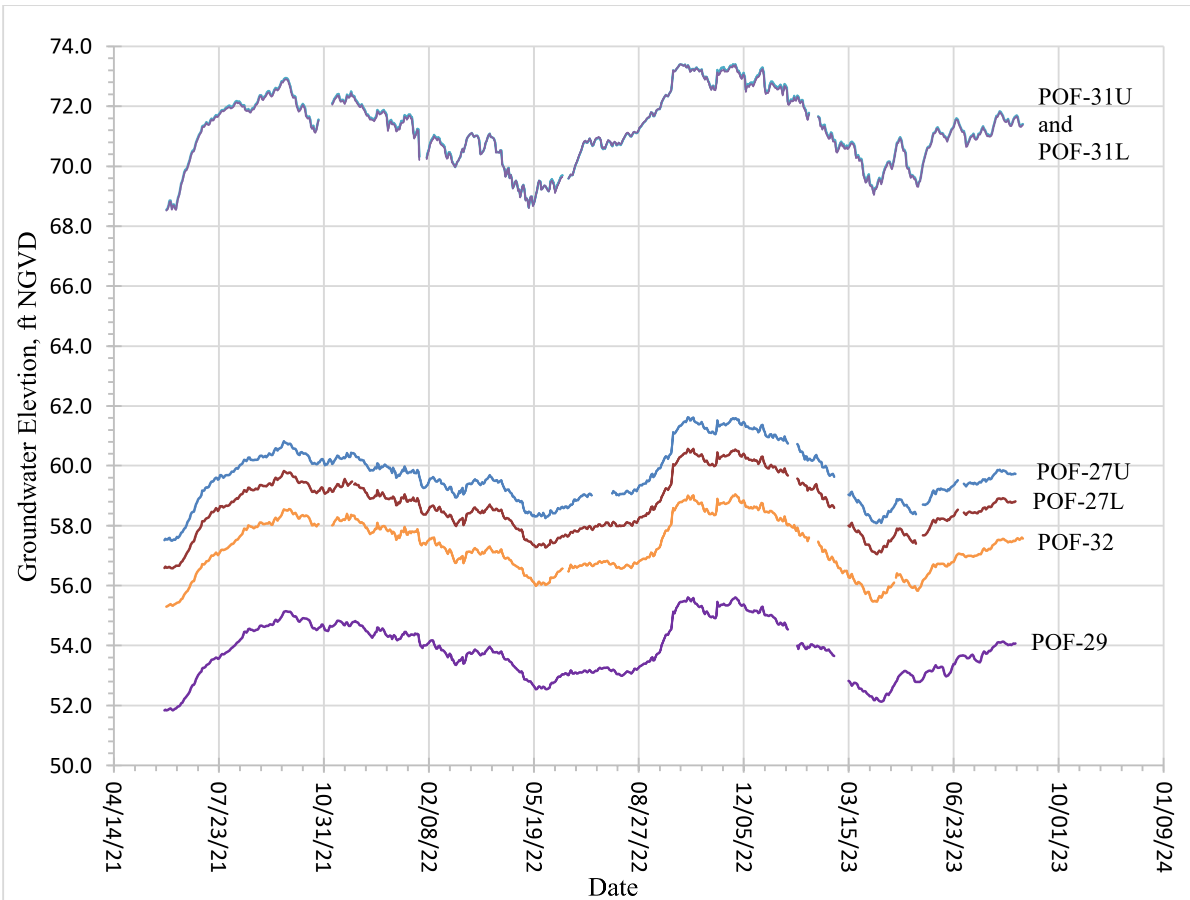


Figure 39. Hydrograph of FAS wells POF-31U, POF-31L, and POF-32 at the Sumica site and nearby FAS wells POF-27U, POF-27L, and POF-29 at the Camp Mack Road site. Elevations shown here are daily mean groundwater elevations. See **Figure 38** for well locations.

As shown in **Figure 39**, the groundwater elevations of POF-31U and POF-31L were nearly identical, with a maximum groundwater elevation difference of 0.11 ft for the period of record shown. These nearly identical groundwater elevations are indicative of the poor hydraulic confinement provided by the OCAPlpz at the Sumica site. The average difference between the groundwater elevations in POF-31L (APPZ) and POF-32 (LFA-upper and GLAUClpu) was 13.95 ft, with POF-32 having the lower groundwater elevation, indicative of good confinement provided by MCU_I. This plot also shows that at the Camp Mack Road site, the confinement between the UFA-upper (POF-27U) and the APPZ (POF-27L) is better than at Sumica, with the average difference in groundwater elevations between POF-27U and POF-27L being 1 foot, with a maximum difference of 1.17 ft. POF-29 is an LFA-upper well and shows the lowest groundwater elevations of all the wells shown in **Figure 39**. All these wells show nearly identical groundwater elevation time series traces and trends both seasonally/long term and often even daily despite the two well sites being about 8 miles apart.

CONCLUSIONS

This investigation was focused on the FAS, in particular the UFA, APPZ, and LFA-upper, to assist with characterizing the hydrostratigraphy, groundwater quality, and productivity of these units. The Sumica site was selected for a number of reasons. First, it filled a data gap in the northwest part of the SFWMD in Polk County where FAS data are sparse. Second, the Sumica site is located at the site of two existing SAS wells, which meant that a more complete picture of the interactions between the SAS, UFA, APPZ, and LFA could be developed with reduced cost. Third, the site was publicly accessible, so no time-consuming access agreements or land acquisitions were required.

Hydrostratigraphic unit boundaries were established for the SAS, ICU, the UFA-upper, OCAPlpz, APPZ, MCU_I, LFA-upper, and the top of the GLAUClpu at the Sumica Site. These boundaries are based on data obtained from continuous wireline coring and packer testing through the FAS, geophysical and OBI logs, and groundwater chemistry data obtained from every successfully completed packer test.

Geologic units encountered during this investigation included undifferentiated Holocene, Pleistocene, and Pliocene sediments, the Peace River and Arcadia formations of the Hawthorn Group, the Ocala Limestone, the Avon Park Formation, and the Oldsmar Formation. The Suwannee Limestone was not encountered. The base of the Oldsmar Formation was not encountered to the total depth drilled (2,000 ft bls) at POF-32.

The exploratory corehole for POF-31 was drilled first and was completed to 1,500 ft bls. This corehole was converted into a dual-zone UFA-upper/OCAPlpz and APPZ monitoring well. The UFA-upper/OCAPlpz monitoring well was named POF-31U and was completed with an annular monitoring zone from 275 to 594 ft bls. The APPZ monitoring well, named POF-31L, was completed with an open-hole interval from 800 to 900 ft bls.

Two significant production zones were identified within the APPZ (named Aphpz-1 and Aphpz-2) between depths of 800 and 857 ft bls and between 958 and 1,023 ft bls, respectively. These two intervals are relatively more fractured and have relatively higher packer test transmissivities than other portions of the APPZ where fractures and deformation features are less prevalent, and productivity is primarily controlled by bedding plane dissolution features and some vuggy porosity.

MCU_I was the only middle confining unit present at the site and was characterized by relatively lower packer test transmissivities as compared to the overlying APPZ and underlying LFA-upper.

Within the LFA-upper, three relatively higher-transmissivity flow zones were identified from 1,410 to 1,463 ft bls, 1,603 to 1,669 ft bls, and 1,722 to 1,833 ft bls. These zones were named LF1, LF2, and LF3, respectively, for discussion purposes in this report.

The geophysical marker for the top of the GLAUClpu was encountered at a depth of 1,833 ft bls in the POF-32 corehole. The GLAUClpu was characterized by relatively low transmissivities and elevated gamma responses. The bottom of this unit was not encountered during this investigation.

The exploratory corehole for POF-32 was cored to 2,000 ft bls following completion of drilling and well installation activities at POF-31. This corehole was converted into an LFA-upper monitoring well, named

POF-32, with an open hole interval from 1,407 to 1,840 ft bls. POF-32's open interval extends approximately 7 ft into the GLAUClpu.

POF-31 and POF-32 were telemetered into the District's SCADA system and are collecting groundwater elevations from each open interval at 15-minute intervals. Groundwater elevation and water quality data can be accessed in DBHYDRO (https://www.sfwmd.gov/science-data/dbhydro), the District's corporate environmental database.

The groundwater elevations recorded at POF-31U and POF-31L were nearly identical for the time period shown in **Figure 39**, with a maximum groundwater elevation difference of 0.12 ft measured between the two wells, indicating that the OCAPlpz is a poor confining unit at the Sumica site. The average difference in groundwater elevations between the LFA-upper (POF-32) and the UFA-OCAPlpz (POF-31U) and APPZ (POF-31L) was about 13.9 ft for the same time period.

All the packer test groundwater samples collected above the MCU were categorized as fresh recharge water using Frazee's classification. From the base of the APPZ to a depth of approximately 1,560 ft bls (within the LFA-upper) at the Sumica site, the groundwater was still fresh according to the Frazee water types classification. However, vertical infiltration was no longer significant, and the primary driver for chemical composition was mineral dissolution. Below 1,560 ft bls, the groundwater samples were categorized as connate water. This connate water is highly mineralized and suggests extended storage and the presence of highly soluble minerals.

Specific conductance measured during packer testing gradually increased to 1,190 µS/cm at the total corehole depth of 2,000 ft bls. It was unexpected to find fresh water at a depth of 2,000 ft bls. Twelve of the groundwater samples collected below a depth of 1,410 ft bls exceeded the USEPA SMCL of 500 mg/L established for TDS (**Appendix J**), and five groundwater samples exceeded the SMCL of 250 mg/L for sulfate (**Table 7**). All the sulfate SMCL exceedances were from groundwater samples collected between depths of 1,410 and 1,610 ft bls (**Table 7**).

The hydraulic conductivities of the FAS, as calculated from the Sumica site packer testing hydraulic data, varied by two orders of magnitude, ranging from 0.83 ft/day in the OCAPlpz (test 8) to 344 ft/day in the APPZ (test 19). The calculated transmissivities in those same zones ranged from 25 ft^2/day (test 8) to 3,589 ft^2/day (test 19). These transmissivities represent order-of-magnitude estimates that are intended for comparison of the relative productivity of each tested interval and are not meant to represent the transmissivity of entire units. As discussed, aquifer performance tests are needed to adequately stress each aquifer and arrive at the most accurate, representative transmissivity for each unit. The calculated ranges in hydraulic conductivities from the packer tests completed in each hydrostratigraphic unit are as follows:

- UFA-upper: 2 to 10 ft/day
- OCAPlpz: 1 to 16 ft/day
- APPZ: 3 to 117 ft/day
- MCU_I: 2 to 15 ft/day
- LFA-upper: 1 to 40 ft/day
- GLAUClpu: All packer tests pumped dry in this low productivity interval.

RECOMMENDATIONS

Aquifer performance tests are recommended to characterize the productivity and aquifer properties of the UFA-upper, OCAPlpz, APPZ, and LFA-upper at the Sumica site. Although the packer testing and data analyses performed for this project were rigorous, these data were collected from 20- to 30-foot-long depth intervals and provide only relative comparisons of the productivity and transmissivity between tested intervals.

An accurate characterization of the hydraulic properties of the entirety of each productive zone identified during this investigation is recommended. This could be achieved by performing constant-rate aquifer performance tests and concurrent groundwater sampling or single-well specific capacity tests. Each aquifer performance test should be conducted at the highest sustainable pumping rates to adequately stress each aquifer so that accurate aquifer parameters can be calculated.

Now that FAS monitor wells POF-31 and POF-32 have been installed in a previously identified FAS data gap, the collected data from these new wells should be integrated into a regional synthesis and correlation with existing FAS wells. Additional FAS drilling, well installation, and testing within the CFWI region could help further resolve differing hydrostratigraphic interpretations between neighboring water management districts and help refine the regional hydrostratigraphic framework and available groundwater resources.

Because the flow zones within the APPZ are highly productive, their regional extent, productivity, thickness, and depths are important for water supply planning and groundwater modeling. There is debate over whether the contiguous single fracture zone prevalent in the northern and western portions of the expanded model area is hydraulically connected to the thinner, bifurcated fracture zones that are more predominant in the south-central and southeast portions of the expanded model area. This uncertainty can only be addressed using data obtained from additional drilling and testing. In addition, discrete groundwater head and water quality data are not available within large portions of the ECFTX model area, further limiting the assessment of the hydraulic continuity of these fracture zones. Consequently, some hydrogeologists lump the fracture zones into a single unit, while others view the deeper fractured zone as part of the LFA. Additional drilling and testing through the APPZ and into the LFA at other CFWI sites would help further characterize the regional extent, thickness, and productivity of fractured intervals within the APPZ (such as APhpz-1 and APhpz-2 at the Sumica site).

The CTD probe used during the POF-31 and POF-32 packer testing was installed within the turbulent zone immediately below the packer assembly intake. This turbulence likely results in a pressure drop where the CTD probe was installed. If the CTD probe (or other pressure transducer) were installed further from the packer assembly intake, then the pressure measurements collected by the probe or transducer would be less impacted by the turbulent flow and more accurate drawdown estimates could be obtained. This hypothesis should be tested during future packer testing programs by replacing the 1-foot-long intake screen/pipe used during this investigation with a 5-foot-long pipe which is only screened across the uppermost foot of the pipe adjacent to the packer testing assembly inlet. Two pressure transducers would then be installed within the 5-foot-long inlet pipe. One pressure transducer would be installed inside the pipe immediately adjacent to the bottom of the screened interval as was done during this investigation. A second pressure transducer would also be installed inside and close to the bottom of the 5-foot-long pipe to isolate the lower transducer from the turbulent flow that occurs at the top of the 5-foot-long pipe and packer assembly inlet. Differences in the pressures measured by these two transducers are expected due to the turbulence induced near the packer assembly inlet and the lack of turbulence farther away from the inlet. It is anticipated that the lower transducer would provide more accurate pressure measurements than the upper pressure transducer. If this is the case, future packer testing programs will utilize this new configuration.

LITERATURE CITED

CFWI Hydrologic Analysis Team. 2016. *Conceptual Model Report: East-Central Florida Transient Expanded (ECFTX) Model*. Central Florida Water Initiative. April 2016.

CFWI Hydrologic Analysis Team. 2020. *Model Documentation Report East-Central Florida Transient Expanded (ECFTX) Model*. Central Florida Water Initiative. February 2020. Available online at https://cfwiwater.com/pdfs/ECFTX_Model_Final_Report_Feb_2020.pdf

Coonts, S. 2021. *Hydrogeologic Investigation at Well OSF-64R for the Central Florida Water Initiative*. Technical Publication WS-59. South Florida Water Management District, West Palm Beach, FL.

Craig, H. 1961. Isotopic variations in meteoric waters. *Science* 133(3465):1,702-1,703.

Davis, J.D. and D. Boniol. 2011. *Grids Representing the Altitude of Top and/or Bottom of Hydrostratigraphic Units for the ECFT 2012 Groundwater Model Area*. St. Johns River Water Management District, Palatka, FL.

Diamond, R. E. 2022. *Stable Isotope Hydrology*. The Groundwater Project, Guelph, Ontario, Canada.

Driscoll, F.G. 1986. *Groundwater and Wells, 2nd Edition*. Johnson Screens, St. Paul, MN.

Duncan, J.G., W.L. Evans III, and K.L. Taylor. 1994. *Geologic Framework of the Lower Floridan Aquifer System, Brevard County, Florida*. Bulletin No. 64. Florida Geological Survey, Tallahassee, FL.

Embry, A.F. and J.E. Klovan. 1971. A Late Devonian reef tract on Northeastern Banks Island, NWT. *Bulletin of Canadian Petroleum Geology* 19(4):730-781.

Finnemore, E.J. and J.B. Franzini. 2002. *Fluid Mechanics with Engineering Applications, 10th Edition*. McGraw Hill, New York, NY.

Frazee, J.M., Jr. 1982. *Geochemical Pattern Analysis: Method of Describing the Southeastern Limestone Regional Aquifer System*. Studies of Hydrogeology of the Southeastern United States, Special Publications Number 1. Georgia Southwestern College, Americus, GA.

Hem, J.D. 1985. *Study and Interpretation of the Chemical Characteristics of Natural Water, 3rd Edition*. Water-Supply Paper 2254. United States Geological Survey, Reston, VA.

Horstman, T. 2011. *Hydrogeology, Water Quality, and Well Construction at ROMP 45.5 – Progress Energy Well Site in Polk County, Florida*. Southwest Florida Water Management District, Brooksville, FL.

Hounslow, A.W. 1995. *Water Quality Data: Analysis and Interpretation*. CRC Press, Boca Raton, FL.

Kasenow, M. 2001. *Applied Ground-water Hydrology and Well Hydraulics, 2nd Edition*. Water Resources Publications, Highlands Ranch, CO.

Kendall, C. and E.A. Caldwell. 1998. Fundamentals of Isotope Geochemistry. Pages 51-86 in: C. Kendall and J.J. McDonnell (eds.), *Isotope Tracers in Catchment Hydrology.* Elsevier, Amsterdam, The Netherlands.

McCartan, L., L.N. Plummer, J.W. Hosterman, E. Busenberg, E.J. Dwornik, A.D. Duerr, R.L. Miller, and J.L. Kiesler. 1988. Celestine ($SrSO_4$) in Hardee and DeSoto Counties, Florida. Pages 129-137 in: G.S. Gohn (ed.), *Proceedings of the 1988 U.S. Geological Survey Workshop on Geology and Geohydrology of the Atlantic Coastal Plain*. United States Geological Survey, Reston, VA.

Miller, J.A. 1986. *Hydrogeologic Framework of the Floridan Aquifer System in Florida and in Parts of Georgia, Alabama, and South Carolina*. U.S. Geological Survey Professional Paper 1403-B. United States Geological Survey, Reston, VA.

NOAA. 2023. *NOWData: Tampa Bay Area, FL*. National Oceanic and Atmospheric Administration, Washington, DC. Available online at https://www.weather.gov/wrh/Climate?wfo=tbw.

Parkhurst, D.L. and C.A.J. Appelo. 1999. *User's Guide to PHREEQC (Version 2)—A Computer Program for Speciation, Batch-Reaction, One-Dimensional Transport, and Inverse Geochemical Calculations*. Water-Resources Investigations Report 99-4259. United States Geological Survey, Denver, CO.

Parkhurst, D.L. and C.A.J. Appelo. 2013. *Description of Input and Examples for PHREEQC Version 3—A Computer Program for Speciation, Batch-Reaction, One-Dimensional Transport, and Inverse Geochemical Calculations*. Techniques and Methods, Book 6, Chapter 43, Section A. United States Geological Survey, Denver, CO.

Peeters, L. 2014. A background color scheme for Piper plots to spatially visualize hydrochemical patterns. *Groundwater* 52(1):2-6.

Reese, R.S. and E. Richardson. 2008. *Synthesis of the Hydrogeologic Framework of the Floridan Aquifer System and Delineation of a Major Avon Park Permeable Zone in Central and Southern Florida*. Scientific Investigations Report 2007-5207. Prepared in Cooperation with the South Florida Water Management District, West Palm Beach, FL. United States Geological Survey, Reston, VA.

Richardson, E., J. Janzen, E. Geddes, A. Dodd, and B. Collins. 2013. *Hydrogeologic Investigation for the Kissimmee Basin Lower Floridan Aquifer Reconnaissance Project, Site B*. Technical Publication WS-33. South Florida Water Management District, West Palm Beach, FL.

Richardson, E., S. Saini, and D. Goch. 2020a. *Hydrogeologic Investigation at the S65 Locks for the Central Florida Water Initiative*. Technical Publication WS-55. South Florida Water Management District, West Palm Beach, FL.

Richardson, E., J. Janzen, and J. Beltran. 2020b. *Hydrogeologic Investigation at the S61 Locks for the Central Florida Water Initiative*. Technical Publication WS-50. South Florida Water Management District, West Palm Beach, FL.

Salter, D.L. and I.M. West. 1965. Calciostrontianite in the basal Purbeck Beds of Durlston Head, Dorset. *Mineralogical Magazine* 35(269):146-150.

Scott, T.M. 1988. *The Lithostratigraphy of the Hawthorn Group (Miocene) of Florida*. Bulletin No. 59. Florida Geological Survey, Tallahassee, FL.

SFWMD. 2019. *Operational Project WQ Monitoring Plan for Central Florida Water Initiative (CFWI)*. SFWMD-FIELD-MP-096-04. South Florida Water Management District, West Palm Beach, FL.

Swamee, P.K. and A.K. Jain. 1976. Explicit equations for pipe flow problems. *Journal of the Hydraulics Division*, American Society of Civil Engineers 102(5):657-664.

Tucker, M.E. and V.P. Wright. 1990. *Carbonate Sedimentology.* Blackwell Science, Oxford, UK.

USEPA. 2024. *Secondary Drinking Water Standards: Guidance for Nuisance Chemicals*. Available online at https://www.epa.gov/sdwa/secondary-drinking-water-standards-guidance-nuisance-chemicals.

Warren, J.K. 2006. *Evaporites: Sediments, Resources, and Hydrocarbons*. Springer-Verlag, Berlin.

West, I. 1973. Vanished evaporites—Significance of strontium minerals. *Journal of Sedimentary Petrology* 43(1):278-279.

Yang, J., H. Liu, Z. Tang, L. Peeters, and M. Ye. 2022. Visualization of aqueous geochemical data using Python and WQChartPy. *Groundwater* 60(4):555-564.

Zydek, J. 2020. *Hydrogeology, Water Quality, and Well Construction at the ROMP 115 – Royal Well Site in Sumter County, Florida*. Southwest Florida Water Management District, Brooksville, FL.

APPENDICES

APPENDIX A:
SFWMD SURVEYOR'S REPORT
CFWI DMIT WETLANDS WELL – SUMICAN

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

SURVEYOR’S REPORT

CFWI DMIT Wetlands Well - SUMICAN

Report Prepared by: Elvie Ebanks
Date: 5/24/2021
Party Chief: Elvie Ebanks
Field Work Date: 5/20/2021
SCADA – Field Operations

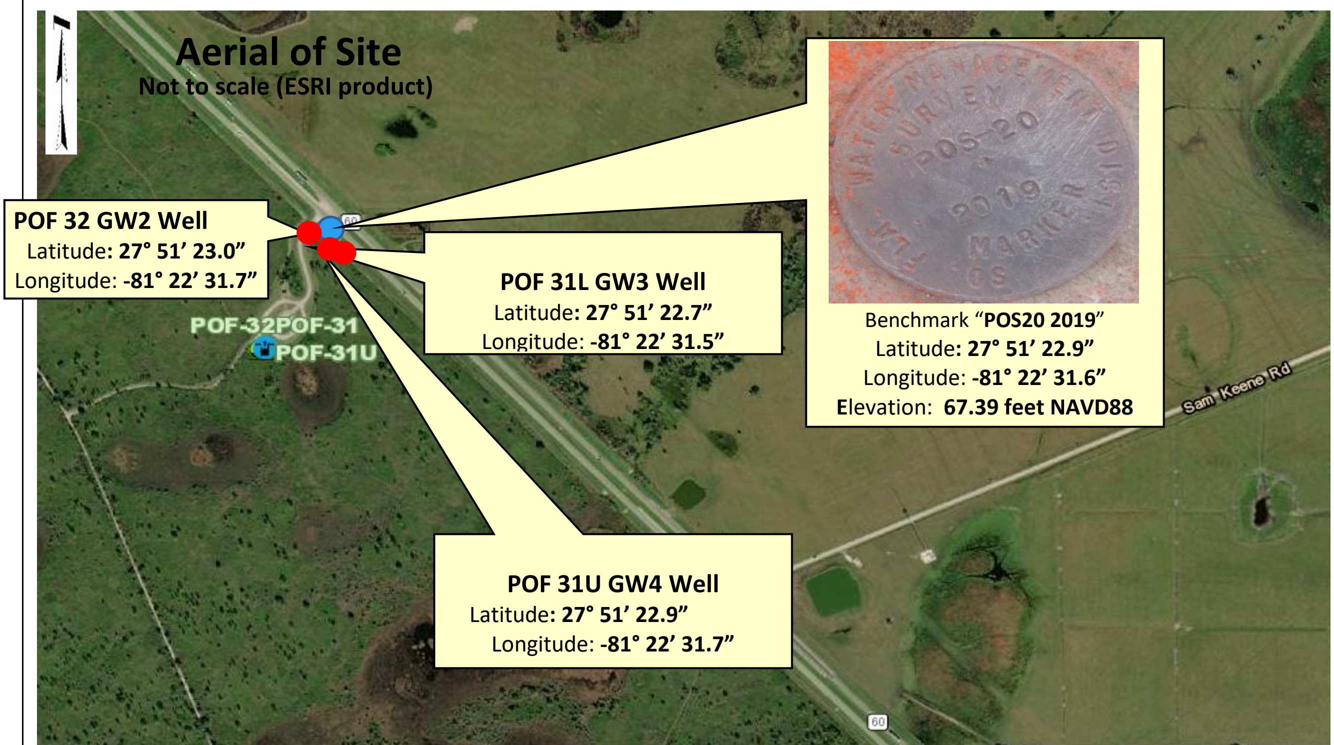
OVERVIEW OF THE PROJECT

PURPOSE

The purpose of this Survey is to establish Reference Elevations for monitoring wells by establishing NGS Third order elevations referring to both the North American Vertical Datum of 1988 (NAVD-88) and the National Geodetic Vertical Datum of 1929 (NGVD-29) at the site.

LOCATION OF PROJECT

Legend: Benchmarks = ● Well(s) = ●



VERTICAL DATUM FOR THE PROJECT

The vertical datum for the project is the North American Vertical Datum of 1988. For correlation with older data sets, the elevations of the benchmarks are also shown in the National Geodetic Vertical Datum (NGVD) of 1929. The NGVD 29 elevations were derived using data from published NGS superseded values when applicable, otherwise values provided by the South Florida Water Management District in a file named

"NGVD29.txt" were used. The linear unit for all elevations is the U.S. survey feet unless otherwise stated.

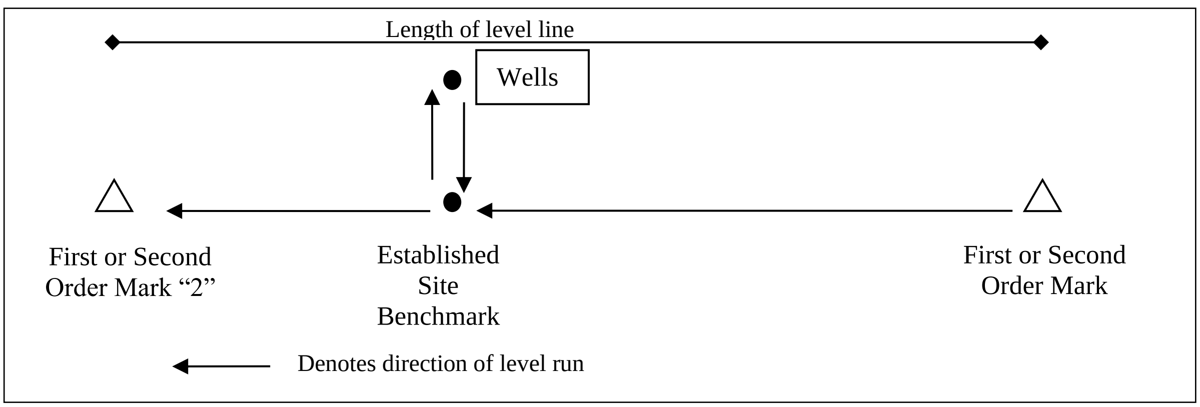
LEVELING METHODS

CONFIGURATION OF LEVEL RUNS

The leveling for the project was performed in accordance with the Federal Geodetic Control Subcommittee standard for Second-Order, Class II geodetic leveling. A brief description of the procedures used is as follows. The run was started at one of the First or Second Order marks and continued through the existing reference point established at the well and closed on the original First or Second Order vertical mark. (see Figure 1. below).

For each well site, a closed loop was run from an established Third Order vertical mark (Site Benchmark).

Figure 1 Typical Level Run Pattern



The FGCS maximum allowable misclosure for this type of run is 0.03' multiplied by the square root of the length of the line in miles.

ESTABLISHING REFERENCE ELEVATION FOR WELL

For Ground Water Well Site (Water Quality/USGS):

- Verify site benchmark elevation using second benchmark
- Set-up level
- Obtain back site for site benchmark
- Obtain elevation for mark set on well head denoted as "reference point"
- Obtain elevation for verification port(s)
- Obtain elevations for corners of concrete well pad, if applicable
- Obtain elevations for natural ground on four (4) sides of well
- Break set-up (with level)

- Obtain back site elevation for mark set on well head denoted as “reference point(s)”
- Close level run on site benchmark

EQUIPMENT USED

All leveling was performed with a conventional level and 25-foot rod.

HORIZONTAL LOCATIONS

INTRODUCTION

The following instrument was used for the GPS observations:

(1) Garmin GPSMAP78 hand-held unit

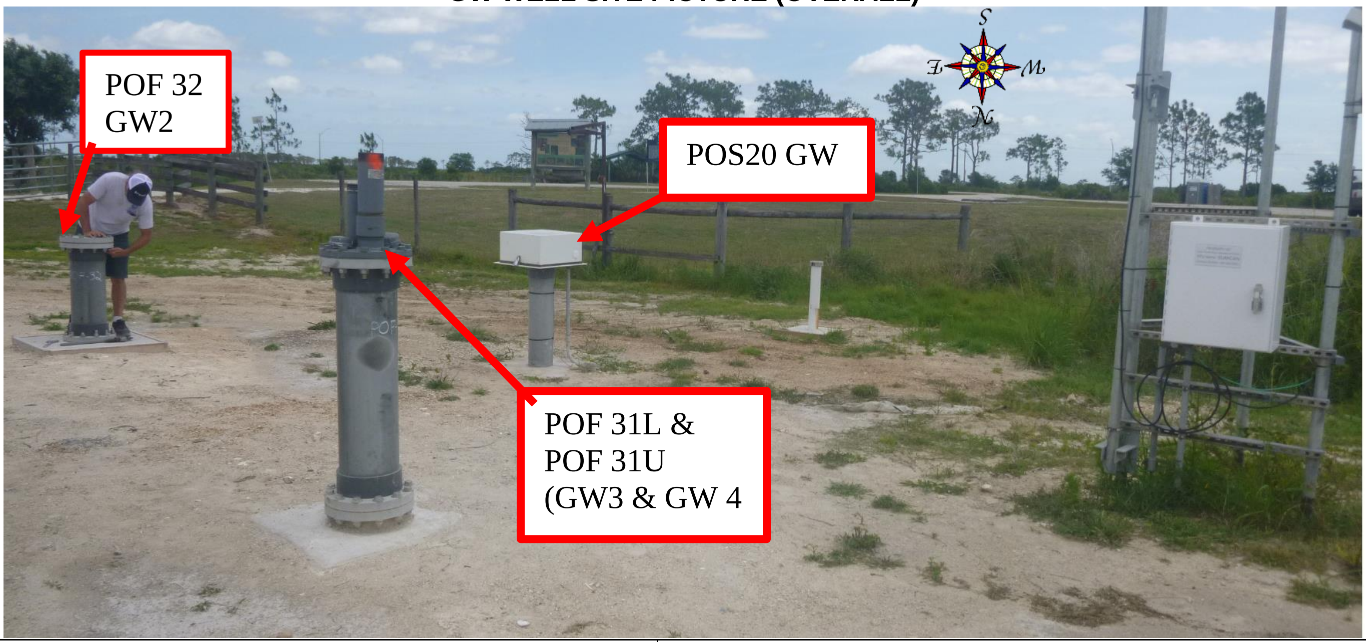
Description	X, (Easting) Coordinates	Y, (Northing) Coordinates	Latitude (DD MM SS.SS)	Longitude (DD MM SS.SS)
Site BM POS20 2019	N/A	N/A	27° 51’ 22.9”	-81° 22’ 31.6”
POF 32 GW2 Well	N/A	N/A	27° 51’ 23.0”	-81° 22’ 31.7”
POF 31L GW3 Well	N/A	N/A	27° 51’ 22.7”	-81° 22’ 31.5”
POF 31U GW4 Well	N/A	N/A	27° 51’ 22.9”	-81° 22’ 31.7”

PROJECT RESULTS

The following tables list the elevations established for each existing or new mark, the level run misclosure, “to-reach” description for each mark and a photo of the mark. All elevations and coordinates are in US Survey Feet.

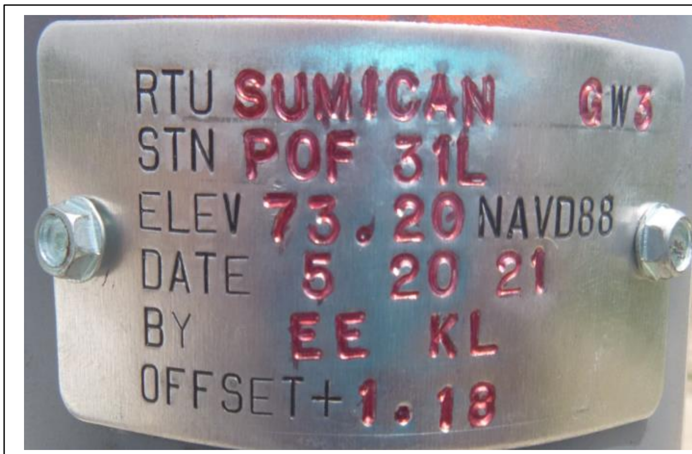
Description	***Reference Elevation (NAVD88)***
Monitoring Well “POF 32” GW2:	70.57 feet
Monitoring Well “POF 32L” GW3;	73.20 feet
Monitoring Well “POF 32U” GW4:	72.74 feet
Site Benchmark “POS20 2019”	67.39 feet (*) Mark Settled.
North Ground Elevation:	67.5 feet
South Ground Elevation:	67.5 feet
NE Concrete Pad Elevation: POF32	67.55 feet
SW Concrete Pad Elevation: POF32	67.55 feet
NE Concrete Pad Elevation: POF 31	67.50 feet
SW Concrete Pad Elevation: POF 31	67.50 feet
Average Ground Elevation:	67.5 feet
Average Concrete Pad Elevation:	67.52 feet
Site Offset (NAVD88 to NGVD29): **+ 1.18 feet**	

GW WELL SITE PICTURE (OVERALL)



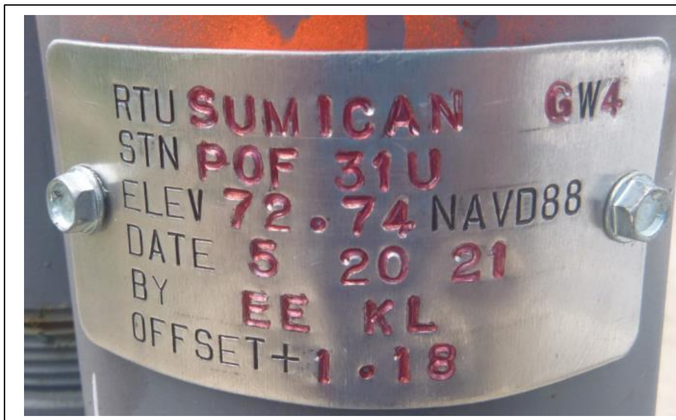
POF 32 GW2 REFERENCE POINT PICTURE
(Close-up)

GW WELL TAG PICTURE

POF 31L & POF31U WELLS	POF 31L GW3 WELL
	 

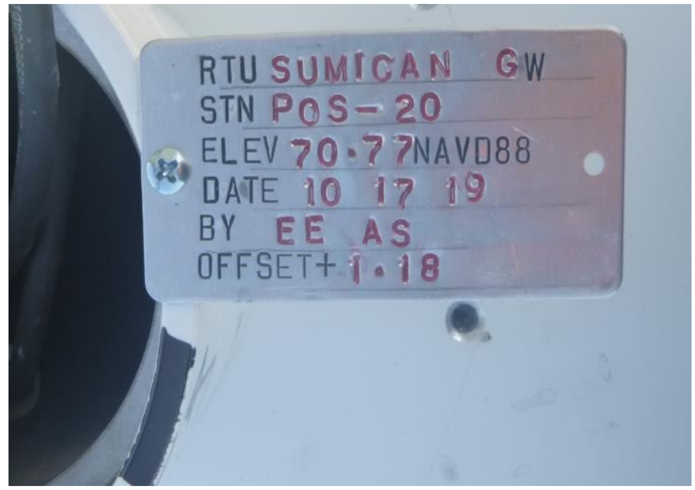

U
31

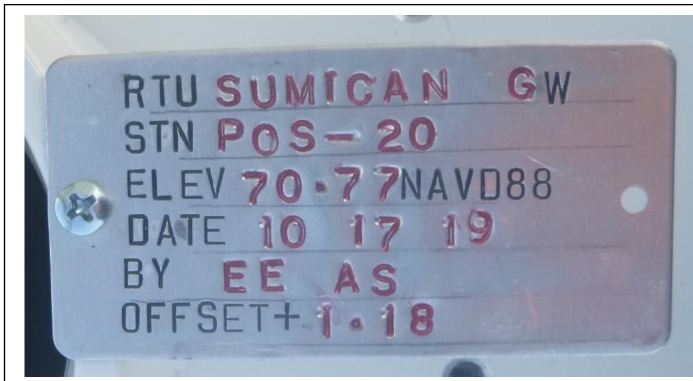

POF 31U GW4 WELL
U


RTU SUMICAN GW4
STN POF 31U
ELEV 72.74 NAVD88
DATE 5 20 21
BY EE KL
OFFSET+1.18

POS20 GW WELL

Note: POS20 GW– Not being Reported on in this Report.



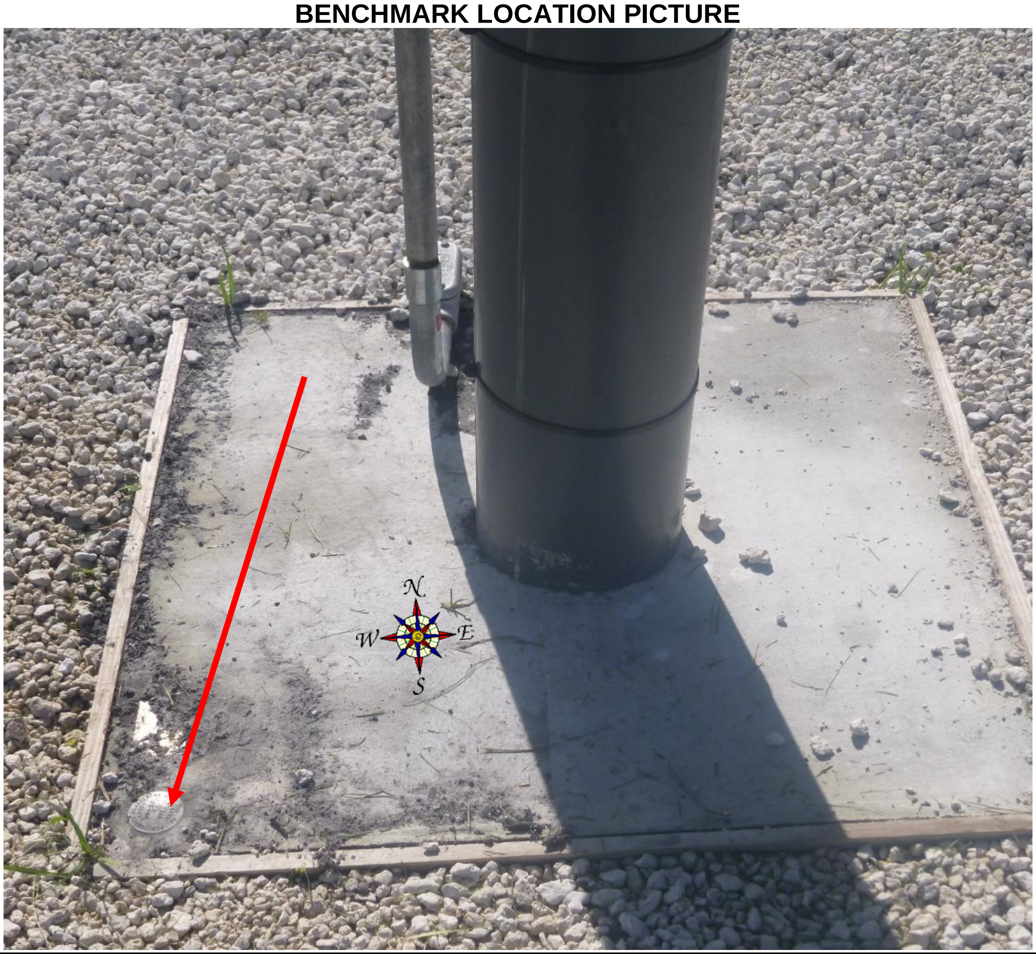


SITE BENCHMARK “POS20 2019” DATA

BENCHMARK PICTURE (Up-close)

TO REACH: FROM THE INTERSECTION SAM KEAN RD AND SR60. GO WEST ON SR60 FOR 0.6MILE TO SUMICA PARK ON LEFT. ENTER GATE TO SUMICA PARK AND STATION IS ON WELL PAD FOR (POS20 GW) AT WELL CLUSTER INSIDE GATE ON LEFT.

BENCHMARK LOCATION PICTURE



SUMICAN WELLS – FIELD NOTES

NCADA FB#14 5-20-21 11

Sec 24 Twp 30 Rge 29 Ebanks

Latham

To establish REF. ELEV. FOR SUMICAN Wells - POF 32 (GW2), POF 31-L (GW3) POF 31-U (GW4)
check POS 20-

Sta	+	H.I.	−	Elev	Remarks
BM POS 20 2019	6.54	73.96		67.42* (67.39)	FND (5/20/21)
POF 32 (GW 2)			3.36	70.60	(70.57) TAG
POF 31L (GW 3)			0.73	73.23	(73.20) TAG
POF 31U (GW 4)			1.19	72.77	(72.74) TAG
CHK POS 20 Well.			3.16	70.80	(70.77) TAG
		R+			
POS 20	2.95	73.75			
POF 31U			0.98	72.77	
POF 31L			0.52	73.23	
POF 32			3.15	70.60	
BM POS 20 2019			6.33	67.42	(67.42)

* Benchmark Settled (0.03) From 2019

FE. 5/20/21

South Florida Water Management District Benchmark Datasheet

Designation:	POS-20	Project Name:	CFWI-SUMICA PARK	Type:	V	State Plane Zone:	FL East
Stamping:	POS-20	Field Book Name:	SCADA #13	Field Book Page:	42		
Established By:	PICKETT & ASSOCIATES	Recovered By:	SFWMD	Recovery Date:	10/17/19		
Surveyor:	John M. Clyatt	Established Date:	05/06/19	Status:	Good		

GEOGRAPHIC POSITION INFORMATION

Section:	24	Township:	30 SOUTH			Range:	29 EAST
County:	POLK	Quadrangle:	LK. Weohyakapka SE	Quad Index:		NGS Source BM(s):	
NAD83 Adj. Year:		Vertical Datum:	NAVD1988	Horizontal Datum:	NAD1983	NGS PID(s):	
NAVD88 Elevation (feet):	67.42	NGVD29 Elevation (feet):	68.6	2022 Elevation:		NGS NAVD88 Elev (ft):	
NAVD88 Class:		NGVD29 Class:		Other Elevation:		NGS NAVD88 Elev (m):	
NAVD88 Order:	3	NGVD29 Order:	3	Other Elevation Type:		NGS 2022 Elev (ft):	

CORPSCON 6.0.1 CONVERSION FACTOR (NAVD88 TO NGVD29): (A U.S. Army Corps of Engineers Engineering Research and Development Center Topographic Engineering Center Alexandria, Virginia Windows-based program to convert coordinates and elevations between datum's using vertcon05.txt and vertcon05.05 files supplied by the U.S. Army Corps of Engineers South Atlantic Division, Jacksonville Fl.)

Vertical Datum Offset: +	1.18	Actual NGS Elevation or ngvd29.txt file:		OPUS Ortho Height:			
Northing (Y) (feet):	1,280,665.51	Easting (X) (feet):	534,858.70	Source of Latitude & Longitude:			
Latitude:	27	51	22.86	Longitude:	81	22	31.54
	DD°	MM'	SS"		DD°	MM'	SS"
Latitude (Decimal Degrees):	27.85635			Longitude (Decimal Degrees):	-81.37542778		

RECOVERY DATA

How to Reach:	From the intersection of Sam Keen Road and SR60. go NW along SR60 towards Lake Wales for 0.6 miles to the Entrance to SUMICA Park on left. Enter Gate and Well Site is on your Left. Mark is Set on Well Pad.
Description/Notes:	
Notable Landmarks:	
Other Source Benchmarks:	

PICTURES

Aerial View of Overall Site

PICTURES

Site Sketch

Page 1 of 1

Elevations are shown in NAVD88 datum unless noted otherwise

Party Chief: ELVIE EBANKS
Field Book: SCADA Field Book #14 Page(s): 11
Site Benchmark: "POS20 2019" Elevation = 67.39 feet (NAVD88)
Date of Survey: MAY 20, 2021

Offset: = +1.18 feet add this value to NAVD88 to obtain NGVD29 values

SURVEYOR'S CERTIFICATION

I hereby certify that as a duly registered Florida Professional Surveyor and Mapper, I have prepared this Report for the South Florida Water Management District with the information as outlined. This report is not complete without the referenced information being available during an examination of said Report. I further certify that the precision achieved and the care taken in collecting the data to formulate this Report are adequate for the purpose of the assignment and that the standards set forth in Chapter 5J-17.050 through 5J-17.052 of the Florida Administrative Code have been met.

Date of Survey
May 20, 20201

Elvie D. Ebanks PSM
Professional Surveyor and Mapper
State of Florida
Certificate No. 5765

APPENDIX B:
SUMMARY OF DRILLING, TESTING, AND WELL CONSTRUCTION ACTIVITIES

Table B-1. Summary of drilling, testing, and well construction activities.

Start Date	End Date	Activity	Site Geologist
3-10-2020	3-11-2020	Mobilized Failing rig to site. Installed make-up water well SUMICAN-PW. Collected SPT samples from 7 to 87 ft bls.	K. Smith
3-16-2020	3-20-2020	Mobilized Versadrill for POF-31 installation. Drilled 22-inch-diameter mud-rotary borehole. Installed 16-inch-diameter steel surface casing and grouted to land surface. District field trailer mobilized to site. Drilled 6-inch-diameter mud-rotary pilot hole from 81 to 157 ft bls.	L. Lindstrom
3-23-2020	3-27-2020	Drilled 6-inch-diameter mud-rotary pilot-hole from 157 to 285 ft bls. Geophysical logging of pilot hole by RMBaker. Reamed 15-inch borehole from 81 to 275 ft bls in preparation for casing installation.	S. Coonts
3-30-2020	4-3-2020	Installed 10-inch PVC conductor casing and grout to land surface. Cleared cement plug to depth of 290 ft bls. Installed temporary 5-inch-diameter and 4-inch casings to 290 ft bls. Secured the well and demobilized from the site.	E. Richardson
4-4-2020	5-31-2020	Work hiatus due to Coronavirus.	--
6-1-2020	6-5-2020	Huss mobilized to site with Failing rig (Versadrill being repaired) and set up over POF-31. Cored from 290 to 440 ft bls and completed packer tests 1 through 5.	K. Smith
6-8-2020	6-12-2020	Cored from 440 to 590 ft bls and completed packer tests 6 through 10.	E. Richardson
6-15-2020	6-19-2020	Cored from 590 to 790 ft bls and completed packer tests 11 through 16. Experienced problems with unconsolidated materials sloughing down-hole. Extra airlifting required to clear corehole.	H. Saini
6-22-2020	6-26-2020	Cored from 790 to 910 ft bls and completed packer tests 17 through 20. Progress slowed by falling unconsolidated materials requiring airlifting after every core run.	S. Coonts
6-29-2020	7-2-2020	Cored from 910 to 964 ft bls and completed packer tests 21 through 22. Falling materials stopped work at 964 ft bls until the Versadrill could be remobilized and additional temporary casing could be installed.	H. Saini
7-6-2020	7-14-2020	Flooded site conditions prevented remobilization of Versadrill. District authorized unplanned time and materials to raise the site and allow work to continue. Four dump truck loads of shell and gravel road base material, and 6 dump truck loads of ballast stone delivered and spread over the site. Versadrill remobilized to site and setup over POF-31. Additional 50 ft of 5-inch-diameter temporary casing installed. Corehole reamed to 5-inches in diameter.	--
7-15-2020	7-17-2020	Temporary 4-inch-diameter casing installed to 960 ft bls. Cored from 964 to 1,000 ft bls and completed packer test 23. Annular zone was flowing under mild artesian conditions.	E. Richardson
7-20-2020	7-24-2020	Cored from 1,000 to 1,130 ft bls and completed packer tests 24 through 27.	S. Coonts
7-27-2020	7-31-2020	Cored from 1,130 to 1,290 ft bls and completed packer tests 28 through 33.	H. Saini
8-3-2020	8-7-2020	Cored from 1,290 to 1,380 ft bls and completed packer tests 34 through 36.	K. Smith
8-10-2020	8-14-2020	Cored from 1,380 to 1,500 ft bls and completed packer tests 37 through 40. Placed gravel from 1,407 to 1,500 ft bls and capped with bentonite grout (50 gallons).	E. Richardson

Table B-1. Continued.

Start Date	End Date	Activity	Site Geologist
8-17-2020	8-21-2020	Pulled core casing and installed tremie pipe for grout backfill of MCU_I. On 8/18/20 pumped grout, hard tagged at 1,176 ft bls, added 6 sacks of grout. On 8/19/20 hard tagged grout at 1,128 ft bls. Pulled tremie and temporary casing. Reamed to 10-inch diameter from base of casing (275 to 416 ft bls).	--
8-24-2020	8-28-2020	Reamed to 10-inch diameter from 416 to 900 ft bls. Removed temporary casings and prepared borehole for geophysical logging.	--
8-31-2020	8-31-2020	RMBaker began initial camera survey and found the borehole blocked at 380 ft bls. Huss ran pipe and bit back in to push the rock down. Huss went to 420 ft bls without issue, but downhole camera showed the borehole blocked at 428 ft bls. Logging was postponed until borehole could be cleared.	S. Krupa
9-1-2020	9-9-2020	Cleared and redeveloped the borehole. Waited on availability of geophysical logger.	--
9-10-2020	9-11-2020	Geophysical logging. Installed 4-inch-diameter Certa-Lok blank casing to 816 ft bls and grouted in place using cement baskets. Placed 18 cubic ft of gravel from 816 to 800 ft bls to capture top of APPZ flow zone in the monitored interval; added grout on top of gravel.	H. Saini
9-14-2020	9-16-2020	Tagged grout at 787 ft bls. Grouted annular zone from 787 to 594 ft bls using cement-bentonite grout.	H. Saini
9-17-2020	9-18-2020	Developed the completed monitoring zones for 5 hours using airlifting and pumping methods. Installed final wellhead.	--
9-21-2020	9-30-2020	Moved drill rig to previously staked position of POF-32 and drilled mud rotary borehole. Installed surface and conductor casings to the depths identified in POF-31 pilot hole (84 and 270 ft, respectively).	--
10-1-2020	10-29-2020	Drilled 10-inch-diameter reverse-air borehole to target depth for final steel casing to top of LFA (1,405 ft bls).	--
10-30-2020	11-6-2020	Geophysical logging completed by RMBaker. USGS conducted OBI logging. Installed 1,033 ft of steel casing.	E. Richardson
11-9-2020	11-9-2020	Work cancelled due to poor weather from Tropical Storm Eta.	--
11-10-2020	11-13-2020	Installed remaining steel casing and started cementing process.	S. Coonts
11-16-2020	11-20-2020	Cementing.	K. Smith
11-23-2020	11-25-2020	Drilled out cement stuck in steel casing. Removed stuck tremie pipe.	--
11-26-2020	11-27-2020	Thanksgiving Break.	--
11-30-2020	12-7-2020	Drilled to 1,500 ft at POF-32, where packer testing in POF-31 stopped. At 1,440 ft bls, the tricone bit that was being used to ream lost a cone. After failing to drill through the lost cone, Huss attempted to retrieve the cone with a magnet. Magnet was unsuccessful, so the cone had to be cored out. The hole was then drilled to 6 inches in diameter using reverse air to the previously cored depth, and 1,500 ft of 4-inch-diameter temporary steel casing was installed.	--
12-8-2020	12-11-2020	Cored and completed packer test from 1,500 to 1,570 ft bls	H. Saini
12-14-2020	12-18-2020	Cored and completed packer test from 1,570 to 1,680 ft bls	E. Richardson
1-4-2021	1-8-2021	Cored and completed packer test from 1,680 to 1,840 ft bls	E. Richardson
1-11-2021	1-15-2021	Cored and completed packer test from 1,840 to 1,960 ft bls	S. Coonts
1-18-2021	1-22-2021	Cored and completed packer test from 1,960 to 2,000 ft bls	K. Smith

APPENDIX C:
WELL COMPLETION REPORTS

Feb. 24. 2020 10:52AM No. 3449 P. 2/5

49WP2031598

STATE OF FLORIDA PERMIT APPLICATION TO CONSTRUCT, REPAIR, MODIFY, OR ABANDON A WELL

☐ Southwest
☐ Northwest
☐ St. Johns River
☒ South Florida
☐ Suwannee River
☐ DEP
☐ Delegated Authority (if Applicable)

PLEASE FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

The water well contractor is responsible for completing this form and forwarding the permit application to the appropriate delegated authority where applicable.

Permit No.
Florida Unique ID
Permit Stipulations Required (See Attached)
62-524 Quad No. Delineation No.
CUP/WUP Application No.
ABOVE THIS LINE FOR OFFICIAL USE ONLY

1. SFWMD PO BOX 24680 West Palm Bch Fl 33416
*Owner, Legal Name if Corporation *Address *City *State *ZIP Telephone Number
2. 14020 Hwy 60 E Lake Wales, Fl. 33898
*Well Location - Address, Road Name or Number, City
3. 29-30-24-000000-014250
*Parcel ID No. ☒ (PIN) or ☐ Alternate Key Lot Block Unit
4. 29 30 24 Osceola Check if 62-524: ☐ Yes ☐ No
*Section or Land Grant *Township *Range *County Subdivision
5. Stephanie Stallsmith 9342 352-567-9500 stephanie@hessdrilling.com
*Water Well Contractor *License Number *Telephone Number E-mail Address
6. 35920 State Road 52 Dade City Fl. 33525
*Water Well Contractor's Address City State ZIP
7. *Type of Work: ☒ Construction ☐ Repair ☐ Modification ☐ Abandonment
*Reason for Repair, Modification, or Abandonment
8. *Number of Proposed Wells 1
9. *Specify Intended Use(s) of Well(s):
☐ Domestic ☐ Landscape Irrigation ☐ Agricultural Irrigation ☐ Site Investigations
☐ Bottled Water Supply ☐ Recreation Area Irrigation ☐ Livestock ☒ Monitoring
☐ Public Water Supply (Limited Use/DOH) ☐ Nursery Irrigation ☐ Test
☐ Public Water Supply (Community or Non-Community/DEP) ☐ Commercial/Industrial ☐ Earth-Coupled Geothermal
☐ Class I Injection ☐ Golf Course Irrigation ☐ HVAC Supply
☐ HVAC Return
Class V Injection: ☐ Recharge ☐ Commercial/Industrial Disposal ☐ Aquifer Storage and Recovery ☐ Drainage
Remediation: ☐ Recovery ☐ Air Sparge ☐ Other (Describe)
☐ Other (Describe)

Date Stamp

Official Use Only

10. *Distance from Septic System if ≤ 200 ft. 11. Facility Description Vacant 12. Estimated Start Date 3/2/20
13. *Estimated Well Depth 1200 ft. *Estimated Casing Depth 800 ft. Primary Casing Diameter 4.5 in. Open Hole: From 800 To 1200 ft.
14. Estimated Screen Interval: From To ft.
15. *Primary Casing Material: ☐ Black Steel ☐ Galvanized ☒ PVC ☐ Stainless Steel
☐ Not Cased ☐ Other
16. Secondary Casing: ☐ Telescope Casing ☐ Liner ☒ Surface Casing Diameter 16,10 in.
17. Secondary Casing Material: ☐ Black Steel ☐ Galvanized ☒ PVC ☐ Stainless Steel ☐ Other
18. *Method of Construction, Repair, or Abandonment: ☐ Auger ☐ Cable Tool Jetted ☒ Rotary ☐ Sonic
☐ Combination (Two or More Methods) ☐ Hand Driven (Well Point, Sand Point) ☐ Hydraulic Point (Direct Push)
☐ Horizontal Drilling ☐ Plugged by Approved Method ☐ Other (Describe)
19. Proposed Grouting Interval for the Primary, Secondary, and Additional Casing:
From 0 To 800 Seal Material (☐ Bentonite ☒ Neat Cement ☐ Other)
From To Seal Material (☐ Bentonite ☐ Neat Cement ☐ Other)
From To Seal Material (☐ Bentonite ☐ Neat Cement ☐ Other)
From To Seal Material (☐ Bentonite ☐ Neat Cement ☐ Other)
20. Indicate total number of existing wells on site List number of existing unused wells on site Ø
21. *Is this well or any existing well or water withdrawal on the owner's contiguous property covered under a Consumptive/Water Use Permit (CUP/WUP) or CUP/WUP Application? Yes No If yes, complete the following: CUP/WUP No. District Well ID No.
22. Latitude Longitude
23. Data Obtained From: ☐ GPS ☐ Map ☐ Survey Datum: NAD 27 NAD 83 WGS 84

I hereby certify that I will comply with the applicable rules of Title 40, Florida Administrative Code, and that a water use permit or artificial recharge permit, if needed, has been or will be obtained prior to commencement of well construction. I further certify that all information provided in this application is accurate and that I will obtain necessary approval from other federal, state, or local governments, if applicable. I agree to provide a well completion report to the District within 30 days after completion of the construction, repair, modification, or abandonment authorized by the permit or the permit application.

I certify that I am the owner of the property, that the information provided is accurate, and that I am aware of my responsibilities under Chapter 373, Florida Statutes, to maintain or properly abandon this well, or, I certify that I am the agent for the owner, that the information provided is accurate, and that I have informed the owner of their responsibilities as stated above. Owner consents to allow personnel of this WMD or Delegated Authority access to the well site during the construction, repair, modification, or abandonment authorized by this permit.

9342 2/24/20
*Signature of Contractor *License No. *Signature of Owner or Agent *Date

Approval Granted By Issue Date 2/25/20 Expiration Date 8/25/20 Hydrologist Approval Initials
Fee Received $ 45— Receipt No. Check No. CC

THIS PERMIT IS NOT VALID UNTIL PROPERLY SIGNED BY AN AUTHORIZED OFFICER OR REPRESENTATIVE OF THE WMD OR DELEGATED AUTHORITY. THE PERMIT SHALL BE AVAILABLE AT THE WELL SITE DURING ALL CONSTRUCTION, REPAIR, MODIFICATION, OR ABANDONMENT ACTIVITIES.

POF 31

STATE OF FLORIDA WELL COMPLETION REPORT

☐ Southwest
☐ Northwest
☐ St. Johns River
☒ South Florida
☐ Suwannee River
☐ DEP
☐ Delegated Authority (If Applicable) ____________

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Official Use Only

1.*Permit Number 49WP2041598 CUP/WUP Number ________ *DID Number ________ 62-524 Delineation No. ________

2.*Number of permitted wells constructed, repaired, or abandoned 1 *Number of permitted wells not constructed, repaired, or abandoned Ø

3.*Owner's Name SFWMD 4.*Completion Date 9/21/20 5. Florida Unique ID ________

6. 14020 Hwy 60 E Lake Wales, Fl. 33898
*Well Location - Address, Road Name or Number, City, ZIP

7. *County Osceola *Section 29 Land Grant ________ *Township 30 *Range 24

8. Latitude ________ Longitude ________

9. Data Obtained From: ____GPS ____Map ____Survey Datum: ____NAD 27 ____NAD 83 ____WGS 84

10.*Type of Work: X Construction ____Repair ____Modification ____Abandonment

11.*Specify Intended Use(s) of Well(s):
____Domestic ____Landscape Irrigation ____Agricultural Irrigation ____Site Investigation
____Bottled Water Supply ____Recreation Area Irrigation ____Livestock ✓ Monitoring
____Public Water Supply (Limited Use/DOH) ____Nursery Irrigation ____Test
____Public Water Supply (Community or Non-Community/DEP) ____Commercial/Industrial ____Earth-Coupled Geothermal
____Class I Injection ____Golf Course Irrigation ____HVAC Supply ____HVAC Return
Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge ____Other (Describe) ________
____Other (Describe) ________

12.*Drill Method: ____Auger ____Cable Tool X Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other ________

13.*Measured Static Water Level ____ ft. Measured Pumping Water Level ____ ft. After ____ Hours at ____ GPM

14.*Measuring Point (Describe) ________ Which is ____ ft. ____Above ____Below Land Surface *Flowing: ____Yes ____No

15.*Casing Material: ____Black Steel ____Galvanized X PVC ____Stainless Steel ____Not Cased ____Other ________

16.*Total Well Depth 900 ft. Cased Depth 816 ft. *Open Hole: From 816 To 900 ft. *Screen: From ____ To ____ ft. Slot Size ____

17.*Abandonment: ____Other (Explain) ________

From	To	No. of Bags	Seal Material (Check One):		
____ft.	____ft.	____	____Neat Cement	____Bentonite	____Other ____
____ft.	____ft.	____	____Neat Cement	____Bentonite	____Other ____
____ft.	____ft.	____	____Neat Cement	____Bentonite	____Other ____
____ft.	____ft.	____	____Neat Cement	____Bentonite	____Other ____
____ft.	____ft.	____	____Neat Cement	____Bentonite	____Other ____

18.*Surface Casing Diameter and Depth:

Dia (in.)	From (ft.)	To (ft.)	No. of Bags	Neat Cement	Bentonite	Other
16	0	81	52	X		
10	0	275	89	X		

19.*Primary Casing Diameter and Depth:

Dia (in.)	From (ft.)	To (ft.)	No. of Bags	Neat Cement	Bentonite	Other
4	0	816	102	X		
			2			Rock

20.*Liner Casing Diameter and Depth:

Dia (in.)	From (ft.)	To (ft.)	No. of Bags	Neat Cement	Bentonite	Other

21.*Telescope Casing Diameter and Depth:

Dia (in.)	From (ft.)	To (ft.)	No. of Bags	Neat Cement	Bentonite	Other

22. Pump Type (If Known):
____Centrifugal ____Jet ____Submersible ____Turbine
Horsepower ____ Pump Capacity (GPM) ____
Pump Depth ____ ft. Intake Depth ____ ft.

23. Chemical Analysis (When Required):
Iron ____ ppm Sulfate ____ ppm Chloride ____ ppm
____Laboratory Test ____Field Test Kit

24. Water Well Contractor:
*Contractor Name Stephanie Stollsmith *License Number 9342 E-mail Address Stephanie@hussdrilling.com
*Contractor's Signature [signature] *Driller's Name (Print or Type) Kevin Keffuse
(I certify that the information provided in this report is accurate and true.)

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PALM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C)____ Material____
From____ ft. To____ ft. Color____ Grain Size (F, M, C) Material
From_
From_
From_

See Attached

Comme

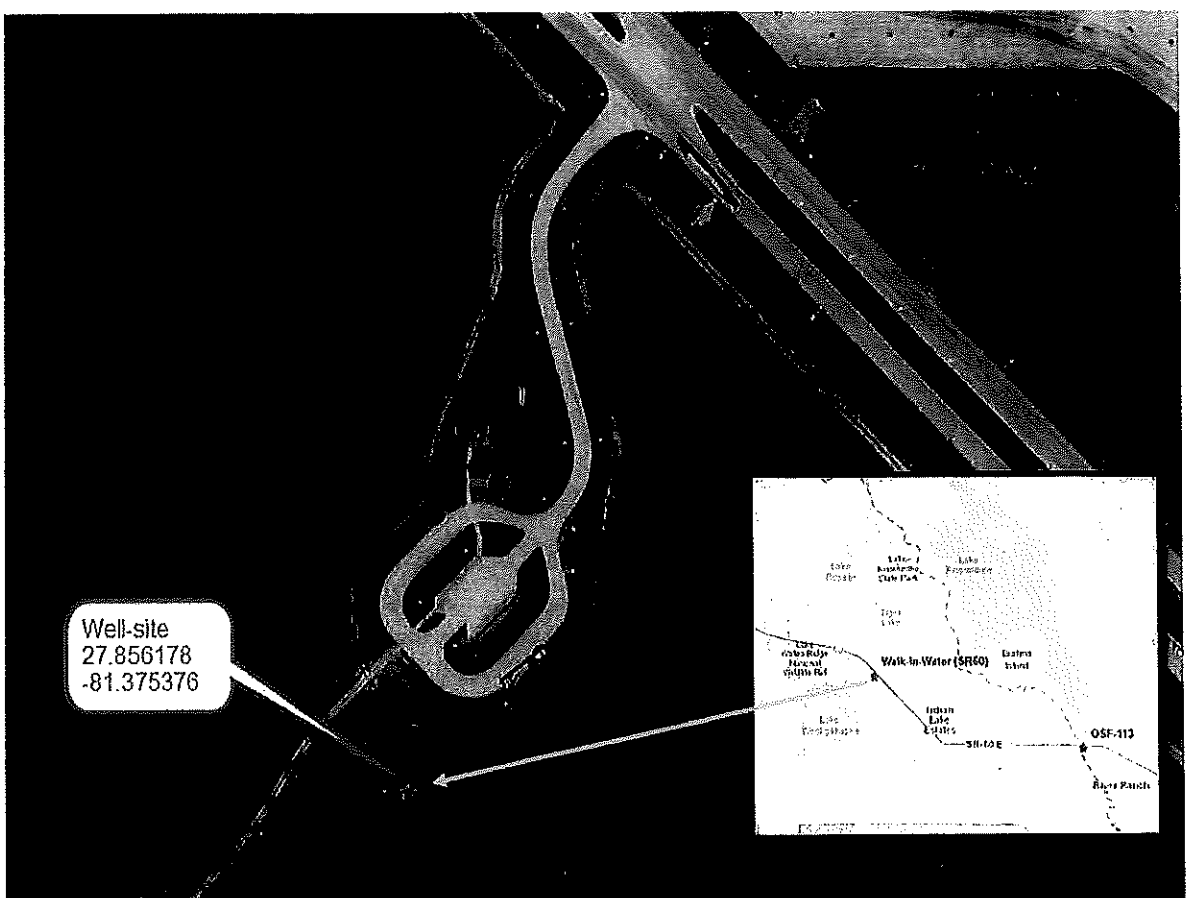


Figure 5. SUMICA Drill-Site Location

FORM LEG

C.

Depth Min	Depth Max	Description/Comments
85.0	90.0	GRAY DOLOSTONE, 20% GRAY SANDY CLAY; GRAY (N5)
90.0	100.0	GRAY DOLOMITE, 10% GRAY SANDY CLAY, 40% VERY PALE ORANGE SHELL FRAGMENTS; GRAY (N5)
100.0	115.0	VERY PALE ORANGE SHELL FRAGMENTS, 5% DARK GREY CLAY, AND 30% GREENISH-GREY DOLOSTONE
115.0	125.0	VERY PALE ORANGE SHELL FRAGMENTS AND 30% GREENISH-GREY DOLOSTONE
125.0	140.0	VERY PALE ORANGE SHELL FRAGMENTS, 5% DARK GREY CLAY, AND 30% GREY DOLOSTONE
140.0	145.0	LIGHT BROWNISH GRAY SHELL FRAGMENTS, 40% GREY DOLOSTONE, 3% PHOSPHATE, 1% QUARTZ SAND
145.0	155.0	LIGHT BROWNISH GRAY SHELL FRAGMENTS, 40% GREY DOLOSTONE, 3% DARK GREY CLAY, 1% PHOSPHATE, 1% QUARTZ SAND
155.0	160.0	GRAY DOLOSTONE, 10% LIGHT BROWISH GRAY SHELL FRAGMENTS, 3% DARK GREY CLAY, 1% PHOSPHATE
160.0	175.0	GRAY DOLOSTONE, 10% LIGHT BROWISH GRAY SHELL FRAGMENTS, 7% DARK GREY CLAY, 5% PHOSPHATE, 30% SALT AND PEPPER PHOSPHATIC DOLOSTONE
175.0	185.0	GRAY PHOSPHATIC DOLOSTONE, 15% DARK GREY CLAY, 10% LIGHT BROWNISH GRAY SHELL FRAGMENTS, 5% PHOSPHATE GRAINS
185.0	200.0	GRAY PHOSPHATIC DOLOSTONE, 5% GREY CLAY, 20% SHELL FRAGMENTS, 7 PERCENT PHOSPHATE GRAINS
200.0	205.0	GRAY PHOSPHATIC DOLOSTONE, 30% GREY CLAY, 10 PERCENT SHELL FRAGMENTS, 5 PERCENT PHOSPHATE GRAINS
205.0	225.0	DARK GREY CLAY, LIGHT GRAY DOLOSTONE, 10 PERCENT SHELL FRAGMENTS, 10 PERCENT PHOSPHATE GRAINS
225.0	230.0	DARK GREY CLAY, LIGHT GRAY DOLOSTONE, 10 PERCENT SHELL FRAGMENTS, 10 PERCENT PHOSPHATE GRAINS, SHARK'S TOOTH
230.0	245.0	DARK GREY CLAY, LIGHT GRAY DOLOSTONE, 10 PERCENT SHELL FRAGMENTS, 20 PERCENT PHOSPHATE GRAINS
245.0	250.0	LIGHT GRAY DOLOSTONE, LIGHT GREEN CLAY, 10 PERCENT SHELL FRAGMENTS, 20 PERCENT PHOSPHATE GRAINS
250.0	260.0	LIGHT GRAY DOLOSTONE, LIGHT GREEN CLAY, 30 PERCENT SHELL FRAGMENTS, 5 PERCENT PHOSPHATE GRAINS
260.0	265.0	LIGHT GRAY DOLOSTONE, 40 PERCENT SHELL FRAGMENTS, 1 PERCENT PHOSPHATE GRAINS, Dark Grey clay
265.0	280.0	LIGHT GRAY DOLOSTONE, 50 PERCENT SHELL FRAGMENTS, 1 PERCENT PHOSPHATE GRAINS, Dark Grey clay
280.0	285.0	LIGHT GRAY DOLOSTONE, LIGHT ORANGE LIMESTONE, SHELL FRAGMENTS, FORAMINIFERA - LEPIDOCYCLINA
285.0	290.0	LIGHT ORANGE LIMESTONE, SHELL FRAGMENTS, FORAMINIFERA
290.0	292.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; LEPIDOCYCLINA
292.0	302.0	NO RECOVERY
302.0	304.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; MILIOLID
304.0	314.0	NO RECOVERY
314.0	315.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; LEPIDOCYCLINA
315.3	317.0	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; POOR INDURATION; LEPIDOCYCLINA
317.0	319.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; LEPIDOCYCLINA
319.6	320.0	NO RECOVERY
320.0	320.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; LEPIDOCYCLINA, BIVALVES, GASTROPODS
320.6	321.2	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; LEPIDOCYCLINA, BIVALVES, GASTROPODS
321.2	322.4	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; LEPIDOCYCLINA, BIVALVES, GASTROPODS
322.4	323.1	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; LEPIDOCYCLINA, BIVALVES, GASTROPODS
323.1	323.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; LEPIDOCYCLINA, BIVALVES, GASTROPODS
323.7	324.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; GOOD INDURATION; LEPIDOCYCLINA, BIVALVES, GASTROPODS
324.0	330.0	NO RECOVERY
330.0	330.6	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION
330.6	333.3	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION

333.3	334.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES
334.0	334.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES
334.6	336.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, GASTROPODS
336.5	336.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, GASTROPODS
336.7	338.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; BIVALVES, GASTROPODS
338.5	340.0	NO RECOVERY
340.0	340.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, GASTROPODS
340.5	341.1	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; BIVALVES, GASTROPODS
341.1	341.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; BIVALVES, GASTROPODS
341.3	343.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, GASTROPODS
343.0	344.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, GASTROPODS, LEPIDOCYCLINA
344.0	346.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGHT INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, GASTROPODS, LEPIDOCYCLINA, PELLETS
346.0	348.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, GASTROPODS, PELLETS
348.0	350.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR, INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, GASTROPODS
350.0	354.9	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES
354.9	356.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, ECHINOIDS, FORAMINIFERA
356.0	356.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS, FORAMINIFERA
356.7	357.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS, FORAMINIFERA, AND BIVALVES
357.5	358.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS, FORAMINIFERA
358.0	360.0	NO RECOVERY
360.0	361.1	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION; MOLLUSKS
361.1	362.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION; MOLLUSKS
362.7	363.0	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); MODERATE MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION; MOLLUSKS
363.0	367.6	LIMESTONE (PACKSTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR, MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION; MOLLUSKS
367.6	368.0	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION; MOLLUSKS
368.0	368.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION
368.5	369.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION
369.0	370.0	NO RECOVERY
370.0	372.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION
372.0	373.6	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); POOR MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION
373.6	378.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION; LAMINATIONS
378.0	380.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION
380.0	381.1	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; LAMINATIONS, FORAMINIFERA, GASTROPODS, BIVALVES
381.1	386.2	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, GASTROPODS, BIVALVES
386.2	389.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION
389.0	390.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, GASTROPODS, BIVALVES

390.0	391.5	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION
391.5	394.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR, MOLDIC, AND INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, GASTROPODS, BIVALVES
394.3	400.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION; GASTROPODS, BIVALVES
400.0	401.3	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); POOR INTERGRANULAR AND VUGGY POROSITY; POOR INDURATION; ECHINOIDS
401.3	403.7	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION
403.7	404.4	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION
404.4	405.1	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION
405.1	406.9	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS, SOME LAMINATIONS
406.9	407.3	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION
407.3	408.2	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR POROSITY; MODERATE INDURATION; ECHINOIDS
408.2	408.7	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION; ECHINOIDS
408.7	410.0	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS
410.0	410.9	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR AND VUGGY POROSITY; POOR INDURATION; FRACTURED
410.9	413.3	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR AND VUGGY POROSITY; POOR INDURATION
413.3	413.9	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR AND VUGGY POROSITY; POOR INDURATION
413.9	415.2	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); MODERATE INTERGRANULAR, MOLDIC, AND VUGGY POROSITY; POOR INDURATION; ECHINOIDS; TURITELLA MOLDS
415.2	416.0	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR AND VUGGY POROSITY; POOR INDURATION; ECHINOIDS
416.0	417.0	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR AND VUGGY POROSITY; POOR INDURATION; ECHINOIDS
417.0	419.5	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR AND VUGGY POROSITY; POOR INDURATION; ECHINOIDS
419.5	420.0	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION
420.0	422.9	LIMESTONE (WACKESTONE); PALE BROWN (5YR 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS
422.9	423.9	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION, ECHINOIDS
423.9	424.3	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION; ECHINOIDS
424.3	426.5	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; SOME FRACTURES, ECHINOIDS
426.5	427.3	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION; ECHINOIDS
427.3	427.9	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION
427.9	428.5	LIMESTONE (PACKSTONE); YELLOWISH GREY (5Y 8/1); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; SOME LAMINATIONS
428.5	429.0	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION; LAMINATIONS
429.0	429.6	CLAY; LIGHT GREENISH GRAY (5GY 8/1); NO OBSERVABLE POROSITY; POOR INDURATION; LAMINATIONS
429.6	430.0	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); MODERATE INTERGRANULAR POROSITY; POOR INDURATION
430.0	431.0	LIMESTONE (PACKSTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA
431.0	432.7	LIMESTONE (WACKESTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; SOME LAMINATIONS
432.7	434.0	LIMESTONE (PACKSTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA
434.0	440.0	NO RECOVERY
440.0	441.1	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, ECHINOIDS
441.1	441.8	LIMESTONE (WACKESTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA

441.8	442.8	LIMESTONE (PACKSTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA
442.8	444.2	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION
444.2	445.8	LIMESTONE (PACKSTONE); PALE BROWN (5Y 5/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS, ORGANICS
445.8	446.5	LIMESTONE (WACKESTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA
446.5	447.7	LIMESTONE (PACKSTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA
447.7	448.0	LIMESTONE (MUDSTONE); WHITE (N9); NO OBSERVABLE POROSITY; MODERATE INDURATION
448.0	448.3	LIMESTONE (PACKSTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION
448.3	449.0	LIMESTONE (MUDSTONE); WHITE (N9); NO OBSERVABLE POROSITY; POOR INDURATION; FRACTURED
449.0	450.0	NO RECOVERY
450.0	450.5	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION
450.5	451.3	LIMESTONE (MUDSTONE); YELLOWISH GRAY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION
451.3	451.9	LIMESTONE (PACKSTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION
451.9	452.8	LIMESTONE (PACKSTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; LOW INDURATION; ECHINOIDS
452.8	454.2	LIMESTONE (WACKESTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR AND MOLDIC POROSITY; LOW INDURATION; ECHINOIDS
454.2	454.9	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; LAMINATIONS
454.9	455.8	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; LEPIDOCYCLINA
455.8	456.5	LIMESTONE (PACKSTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; LEPIDOCYCLINA, INDURATIONS, SOME FRACTURES
456.5	457.4	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; FRACTURES
457.4	457.7	CLAY; WHITE (N9); NO OBSERVABLE POROSITY; POOR INDURATION;
457.7	460.0	NO RECOVERY
460.0	461.6	LIMESTONE (MUDSTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS (WEISBORDELLA CUBAE)
461.6	463.7	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS (WEISBORDELLA CUBAE), SOME LAMINATIONS
463.7	464.2	LIMESTONE (MUDSTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION
464.2	467.0	CLAY; WHITE (N9); NO OBSERVABLE POROSITY; POOR INDURATION;
467.0	470.0	NO RECOVERY
470.0	471.2	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION
471.2	471.9	LIMESTONE (PACKSTONE); PALE BROWN (5YR 5/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION
471.9	475.5	LIMESTONE (MUDSTONE); PALE BROWN (5YR 5/2); NO OBSERVABLE POROSITY; POOR INDURATION
475.5	476.0	LIMESTONE (WACKESTONE); PALE BROWN (5YR 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION
476.0	477.9	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION
477.9	478.6	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION
478.6	479.4	LIMESTONE (MUDSTONE); YELLOWISH GRAY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION
479.4	480.0	NO RECOVERY
480.0	481.5	LIMESTONE (WACKESTONE); PALE BROWN (5YR 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; ORGANICS
481.5	485.8	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; ORGANICS, LAMINATIONS
485.8	487.0	CLAY; YELLOWISH GRAY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION;
487.0	490.0	NO RECOVERY
490.0	491.0	CLAY; YELLOWISH GRAY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION;
491.0	492.4	LIMESTONE (MUDSTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION
492.4	493.0	LIMESTONE (WACKESTONE); PALE BROWN (5YR 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION
493.0	493.7	CARBONATE GRAVELLY SAND; YELLOWISH GRAY (5Y 8/1); HIGH INTERGRANULAR POROSITY; UNCONSOLIDATED

493.7	496.5	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION
496.5	500.0	NO RECOVERY
500.0	501.9	LIMESTONE (WACKESTONE); PALE BROWN (5YR 5/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; SOME LAMINATIONS
501.9	503.6	LIMESTONE (MUDSTONE); YELLOWISH GRAY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION; FRACTURES
503.6	505.0	LIMESTONE (WACKESTONE); PALE BROWN (5YR 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; SOME LAMINATIONS
505.0	505.9	LIMESTONE (MUDSTONE); PALE BROWN (5YR 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FRACTURED
505.9	506.8	LIMESTONE (WACKESTONE); WHITE (N9); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA
506.8	510.0	NO RECOVERY
510.0	511.0	LIMESTONE (WACKESTONE); PALE BROWN (5YR 5/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; LAMINATIONS, CROSS BEDDING
511.0	512.3	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; LAMINATIONS, FORAMINIFERA
512.3	515.2	LIMESTONE (MUDSTONE); WHITE (N9); NO OBSERVABLE POROSITY; POOR INDURATION; FRACTURED
515.2	516.5	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MODERATE MOLDIC AND VUGGY POROSITY; GOOD INDURATION
516.5	519.2	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); HIGH MOLDIC AND VUGGY POROSITY; GOOD INDURATION
519.2	520.0	NO RECOVERY
520.0	524.1	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS, SOME FRACTURES, THIN CLAY LAMINATIONS
524.1	525.5	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; FRACTURED, CLAYEY
525.5	526.5	CLAY; YELLOWISH GRAY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION;
526.5	530.0	NO RECOVERY
530.0	532.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE MOLDIC AND INTERGRANULAR POROSITY; MODERATE INDURATION; GASTROPODS, FORAMINIFERA
532.0	534.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION
534.0	535.1	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE MOLDIC AND INTERGRANULAR POROSITY; MODERATE INDURATION; ORGANICS
535.1	535.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION
535.7	539.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION
539.0	540.0	NO RECOVERY
540.0	541.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION
541.6	542.3	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION
542.3	543.6	LIMESTONE (MUDSTONE); YELLOWISH GRAY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION
543.6	545.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; ECHINOIDS, FORAMINIFERA
545.0	546.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION
546.0	547.7	CLAY; VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION;
547.7	550.0	NO RECOVERY
550.0	550.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION
550.7	551.6	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION
551.6	553.2	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; ECHINOIDS
553.2	554.0	CLAY; VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION;
554.0	556.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS
556.0	557.0	LIMESTONE (MUDSTONE); WHITE (N9); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS
557.0	558.0	LIMESTONE (MUDSTONE); WHITE (N9); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS, CLAYEY
558.0	560.0	LIMESTONE (WACKESTONE); WHITE (N9); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION; ECHINOIDS, GASTROPODS
560.0	561.6	LIMESTONE(WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS

561.6	562.0	LIMESTONE(MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS
562.0	569.2	LIMESTONE(WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS
569.2	570.0	NO RECOVERY
570.0	571.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS
571.0	571.9	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION; LAMINATIONS
571.9	577.2	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION; FRACTURED
577.2	577.6	CLAY; VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION;
577.6	578.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FRACTURED
578.5	580.3	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA
580.3	581.1	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION; ORGANICS, FORAMINIFERA
581.1	582.3	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, ORGANICS, FRACTURED
582.3	582.8	CLAY; PALE YELLOWISH BROWN (10YR 6/2); NO OBSERVABLE POROSITY; POOR INDURATION; ORGANICS
582.8	584.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FRACTURED
584.0	585.0	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA, ORGANICS, FRACTURED
585.0	586.1	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA, FRACTURED
586.1	587.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FRACTURED
587.3	590.0	NO RECOVERY
590.0	591.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS, FORAMINIFERA, FALLOTELLA
591.3	591.6	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA, FRACTURED
591.6	592.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA
592.6	593.0	LIMESTONE (PACKSTONE); GRAYISH ORANGE (10YR 7/4); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA
593.0	594.4	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA, FRACTURED
594.4	595.9	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, ECHINOIDS, FRACTURED
595.9	596.2	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION; FRACTURED, CLAYEY
596.2	596.8	CLAY; VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION
596.8	598.1	LIMESTONE (PACKSTONE); GRAYISH ORANGE (10YR 7/4); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA
598.1	599.2	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION; LAMINATIONS
599.2	599.5	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA
599.5	600.0	NO RECOVERY
600.0	601.1	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; LAMINATIONS
601.1	601.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION; LAMINATIONS
601.5	603.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; LAMINATIONS, FORAMINIFERA
603.0	604.1	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION; LAMINATIONS
604.1	605.4	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA
605.4	606.2	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, ECHINOIDS
606.2	607.4	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA, ECHINOIDS
607.4	609.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA, ECHINOIDS

609.5	610.0	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE VUGGY POROSITY; MODERATE INDURATION; LAMINATIONS
610.0	611.3	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; MODERATE MOLDIC AND PINPOINT POROSITY; GOOD INDURATION; BIVALVES, ECHINOIDS
611.3	612.5	LIMESTONE (MUDSTONE); WHITE (N9); NO OBSERVABLE POROSITY; POOR INDURATION
612.5	617.2	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS, FALLOTELLA
617.2	618.5	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR, MOLDIC AND VUGGY POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS
618.5	621.2	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; LAMINATIONS
621.2	626.7	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS, FALLOTELLA
626.7	632.5	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA
632.5	634.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS, FRACTURED
634.5	638.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS, FRACTURED
638.0	638.8	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA
638.8	640.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS
640.0	641.7	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS
641.7	646.8	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA, LEPIDOCYCLINA
646.8	648.5	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); LOW INTERGRANULAR POROSITY; MODERATE INDURATION
648.5	650.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION; FRACTURED, FORAMINIFERA
650.0	654.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA
654.0	654.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION
654.6	657.0	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS
657.0	657.7	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA
657.7	658.4	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA
658.4	660.0	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS
660.0	661.7	LIMESTONE (GRAINSTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS, BIVALVES, FALLOTELLA
661.7	662.5	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); MODERATE INTERGRANULAR, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS, FRACTURED, BIVALVES, GASTROPODS
662.5	665.8	LIMESTONE (PACKSTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS, FALLOTELLA, FRACTURED
665.8	668.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR, VUGGY, AMD MOLDIC POROSITY; MODERATE INDURATION; FRACTURED, FORAMINIFERA, BIVALVES, GASTROPODS, ECHINOIDS
668.5	670.0	NO RECOVERY
670.0	670.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND VUGGY POROSITY; MODERATE INDURATION; FORAMINIFERA
670.7	671.6	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, FALLOTELLA, BIVALVE, FRACTURED
671.6	672.5	LIMESTONE (GRAINSTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, BIVALVES
672.5	675.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FRACTURED, BIVALVES
675.3	680.0	NO RECOVERY
680.0	684.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, SOME FRACTURES
684.5	687.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA
687.5	690.0	NO RECOVERY

690.0	690.1	LIMESTONE (GRAINSTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA
690.1	694.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA
694.0	695.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA
695.0	696.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA
696.3	697.8	CLAY; VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION
697.8	700.0	NO RECOVERY
700.0	703.6	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA
703.6	706.4	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA
706.4	709.5	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA, SOME FRACTURES
709.5	710.0	NO RECOVERY
710.0	711.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION; FRACTURED
711.3	712.3	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION; FRACTURED
712.3	716.0	NO RECOVERY
716.0	716.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION
716.5	720.0	NO RECOVERY
720.0	721.0	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION
721.0	722.5	LIMESTONE (PACKSTONE); GRAYISH ORANGE (10YR 7/4); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION
722.5	726.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION
726.0	728.0	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION
728.0	730.0	NO RECOVERY
730.0	731.0	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, GATROPOD, FRACTURED
731.0	734.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION
734.3	736.4	LIMESTONE (GRAINSTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR AND MOLDIC POROSITY; GOOD INDURATION; FORAMINIFERA, GASTROPODS
736.4	744.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; SOME FRACTURES, GASTROPODS
744.6	750.0	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); POOR INTERGRANULAR POROSITY; MODERATE INDURATION
750.0	761.0	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; CHERT, CALCITE, SOME FRACTURES
761.0	763.6	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION; CHERT, FRACTURED
763.6	770.0	NO RECOVERY
770.0	772.0	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION;
772.0	773.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION; FRACTURED
773.0	776.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; SOME FRACTURES
776.0	777.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FRACTURED
777.0	780.0	NO RECOVERY
780.0	783.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION; FRACTURED
783.3	785.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; FRACTURED
785.0	790.0	NO RECOVERY
790.0	791.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION
791.0	792.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION
792.0	800.0	NO RECOVERY

800.0	801.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; FRACTURED
801.7	804.4	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION
804.4	810.0	NO RECOVERY
810.0	811.3	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION
811.3	815.5	CALCAREOUS DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; NO OBSERVABLE POROSITY; GOOD INDURATION; CHERT
815.5	816.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION
816.0	820.0	NO RECOVERY
820.0	825.3	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; CHERT, SOME FRACTURES
825.3	830.0	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION
830.0	833.3	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION
833.3	838.2	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; SOME FRACTURES
838.2	840.0	DOLOMITIC-LIMESTONE; YELLOWISH GREY (5Y 7/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; ORGANICS
840.0	845.0	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; ORGANICS
845.0	847.6	DOLOMITIC-LIMESTONE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; HIGH PINPOINT AND MOLDIC POROSITY; GOOD INDURATION
847.6	849.5	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION
849.5	850.0	NO RECOVERY
850.0	854.8	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURES
850.0	854.8	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURES
845.8	855.7	DOLOMITIC-LIMESTONE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; INTRACLASTS
855.7	857.3	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; LAMINATIONS, ORGANICS
857.3	858.4	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; NO OBSERVABLE POROSITY; GOOD INDURATION; LAMINATIONS, ORGANICS
858.4	859.4	DOLOMITE; DARK YELLOWISH ORANGE (10YR 6/6); SUCROSIC; MODERATE PINPOINT POROSITY; MODERATE INDURATION
859.4	861.1	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; ORGANICS
861.1	865.6	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; LAMINATIONS, SOME FRACTURES, ORGANICS
865.6	868.2	DOLOMITIC-LIMESTONE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; MODERATE INDURATION; SOME FRACTURES
868.2	870	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS
870	871.6	DOLOMITIC-LIMESTONE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION
871.6	874.3	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; SOME FRACTURES, ORGANICS, CARBONATE MUD INFILLING PORES
874.3	876.3	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; SOME FRACTURES, DOLOSTONE INFILLING OF PORES
876.3	878.2	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; NO OBSERVEABLE POROSITY; MODERATE INDURATION
878.2	880	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; DOLOSTONE INFILLING OF PORES
880	881.8	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION
881.8	883.7	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; FRACTURED, ORGANICS
883.7	886	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE PINPOINT, MOLDIC, AND VUGGY POROSITY; MODERATE INDURATION; SOME FRACTURES, ORGANICS

886	890	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; ORGANICS, VUGS INFILLED WITH DOLOSTONE AND ORGANICS
890	892.5	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION
892.5	894.1	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; ORGANICS
894.1	897.1	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; SOME FRACTURES, SOME VUGS INFILLED WITH DOLOSTONE
897.1	898.4	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; LAMINATIONS, ORGANICS
898.4	898.9	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); SUCROSIC; MODERATE PINPOINT AND INTERGRANULAR POROSITY; GOOD INDURATION; LAMINATIONS, ORGANICS
898.9	900	NO RECOVERY

Feb. 24. 2020 10:52AM No. 3449 P. 4/5

49WP2041605

STATE OF FLORIDA PERMIT APPLICATION TO CONSTRUCT, REPAIR, MODIFY, OR ABANDON A WELL

☐ Southwest
☐ Northwest
☐ St. Johns River
☒ South Florida
☐ Suwannee River
☐ DEP
☐ Delegated Authority (If Applicable) ____________

PLEASE FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

The water well contractor is responsible for completing this form and forwarding the permit application to the appropriate delegated authority where applicable.

Permit No.
Florida Unique ID ____
Permit Stipulations Required (See Attached)
62-524 Quad No. ____ Delineation No. ____
CUP/WUP Application No. ____
ABOVE THIS LINE FOR OFFICIAL USE ONLY

1. SFWMD PO Box 24680 West Palm Bch Fl 33416
*Owner, Legal Name if Corporation *Address *City *State *ZIP Telephone Number
2. 14020 Hwy 60 E Lake Wales, Fl. 33898
*Well Location - Address, Road Name or Number, City
3. 29-30-24-000000-014250
*Parcel ID No. ☒ (PIN) or ☐ Alternate Key Lot Block Unit
4. 29 30 24 Osceola Check if 62-524: ☐ Yes ☐ No
*Section or Land Grant *Township *Range *County Subdivision
5. Stephanie Stallsmith 9342 352-567-9500 Stephanie@rossdrilling.com
*Water Well Contractor *License Number *Telephone Number E-mail Address
6. 35920 State Road 52 Dade City Fl. 33525
*Water Well Contractor's Address City State ZIP
7. *Type of Work: ☒ Construction ☐ Repair ☐ Modification ☐ Abandonment ____
*Reason for Repair, Modification, or Abandonment
8. *Number of Proposed Wells 1
9. *Specify Intended Use(s) of Well(s):
☐ Domestic ☐ Landscape Irrigation ☐ Agricultural Irrigation ☐ Site Investigations
☐ Bottled Water Supply ☐ Recreation Area Irrigation ☐ Livestock ☒ Monitoring
☐ Public Water Supply (Limited Use/DOH) ☐ Nursery Irrigation ☐ Test
☐ Public Water Supply (Community or Non-Community/DEP) ☐ Commercial/Industrial ☐ Earth-Coupled Geothermal
☐ Class I Injection ☐ Golf Course Irrigation ☐ HVAC Supply
☐ HVAC Return
Class V Injection: ☐ Recharge ☐ Commercial/Industrial Disposal ☐ Aquifer Storage and Recovery ☐ Drainage
Remediation: ☐ Recovery ☐ Air Sparge ☐ Other (Describe) ____
☐ Other (Describe)

Date Stamp
Official Use Only

10. *Distance from Septic System if ≤ 200 ft. ____ 11. Facility Description Vacant 12. Estimated Start Date 3/2/20
13. *Estimated Well Depth 600 ft. *Estimated Casing Depth 475 ft. Primary Casing Diameter 4" in. Open Hole: From 475 To 600 ft.
14. Estimated Screen Interval: From ____ To ____ ft.
15. *Primary Casing Material: ☐ Black Steel ☐ Galvanized ☒ PVC ☐ Stainless Steel
☐ Not Cased ☐ Other ____
16. Secondary Casing: ☐ Telescope Casing ☐ Liner ☒ Surface Casing Diameter 16.10 in.
17. Secondary Casing Material: ☐ Black Steel ☐ Galvanized ☒ PVC ☐ Stainless Steel ☐ Other ____
18. *Method of Construction, Repair, or Abandonment: ☐ Auger ☐ Cable Tool Jetted ☐ Rotary ☐ Sonic
☐ Combination (Two or More Methods) ☐ Hand Driven (Well Point, Sand Point) ☐ Hydraulic Point (Direct Push)
☐ Horizontal Drilling ☐ Plugged by Approved Method ☐ Other (Describe) ____
19. Proposed Grouting Interval for the Primary, Secondary, and Additional Casing:
From 0 To 475 Seal Material (☐ Bentonite ☒ Neat Cement ☐ Other ____)
From ____ To ____ Seal Material (☐ Bentonite ☐ Neat Cement ☐ Other ____)
From ____ To ____ Seal Material (☐ Bentonite ☐ Neat Cement ☐ Other ____)
From ____ To ____ Seal Material (☐ Bentonite ☐ Neat Cement ☐ Other ____)
20. Indicate total number of existing wells on site ____ List number of existing unused wells on site Ø
21. *Is this well or any existing well or water withdrawal on the owner's contiguous property covered under a Consumptive/Water Use Permit (CUP/WUP) or CUP/WUP Application? Yes No If yes, complete the following: CUP/WUP No. ____ District Well ID No. ____
22. Latitude ____ Longitude ____
23. Data Obtained From: ☐ GPS ☐ Map ☐ Survey Datum: ____ NAD 27 ____ NAD 83 ____ WGS 84

I hereby certify that I will comply with the applicable rules of Title 40, Florida Administrative Code, and that a water use permit or artificial recharge permit, if needed, has been or will be obtained prior to commencement of well construction. I further certify that all information provided in this application is accurate and that I will obtain necessary approval from other federal, state, or local governments, if applicable. I agree to provide a well completion report to the District within 30 days after completion of the construction, repair, modification, or abandonment authorized by this permit, or if the permit expires, whichever occurs first.

I certify that I am the owner of the property, that the information provided is accurate, and that I am aware of my responsibilities under Chapter 373, Florida Statutes, to maintain or properly abandon this well, or, I certify that I am the agent for the owner, that the information provided is accurate, and that I have informed the owner of their responsibilities as noted above. Owner consents to allow representatives of the WMD or Delegated Authority access to the well site during the construction, repair, modification, or abandonment authorized by this permit.

*Signature of Contractor 9342 *License No. *Signature of Owner or Agent 2/24/20 *Date

Approval Granted By ____ Issue Date 8-25-20 Expiration Date 8-25-20 Hydrologist Approval ____
Fee Received $ 75 Receipt No. ____ Check No. CC

THIS PERMIT IS NOT VALID UNTIL PROPERLY SIGNED BY AN AUTHORIZED OFFICER OR REPRESENTATIVE OF THE WMD OR DELEGATED AUTHORITY. THE PERMIT SHALL BE AVAILABLE AT THE WELL SITE DURING ALL CONSTRUCTION, REPAIR, MODIFICATION, OR ABANDONMENT ACTIVITIES.

DEP Form: 62-532.900(1) Incorporated in 62-532.400(1), F.A.C. Effective Date: October 7, 2010 Page 1 of 2

STATE OF FLORIDA WELL COMPLETION REPORT

☐ Southwest
☐ Northwest
☐ St. Johns River
☐ South Florida
☐ Suwannee River
☐ DEP
☒ Delegated Authority (If Applicable) Osceola

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Official Use Only

1.*Permit Number 49WP2041605 CUP/WUP Number ______ *DID Number ______ 62-524 Delineation No. ______

2.*Number of permitted wells constructed, repaired, or abandoned 1 *Number of permitted wells not constructed, repaired, or abandoned Ø

3.*Owner's Name SFWMD 4.*Completion Date 2/11/21 5. Florida Unique ID ______

6. 14020 Hwy 60 E Lake Wales, Fl. 33898
*Well Location - Address, Road Name or Number, City, ZIP

7. *County Osceola *Section 29 Land Grant ______ *Township 30 *Range 24

8. Latitude ______ Longitude ______

9. Data Obtained From: ___GPS ___Map ___Survey Datum: ___NAD 27 ___NAD 83 ___WGS 84

10.*Type of Work: X Construction ___Repair ___Modification ___Abandonment

11.*Specify Intended Use(s) of Well(s):
___Domestic ___Landscape Irrigation ___Agricultural Irrigation ___Site Investigation
___Bottled Water Supply ___Recreation Area Irrigation ___Livestock X Monitoring
___Public Water Supply (Limited Use/DOH) ___Nursery Irrigation ___Test
___Public Water Supply (Community or Non-Community/DEP) ___Commercial/Industrial ___Earth-Coupled Geothermal
___Golf Course Irrigation ___HVAC Supply
___Class I Injection ___HVAC Return
Class V Injection: ___Recharge ___Commercial/Industrial Disposal ___Aquifer Storage and Recovery ___Drainage
Remediation: ___Recovery ___Air Sparge ___Other (Describe) ______
___Other (Describe) ______

12.*Drill Method: ___Auger ___Cable Tool X Rotary ___Combination (Two or More Methods) ___Jetted ___Sonic
___Horizontal Drilling ___Hydraulic Point (Direct Push) ___Other ______

13.*Measured Static Water Level ___ ft. Measured Pumping Water Level ___ ft. After ___ Hours at ___ GPM

14.*Measuring Point (Describe) ______ Which is ___ ft. ___Above ___Below Land Surface *Flowing: ___Yes ___No

15.*Casing Material: X Black Steel ___Galvanized ___PVC ___Stainless Steel ___Not Cased ___Other ______

16.*Total Well Depth 1840 ft. Cased Depth 1407 ft. *Open Hole: From 1407 To 1840 ft. *Screen: From ___ To ___ ft. Slot Size ___

17.*Abandonment: ___Other (Explain) ______
From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___

18.*Surface Casing Diameter and Depth:
Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___

19.*Primary Casing Diameter and Depth:
Dia 6 in. From 0 ft. To 1407 ft. No. of Bags 559 Seal Material (Check One): X Neat Cement ___Bentonite ___Other ___
Dia ___ in. From 515 ft. To 1118 ft. No. of Bags 9.26 yds Seal Material (Check One): ___Neat Cement ___Bentonite X Other Gravel
Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___

20.*Liner Casing Diameter and Depth:
Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___

21.*Telescope Casing Diameter and Depth:
Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___
Dia ___ in. From ___ ft. To ___ ft. No. of Bags ___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other ___

22. Pump Type (If Known):
___Centrifugal ___Jet ___Submersible ___Turbine
Horsepower ___ Pump Capacity (GPM) ___
Pump Depth ___ ft. Intake Depth ___ ft.

23. Chemical Analysis (When Required):
Iron ___ ppm Sulfate ___ ppm Chloride ___ ppm
___Laboratory Test ___Field Test Kit

24. Water Well Contractor:
*Contractor Name Stephanie Steelsmith *License Number 9342 E-mail Address Stephanie@hussdrilling.com
*Contractor's Signature [signature] *Driller's Name (Print or Type) Kevin Reffuse
(I certify that the information provided in this report is accurate and true.)

FORM LEG-R.005.02 (6/10) Rule 40D-3.411 (1) (a), F.A.C.

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

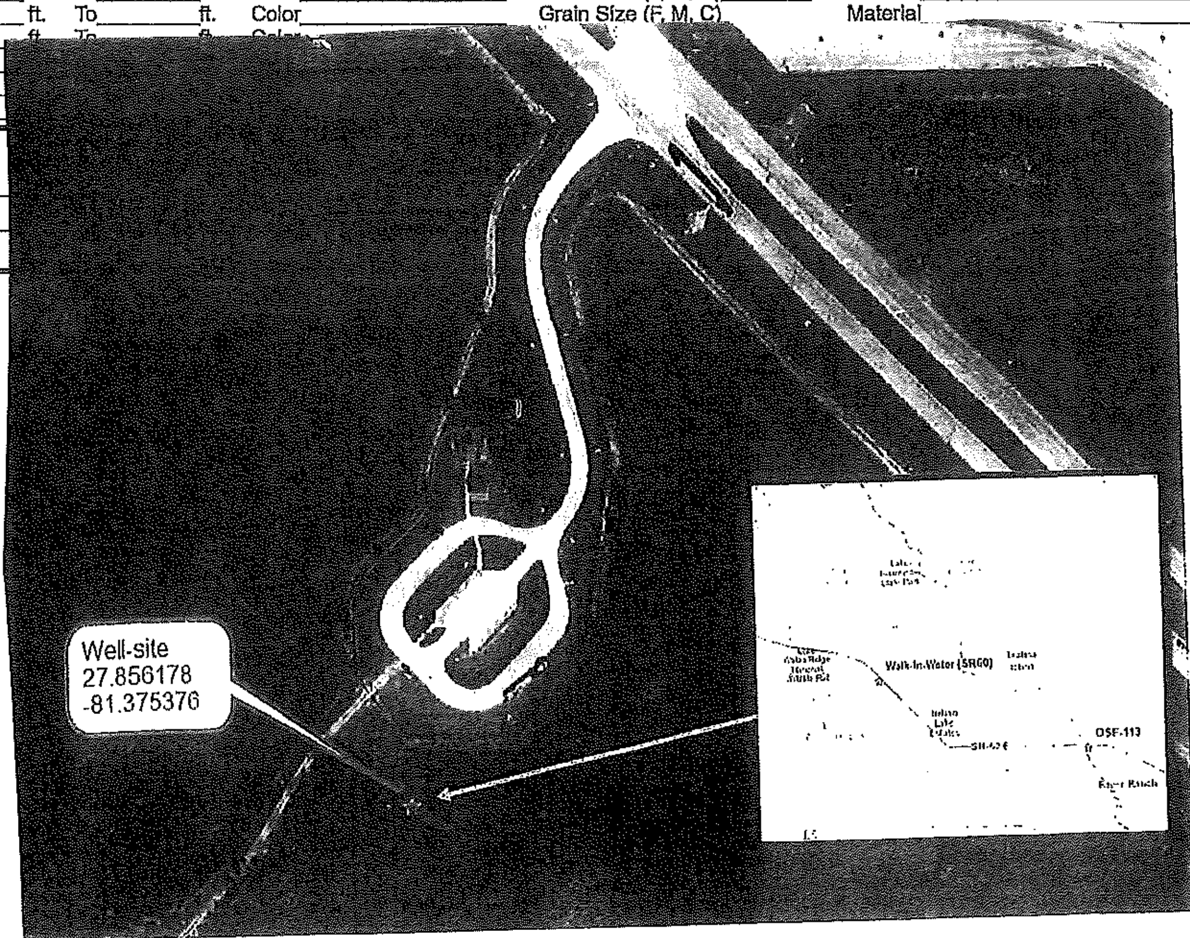
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PALM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C)______ Material______
From______ ft. To______ ft. Color______ Grain Size (F, M, C) Material______
From______
From______
From______
From______

Comments:



Give dist **Figure 5.** SUMICA Drill-Site Location

Well	Depth Mi	Depth Ma	Description/Comments	Rock Type	Porosity	Porosity Types	Induration	Other Feature	Fossil type	Colors	Access Min Ty	Access Min Pct	Porosity Percent Modifie
Description	The minimum depth of the lithologic sample, recorded as units of feet below land surface	The end depth of the lithologic sample, recorded as units of feet below land surface	Description of interval or any additional comments. 2000 characters maximum	The rock type for the lithologic sample. Restricted input, select from pull down menu	Percent porosity, reported in percent, not as a decimal. Value range from 0 to 100	Restricted input, select from pull down menu	Amount of induration observed in interval. Restricted input, select from pull down menu	Any additional feature that does not fit in the other categories	Restricted input, select from pull down menu	Restricted input, select from pull down menu	Accessory mineral observed in interval. Restricted input, select from pull down menu	Percent of sample that is made up of the accessory mineral	Describes the various processes for obtaining porosity measurements. Restricted input, select from pull down menu
	0.0	5.0	TRACE OF HEAVY MINERALS	SAND (QUARTZ)									
	5.0	10.0	GASTROPODS. POORLY WASHED SAMPLE.	SAND (QUARTZ)									
	16.0	20.0	LARGE SHELL FRAGMENTS. GASTROPODS	SAND (QUARTZ)									
	20.0	23.0	GASTROPODS. TRACE OF MICA. FINELY GROUND SHELL. SOME OF THE LIMESTONE IS PHOSPHATIC	SAND (QUARTZ)									
	23.0	26.0	SMALL AMOUNT OF PHOSPHATIC SANDSTONE WITH SPARRY CALCITE MATRIX	LIMESTONE									
	30.0	40.0	GASTROPODS. SMALL AMOUNT OF SHELLY SANDSTONE WITH SPARRY CALCITE MATRIX	SAND (QUARTZ)									
	43.0	53.0	MOST OF THE SHELL IS FINELY GROUND. TRACE OF MICA.	SAND (QUARTZ)									
	53.0	56.0	GASTROPODS. SOME LOOSE LARGE SHELL FRAGMENTS AND FINELY GROUND SHELL FRAGMENTS. SMALL AMOUNT OF MOLDIC SHELLY SANDSTONE WITH SPARRY CALCITE MATRIX.	SAND (QUARTZ)									
	56.0	63.0	BRYOZOA. GASTROPODS. SOME OF THE LIMESTONE HAS PHOSPHATE MATRIX AND IS SMOOTH AND ROUNDED. MANY SHELLS ARE PHOSPHATIZED SAND SIZE FRAGMENTS. SOME SHELLY PHOSPHATIC SANDSTONE WITH SPARRY CALCITE CEMENT (LOOKS LIKE CONCRETIONS WITH VERY FINE GRAINED SAND AND PHOSPHATE).	SAND (QUARTZ)									
	63.0	70.0	ABOUT 35% OF SAMPLE IS VERY FINE GRAINED CARBONATE MATERIAL (POORLY WASHED). <5% VERY FINE GRAINED PHOSPHATIC COQUINA-LIKE SANDSTONE.	SAND (QUARTZ)									
Example Data	70.0	73.0	GASTROPODS, CRUSTACEA. LIMESTONE IS RECRYSTALLIZED, FOSSILIFEROUS, AND PHOSPHATIC	SHELL BED									
	73.0	76.0	GASTROPODS	SAND (QUARTZ)									
	86.0	96.0	GASTROPODS. <2% SANDY COQUINA WITH SPARRY CALCITE CEMENT WITH GOOD INDURATION. MANY SHELLS ARE PHOSPHATIZED. SAND INCREASES TOWARD BOTTOM TO ABOUT 45%.	SHELL BED									
	95.0	100.0	MANY TURRITELLA 1-2CM LONG. MANY SHELL FRAGMENTS ARE PHOSPHATIZED. %PHOSPHATE INCLUDES SAND AND GRAVEL SIZE.	SHELL BED									
	100.0	126.0	MANY TURRITELLA. MANY SHELL FRAGMENTS ARE PHOSPHATIZED. TRACE OF SANDY COQUINA WITH SPARRY CALCITE CEMENT. GOOD INDURATION. % PHOSPHATE INCLUDES SAND AND GRAVEL SIZE STARTING AT 113 FT. % LARGE SHELL FRAGMENTS AND SAND CONTENT INCREASES.	SHELL BED									
	126.0	136.0	LARGE BARNACLES. GRADATIONAL CHANGE FROM ABOVE INTERVAL TO THIS INTERVAL. 10% SHELLY SANDSTONE WITH CALCILUTITE MATRIX.	GRAVELLY SANDS									
	138.0	150.0	GASTROPODS. TRACE OF MICA AND HEAVY MINERALS. 2% OF SAMPLE IS A POORLY INDURATED CALCAREOUS SANDSTONE AND INCREASES WITH DEPTH TO 6%. SHELL DECREASES TO ABOUT 5%.	SAND (QUARTZ)									
	150.0	170.0	CALCAREOUS POORLY WASHED SAMPLE FORMING SOME POORLY INDURATED SANDSTONE. TRACE OF SHELL. <1% MICA.	SAND (QUARTZ)									
POF-32	1500.0	1500.5	NO RECOVERY										
POF-32	1500.5	1503.0	LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR : MODERATE INDURATION, BIVALVES	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	BIVALVES		GRAYISH ORANGE : 10YR 7/4			
POF-32	1503.0	1504.0	LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, MODERATE INTERGRANULAR POROSITY, MODERATE INDURATION, BIVALVES, SOME FRACTURES	LIMESTONE-PACKSTONE	20	INTERGRANULA	MODERATE	BIVALVES, SOME FRACTURES		VERY PALE ORANGE : 10YR 8/2			
POF-32	1504.0	1504.6	LIMESTONE-PACKSTONE, MODERATE YELLOWISH BROWN : 10YR 5/4, MODERATE INTERGRANULAR AND PINPOINT POROSITY, GOOD INDURATION, BIVALVES, SOME FRACTURES, CALCITE GROWING ON FRACTURE SURFACE	LIMESTONE-PACKSTONE	20	INTERGRANULA	GOOD	BIVALVES, SOME FRACTURES, CALCITE GROWING ON FRACTURE SURFACE		MODERATE YELLOWISH BROWN : 10YR 5/4	CALCITE		
POF-32	1504.6	1506.1	LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, BIVALVES	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	BIVALVES		VERY PALE ORANGE : 10YR 8/2			
POF-32	1506.1	1507.5	LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR AND VUGGY POROSITY, MODERATE INDURATION, CALCITE GROWING ON FRACTURE SURFACE AND IN VUGS	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	CALCITE GROWING ON FRACTURE SURFACE AND IN VUGS		GRAYISH ORANGE 10YR 7/4	CALCITE		
POF-32	1507.5	1509.1	LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, MODERATE INTERGRANULAR, MOLDIC, AND VUGGY POROSITY, MODERATE INDURATION, BIVALVES, CALCITE GROWING ON FRACTURE SURFACE AND IN VUGS	LIMESTONE-PACKSTONE	20	INTERGRANULA	MODERATE	BIVALVES, CALCITE GROWING ON FRACTURE SURFACE AND IN VUGS		GRAYISH ORANGE 10YR 7/4	CALCITE		
POF-32	1509.1	1510.0	CALCAREOUS DOLOMITE, GRAYISH ORANGE : 10YR 7/4, MICROCRYSTALLINE, LOW PINPOINT AND MOLDIC POROSITY, MODERATE INDURATION, BIVALVES, ECHINOIDS	DOLOMITE	10	PIN POINT - VUG	MODERATE	BIVALVES	ECHINOIDS	GRAYISH ORANGE 10YR 7/4			
POF-32	1510.0	1513.7	LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, ECHINOIDS	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE		ECHINOIDS	VERY PALE ORANGE : 10YR 8/2			
POF-32	1513.7	1515.6	CALCAREOUS DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT, MOLDIC, AND VUGGY POROSITY, GOOD INDURATION, BIVALVES, CALCITE IN VUGS	DOLOMITE	20	PIN POINT - VUG	GOOD	BIVALVES, CALCITE IN VUGS		MODERATE YELLOWISH BROWN : 10YR 5/4	CALCITE		
POF-32	1515.6	1518.3	LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, BIVALVES, SOME INTRACLASTS	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	BIVALVES, SOME INTRACLASTS		GRAYISH ORANGE : 10YR 7/4			
POF-32	1518.3	1520.0	NO RECOVERY										
POF-32	1520.0	1521.5	CALCAREOUS DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT AND MOLDIC POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	20	PIN POINT - VUG	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1521.5	1523.8	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT AND MOLDIC POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	20	PIN POINT - VUG	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1523.8	1524.0	NO RECOVERY										
POF-32	1524.0	1525.7	CALCAREOUS DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	20	PIN POINT - VUG	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1525.7	1526.0	NO RECOVERY										
POF-32	1526.0	1527.5	CALCAREOUS DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT POROSITY, MODERATE INDURATION, FRACTURED	DOLOMITE	20	PIN POINT - VUG	MODERATE	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1527.5	1528.6	CALCAREOUS DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, HIGH PINPOINT POROSITY, MODERATE INDURATION	DOLOMITE	30	PIN POINT - VUG	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1528.6	1530.0	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, HIGH PINPOINT POROSITY, POOR INDURATION, FRACTURED, BIVALVES	DOLOMITE	30	PIN POINT - VUG	POOR	FRACTURED BIVALVES		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1530.0	1531.3	DOLOMITE, DARK YELLOWISH BROWN : 10YR 4/2, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, GOOD INDURATION, BIVALVES	DOLOMITE	30	PIN POINT - VUG	GOOD	BIVALVES		DARK YELLOWISH BROWN : 10YR 4/2			
POF-32	1531.3	1532.2	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, GOOD INDURATION, BIVALVES	DOLOMITE	30	PIN POINT - VUG	GOOD	BIVALVES		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1532.2	1532.6	CALCAREOUS DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, GOOD INDURATION	DOLOMITE	30	PIN POINT - VUG	GOOD			MODERATE YELLOWISH BROWN 10YR 5/4			
POF-32	1532.6	1533.0	CALCAREOUS DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT POROSITY, GOOD INDURATION	DOLOMITE	10	PIN POINT - VUG	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1533.0	1534.0	CALCAREOUS DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT POROSITY, MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUG	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1534.0	1535.1	CALCAREOUS DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, LOW PINPOINT POROSITY, POOR INDURATION	DOLOMITE	10	PIN POINT - VUG	POOR			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1535.1	1540.0	LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, LOW INTERGRANULAR POROSITY, POOR INDURATION, CALCITE VEIN AT 1535.6	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR	CALCITE VEIN AT 1535.6		PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1540.0	1541.3	LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1541.3	1543.2	CLAYEY LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, POOR INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULA	POOR			VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1543.2	1550.0	CLAYEY LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR POROSITY, MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE			GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1550.0	1554.0	CLAYEY LIMESTONE-PACKSTONE, DARK YELLOWISH ORANGE : 10YR 6/6, LOW INTERGRANULAR POROSITY, MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE			DARK YELLOWISH ORANGE : 10YR 6/6	CLAY		
POF-32	1554.0	1556.4	CLAYEY LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, SMALL CALCITE CRYSTALS, BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	SMALL CALCITE CRYSTALS, BIVALVE SHELL FRAGMENTS		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1556.4	1557.0	CLAYEY LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, MODERATE INTERGRANULAR AND VUGGY POROSITY, MODERATE INDURATION, BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	20	INTERGRANULA	MODERATE	BIVALVE SHELL FRAGMENTS		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1557.0	1558.2	CLAYEY LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, BIVALVE AND GASTROPOD SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	BIVALVE AND GASTROPOD SHELL FRAGMENTS		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1558.2	1560.0	CLAYEY LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, MODERATE INTERGRANULAR AND VUGGY POROSITY, MODERATE INDURATION, BIVALVE AND GASTROPOD SHELL FRAGMENTS	LIMESTONE-PACKSTONE	20	INTERGRANULA	MODERATE	BIVALVE AND GASTROPOD SHELL FRAGMENTS		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1560.0	1562.0	CLAYEY LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, MODERATE INTERGRANULAR AND VUGGY POROSITY, POOR INDURATION, BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-PACKSTONE	20	INTERGRANULA	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1562.0	1563.2	CLAYEY LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, POOR INDURATION, BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-PACKSTONE	10	INTERGRANULA	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1563.2	1564.5	CLAYEY LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, POOR INDURATION, BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1564.5	1566.4	CLAYEY LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, POOR INDURATION, BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-PACKSTONE	10	INTERGRANULA	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1566.4	1567.6	CLAYEY LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, NO OBSERVABLE POROSITY, POOR INDURATION, BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-PACKSTONE	0	NO OBSERVABL	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1567.6	1570.0	CLAYEY LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, NO OBSERVABLE POROSITY, POOR INDURATION, BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-WACKESTONE	0	NO OBSERVABL	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1570.0	1570.9	CLAYEY LIMESTONE-WACKESTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR POROSITY, POOR INDURATION, BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1570.9	1575.3	CLAYEY LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR POROSITY, POOR INDURATION, BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-PACKSTONE	10	INTERGRANULA	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		GRAYISH ORANGE : 10YR 7/4	CLAY		

POF-32	1575.3	1578.0	CLAYEY LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, POOR INDURATION, BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-PACKSTONE	10	INTERGRANULA	POOR	BIVALVE SHELL FRAGMENTS LIMONITE	VERY PALE ORANGE : 10YR 8/2	CLAY
POF-32	1578.0	1580.0	CLAYEY LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2 LOW INTERGRANULAR POROSITY, POOR INDURATION, BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE	VERY PALE ORANGE : 10YR 8/2	CLAY
POF-32	1580.0	1581.0	CLAYEY LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR POROSITY, POOR INDURATION, BIVALVE SHELL FRAGMENTS, LIMONITE, PYRITE, QUARTZ SAND	LIMESTONE-PACKSTONE	10	INTERGRANULA	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE, PYRITE, QUARTZ SAND	GRAYISH ORANGE : 10YR 7/4	CLAY
POF-32	1581.0	1583.1	CLAYEY LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, NO OBSERVABLE POROSITY, POOR INDURATION, BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	0	NO OBSERVABL	POOR	BIVALVE SHELL FRAGMENTS	GRAYISH ORANGE : 10YR 7/4	CLAY
POF-32	1583.1	1590.0	CLAYEY LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR POROSITY, POOR INDURATION, BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULA	POOR	BIVALVE SHELL FRAGMENTS	GRAYISH ORANGE : 10YR 7/4	CLAY
POF-32	1590.0	1591.8	CLAYEY LIMESTONE-WACKESTONE, GRAYISH ORANGE : 10YR 7/4 LOW INTERGRANULAR AND MOLDIC POROSITY, MODERATE INDURATION, BIVALVE AND GASTROPOD SHELL FRAGMENTS LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	BIVALVE AND GASTROPOD SHELL FRAGMENTS LIMONITE	GRAYISH ORANGE : 10YR 7/4	CLAY
POF-32	1591.8	1595.7	CLAYEY LIMESTONE-WACKESTONE, GRAYISH ORANGE : 10YR 7/4 LOW INTERGRANULAR AND MOLDIC POROSITY, POOR INDURATION LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR	LIMONITE	GRAYISH ORANGE : 10YR 7/4	CLAY
POF-32	1595.7	1598.5	CLAYEY LIMESTONE-WACKESTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR AND MOLDIC POROSITY, MODERATE INDURATION, SOME BIVALVE AND GASTROPOD SHELL FRAGMENTS	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	SOME BIVALVE AND GASTROPOD SHELL FRAGMENTS	GRAYISH ORANGE : 10YR 7/4	CLAY
POF-32	1598.5	1598.9	CALCAREOUS DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT POROSITY, GOOD INDURATION FRACTURED	DOLOMITE	10	PIN POINT - VUG	GOOD	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1598.9	1600.0	NO RECOVERY							
POF-32	1600.0	1602.9	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT POROSITY, GOOD INDURATION FRACTURED	DOLOMITE	10	PIN POINT - VUG	GOOD	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1602.9	1605.3	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	20	PIN POINT - VUG	GOOD	FRACTURED	MODERATE YELLOWISH BROWN 10YR 5/4	
POF-32	1605.3	1606.0	CALCAREOUS DOLOMITE, GRAYISH ORANGE : 10YR 7/4, MICROCRYSTALLINE, LOW PINPOINT POROSITY, MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUG	MODERATE		GRAYISH ORANGE : 10YR 7/4	
POF-32	1606.0	1607.2	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT POROSITY, MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUG	MODERATE		MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1607.2	1608.5	CALCAREOUS DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, LOW PINPOINT POROSITY, MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUG	MODERATE		PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1608.5	1610.0	NO RECOVERY							
POF-32	1610.0	1612.0	CALCAREOUS DOLOMITE, DARK YELLOWISH ORANGE : 10YR 6/6, MICROCRYSTALLINE, LOW PINPOINT POROSITY, MODERATE INDURATION, LIMONITE	DOLOMITE	10	PIN POINT - VUG	MODERATE		DARK YELLOWISH ORANGE : 10YR 6/6	LIMONITE
POF-32	1612.0	1612.4	CALCAREOUS DOLOMITE, DARK YELLOWISH ORANGE : 10YR 6/6 MICROCRYSTALLINE, MODERATE PINPOINT POROSITY, POOR INDURATION	DOLOMITE	20	PIN POINT - VUG	POOR		DARK YELLOWISH ORANGE : 10YR 6/6	
POF-32	1612.4	1613.0	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT POROSITY, MODERATE INDURATION, FRACTURED	DOLOMITE	20	PIN POINT - VUG	MODERATE	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1613.0	1614.1	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION FRACTURED	DOLOMITE	20	PIN POINT - VUG	GOOD	FRACTURED	MODERATE YELLOWISH BROWN 10YR 5/4	
POF-32	1614.1	1614.9	DOLOMITE, MODERATE YELLOWISH BROWN 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT POROSITY, GOOD INDURATION	DOLOMITE	10	PIN POINT - VUG	GOOD		MODERATE YELLOWISH BROWN 10YR 5/4	
POF-32	1614.9	1616.0	DOLOMITE, DARK YELLOWISH BROWN : 10YR 4/2, MICROCRYSTALLINE, LOW PINPOINT POROSITY, GOOD INDURATION	DOLOMITE	10	PIN POINT - VUG	GOOD		DARK YELLOWISH BROWN : 10YR 4/2	
POF-32	1616.0	1617.3	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION	DOLOMITE	20	PIN POINT - VUG	GOOD		MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1617.3	1619.6	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, MODERATE INDURATION, FRACTURED	DOLOMITE	20	PIN POINT - VUG	MODERATE	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1619.6	1620.0	NO RECOVERY							
POF-32	1620.0	1622.2	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, MODERATE INDURATION, FRACTURED, LIMONITE	DOLOMITE	20	PIN POINT - VUG	MODERATE	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1622.2	1624.0	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, MODERATE INDURATION, FRACTURED, LIMONITE	DOLOMITE	30	PIN POINT - VUG	MODERATE	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1624.0	1625.8	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, MODERATE INDURATION, FRACTURED, LIMONITE	DOLOMITE	20	PIN POINT - VUG	MODERATE	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1625.8	1626.3	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT AND VUGGY POROSITY, MODERATE INDURATION, FRACTURED, LIMONITE	DOLOMITE	10	PIN POINT - VUG	MODERATE	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1626.3	1629.0	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, MODERATE INDURATION, LIMONITE	DOLOMITE	30	PIN POINT - VUG	MODERATE		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1629.0	1633.8	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT POROSITY, MODERATE INDURATION, SOME FRACTURES, LIMONITE	DOLOMITE	10	PIN POINT - VUG	MODERATE	SOME FRACTURES	MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1633.8	1635.4	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT AND VUGGY POROSITY, POOR INDURATION, FRACTURED, LIMONITE	DOLOMITE	10	PIN POINT - VUG	POOR	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1635.4	1637.6	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT POROSITY, GOOD INDURATION LIMONITE	DOLOMITE	10	PIN POINT - VUG	GOOD		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1637.6	1640.0	DOLOMITE, DARK YELLOWISH BROWN : 10YR 4/2, MICROCRYSTALLINE, LOW PINPOINT POROSITY, GOOD INDURATION, SOME FRACTURES, LIMONITE	DOLOMITE	10	PIN POINT - VUG	GOOD	SOME FRACTURES	DARK YELLOWISH BROWN : 10YR 4/2	LIMONITE
POF-32	1640.0	1643.6	LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, LIMONITE	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE		GRAYISH ORANGE : 10YR 7/4	LIMONITE
POF-32	1643.6	1650.0	NO RECOVERY							
POF-32	1650.0	1651.1	LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, LIMONITE	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE		GRAYISH ORANGE : 10YR 7/4	LIMONITE
POF-32	1651.1	1651.8	LIMESTONE-PACKSTONE, MODERATE YELLOWISH BROWN : 10YR 5/4, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, LIMONITE	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1651.8	1654.6	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT AND VUGGY POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	10	PIN POINT - VUG	GOOD	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1654.6	1656.5	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	20	PIN POINT - VUG	GOOD	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1656.5	1659.5	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT AND VUGGY POROSITY, GOOD INDURATION	DOLOMITE	10	PIN POINT - VUG	GOOD		MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1659.5	1660.0	LIMESTONE-PACKSTONE, PALE YELLOWISH BROWN : 10YR 6/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE		PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1660.0	1661.3	LIMESTONE-WACKESTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE		GRAYISH ORANGE : 10YR 7/4	LIMONITE
POF-32	1661.3	1664.7	LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR POROSITY, MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE		GRAYISH ORANGE : 10YR 7/4	
POF-32	1664.7	1666.4	DOLOMITE, DARK YELLOWISH BROWN : 10YR 4/2, MICROCRYSTALLINE, LOW PINPOINT AND VUGGY POROSITY, MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUG	MODERATE		DARK YELLOWISH BROWN : 10YR 4/2	
POF-32	1666.4	1667.0	DOLOMITE, DARK YELLOWISH BROWN : 10YR 4/2, MICROCRYSTALLINE, LOW PINPOINT POROSITY, GOOD INDURATION	DOLOMITE	10	PIN POINT - VUG	GOOD		DARK YELLOWISH BROWN : 10YR 4/2	
POF-32	1667.0	1668.0	DOLOMITE, DARK YELLOWISH BROWN : 10YR 4/2, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, GOOD INDURATION, LIMONITE	DOLOMITE	30	PIN POINT - VUG	GOOD		DARK YELLOWISH BROWN : 10YR 4/2	LIMONITE
POF-32	1668.0	1668.3	DOLOMITE, DARK YELLOWISH BROWN : 10YR 4/2, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION, LIMONITE	DOLOMITE	20	PIN POINT - VUG	GOOD		DARK YELLOWISH BROWN : 10YR 4/2	LIMONITE
POF-32	1668.3	1669.8	LIMESTONE-WACKESTONE, GRAYISH ORANGE : 10YR 7/4, MODERATE INTERGRANULAR POROSITY, MODERATE INDURATION, ORGANICS, LAMINATIONS	LIMESTONE-WACKESTONE	20	INTERGRANULA	MODERATE	ORGANICS, LAMINATIONS	GRAYISH ORANGE : 10YR 7/4	LIMONITE
POF-32	1669.8	1670.0	NO RECOVERY							
POF-32	1670.0	1671.3	LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, BIVALVE SHELL FRAGMENTS, PYRITE	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	BIVALVE SHELL FRAGMENTS, PYRITE	VERY PALE ORANGE : 10YR 8/2	LIMONITE
POF-32	1671.3	1672.0	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, BIVALVE SHELL FRAGMENTS	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	BIVALVE SHELL FRAGMENTS	VERY PALE ORANGE : 10YR 8/2	
POF-32	1672.0	1678.4	LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, BIVALVE AND ECHINOID SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	BIVALVE AND ECHINOID SHELL FRAGMENTS	VERY PALE ORANGE : 10YR 8/2	
POF-32	1678.4	1680.0	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, FRACTURED	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	FRACTURED	VERY PALE ORANGE : 10YR 8/2	
POF-32	1680.0	1681.1	LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, MODERATE INTERGRANULAR POROSITY, MODERATE INDURATION, BIVALVE AND ECHINOID SHELL FRAGMENTS, PYRITE	LIMESTONE-PACKSTONE	20	INTERGRANULA	MODERATE	BIVALVE AND ECHINOID SHELL FRAGMENTS, PYRITE	VERY PALE ORANGE : 10YR 8/2	LIMONITE
POF-32	1681.1	1684.5	LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, BIVALVE AND ECHINOID SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	BIVALVE AND ECHINOID SHELL FRAGMENTS	VERY PALE ORANGE : 10YR 8/2	LIMONITE
POF-32	1684.5	1688.0	LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, BIVALVE AND ECHINOID SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	BIVALVE AND ECHINOID SHELL FRAGMENTS	VERY PALE ORANGE : 10YR 8/2	
POF-32	1688.0	1690.0	LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE		VERY PALE ORANGE : 10YR 8/2	
POF-32	1690.0	1690.6	LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE		VERY PALE ORANGE : 10YR 8/2	LIMONITE
POF-32	1690.6	1692.3	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE		VERY PALE ORANGE : 10YR 8/2	
POF-32	1692.3	1694.6	LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE		VERY PALE ORANGE : 10YR 8/2	
POF-32	1694.6	1696.4	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR		VERY PALE ORANGE : 10YR 8/2	
POF-32	1696.4	1700.0	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE		VERY PALE ORANGE : 10YR 8/2	
POF-32	1700.0	1702.9	LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	BIVALVE SHELL FRAGMENTS	GRAYISH ORANGE : 10YR 7/4	LIMONITE
POF-32	1702.9	1704.3	LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	BIVALVE SHELL FRAGMENTS	GRAYISH ORANGE : 10YR 7/4	
POF-32	1704.3	1706.0	LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	BIVALVE SHELL FRAGMENTS	VERY PALE ORANGE : 10YR 8/2	
POF-32	1706.0	1710.0	LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	BIVALVE SHELL FRAGMENTS	VERY PALE ORANGE : 10YR 8/2	LIMONITE

POF-32	1710.0	1711.7	LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR POROSITY, MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE		GRAYISH ORANGE : 10YR 7/4	
POF-32	1711.7	1715.1	LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	BIVALVE SHELL FRAGMENTS	GRAYISH ORANGE : 10YR 7/4	
POF-32	1715.1	1716.2	LIMESTONE-PACKSTONE, DARK YELLOWISH ORANGE : 10YR 6/6, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	BIVALVE SHELL FRAGMENTS	DARK YELLOWISH ORANGE : 10YR 6/6	
POF-32	1716.2	1718.4	DOLOMITE, DARK YELLOWISH ORANGE : 10YR 6/6, MICROCRYSTALLINE, MODERATE PINPOINT POROSITY, POOR INDURATION	DOLOMITE	20	PIN POINT - VUG	POOR		DARK YELLOWISH ORANGE : 10YR 6/6	
POF-32	1718.4	1720.0	DOLOMITE, DARK YELLOWISH ORANGE : 10YR 6/6, MICROCRYSTALLINE, MODERATE PINPOINT POROSITY, MODERATE INDURATION, FRACTURED, LIMONITE	DOLOMITE	20	PIN POINT - VUG	MODERATE	FRACTURED	DARK YELLOWISH ORANGE : 10YR 6/6	LIMONITE
POF-32	1720.0	1721.0	DOLOMITE, DARK YELLOWISH ORANGE : 10YR 6/6, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION	DOLOMITE	20	PIN POINT - VUG	GOOD		DARK YELLOWISH ORANGE : 10YR 6/6	
POF-32	1721.0	1722.0	DOLOMITE, DARK YELLOWISH ORANGE : 10YR 6/6, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, MODERATE INDURATION, FRACTURED	DOLOMITE	30	PIN POINT - VUG	MODERATE	FRACTURED	DARK YELLOWISH ORANGE : 10YR 6/6	
POF-32	1722.0	1722.8	DOLOMITE, DARK YELLOWISH ORANGE : 10YR 6/6, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	30	PIN POINT - VUG	GOOD	FRACTURED	DARK YELLOWISH ORANGE : 10YR 6/6	
POF-32	1722.8	1723.5	DOLOMITE, DARK YELLOWISH ORANGE : 10YR 6/6, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION	DOLOMITE	20	PIN POINT - VUG	GOOD		DARK YELLOWISH ORANGE : 10YR 6/6	
POF-32	1723.5	1726.0	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	20	PIN POINT - VUG	GOOD	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1726.0	1727.4	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, LOW PINPOINT AND VUGGY POROSITY, GOOD INDURATION, ORGANICS	DOLOMITE	10	PIN POINT - VUG	GOOD	ORGANICS	PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1727.4	1728.6	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	30	PIN POINT - VUG	GOOD	FRACTURED	PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1728.6	1730.3	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, LOW VUGGY POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	10	VUGULAR	GOOD	FRACTURED	PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1730.3	1734.5	NO RECOVERY							
POF-32	1734.5	1736.0	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, MODERATE PINPOINT AND MOLDIC POROSITY, POOR INDURATION, FRACTURED, LIMONITE	DOLOMITE	20	PIN POINT - VUG	POOR	FRACTURED	PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE
POF-32	1736.0	1738.5	DOLOMITE, DARK YELLOWISH ORANGE : 10YR 6/6, MICROCRYSTALLINE, MODERATE PINPOINT AND MOLDIC POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	20	PIN POINT - VUG	GOOD	FRACTURED	DARK YELLOWISH ORANGE : 10YR 6/6	
POF-32	1738.5	1740.0	DOLOMITE, DARK YELLOWISH ORANGE : 10YR 6/6, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, MODERATE INDURATION, FRACTURED, LIMONITE	DOLOMITE	20	PIN POINT - VUG	MODERATE	FRACTURED	DARK YELLOWISH ORANGE : 10YR 6/6	LIMONITE
POF-32	1740.0	1742.0	DOLOMITE, GRAYISH ORANGE : 10YR 7/4, MICROCRYSTALLINE, MODERATE PINPOINT AND MOLDIC POROSITY, MODERATE INDURATION, LIMONITE	DOLOMITE	20	PIN POINT - VUG	MODERATE		GRAYISH ORANGE : 10YR 7/4	LIMONITE
POF-32	1742.0	1743.2	DOLOMITE, GRAYISH ORANGE : 10YR 7/4, MICROCRYSTALLINE, LOW PINPOINT AND MOLDIC POROSITY, GOOD INDURATION	DOLOMITE	10	PIN POINT - VUG	GOOD		GRAYISH ORANGE : 10YR 7/4	
POF-32	1743.2	1744.5	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, LOW PINPOINT AND MOLDIC POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	10	PIN POINT - VUG	GOOD	FRACTURED	PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1744.5	1746.0	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, MODERATE INDURATION, FRACTURED	DOLOMITE	30	PIN POINT - VUG	MODERATE	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1746.0	1746.9	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, MODERATE INDURATION FRACTURED	DOLOMITE	30	PIN POINT - VUG	MODERATE	FRACTURED	PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1746.9	1748.3	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	30	PIN POINT - VUG	GOOD	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1748.3	1750.0	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	20	PIN POINT - VUG	GOOD	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1750.0	1752.2	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION, LIMONITE	DOLOMITE	20	PIN POINT - VUG	GOOD		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1752.2	1754.1	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, MODERATE INDURATION, LIMONITE	DOLOMITE	30	PIN POINT - VUG	MODERATE		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1754.1	1756.3	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, GOOD INDURATION, LIMONITE	DOLOMITE	30	PIN POINT - VUG	GOOD		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1756.3	1757.6	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT, VUGGY, AND MOLDIC POROSITY, GOOD INDURATION, LIMONITE	DOLOMITE	20	PIN POINT - VUG	GOOD		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1757.6	1759.0	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, HIGH PINPOINT, VUGGY, AND MOLDIC POROSITY, MODERATE INDURATION, LIMONITE	DOLOMITE	30	PIN POINT - VUG	MODERATE		PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE
POF-32	1759.0	1760.0	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, POOR INDURATION, LIMONITE	DOLOMITE	30	PIN POINT - VUG	POOR		PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE
POF-32	1760.0	1762.1	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, MODERATE PINPOINT AND MOLDIC POROSITY, GOOD INDURATION, FRACTURED, LIMONITE	DOLOMITE	20	PIN POINT - VUG	GOOD	FRACTURED	PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE
POF-32	1762.1	1763.0	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR AND VUGGY POROSITY, MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE		VERY PALE ORANGE : 10YR 8/2	LIMONITE
POF-32	1763.0	1766.2	LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR AND VUGGY POROSITY, MODERATE INDURATION, SOME ORGANICS	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE	SOME ORGANICS	VERY PALE ORANGE : 10YR 8/2	
POF-32	1766.2	1768.4	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR AND VUGGY POROSITY, MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE		VERY PALE ORANGE : 10YR 8/2	
POF-32	1768.4	1770.0	NO RECOVERY							
POF-32	1770.0	1772.1	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, GOOD INDURATION, FRACTURED, GLAUCONITE, LIMONITE	DOLOMITE	30	PIN POINT - VUG	GOOD	FRACTURED, GLAUCONITE	MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1772.1	1776.0	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	20	PIN POINT - VUG	GOOD	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1776.0	1780.0	NO RECOVERY							
POF-32	1780.0	1781.0	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION, FRACTURED, GLAUCONITE, LIMONITE	DOLOMITE	20	PIN POINT - VUG	GOOD	FRACTURED, GLAUCONITE	MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1781.0	1784.3	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, GOOD INDURATION, FRACTURED, LIMONITE	DOLOMITE	30	PIN POINT - VUG	GOOD	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1784.3	1785.1	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION, FRACTURED, LIMONITE	DOLOMITE	30	PIN POINT - VUG	GOOD	FRACTURED	PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE
POF-32	1785.1	1787.5	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION	DOLOMITE	20	PIN POINT - VUG	GOOD		PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1787.5	1790.0	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	20	PIN POINT - VUG	GOOD	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1790.0	1790.8	DOLOMITE, DARK YELLOWISH BROWN : 10YR 4/2, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION, FRACTURED, PYRITE	DOLOMITE	20	PIN POINT - VUG	GOOD	FRACTURED	DARK YELLOWISH BROWN : 10YR 4/2	PYRITE
POF-32	1790.8	1793.2	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION, FRACTURED	DOLOMITE	20	PIN POINT - VUG	GOOD	FRACTURED	MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1793.2	1794.7	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, HIGH PINPOINT, MOLDIC, AND VUGGY POROSITY, GOOD INDURATION	DOLOMITE	30	PIN POINT - VUG	GOOD		MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1794.7	1795.7	DOLOMITE, DARK YELLOWISH BROWN : 10YR 4/2, MICROCRYSTALLINE, MODERATE PINPOINT POROSITY, GOOD INDURATION	DOLOMITE	20	PIN POINT - VUG	GOOD		DARK YELLOWISH BROWN : 10YR 4/2	
POF-32	1795.7	1797.9	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION	DOLOMITE	20	PIN POINT - VUG	GOOD		PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1797.9	1799.1	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, HIGH PINPOINT AND VUGGY POROSITY, GOOD INDURATION, PYRITE	DOLOMITE	30	PIN POINT - VUG	GOOD		PALE YELLOWISH BROWN : 10YR 6/2	PYRITE
POF-32	1799.1	1800.0	NO RECOVERY							
POF-32	1800.0	1800.5	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT POROSITY, GOOD INDURATION, ORGANICS AND LAMINATIONS, LIMONITE	DOLOMITE	10	PIN POINT - VUG	GOOD	ORGANICS AND LAMINATIONS	MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1800.5	1801.2	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION	DOLOMITE	20	PIN POINT - VUG	GOOD		MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1801.2	1805.6	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT AND VUGGY POROSITY, GOOD INDURATION, SOME FRACTURES, LIMONITE	DOLOMITE	10	PIN POINT - VUG	GOOD	SOME FRACTURES	MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE
POF-32	1805.6	1810.0	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION, LIMONITE	DOLOMITE	20	PIN POINT - VUG	GOOD		PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE
POF-32	1810.0	1811.4	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, LOW PINPOINT POROSITY, GOOD INDURATION	DOLOMITE	10	PIN POINT - VUG	GOOD		PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1811.4	1812.0	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, GOOD INDURATION, LIMONITE	DOLOMITE	20	PIN POINT - VUG	GOOD		PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE
POF-32	1812.0	1813.1	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, MODERATE INDURATION, LIMONITE	DOLOMITE	20	PIN POINT - VUG	MODERATE		PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE
POF-32	1813.1	1816.2	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, LOW PINPOINT AND VUGGY POROSITY, MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUG	MODERATE		PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1816.2	1817.6	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY ; MODERATE INDURATION, LIMONITE	DOLOMITE	20	PIN POINT - VUG	MODERATE		PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE
POF-32	1817.6	1818.1	DOLOMITE, VERY PALE ORANGE : 10YR 8/2, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY ; MODERATE INDURATION, LIMONITE	DOLOMITE	20	PIN POINT - VUG	MODERATE		VERY PALE ORANGE : 10YR 8/2	LIMONITE
POF-32	1818.1	1821.1	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, LOW PINPOINT AND VUGGY ; GOOD INDURATION, FRACTURED, PYRITE, LIMONITE	DOLOMITE	10	PIN POINT - VUG	GOOD	FRACTURED PYRITE	PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE
POF-32	1821.1	1822.0	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY ; GOOD INDURATION, LIMONITE	DOLOMITE	20	PIN POINT - VUG	GOOD		PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE
POF-32	1822.0	1823.1	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, LOW PINPOINT ; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUG	GOOD		PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1823.1	1824.0	DOLOMITE, GRAYISH ORANGE : 10YR 7/4, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY ; GOOD INDURATION, GLAUCONITE, LIMONITE	DOLOMITE	20	PIN POINT - VUG	GOOD	GLAUCONITE	GRAYISH ORANGE : 10YR 7/4	LIMONITE
POF-32	1824.0	1825.7	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, LOW PINPOINT ; GOOD INDURATION, WHITE QUARTZ INFILLING VUGS	DOLOMITE	10	PIN POINT - VUG	GOOD	WHITE QUARTZ INFILLING VUGS	PALE YELLOWISH BROWN : 10YR 6/2	

POF-32	1825.7	1826.0	NO RECOVERY								
POF-32	1826.0	1827.7	DOLOMITE, YELLOWISH GRAY (2) : 5Y 8/1, MICROCRYSTALLINE, LOW PINPOINT POROSITY, GOOD INDURATION, VUGS INFILLED WITH WHITE QUARTZ	DOLOMITE	10	PIN POINT - VUG	GOOD	VUGS INFILLED WITH WHITE QUARTZ		YELLOWISH GRAY (2) : 5Y 8/1	
POF-32	1827.7	1828.4	DOLOMITE, YELLOWISH GRAY (2) : 5Y 8/1, MICROCRYSTALLINE, HIGH PINPOINT, MOLDIC, AND VUGGY POROSITY, GOOD INDURATION, FRACTURED, LIMONITE	DOLOMITE	30	PIN POINT - VUG	GOOD	FRACTURED		YELLOWISH GRAY (2) : 5Y 8/1	LIMONITE
POF-32	1828.4	1830.0	NO RECOVERY								
POF-32	1830.0	1834.7	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, LOW PINPOINT AND VUGGY POROSITY, MODERATE INDURATION, VUGS INFILLED WITH WHITE QUARTZ, SOME HEALED FRACTURES, LIMONITE	DOLOMITE	10	PIN POINT - VUG	MODERATE	VUGS INFILLED WITH WHITE QUARTZ, SOME HEALED FRACTURES		PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE
POF-32	1834.7	1839.0	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, NO OBSERVEABLE POROSITY, MODERATE INDURATION, VUGS INFILLED WITH WHITE QUARTZ, LIMONITE	DOLOMITE	0	NO OBSERVABL	MODERATE	VUGS INFILLED WITH WHITE QUARTZ		PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE
POF-32	1839.0	1840.0	NO RECOVERY								
POF-32	1840.0	1841.8	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, NO OBSERVEABLE ; MODERATE INDURATION	DOLOMITE	0	NO OBSERVABL	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1841.8	1844.9	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT AND VUGGY POROSITY, MODERATE INDURATION, VUGS INFILLED WITH WHITE QUARTZ	DOLOMITE	10	PIN POINT - VUG	MODERATE	VUGS INFILLED WITH WHITE QUARTZ		MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1844.9	1846.5	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY POROSITY, MODERATE INDURATION, VUGS INFILLED WITH WHITE QUARTZ	DOLOMITE	20	PIN POINT - VUG	MODERATE	VUGS INFILLED WITH WHITE QUARTZ		MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1846.5	1848.5	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT, MOLDIC, AND VUGGY POROSITY, MODERATE INDURATION, VUGS INFILLED WITH WHITE QUARTZ	DOLOMITE	10	PIN POINT - VUG	MODERATE	VUGS INFILLED WITH WHITE QUARTZ		MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1848.5	1850.0	CALCAREOUS DOLOMITE, GRAYISH ORANGE : 10YR 7/4, MICROCRYSTALLINE, LOW PINPOINT AND VUGGY POROSITY, MODERATE INDURATION, FRACTURED	DOLOMITE	10	PIN POINT - VUG	MODERATE	FRACTURED		GRAYISH ORANGE : 10YR 7/4	
POF-32	1850.0	1851.6	CALCAREOUS DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, NO OBSERVEABLE POROSITY, MODERATE INDURATION, VUGS INFILLED WITH WHITE QUARTZ, ORGANICS	DOLOMITE	0	NO OBSERVABL	MODERATE	VUGS INFILLED WITH WHITE QUARTZ		PALE YELLOWISH BROWN : 10YR 6/2	ORGANICS
POF-32	1851.6	1856.4	CALCAREOUS DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, LOW VUGGY POROSITY, MODERATE INDURATION, VUGS INFILLED WITH WHITE QUARTZ, ORGANICS	DOLOMITE	10	VUGULAR	MODERATE	VUGS INFILLED WITH WHITE QUARTZ		PALE YELLOWISH BROWN : 10YR 6/2	ORGANICS
POF-32	1856.4	1859.2	CALCAREOUS DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, NO OBSERVEABLE ; MODERATE INDURATION, VUGS INFILLED WITH WHITE QUARTZ, ORGANICS	DOLOMITE	0	NO OBSERVABL	MODERATE	VUGS INFILLED WITH WHITE QUARTZ		PALE YELLOWISH BROWN : 10YR 6/2	ORGANICS
POF-32	1859.2	1860.0	CALCAREOUS DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, NO OBSERVEABLE ; MODERATE INDURATION, VUGS INFILLED WITH WHITE QUARTZ, ORGANICS	DOLOMITE	0	NO OBSERVABL	MODERATE	VUGS INFILLED WITH WHITE QUARTZ		MODERATE YELLOWISH BROWN : 10YR 5/4	ORGANICS
POF-32	1860.0	1863.0	LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, NO OBSERVEABLE ; MODERATE INDURATION, WHITE QUARTZ, LAMINATIONS, ORGANICS	LIMESTONE-WACKESTONE	0	NO OBSERVABL	MODERATE	WHITE QUARTZ, LAMINATIONS		PALE YELLOWISH BROWN : 10YR 6/2	ORGANICS
POF-32	1863.0	1863.6	LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, MODERATE PINPOINT AND VUGGY ; MODERATE INDURATION, WHITE QUARTZ, LAMINATIONS, ORGANICS	LIMESTONE-WACKESTONE	20	NO OBSERVABL	MODERATE	WHITE QUARTZ, LAMINATIONS		PALE YELLOWISH BROWN : 10YR 6/2	ORGANICS
POF-32	1863.6	1864.3	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, MODERATE PINPOINT AND VUGGY ; MODERATE INDURATION, WHITE QUARTZ	DOLOMITE	20	PIN POINT - VUG	MODERATE	WHITE QUARTZ		PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1864.3	1867.2	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, NO OBSERVEABLE ; MODERATE INDURATION, WHITE QUARTZ, LAMINATIONS, ORGANICS	DOLOMITE	0	NO OBSERVABL	MODERATE	WHITE QUARTZ, LAMINATIONS		PALE YELLOWISH BROWN : 10YR 6/2	ORGANICS
POF-32	1867.2	1867.6	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT AND VUGGY ; MODERATE INDURATION, LAMINATIONS, WHITE QUARTZ, ORGANICS	DOLOMITE	10	PIN POINT - VUG	MODERATE	LAMINATIONS, WHITE QUARTZ		MODERATE YELLOWISH BROWN : 10YR 5/4	ORGANICS
POF-32	1867.8	1868.3	DOLOMITE, MODERATE YELLOWISH BROWN : 10YR 5/4, MICROCRYSTALLINE, LOW PINPOINT AND VUGGY ; MODERATE INDURATION, WHITE QUARTZ, LAMINATIONS, ORGANICS	DOLOMITE	10	PIN POINT - VUG	MODERATE	WHITE QUARTZ, LAMINATIONS		MODERATE YELLOWISH BROWN : 10YR 5/4	ORGANICS
POF-32	1868.3	1868.5	CLAY, MODERATE YELLOWISH BROWN : 10YR 5/4, ; LOW INTERGRANULAR ; UNCONSOLIDATED INDURATION	CLAY	10	INTERGRANULA	UNCONSOLIDATED			MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1868.5	1869.0	DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, LOW PINPOINT AND VUGGY ; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUG	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1869.0	1869.8	CALCAREOUS DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, LOW PINPOINT AND VUGGY ; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUG	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1869.8	1870.0	NO RECOVERY								
POF-32	1870.0	1871.1	CALCAREOUS DOLOMITE, PALE YELLOWISH BROWN : 10YR 6/2, MICROCRYSTALLINE, NO OBSERVEABLE POROSITY, MODERATE INDURATION, LAMINATIONS	DOLOMITE	0	NO OBSERVABL	MODERATE	LAMINATIONS		PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1871.1	1872.4	LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, NO OBSERVEABLE POROSITY, MODERATE INDURATION, LAMINATIONS, FORAMINIFERA	LIMESTONE-WACKESTONE	0	NO OBSERVABL	MODERATE	LAMINATIONS	FORAMINIFERA	PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1872.4	1872.7	CLAY, DARK YELLOWISH BROWN : 10YR 4/2 ; NO OBSERVEABLE POROSITY, UNCONSOLIDATED INDURATION	CLAY	0	NO OBSERVABL	UNCONSOLIDATED			DARK YELLOWISH BROWN : 10YR 4/2	
POF-32	1872.7	1873.9	LIMESTONE-WACKESTONE, MODERATE YELLOWISH BROWN : 10YR 5/4, NO OBSERVEABLE POROSITY, MODERATE INDURATION, LAMINATIONS, FORAMINIFERA	LIMESTONE-WACKESTONE	0	NO OBSERVABL	MODERATE	LAMINATIONS	FORAMINIFERA	MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1873.9	1874.1	CLAY, MODERATE YELLOWISH BROWN : 10YR 5/4, ; NO OBSERVEABLE POROSITY, UNCONSOLIDATED INDURATION	CLAY	0	NO OBSERVABL	UNCONSOLIDATED			MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1874.1	1874.5	LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, NO OBSERVEABLE POROSITY, MODERATE INDURATION, LAMINATIONS, FORAMINIFERA	LIMESTONE-WACKESTONE	0	NO OBSERVABL	MODERATE	LAMINATIONS	FORAMINIFERA	PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1874.5	1874.9	CLAY, PALE YELLOWISH BROWN : 10YR 6/2, ; NO OBSERVEABLE POROSITY, UNCONSOLIDATED INDURATION	CLAY	0	NO OBSERVABL	UNCONSOLIDATED			PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1874.9	1875.8	LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, NO OBSERVEABLE POROSITY, POOR INDURATION, LAMINATIONS, FORAMINIFERA	LIMESTONE-WACKESTONE	0	NO OBSERVABL	POOR	LAMINATIONS	FORAMINIFERA	PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1875.8	1876.1	LIMESTONE-WACKESTONE, MODERATE YELLOWISH BROWN : 10YR 5/4, LOW INETERGRANULAR POROSITY, MODERATE INDURATION, LAMINATIONS, WHITE QUARTZ, FORAMINIFERA	LIMESTONE-WACKESTONE	10	INTRAGRANULA	MODERATE	LAMINATIONS, WHITE QUARTZ	FORAMINIFERA	MODERATE YELLOWISH BROWN : 10YR 5/4	
POF-32	1876.1	1879.2	LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, NO OBSERVEABLE POROSITY, POOR INDURATION, FORAMINIFERA	LIMESTONE-WACKESTONE	0	NO OBSERVABL	POOR		FORAMINIFERA	PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1879.2	1880.0	LIMESTONE-MUDSTONE, PALE YELLOWISH BROWN : 10YR 6/2, NO OBSERVEABLE POROSITY, POOR INDURATION	LIMESTONE-MUDSTONE	0	NO OBSERVABL	POOR			PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1880.0	1882.2	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, LIMONITE, FORAMINIFERA, PYRITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	LIMONITE	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2	PYRITE
POF-32	1882.2	1883.7	LIMESTONE-WACKESTONE, OLIVE GRAY (2) : 5Y 4/1, NO OBSERVEABLE POROSITY, MODERATE INDURATION, LAMINATIONS, FORAMINIFERA, ORGANICS	LIMESTONE-WACKESTONE	0	NO OBSERVABL	MODERATE	LAMINATIONS	FORAMINIFERA	OLIVE GRAY (2) : 5Y 4/1	ORGANICS
POF-32	1883.7	1887.7	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, NO OBSERVEABLE POROSITY, MODERATE INDURATION, WHITE QUARTZ, FORAMINIFERA	LIMESTONE-WACKESTONE	0	NO OBSERVABL	MODERATE	WHITE QUARTZ	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2	
POF-32	1887.7	1888.1	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, WHITE QUARTZ, FORAMINIFERA	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	WHITE QUARTZ	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2	
POF-32	1888.1	1890.0	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, NO OBSERVEABLE POROSITY, MODERATE INDURATION, FORAMINIFERA	LIMESTONE-WACKESTONE	0	NO OBSERVABL	MODERATE		FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2	
POF-32	1890.0	1893.3	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, NO OBSERVEABLE POROSITY, MODERATE INDURATION, LAMINATIONS, LIMONITE, FORAMINIFERA, ORGANICS	LIMESTONE-WACKESTONE	0	NO OBSERVABL	MODERATE	LAMINATIONS, LIMONITE	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2	ORGANICS
POF-32	1893.3	1893.7	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, NO OBSERVEABLE POROSITY, MODERATE INDURATION, LARGE CHERT NODULE	LIMESTONE-WACKESTONE	0	NO OBSERVABL	MODERATE	LARGE CHERT NODULE		VERY PALE ORANGE : 10YR 8/2	
POF-32	1893.7	1897.8	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, NO OBSERVEABLE POROSITY, MODERATE INDURATION, LAMINATIONS, WHITE QUARTZ, FORAMINIFERA, ORGANICS	LIMESTONE-WACKESTONE	0	NO OBSERVABL	MODERATE	LAMINATIONS, WHITE QUARTZ	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2	ORGANICS
POF-32	1897.8	1900.0	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, LAMINATIONS, WHITE QUARTZ, FORAMINIFERA, ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	LAMINATIONS, WHITE QUARTZ	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2	ORGANICS
POF-32	1900.0	1902.3	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, LAMINATIONS, ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2	ORGANICS
POF-32	1902.3	1904.2	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, WHITE QUARTZ	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	WHITE QUARTZ		VERY PALE ORANGE : 10YR 8/2	
POF-32	1904.2	1905.0	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR			VERY PALE ORANGE : 10YR 8/2	
POF-32	1905.0	1905.8	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, LAMINATIONS, ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2	ORGANICS
POF-32	1905.8	1906.3	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR			VERY PALE ORANGE : 10YR 8/2	
POF-32	1906.3	1907.7	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, MODERATE INTERGRANULAR AND VUGGY POROSITY, POOR INDURATION, WHITE QUARTZ	LIMESTONE-WACKESTONE	20	INTERGRANULA	POOR	WHITE QUARTZ		VERY PALE ORANGE : 10YR 8/2	
POF-32	1907.7	1909.7	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, MODERATE INTERGRANULAR AND VUGGY POROSITY, MODERATE INDURATION, FRACTURED, WHITE QUARTZ, GLAUCONITE, LIMONITE	LIMESTONE-WACKESTONE	20	INTERGRANULA	MODERATE	FRACTURED, WHITE QUARTZ, GLAUCONITE		VERY PALE ORANGE : 10YR 8/2	LIMONITE
POF-32	1909.7	1910.0	NO RECOVERY								
POF-32	1910.0	1911.1	LIMESTONE-WACKESTONE, DARK YELLOWISH BROWN : 10YR 4/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION, INTRACLASTS, LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	INTRACLASTS		DARK YELLOWISH BROWN : 10YR 4/2	LIMONITE
POF-32	1911.1	1912.2	LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1912.2	1913.3	LIMESTONE-WACKESTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR POROSITY, MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE			GRAYISH ORANGE : 10YR 7/4	
POF-32	1913.3	1915.1	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR POROSITY, MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE			VERY PALE ORANGE : 10YR 8/2	
POF-32	1915.1	1916.1	CLAYEY LIMESTONE-WACKESTONE, GRAYISH GREEN : 10GY 5/2, LOW INTERGRANULAR POROSITY, POOR INDURATION, GLAUCONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR	GLAUCONITE		GRAYISH GREEN : 10GY 5/2	CLAY
POF-32	1916.1	1918.2	CLAYEY LIMESTONE-WACKESTONE, YELLOWISH GRAY (2) : 5Y 8/1, LOW INTERGRANULAR ; POOR INDURATION, LAMINATIONS, ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR	LAMINATIONS, ORGANICS		YELLOWISH GRAY (2) : 5Y 8/1	CLAY
POF-32	1918.2	1918.0	LIMESTONE-MUDSTONE, YELLOWISH GRAY (2) : 5Y 8/1 ; LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULA	MODERATE			YELLOWISH GRAY (2) : 5Y 8/1	
POF-32	1918.0	1920.0	LIMESTONE-MUDSTONE, LIGHT OLIVE GRAY (2) : 5Y 6/1, LOW INTERGRANULAR ; MODERATE INDURATION, LAMINATIONS	LIMESTONE-MUDSTONE	10	INTERGRANULA	MODERATE	LAMINATIONS		LIGHT OLIVE GRAY (2) : 5Y 6/1	ORGANICS
POF-32	1920.0	1921.0	CLAYEY LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, MODERATE INTERGRANULAR ; MODERATE INDURATION, FRACTURED	LIMESTONE-WACKESTONE	20	INTERGRANULA	MODERATE	FRACTURED		VERY PALE ORANGE : 10YR 8/2	
POF-32	1921.0	1922.8	CLAYEY LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, LOW INTERGRANULAR ; MODERATE INDURATION, LAMINATIONS, ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	LAMINATIONS, ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2	CLAY
POF-32	1922.8	1923.4	CLAYEY LIMESTONE-WACKESTONE, LIGHT OLIVE GRAY (2) : 5Y 6/1, MODERATE INTERGRANULAR AND VUGGY ; MODERATE INDURATION	LIMESTONE-WACKESTONE	20	INTERGRANULA	MODERATE			LIGHT OLIVE GRAY (2) : 5Y 6/1	CLAY
POF-32	1923.4	1924.5	CLAYEY LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, MODERATE INTERGRANULAR AND VUGGY ; MODERATE INDURATION	LIMESTONE-WACKESTONE	20	INTERGRANULA	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2	
POF-32	1924.5	1925.7	CLAYEY LIMESTONE-WACKESTONE, LIGHT OLIVE GRAY (2) : 5Y 6/1, MODERATE INTERGRANULAR AND VUGGY ; MODERATE INDURATION	LIMESTONE-WACKESTONE	20	INTERGRANULA	MODERATE			LIGHT OLIVE GRAY (2) : 5Y 6/1	

POF-32	1925.7	1927.7	CLAYEY LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1927.7	1929.0	CLAYEY LIMESTONE-MUDSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULA	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1929.0	1930.0	CLAYEY LIMESTONE-MUDSTONE, LIGHT OLIVE GRAY (2) : 5Y 6/1, MODERATE INTERGRANULAR AND VUGGY ; MODERATE INDURATION	LIMESTONE-MUDSTONE	20	INTERGRANULA	MODERATE			LIGHT OLIVE GRAY (2) : 5Y 6/1			
POF-32	1930.0	1931.4	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR ; POOR INDURATION, LIMONITE, PYRITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR	LIMONITE		VERY PALE ORANGE : 10YR 8/2	PYRITE		
POF-32	1931.4	1932.0	LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1932.0	1932.5	LIMESTONE-MUDSTONE, GRAY : N5, HIGH INTERGRANULAR AND VUGGY ; MODERATE INDURATION, ORGANICS	LIMESTONE-MUDSTONE	30	INTERGRANULA	MODERATE			GRAY : N5	ORGANICS		
POF-32	1932.5	1933.3	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, MODERATE INTERGRANULAR AND VUGGY ; MODERATE INDURATION	LIMESTONE-WACKESTONE	20	INTERGRANULA	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1933.3	1934.2	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR ; MODERATE INDURATION, LAMINATIONS, ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2	ORGANICS		
POF-32	1934.2	1936.1	LIMESTONE-WACKESTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR ; MODERATE INDURATION, FORAMINIFERA	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE		FORAMINIFERA	GRAYISH ORANGE : 10YR 7/4			
POF-32	1936.1	1938.0	LIMESTONE-WACKESTONE, LIGHT GRAY : N7, LOW INTERGRANULAR ; MODERATE INDURATION, INTERCLASTS, ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	INTERCLASTS		LIGHT GRAY : N7	ORGANICS		
POF-32	1938.0	1938.1	LIMESTONE-WACKESTONE, YELLOWISH GRAY (2) : 5Y 8/1, LOW INTERGRANULAR ; MODERATE INDURATION, LAMINATIONS, ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	LAMINATIONS		YELLOWISH GRAY (2) : 5Y 8/1	ORGANICS		
POF-32	1938.1	1938.8	LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, LOW INTERGRANULAR ; MODERATE INDURATION, INTERCLASTS	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	INTERCLASTS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1938.8	1939.1	LIMESTONE-WACKESTONE, LIGHT GRAY : N7, LOW INTERGRANULAR ; MODERATE INDURATION, INTERCLASTS, ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	INTERCLASTS		LIGHT GRAY : N7	ORGANICS		
POF-32	1939.1	1940.0	LIMESTONE-WACKESTONE, YELLOWISH GRAY (2) : 5Y 8/1, LOW INTERGRANULAR ; POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-32	1940.0	1940.9	LIMESTONE-WACKESTONE, LIGHT OLIVE GRAY (2) : 5Y 6/1, LOW INTERGRANULAR ; MODERATE INDURATION, LAMINATIONS, PELLETS	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	LAMINATIONS PELLETS		LIGHT OLIVE GRAY (2) : 5Y 6/1			
POF-32	1940.9	1942.0	LIMESTONE-WACKESTONE, YELLOWISH GRAY (2) : 5Y 8/1, MODERATE INTERGRANULAR ; POOR INDURATION, FRACTURED	LIMESTONE-WACKESTONE	20	INTERGRANULA	POOR	FRACTURED		YELLOWISH GRAY (2) : 5Y 8/1			
POF-32	1942.0	1943.0	LIMESTONE-MUDSTONE, WHITE : N9, MODERATE INTERGRANULAR ; POOR INDURATION	LIMESTONE-MUDSTONE	20	INTERGRANULA	POOR			WHITE : N9			
POF-32	1943.0	1945.2	LIMESTONE-MUDSTONE, WHITE : N9, LOW INTERGRANULAR ; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULA	POOR			WHITE : N9			
POF-32	1945.2	1946.1	LIMESTONE-WACKESTONE, LIGHT OLIVE GRAY (2) : 5Y 6/1, MODERATE INTERGRANULAR ; MODERATE INDURATION, LAMINATIONS, PELLETS, FRACTURED	LIMESTONE-WACKESTONE	20	INTERGRANULA	MODERATE	LAMINATIONS, PELLETS, FRACTURED		LIGHT OLIVE GRAY (2) : 5Y 6/1			
POF-32	1946.1	1950.0	LIMESTONE-MUDSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR ; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULA	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-32	1950.0	1953.8	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR ; POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR	LIMONITE, SOME FRACTURES		VERY PALE ORANGE : 10YR 8/2	PYRITE		
POF-32	1953.8	1957.6	LIMESTONE-MUDSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR ; POOR INDURATION, LIMONITE, SOME FRACTURES, PYRITE	LIMESTONE-MUDSTONE	10	INTERGRANULA	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-32	1957.6	1958.9	LIMESTONE-MUDSTONE, LIGHT OLIVE GRAY (2) : 5Y 6/1, LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULA	MODERATE	FRACTURED		LIGHT OLIVE GRAY (2) : 5Y 6/1			
POF-32	1958.9	1960.0	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR ; POOR INDURATION, FRACTURED	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR	FRACTURED		VERY PALE ORANGE : 10YR 8/2	LIMONITE		
POF-32	1960.0	1960.8	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR ; POOR INDURATION, FRACTURED, LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR	INTRACLASTS		VERY PALE ORANGE : 10YR 8/2	LIMONITE		
POF-32	1960.8	1962.0	CLAYEY LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR ; POOR INDURATION, INTRACLASTS	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR	INTRACLASTS		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1962.0	1962.5	CLAYEY LIMESTONE-MUDSTONE, LIGHT OLIVE GRAY (2) : 5Y 6/1, LOW INTERGRANULAR ; MODERATE INDURATION, LAMINATIONS, INTRACLASTS, GLAUCONITE	LIMESTONE-MUDSTONE	10	INTERGRANULA	MODERATE	LAMINATIONS, INTRACLASTS	GLAUCONITE	LIGHT OLIVE GRAY (2) : 5Y 6/1	CLAY		
POF-32	1962.5	1963.3	CLAYEY LIMESTONE-MUDSTONE, LIGHT OLIVE GRAY (2) : 5Y 6/1, MODERATE INTERGRANULAR AND VUGGY ; MODERATE INDURATION, INTRACLASTS, GLAUCONITE	LIMESTONE-MUDSTONE	20	INTERGRANULA	MODERATE	INTRACLASTS	GLAUCONITE	LIGHT OLIVE GRAY (2) : 5Y 6/1	CLAY		
POF-32	1963.3	1964.0	CLAYEY LIMESTONE-MUDSTONE, LIGHT OLIVE GRAY (2) : 5Y 6/1, LOW INTERGRANULAR ; MODERATE INDURATION, FRACTURED, GLAUCONITE	LIMESTONE-MUDSTONE	10	INTERGRANULA	MODERATE	FRACTURED	GLAUCONITE	LIGHT OLIVE GRAY (2) : 5Y 6/1	CLAY		
POF-32	1964.0	1965.7	LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, MODERATE INTERGRANULAR AND VUGGY ; MODERATE INDURATION, FRACTURED, CLAY	LIMESTONE-WACKESTONE	20	INTERGRANULA	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1965.7	1967.7	LIMESTONE-PACKSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1967.7	1968.2	LIMESTONE-WACKESTONE, LIGHT OLIVE GRAY (2) : 5Y 6/1, LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	LAMINATIONS, INTRACLASTS		LIGHT OLIVE GRAY (2) : 5Y 6/1	GLAUCONITE		
POF-32	1968.2	1970.0	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, MODERATE INTERGRANULAR ; MODERATE INDURATION, LAMINATIONS, INTRACLASTS, GLAUCONITE	LIMESTONE-WACKESTONE	20	INTERGRANULA	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1970.0	1971.2	CLAYEY LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, LOW INTERGRANULAR ; MODERATE INDURATION, LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	LIMONITE		PALE YELLOWISH BROWN : 10YR 6/2	CLAY		
POF-32	1971.2	1972.4	CLAYEY LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, MODERATE INTERGRANULAR ; MODERATE INDURATION, GLAUCONITE, LIMONITE	LIMESTONE-WACKESTONE	20	INTERGRANULA	MODERATE	GLAUCONITE, LIMONITE		PALE YELLOWISH BROWN : 10YR 6/2	CLAY		
POF-32	1972.4	1973.0	CLAYEY LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, LOW INTERGRANULAR ; MODERATE INDURATION, GLAUCONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	GLAUCONITE		PALE YELLOWISH BROWN : 10YR 6/2	CLAY		
POF-32	1973.0	1974.1	CLAYEY LIMESTONE-MUDSTONE, LIGHT OLIVE GRAY (2) : 5Y 6/1, LOW INTERGRANULAR ; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULA	POOR			LIGHT OLIVE GRAY (2) : 5Y 6/1	CLAY		
POF-32	1974.1	1975.6	CLAYEY LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR ; POOR INDURATION, GLAUCONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	POOR	GLAUCONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1975.6	1976.0	CLAYEY LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR ; MODERATE INDURATION, GLAUCONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	GLAUCONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1976.0	1976.9	CLAYEY LIMESTONE-MUDSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR ; GOOD INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULA	GOOD			VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1976.9	1978.2	CLAYEY LIMESTONE-MUDSTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULA	MODERATE			VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1978.2	1979.0	CLAYEY LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR AND VUGGY ; MODERATE INDURATION, GLAUCONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	GLAUCONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1979.0	1980.8	CLAYEY LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, LOW INTERGRANULAR ; MODERATE INDURATION, GLAUCONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	GLAUCONITE		PALE YELLOWISH BROWN : 10YR 6/2	CLAY		
POF-32	1980.8	1983.5	CLAYEY LIMESTONE-PACKSTONE, PALE YELLOWISH BROWN : 10YR 6/2, MODERATE INTERGRANULAR ; POOR INDURATION, LIMONITE	LIMESTONE-PACKSTONE	20	INTERGRANULA	POOR	LIMONITE		PALE YELLOWISH BROWN : 10YR 6/2	CLAY		
POF-32	1983.5	1985.2	CLAYEY LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, MODERATE INTERGRANULAR ; POOR INDURATION	LIMESTONE-WACKESTONE	20	INTERGRANULA	POOR			PALE YELLOWISH BROWN : 10YR 6/2	CLAY		
POF-32	1985.2	1986.1	LIMESTONE-WACKESTONE, PALE YELLOWISH BROWN : 10YR 6/2, LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1986.1	1987.8	CLAYEY LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, MODERATE INTERGRANULAR ; POOR INDURATION	LIMESTONE-PACKSTONE	20	INTERGRANULA	POOR			GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1987.8	1988.2	LIMESTONE-WACKESTONE, GRAYISH ORANGE : 10YR 7/4, HIGH INTERGRANULAR AND VUGGY ; MODERATE INDURATION, GLAUCONITE	LIMESTONE-WACKESTONE	30	INTERGRANULA	MODERATE			GRAYISH ORANGE : 10YR 7/4	GLAUCONITE		
POF-32	1988.2	1990.0	CLAYEY LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, MODERATE INTERGRANULAR ; POOR INDURATION	LIMESTONE-PACKSTONE	20	INTERGRANULA	POOR			GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1990.0	1990.9	LIMESTONE-WACKESTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR ; MODERATE INDURATION, LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE			GRAYISH ORANGE : 10YR 7/4	LIMONITE		
POF-32	1990.9	1991.3	CLAYEY LIMESTONE-WACKESTONE, GRAYISH ORANGE : 10YR 7/4, MODERATE INTERGRANULAR AND VUGGY ; MODERATE INDURATION, LIMONITE	LIMESTONE-WACKESTONE	20	INTERGRANULA	MODERATE	LIMONITE		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1991.3	1991.7	LIMESTONE-MUDSTONE, GRAY : N5, LOW INTERGRANULAR ; MODERATE INDURATION, LIMONITE	LIMESTONE-MUDSTONE	10	INTERGRANULA	MODERATE			GRAY : N5	LIMONITE		
POF-32	1991.7	1992.4	LIMESTONE-WACKESTONE, VERY PALE ORANGE : 10YR 8/2, LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1992.4	1992.9	LIMESTONE-MUDSTONE, PALE YELLOWISH BROWN : 10YR 6/2, LOW INTERGRANULAR ; MODERATE INDURATION, LIMONITE	LIMESTONE-MUDSTONE	10	INTERGRANULA	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE		
POF-32	1992.9	1994.1	CLAYEY LIMESTONE-WACKESTONE, GRAYISH ORANGE : 10YR 7/4, MODERATE INTERGRANULAR ; MODERATE INDURATION, LIMONITE	LIMESTONE-WACKESTONE	20	INTERGRANULA	MODERATE	LIMONITE		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1994.1	1994.6	LIMESTONE-WACKESTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR ; MODERATE INDURATION, LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULA	MODERATE	LIMONITE		GRAYISH ORANGE : 10YR 7/4			
POF-32	1994.6	1996.2	CLAYEY LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, MODERATE INTERGRANULAR AND VUGGY ; POOR INDURATION, LIMONITE	LIMESTONE-PACKSTONE	20	INTERGRANULA	POOR	LIMONITE		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1996.2	1996.9	CLAYEY LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, HIGH INTERGRANULAR AND VUGGY ; POOR INDURATION, LIMONITE	LIMESTONE-PACKSTONE	30	INTERGRANULA	POOR	LIMONITE		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1996.9	1997.5	CLAYEY LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, HIGH INTERGRANULAR AND VUGGY ; MODERATE INDURATION, LIMONITE	LIMESTONE-PACKSTONE	30	INTERGRANULA	MODERATE	LIMONITE		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1997.5	1998.4	CLAYEY LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, MODERATE INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-PACKSTONE	20	INTERGRANULA	MODERATE			GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1998.4	2000.0	CLAYEY LIMESTONE-PACKSTONE, GRAYISH ORANGE : 10YR 7/4, LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULA	MODERATE			GRAYISH ORANGE : 10YR 7/4	CLAY		

APPENDIX D:
POF-31 AND POF-32 GEOPHYSICAL LOGS

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WELL POF-31
UWI POF-31

PROFESSIONAL LICENSES
Geologist PG2186
Geology Business GB458

HEADER NOTES:

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X		ALL SERVICES: CALIPER, NATURAL GAMMA, ELECTRIC, DUAL INDUCTION, SONIC
LONG		Y		
GDAT	WGS84	H DAT		
SEC		ELEV		
TWP		V DAT		
RGE				

PERMANENT DATUM:

LOG MEASURED FROM: GROUND SURFACE

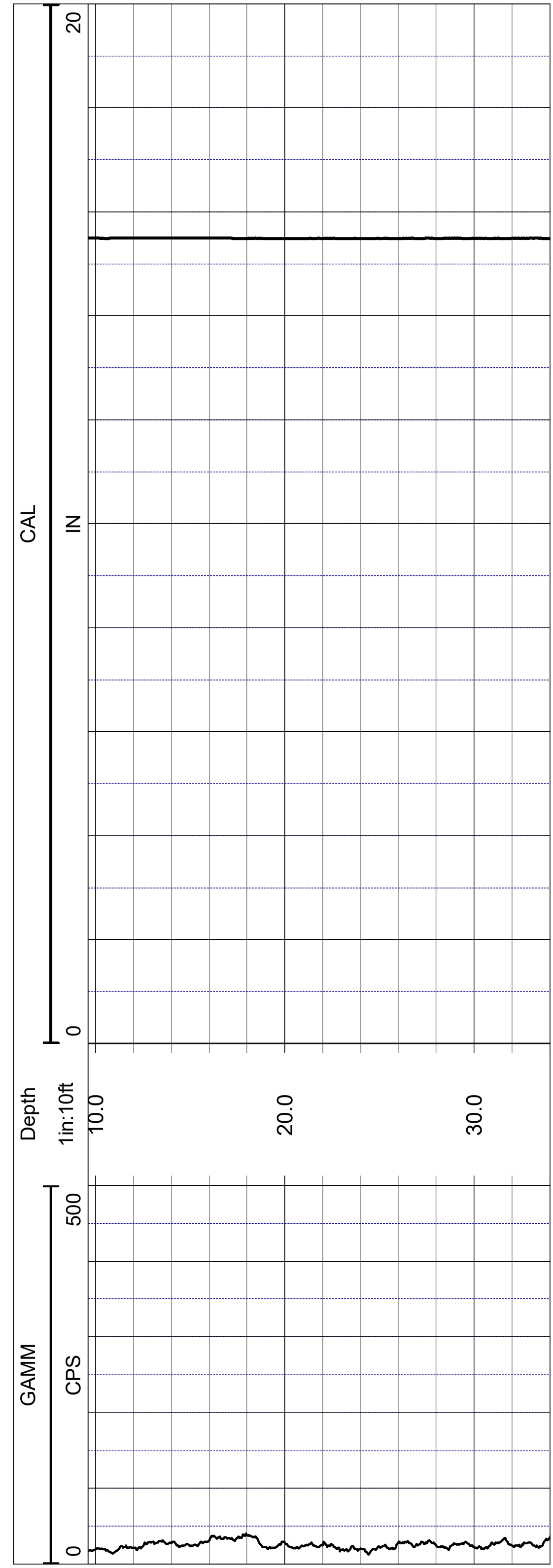
DRILLING MEASURED FROM:

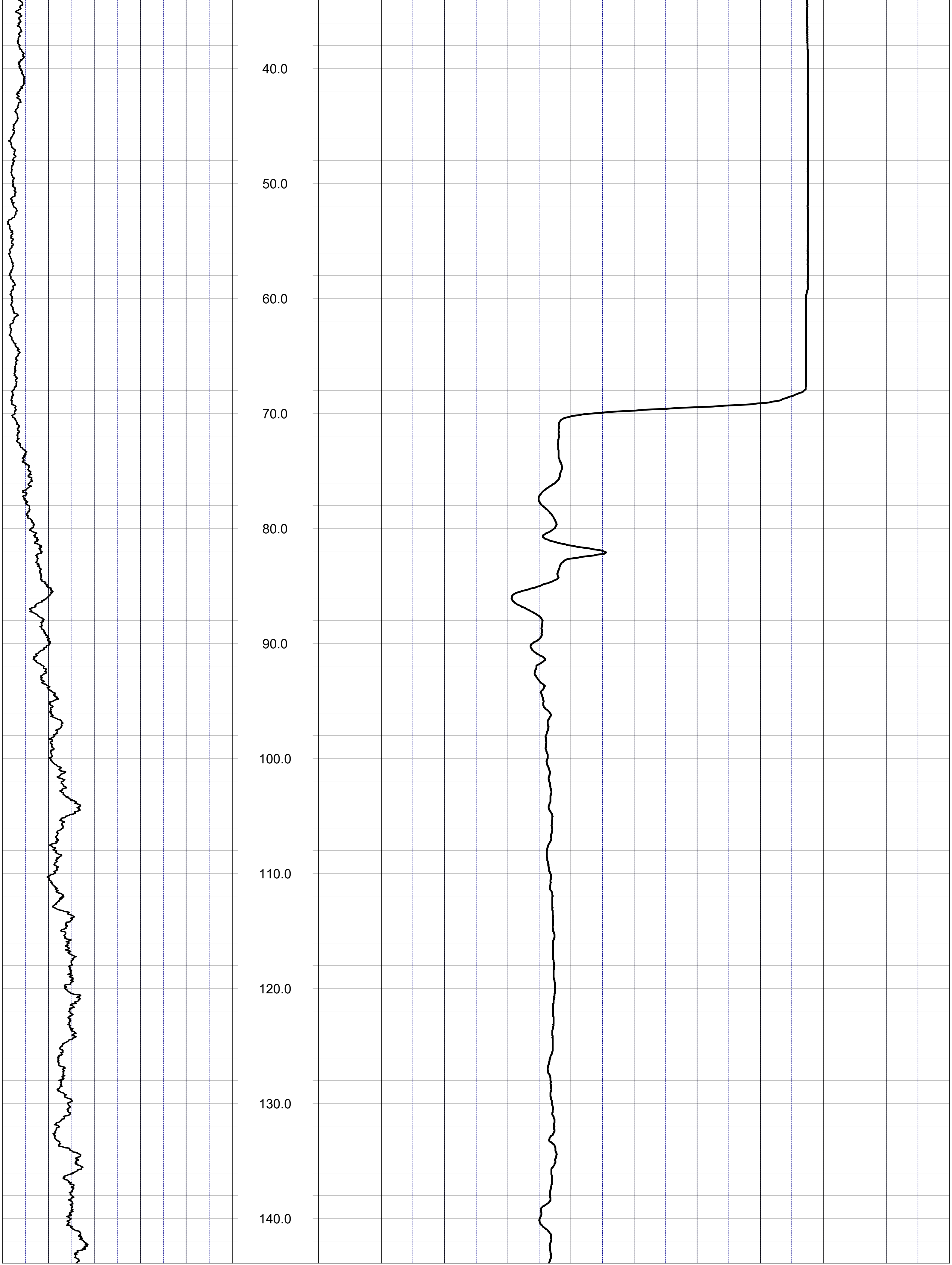
DATE	24 Mar 20	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	30
TYPE LOG	**CALIPER**	TROLLING DIRECTION	UP
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	285		
DEPTH-LOGGER	285.4		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	6	70	285	16	STEEL	0	84

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**

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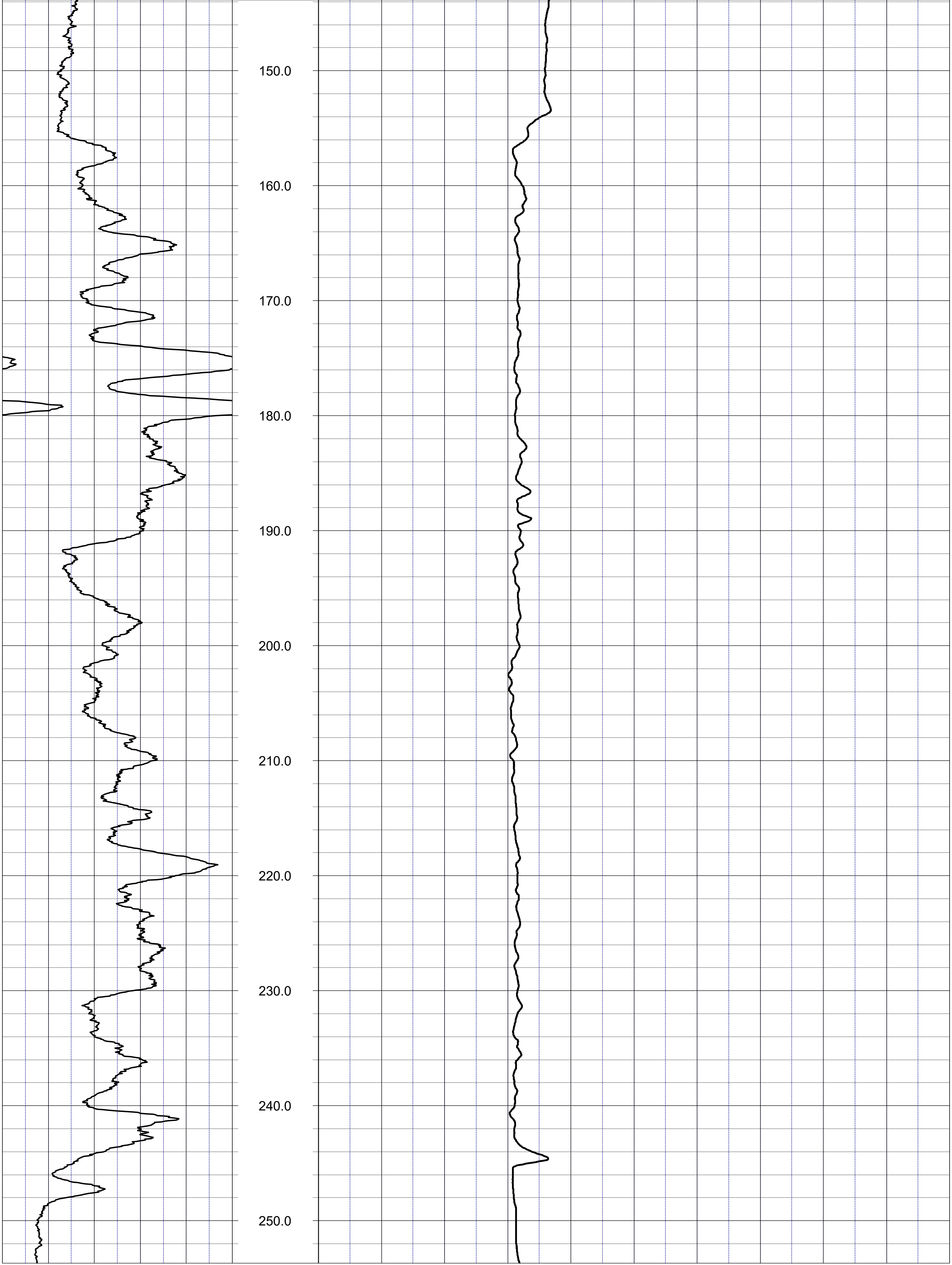
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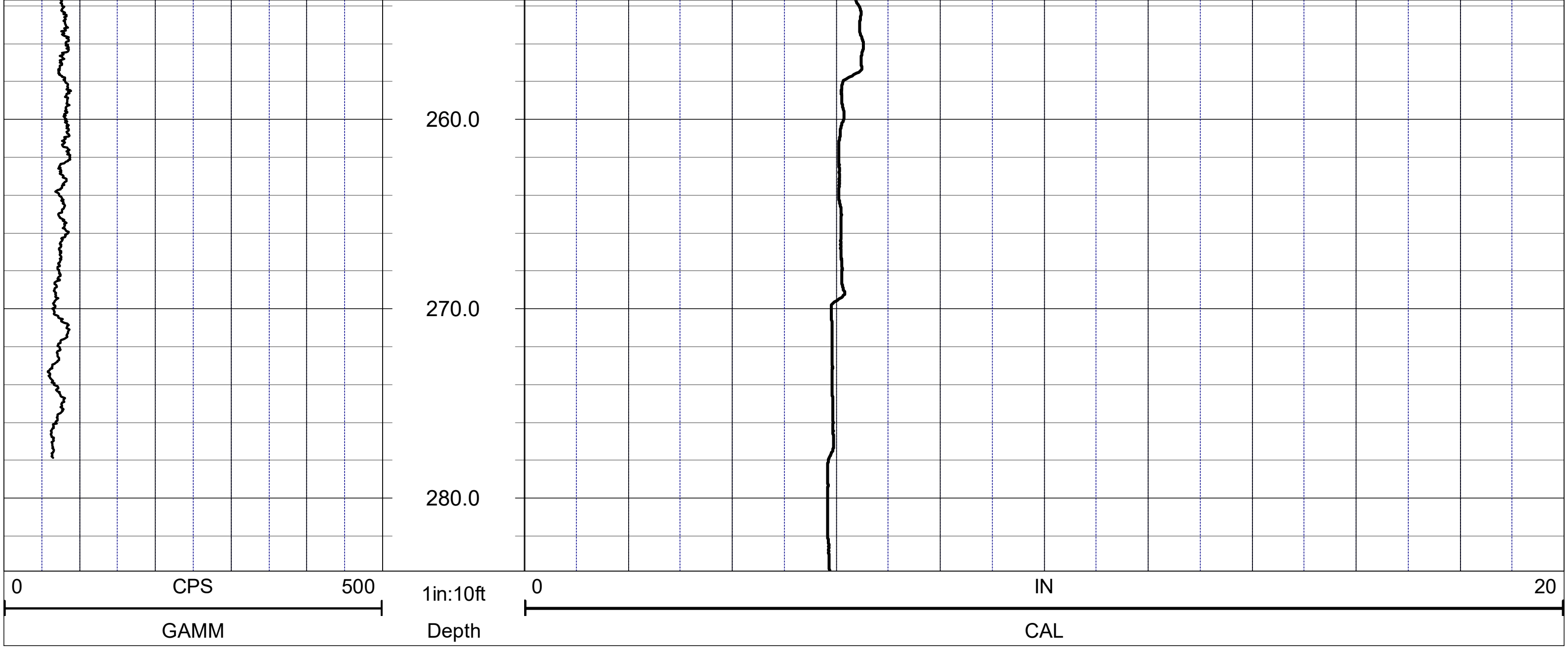

NOTES:
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WELL POF-31
UWI POF-31

PROFESSIONAL LICENSES
Geologist PG2186
Geology Business GB458

HEADER NOTES:

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
DUAL INDUCTION
SONIC

PERMANENT DATUM:
LOG MEASURED FROM: GROUND SURFACE
DRILLING MEASURED FROM:

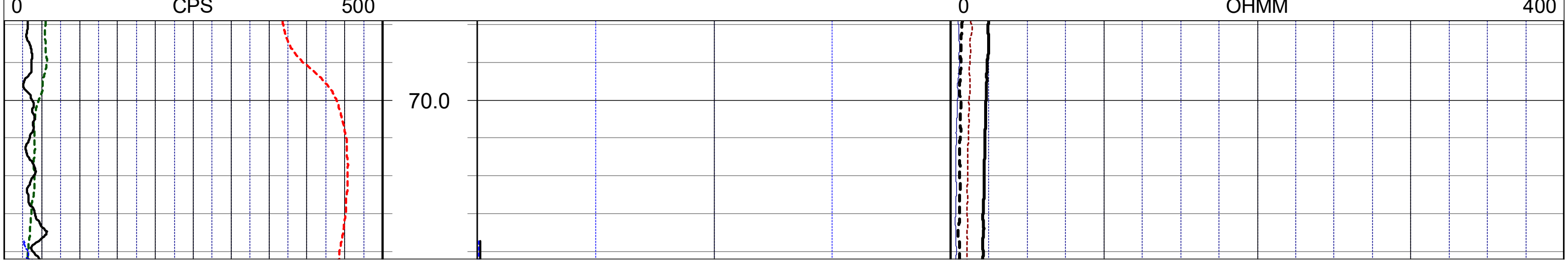
DATE	24 Mar 20	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	30
TYPE LOG	**ELECTRIC+DUIN**	TROLLING DIRECTION	UP
DEPTH-DRILLER	285	PUMPING RATE (GPM)	N/A
DEPTH-LOGGER	285.4		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

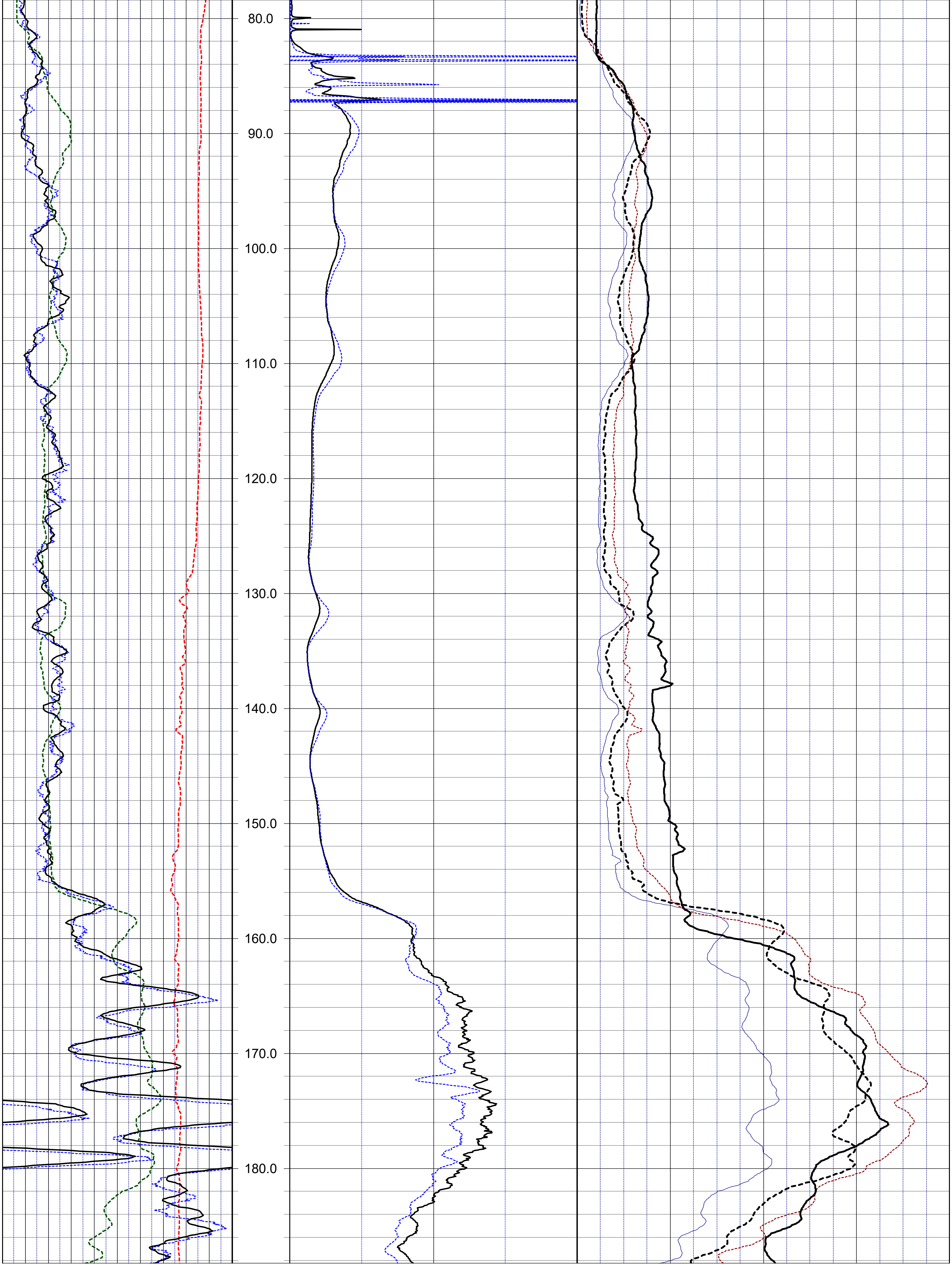
BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	6	70	285	16	STEEL	0	84

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**

ESP	Depth	ILD	R8
0 mV 1000	1in:10ft	0 OHMM 200	0 OHMM 400
RES		ILM	RSN
0 OHM 150		0 OHMM 200	0 OHMM 400
DGAMM			R32
0 CPS 500			0 OHMM 400
EGAMM			RLN
0 CPS 500			0 OHMM 400





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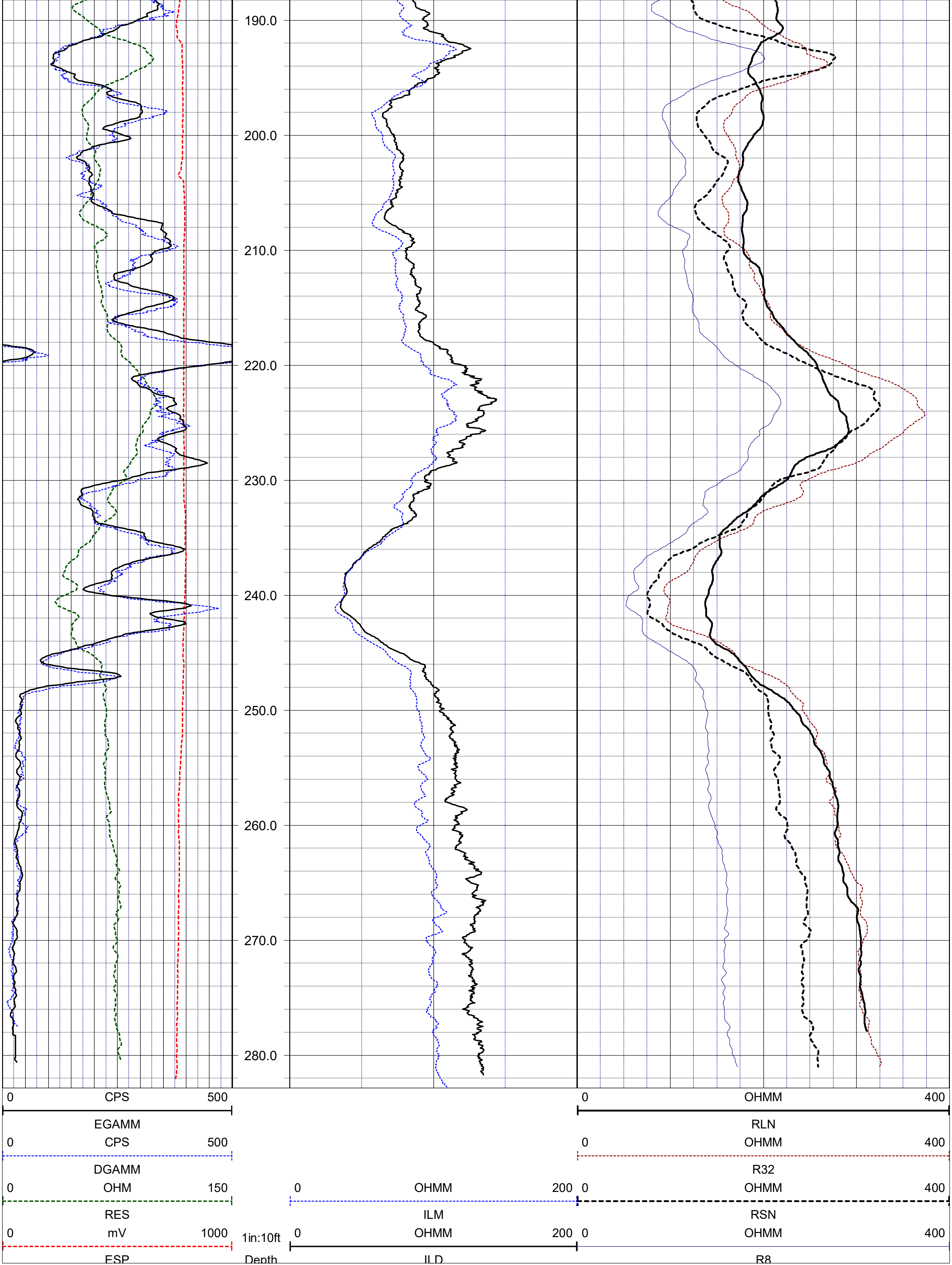
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0 CPS 500
EGAMM
0 CPS 500
DGAMM
0 OHM 150
RES
0 mV 1000
ESP
1in:10ft
Depth
0 OHMM 200
ILM
0 OHMM 200
ILD
0 OHMM 400
RLN
0 OHMM 400
R32
0 OHMM 400
RSN
0 OHMM 400
R8

NOTES:

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Florida Licensed Geology Business GB 458

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WELL POF-31
UWI POF-31

PROFESSIONAL LICENSES
Geologist PG2186
Geology Business GB458

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

HEADER NOTES:
THE POROSITY CALCULATION IS ONLY VALID FOR CARBONATE STRATA.

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
DUAL INDUCTION
SONIC

PERMANENT DATUM:
LOG MEASURED FROM: GROUND SURFACE
DRILLING MEASURED FROM:

DATE	24 Mar 20	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	12
TYPE LOG	**SONIC**	TROLLING DIRECTION	UP
DEPTH-DRILLER	285	PUMPING RATE (GPM)	N/A
DEPTH-LOGGER	285.4		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	6	70	285	16	STEEL	0	84

LOG CODES

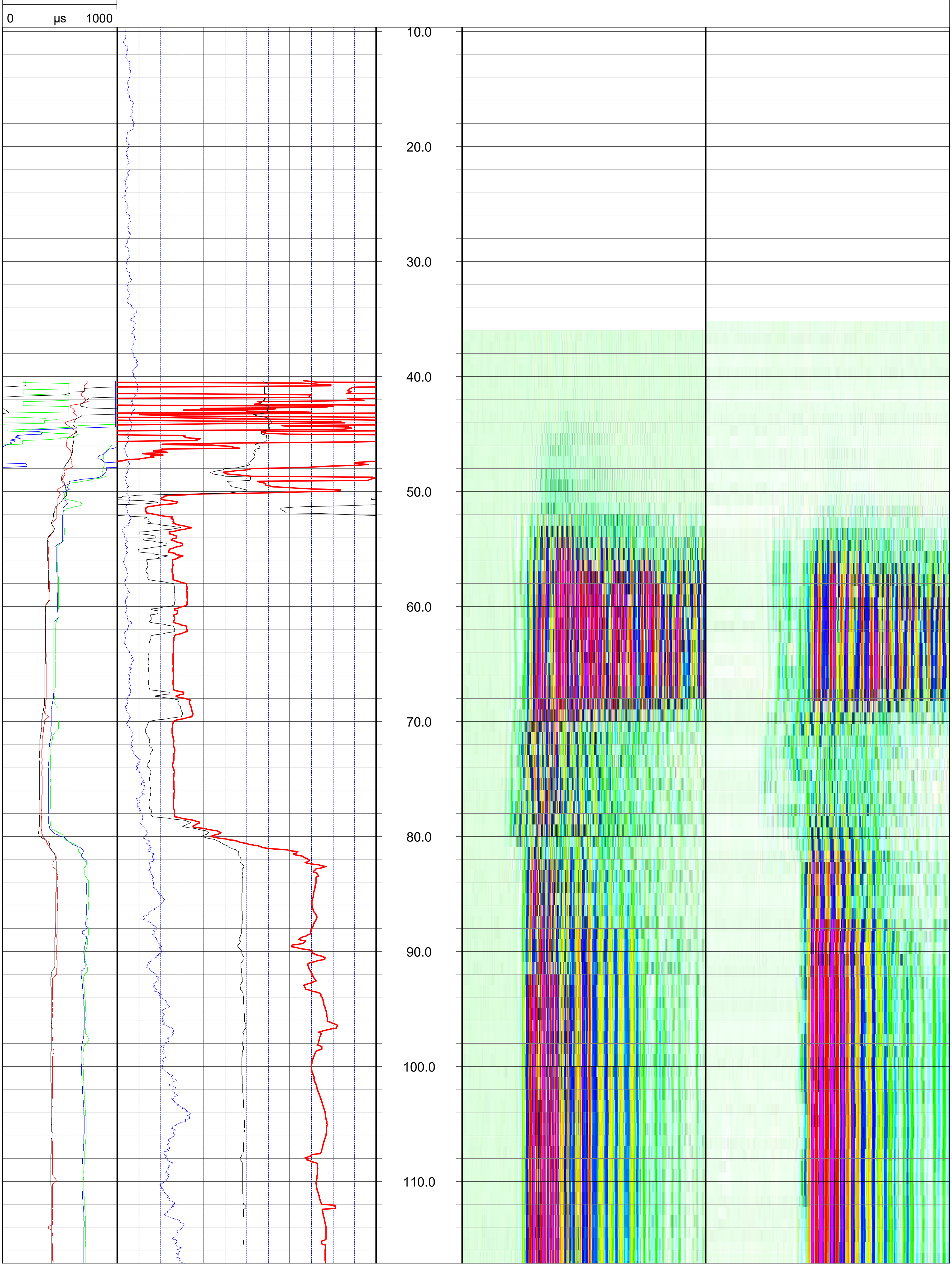
3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**

SONIC POROSITY:
Assuming a carbonate formation, the porosity can be calculated using the Raymer-Hunt-Gardner (RHG) equation:

porosity= 5/8 x ([TT of log - TT of matrix] / TT of log), where "TT of log" is the measured sonic value and the "TT of matrix" is a constant.

The TT of matrix for dolostone is 43.5 microseconds per foot, and for limestone is 47.5 microseconds per foot.

TA	GAMM	Depth	RX-3	RX-5
0 µs 1000	0 CPS 600	1in:10ft	0 1916	0 1916
TB	DT			
0 µs 1000	0 µs/ft 250			
TC	SPHI			
0 µs 1000	0 PU 100			
TD				



0
µs
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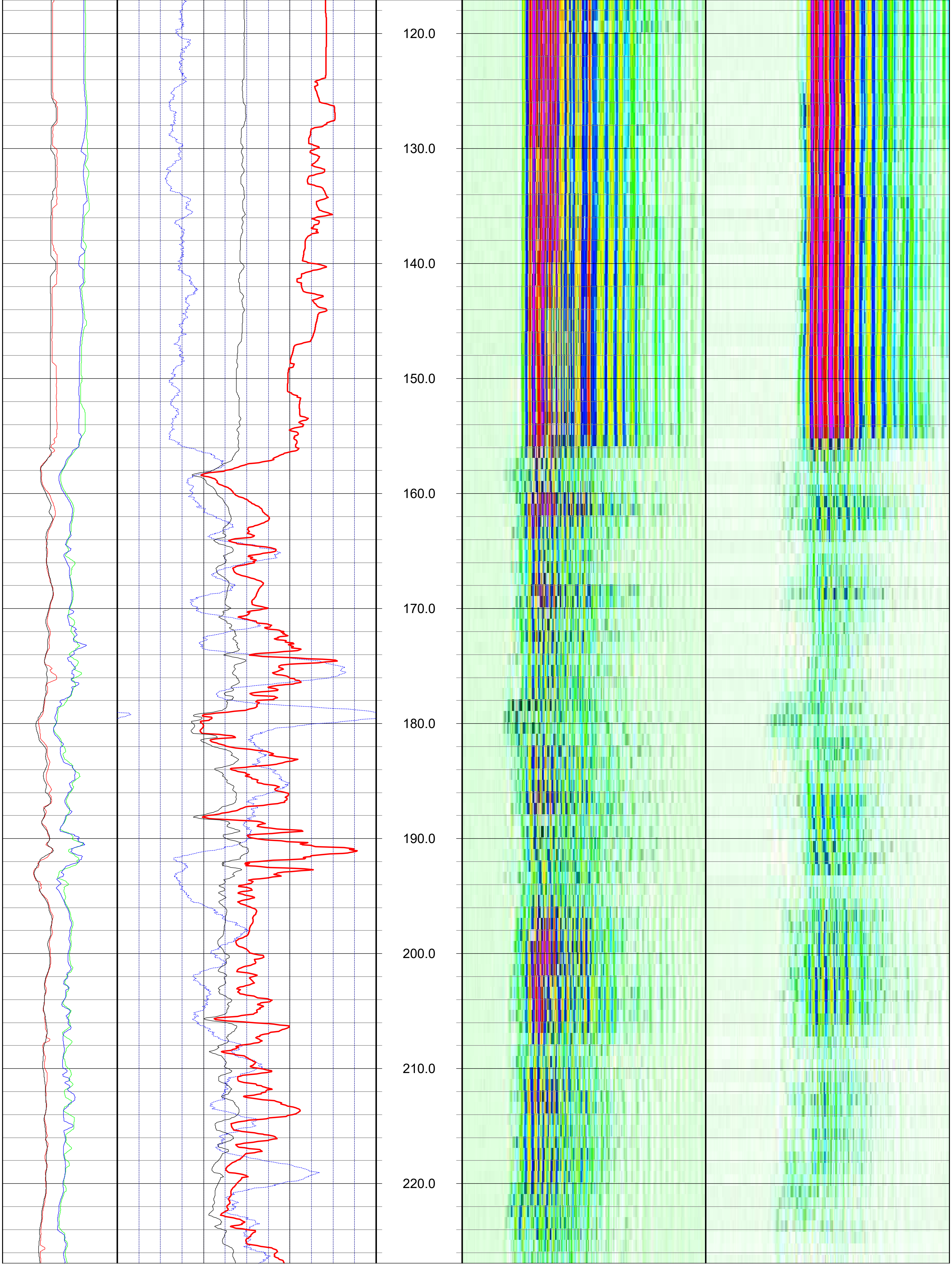
110.0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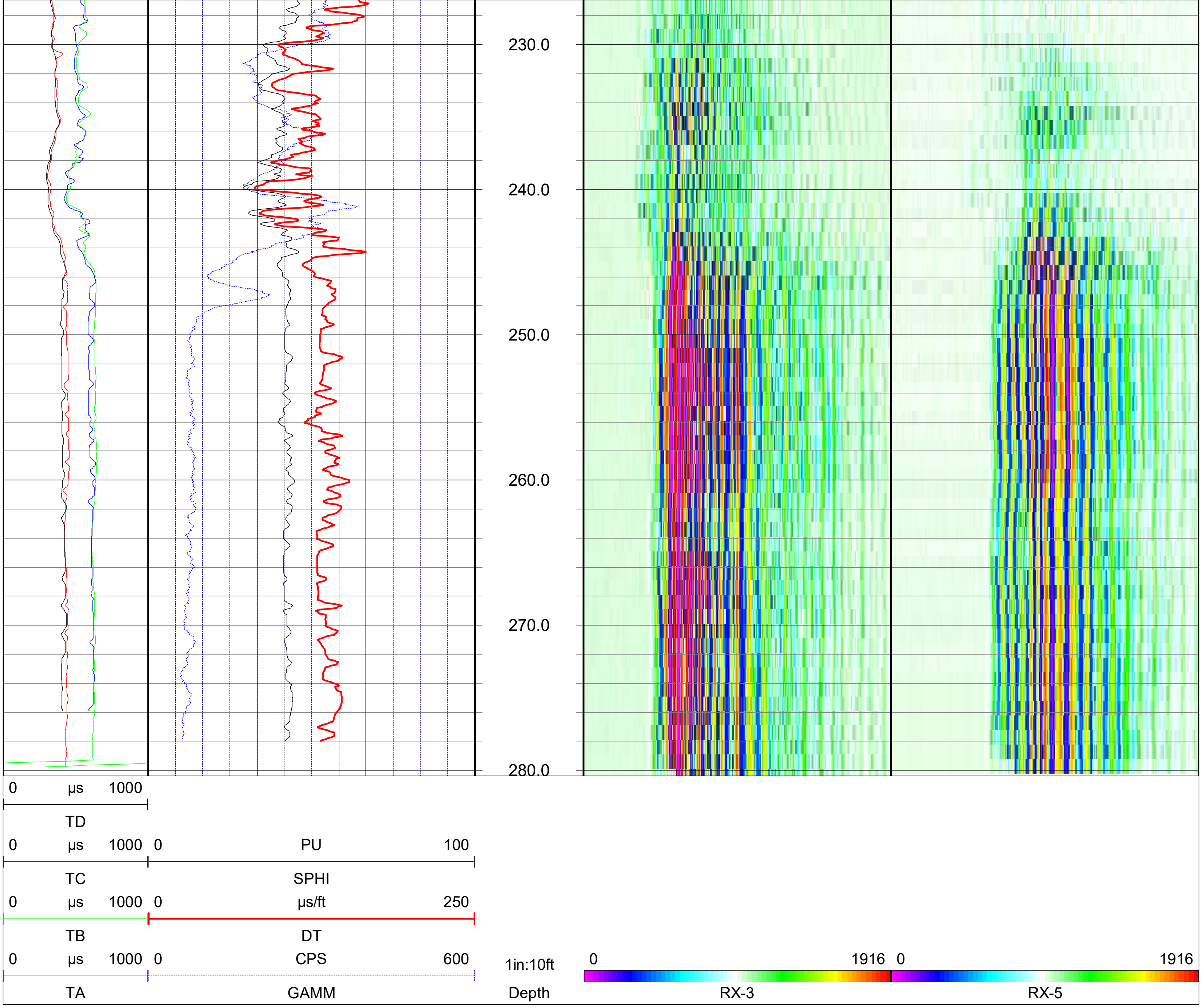

NOTES:

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WELL POF-31
UWI POF-31

PROFESSIONAL LICENSES
Geologist PG2186
Geology Business GB458

COMP	SFWMD
LOC	SUMICA SITE
FLD	SR 60
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

HEADER NOTES:

LATI		X		ALL SERVICES:
LONG		Y		CALIPER
GDAT	WGS84	H DAT		NATURAL GAMMA
SEC		ELEV		ELECTRIC
TWP		V DAT		DUAL INDUCTION
RGE				FLOWMETER WATER QUALITY VIDEO

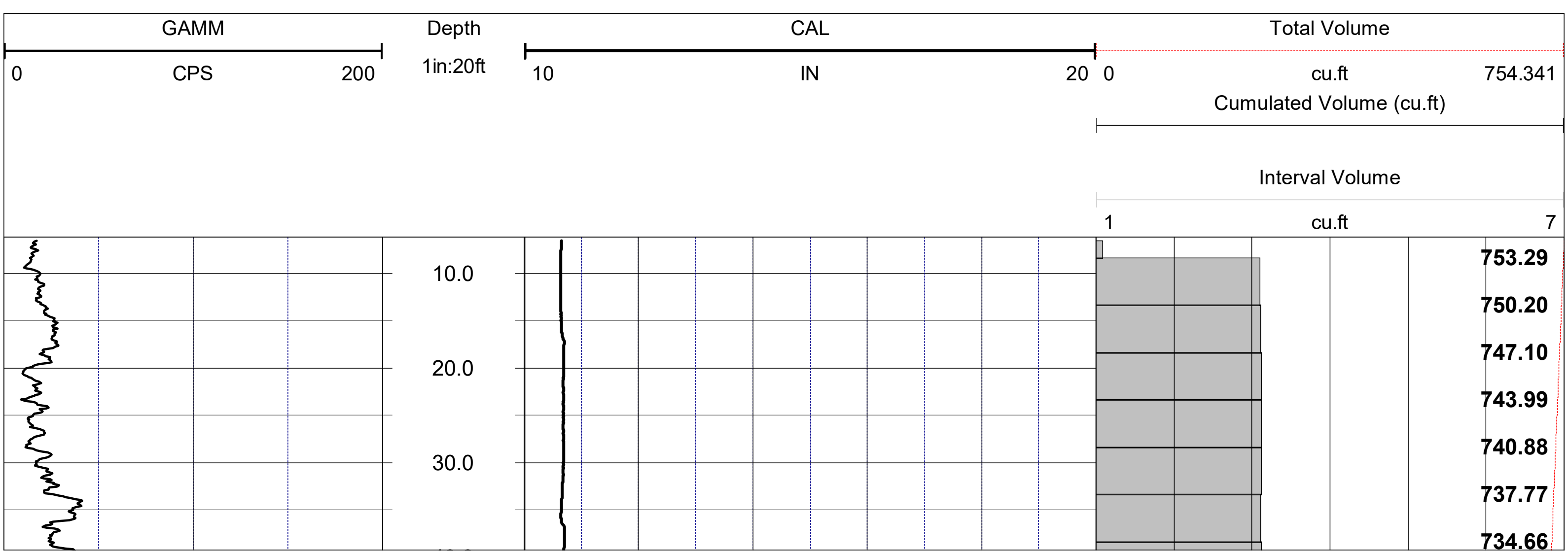
PERMANENT DATUM:
LOG MEASURED FROM: GROUND SURFACE
DRILLING MEASURED FROM:

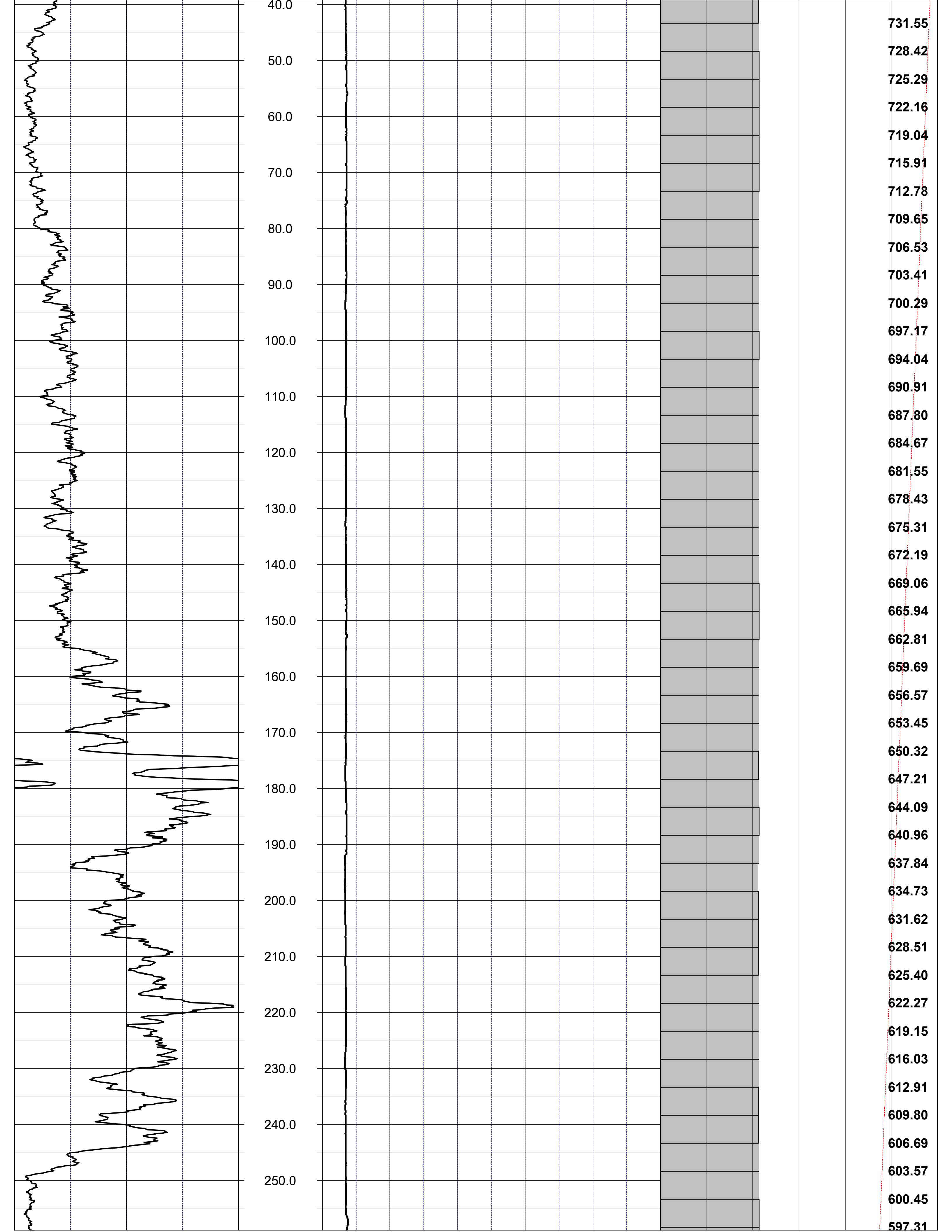
DATE	10 Sep 20	TYPE FLUID IN HOLE	WATER
RUN No	2	LOGGING SPEED (FT/MIN)	40
TYPE LOG	CALIPER	TROLLING DIRECTION	UP
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	900		
DEPTH-LOGGER	900.2		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	6	70	285	16	STEEL	0	84
2	9.875	270	900	10	PVC	0	270

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**

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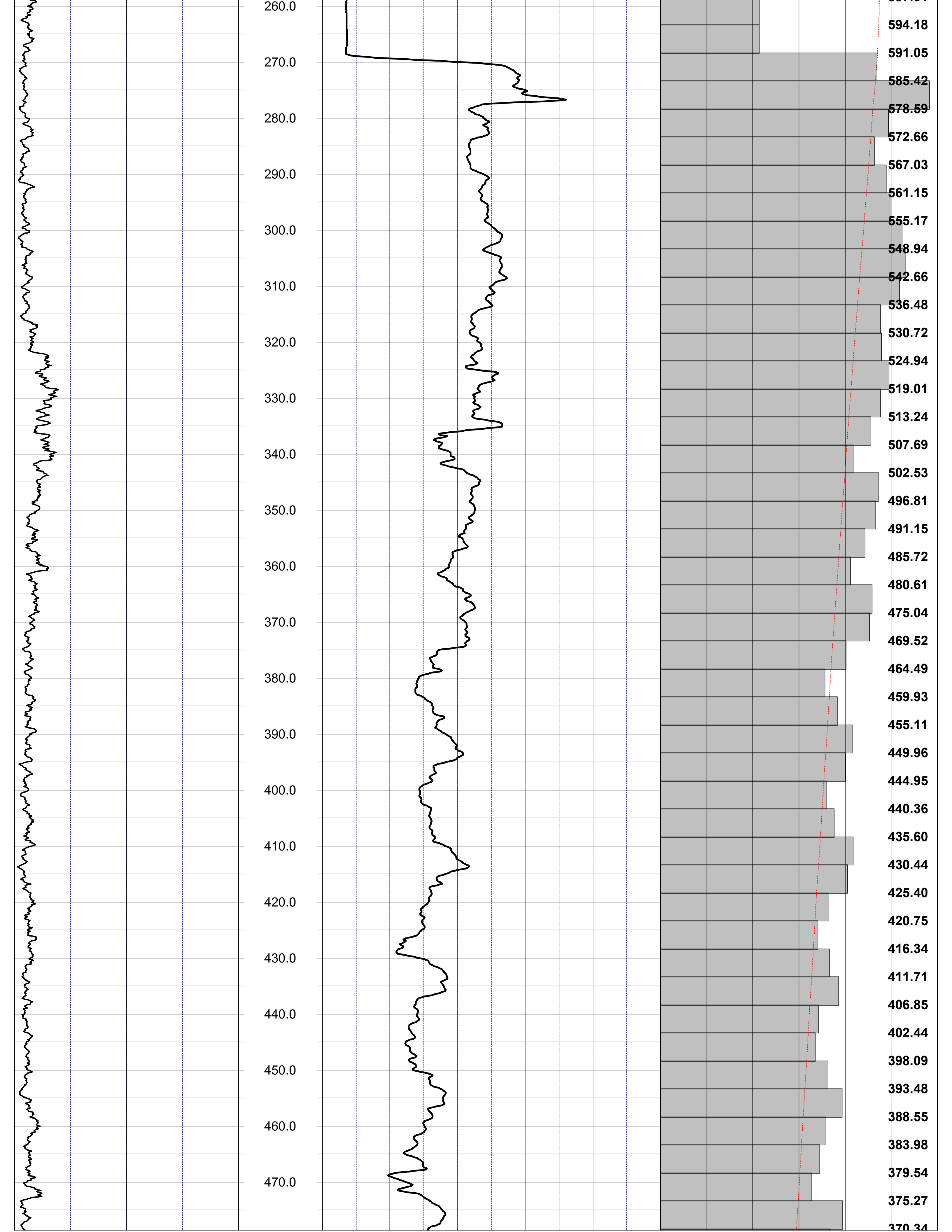

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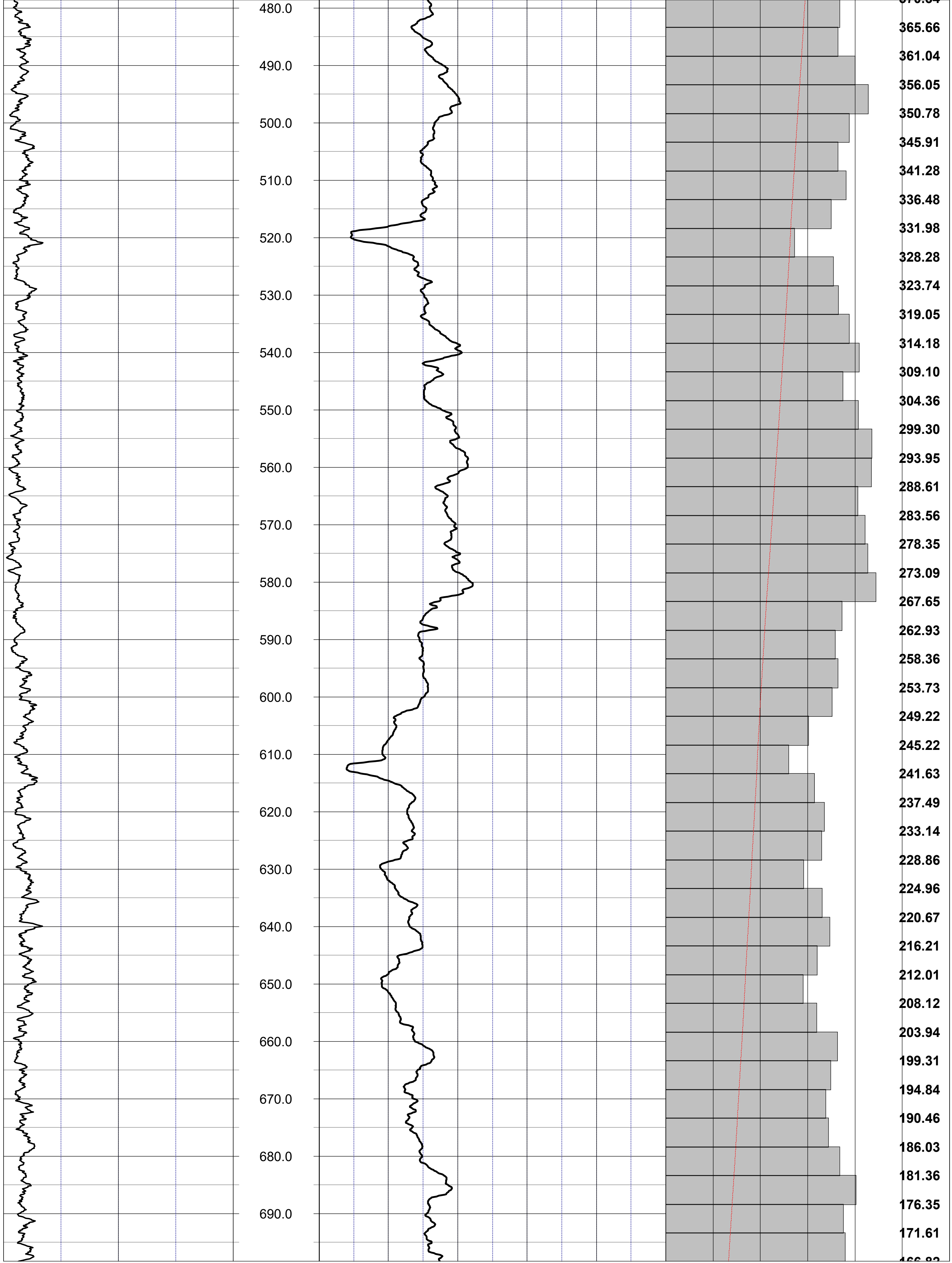

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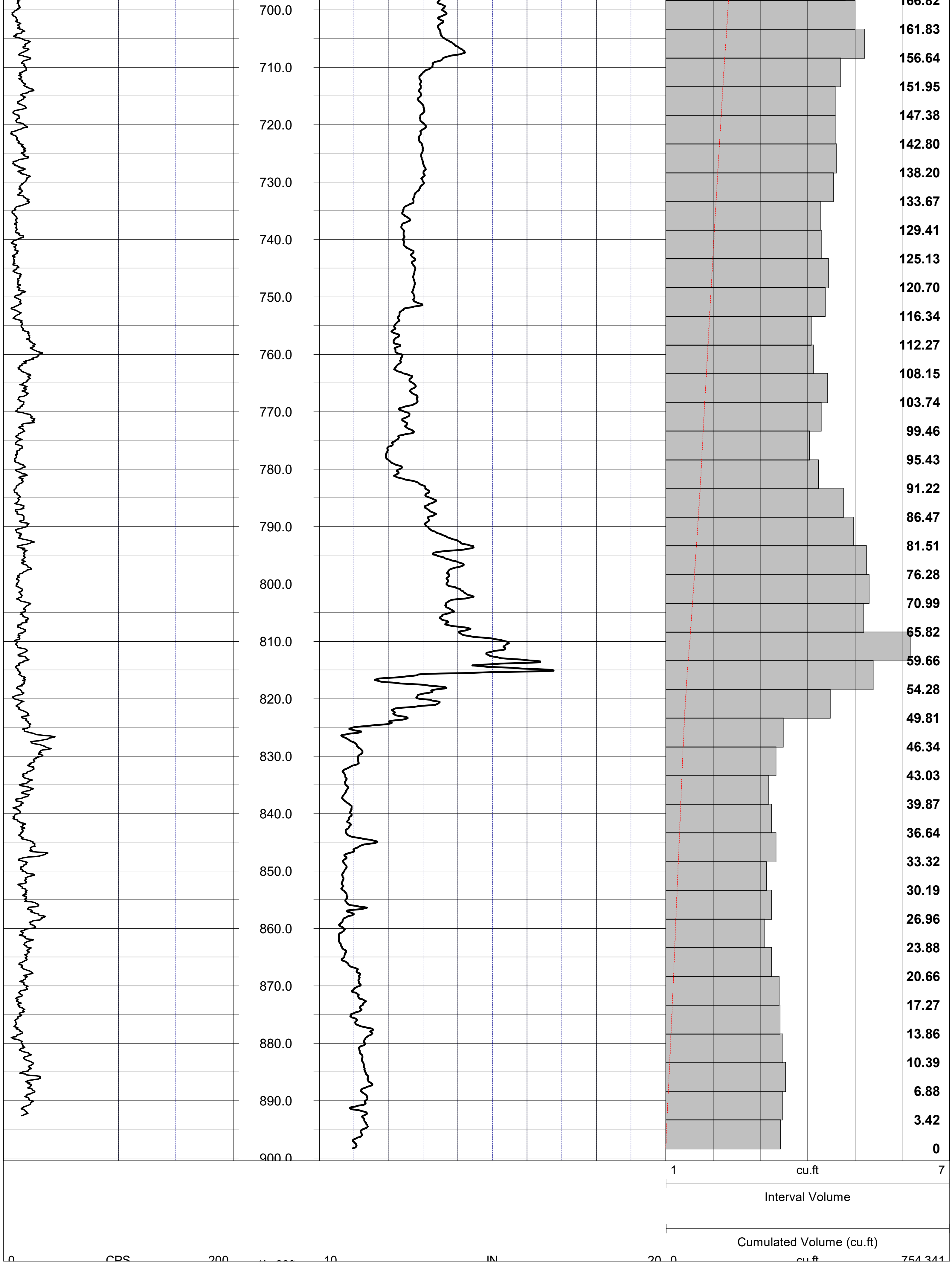
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13.86
10.39
6.88
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0
1
cu.ft
7
Interval Volume
Cumulated Volume (cu.ft)

GAMM (0 – CPS – 200)	Depth (1in:20ft)	CAL (10 – IN – 20)	Total Volume (0 – cu.ft – 734.341)

NOTES:

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WELL POF-31
UWI POF-31

PROFESSIONAL LICENSES
Geologist PG2186
Geology Business GB458

HEADER NOTES:

COMP	SFWMD
LOC	SUMICA SITE
FLD	SR 60
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
DUAL INDUCTION
FLOWMETER
WATER QUALITY
VIDEO

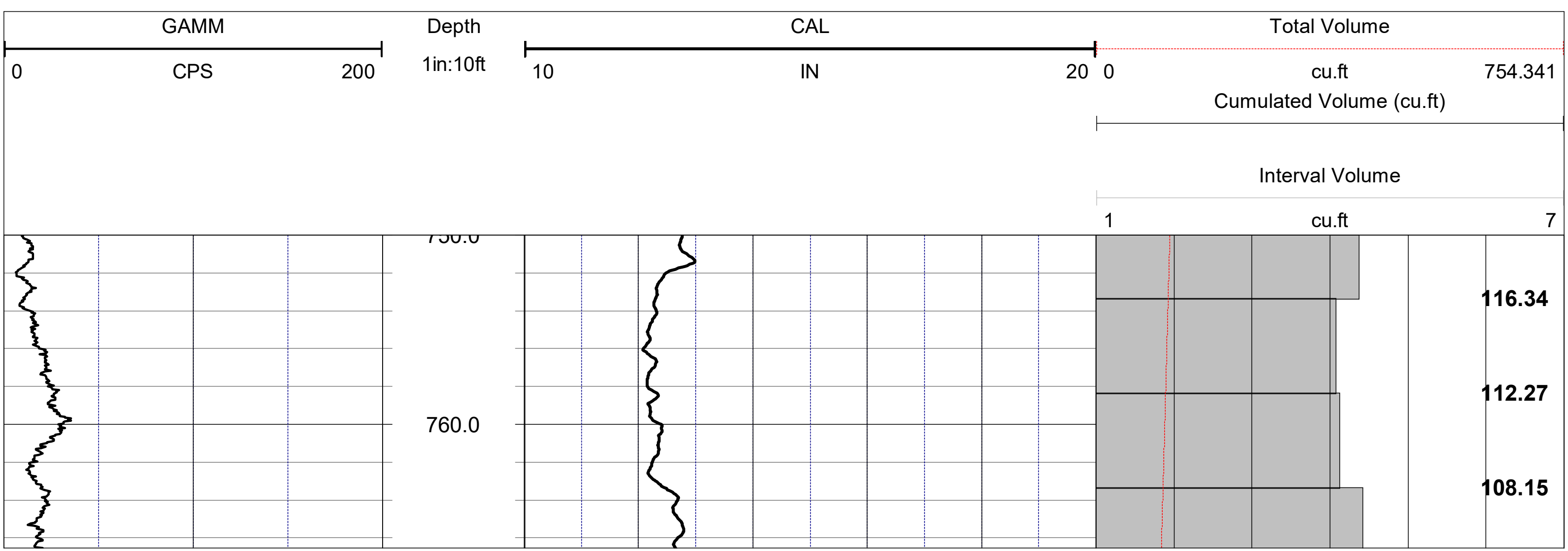
PERMANENT DATUM:
LOG MEASURED FROM: GROUND SURFACE
DRILLING MEASURED FROM:

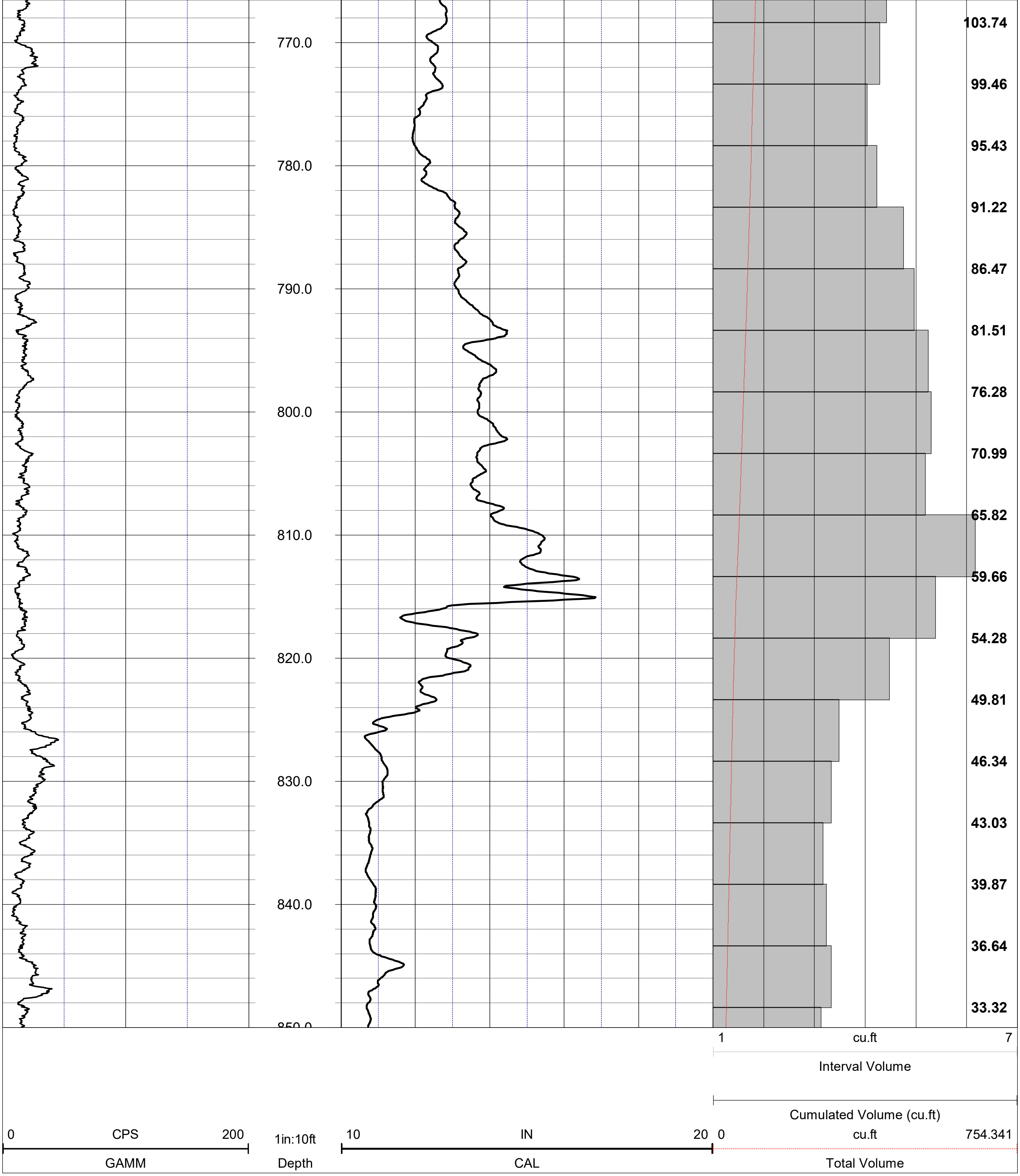
DATE	10 Sep 20	TYPE FLUID IN HOLE	WATER
RUN No	2	LOGGING SPEED (FT/MIN)	40
TYPE LOG	CALIPER	TROLLING DIRECTION	UP
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	900		
DEPTH-LOGGER	900.2		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	6	70	285	16	STEEL	0	84
2	9.875	270	900	10	PVC	0	270

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**





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WELL POF-31
UWI POF-31

PROFESSIONAL LICENSES
Geologist PG2186
Geology Business GB458

COMP	SFWMD
LOC	SUMICA SITE
FLD	SR 60
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

HEADER NOTES:

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

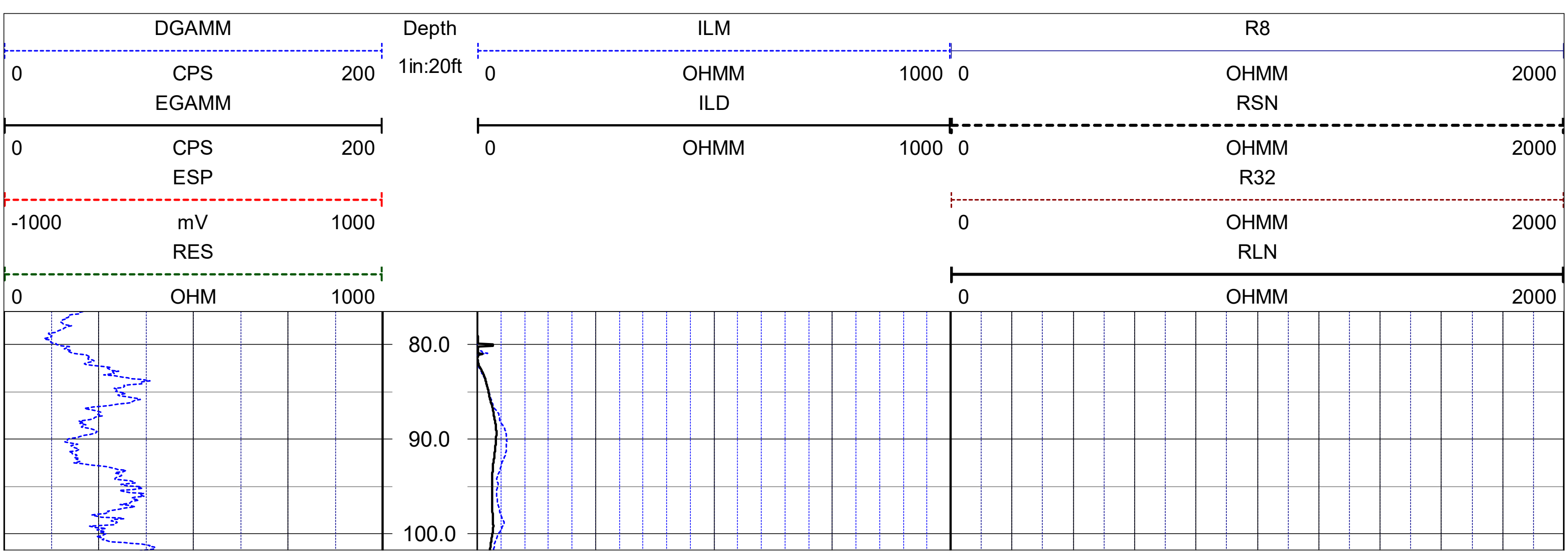
ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
DUAL INDUCTION
FLOWMETER
WATER QUALITY
VIDEO

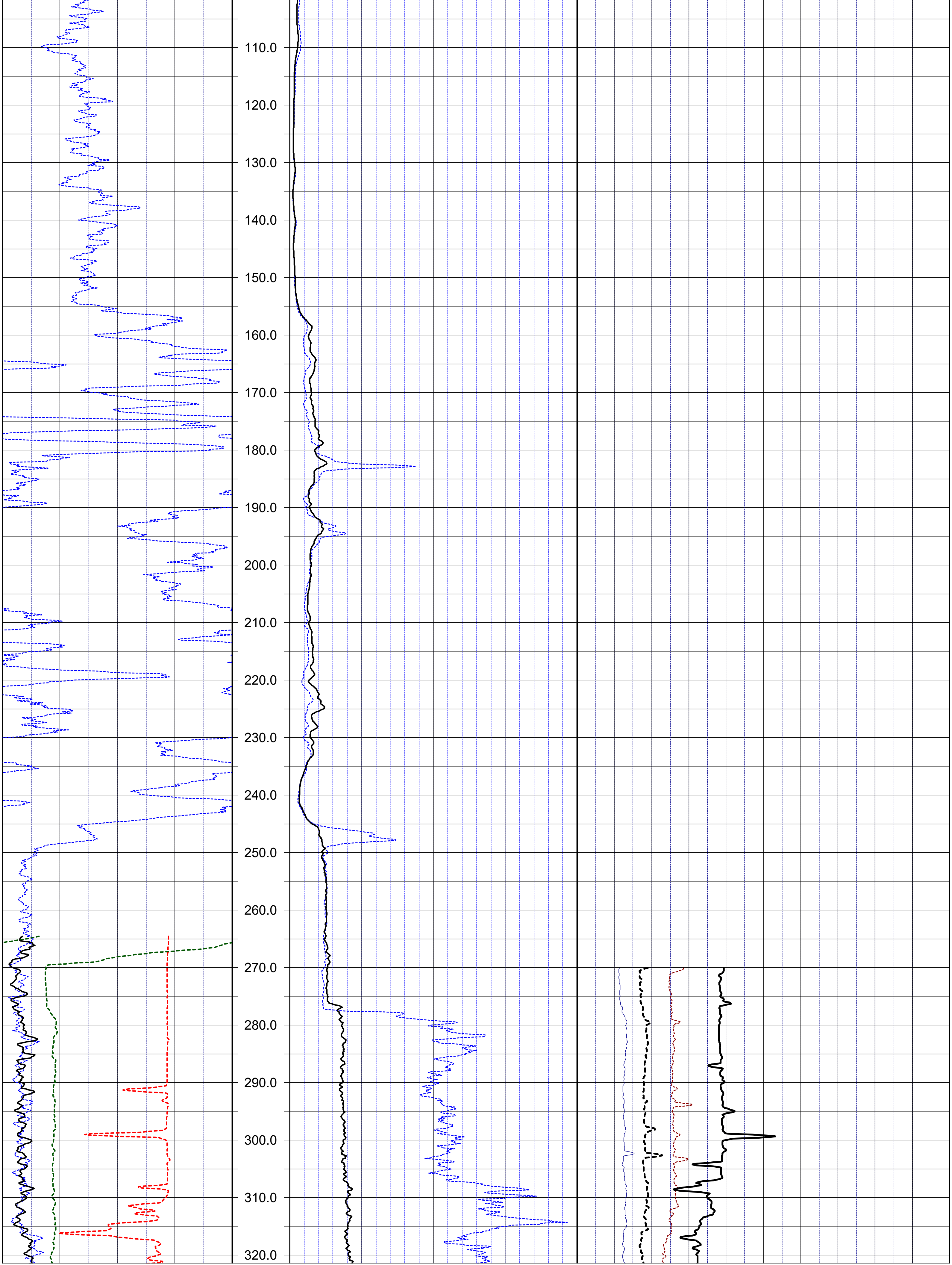
PERMANENT DATUM:
LOG MEASURED FROM: GROUND SURFACE
DRILLING MEASURED FROM:

DATE	10 Sep 20	TYPE FLUID IN HOLE	WATER
RUN No	2	LOGGING SPEED (FT/MIN)	35
TYPE LOG	ELECTRIC + DUIN	TROLLING DIRECTION	UP
DEPTH-DRILLER	900	PUMPING RATE (GPM)	N/A
DEPTH-LOGGER	900.2		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	6	70	285	16	STEEL	0	84
2	9.875	270	900	10	PVC	0	270

LOG CODES					
3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**





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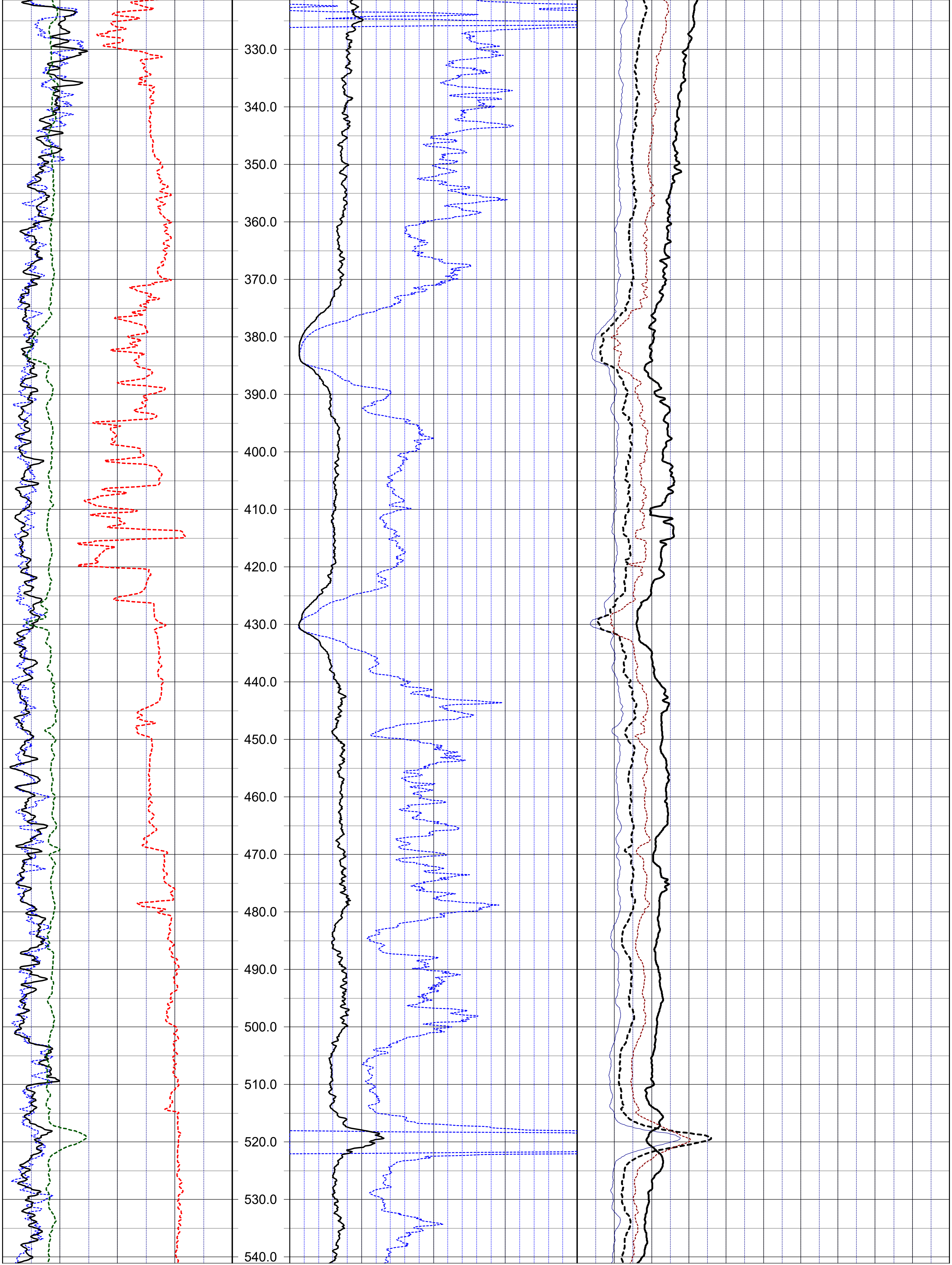
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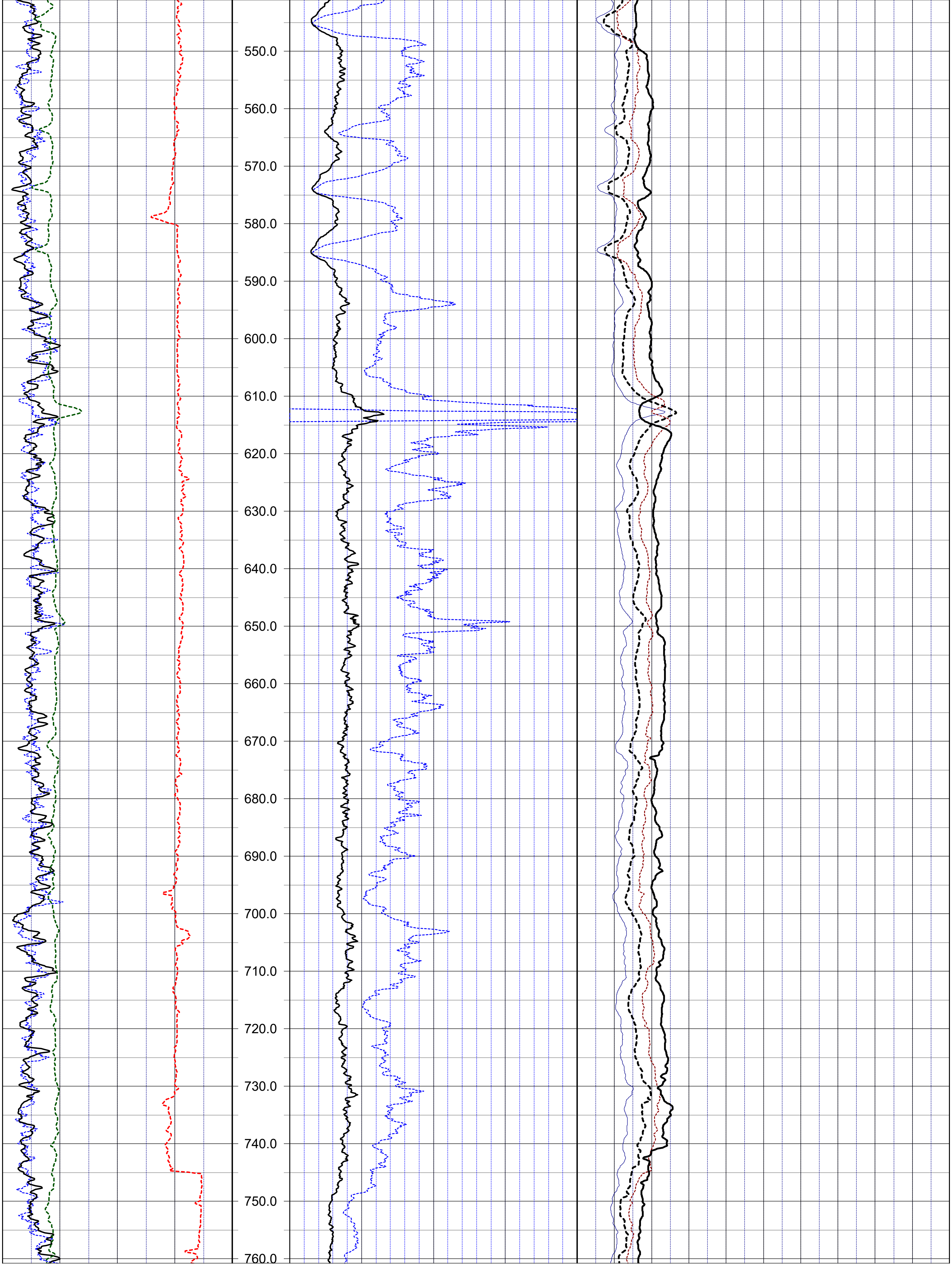
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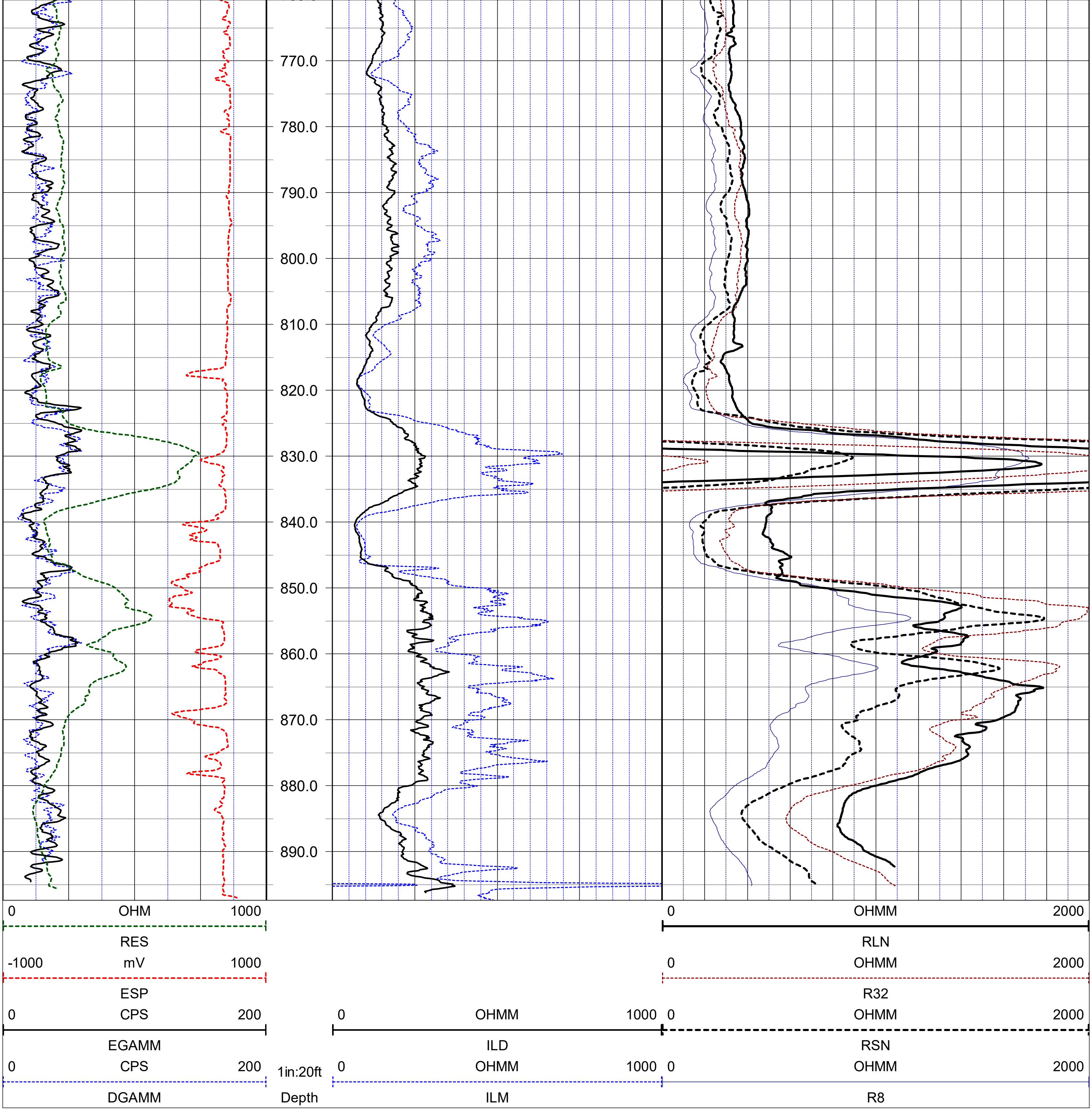

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WELL POF-31
UWI POF-31

PROFESSIONAL LICENSES
Geologist PG2186
Geology Business GB458

COMP	SFWMD
LOC	SUMICA SITE
FLD	SR 60
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

HEADER NOTES:

LATI		X		ALL SERVICES:
LONG		Y		CALIPER
GDAT	WGS84	H DAT		NATURAL GAMMA
SEC		ELEV		ELECTRIC
TWP		V DAT		DUAL INDUCTION
RGE				FLOWMETER
				WATER QUALITY
				VIDEO

PERMANENT DATUM:
LOG MEASURED FROM: GROUND SURFACE
DRILLING MEASURED FROM:

DATE	10 Sep 20	TYPE FLUID IN HOLE	WATER
RUN No	2	LOGGING SPEED (FT/MIN)	30
TYPE LOG	**FLOWMETER**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	FLOWING 150 GPM
DEPTH-DRILLER	900		
DEPTH-LOGGER	900.2		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	6	70	285	16	STEEL	0	84
2	9.875	270	900	10	PVC	0	270

PROJECT NOTES:
-The spinner rate curves deflect to the positive direction with increasing flow from the well.
-The spinner rate curves are not corrected for borehole diameter.
-The natural flow rate was visually estimated at 100-150 GPM.

FLOWMETER LOG CODES

down static spinner rate	**FSD**	down static line speed	**LSSD**	natural gamma (w/annot.)	**GAMM**
up static spinner rate	**UTS**	up static line speed	**LSSU**	caliper	**CAL**
down dynamic spinner rate	**DYND**	down dynamic line speed	**LSDD**	repeat designation	**R**
up dynamic spinner rate	**DYNU**	up dynamic line speed	**LSDU**	percent flow	**PFLO**
static station spinner rate	**FSU**	dynamic station spinner rate	**FSP**	GPM flow	**GPMFLO**

LSDD	Depth	CAL	DD GAMM	DYND
0 ft/min 60	1in:20ft	0 IN 20	0 CPS 350	-1000 RPM 2000
LSDU		COMMENTS	UD GAMM	DYNU
0 ft/min 60			0 CPS 350	-1000 RPM 2000
				STATIONS - FINAL
				-1000 RPM 2000

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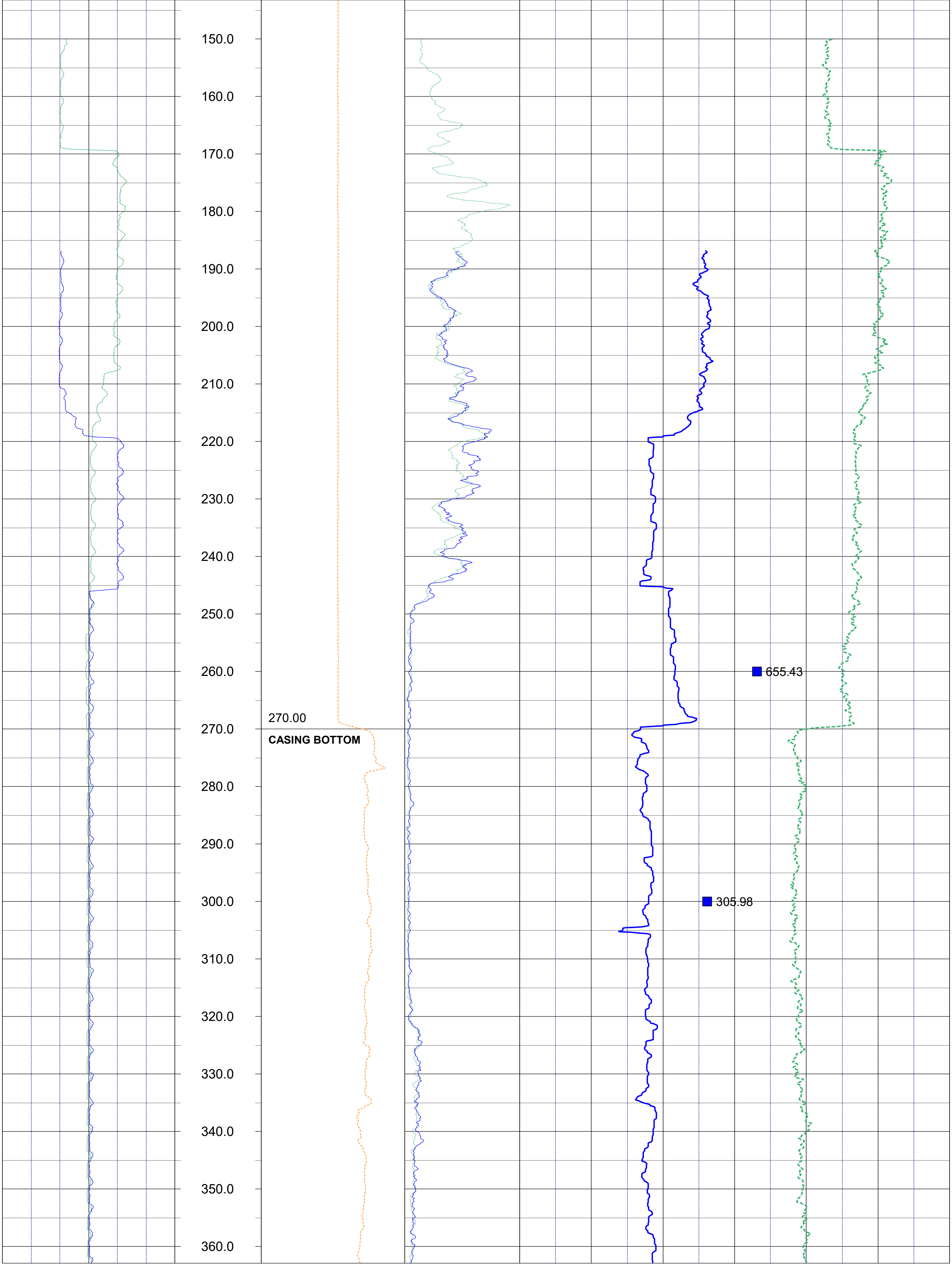
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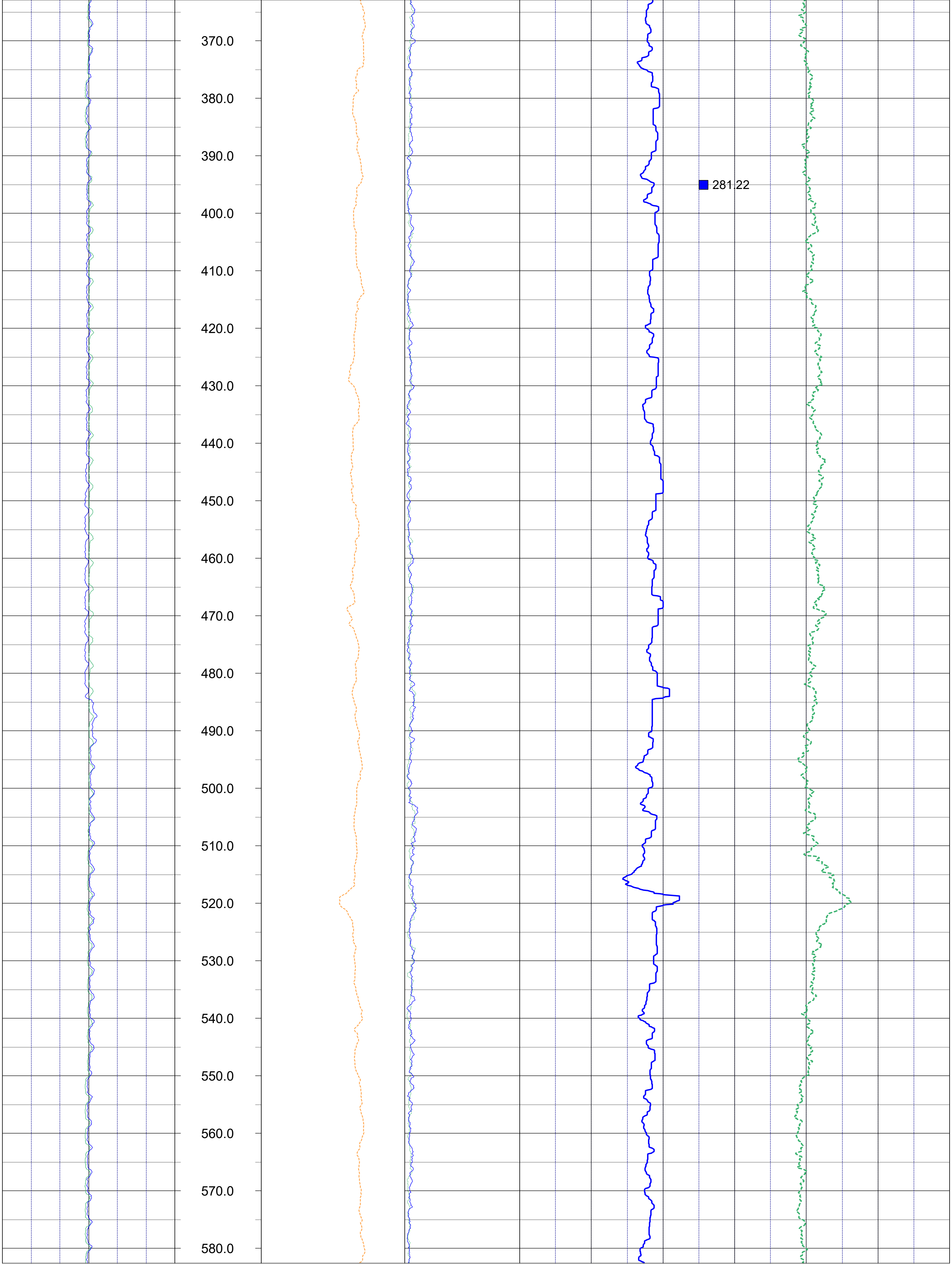
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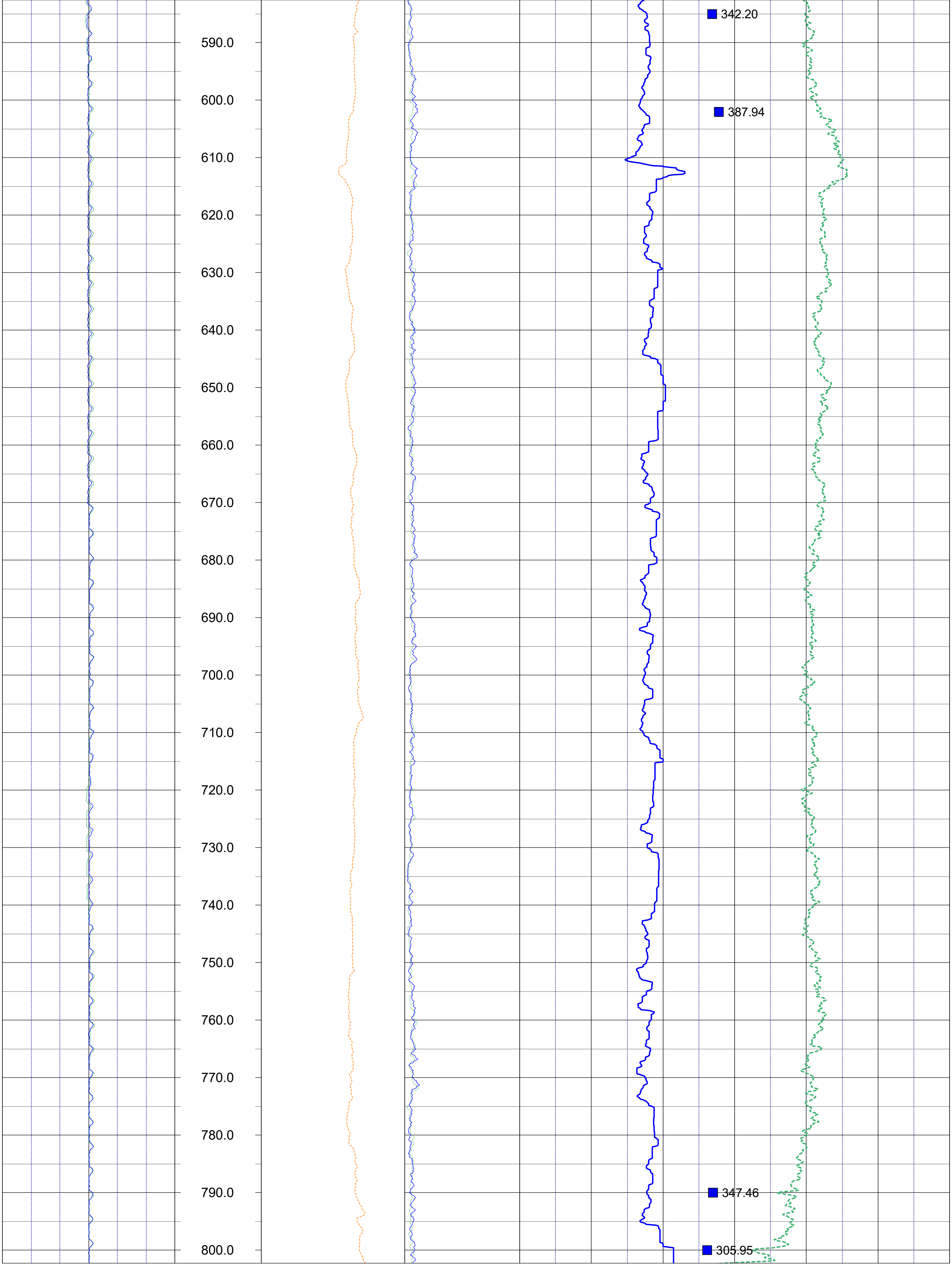

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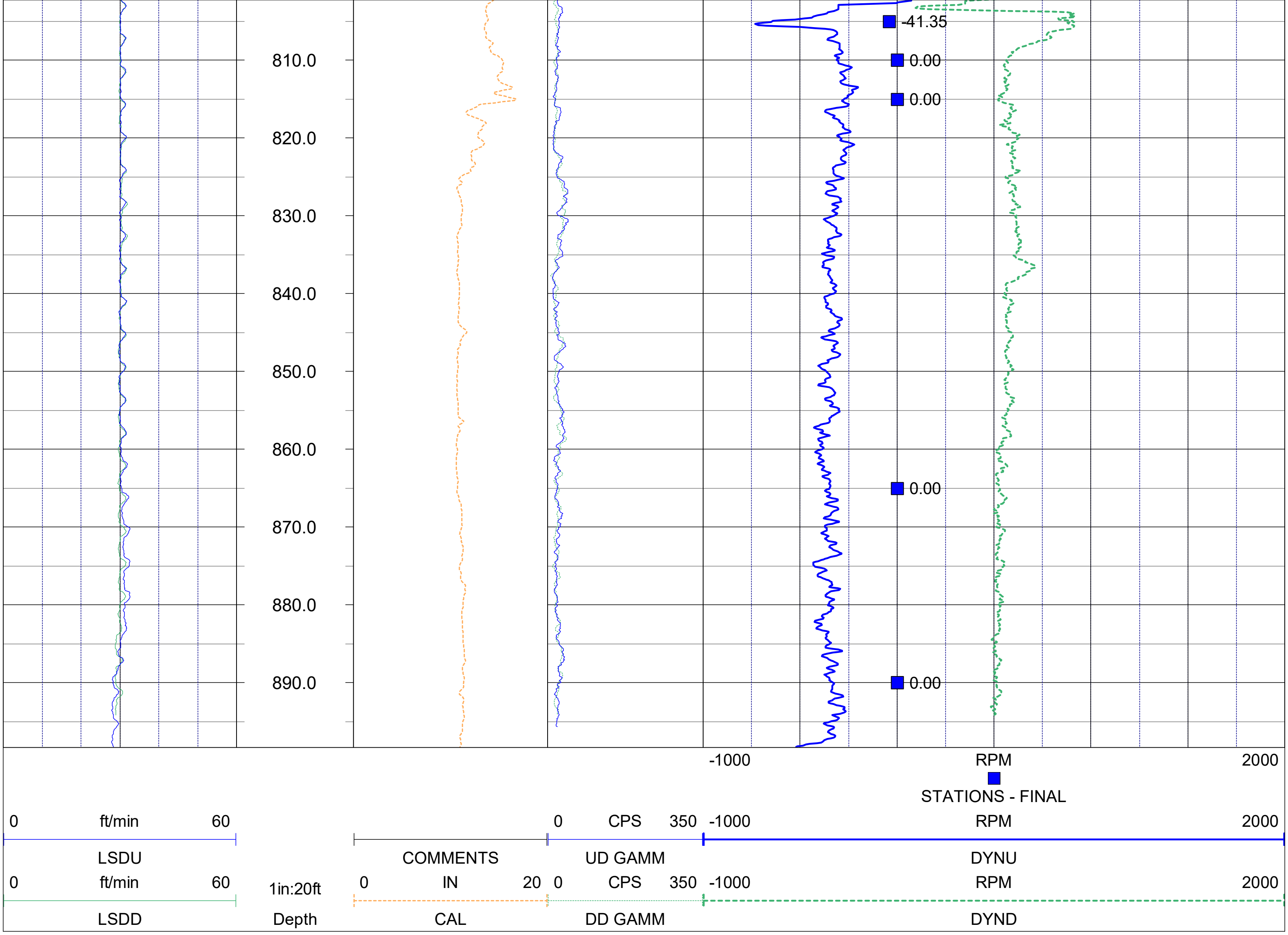

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Geology Business GB458

HEADER NOTES:

COMP	SFWMD
LOC	SUMICA SITE
FLD	SR 60
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
DUAL INDUCTION
FLOWMETER
WATER QUALITY
VIDEO

PERMANENT DATUM:
LOG MEASURED FROM: GROUND SURFACE
DRILLING MEASURED FROM:

DATE	10 Sep 20	TYPE FLUID IN HOLE	WATER
RUN No	2	LOGGING SPEED (FT/MIN)	30
TYPE LOG	**FLOWMETER**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	FLOWING 150 GPM
DEPTH-DRILLER	900		
DEPTH-LOGGER	900.2		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

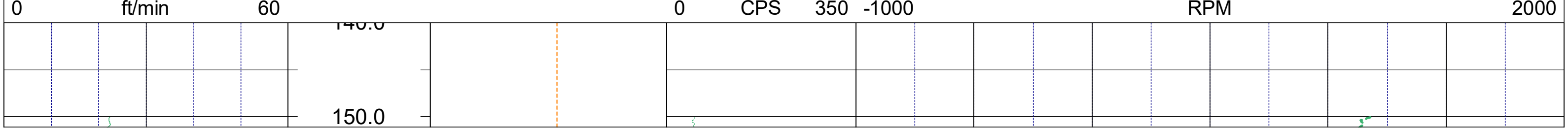
RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	6	70	285	16	STEEL	0	84
2	9.875	270	900	10	PVC	0	270

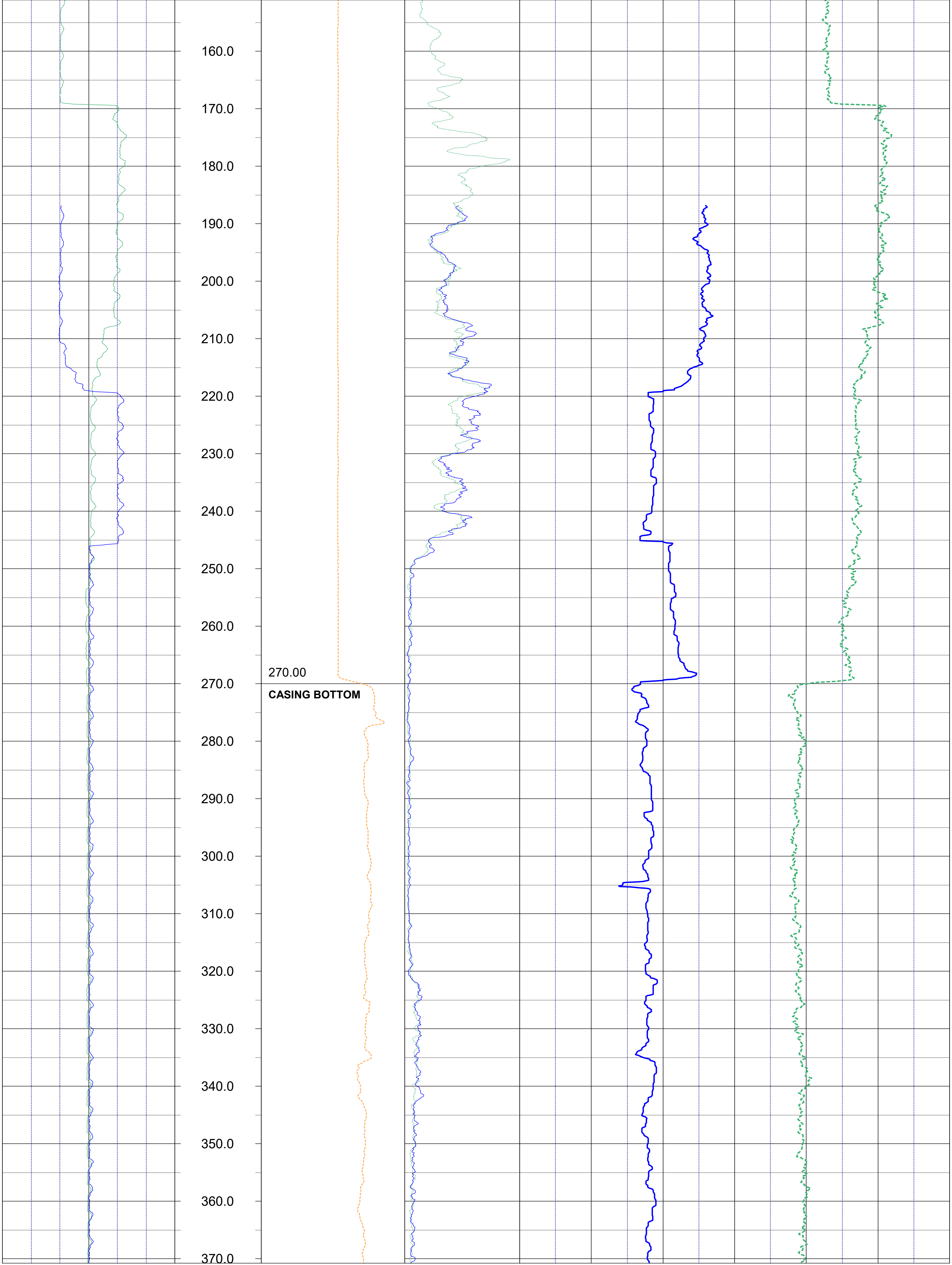
PROJECT NOTES:
-The spinner rate curves deflect to the positive direction with increasing flow from the well.
-The spinner rate curves are not corrected for borehole diameter.
-The natural flow rate was visually estimated at 100-150 GPM.

FLOWMETER LOG CODES

down static spinner rate	**FSD**	down static line speed	**LSSD**	natural gamma (w/annot.)	**GAMM**
up static spinner rate	**UTS**	up static line speed	**LSSU**	caliper	**CAL**
down dynamic spinner rate	**DYND**	down dynamic line speed	**LSDD**	repeat designation	**R**
up dynamic spinner rate	**DYNU**	up dynamic line speed	**LSDU**	percent flow	**PFLO**
static station spinner rate	**FSU**	dynamic station spinner rate	**FSP**	GPM flow	**GPMFLO**

LSDD	Depth	CAL	DD GAMM	DYND
0 ft/min 60	1in:20ft	0 IN 20	0 CPS 350	-1000 RPM 2000
LSDU		COMMENTS	UD GAMM	DYNU
0 ft/min 60			0 CPS 350	-1000 RPM 2000

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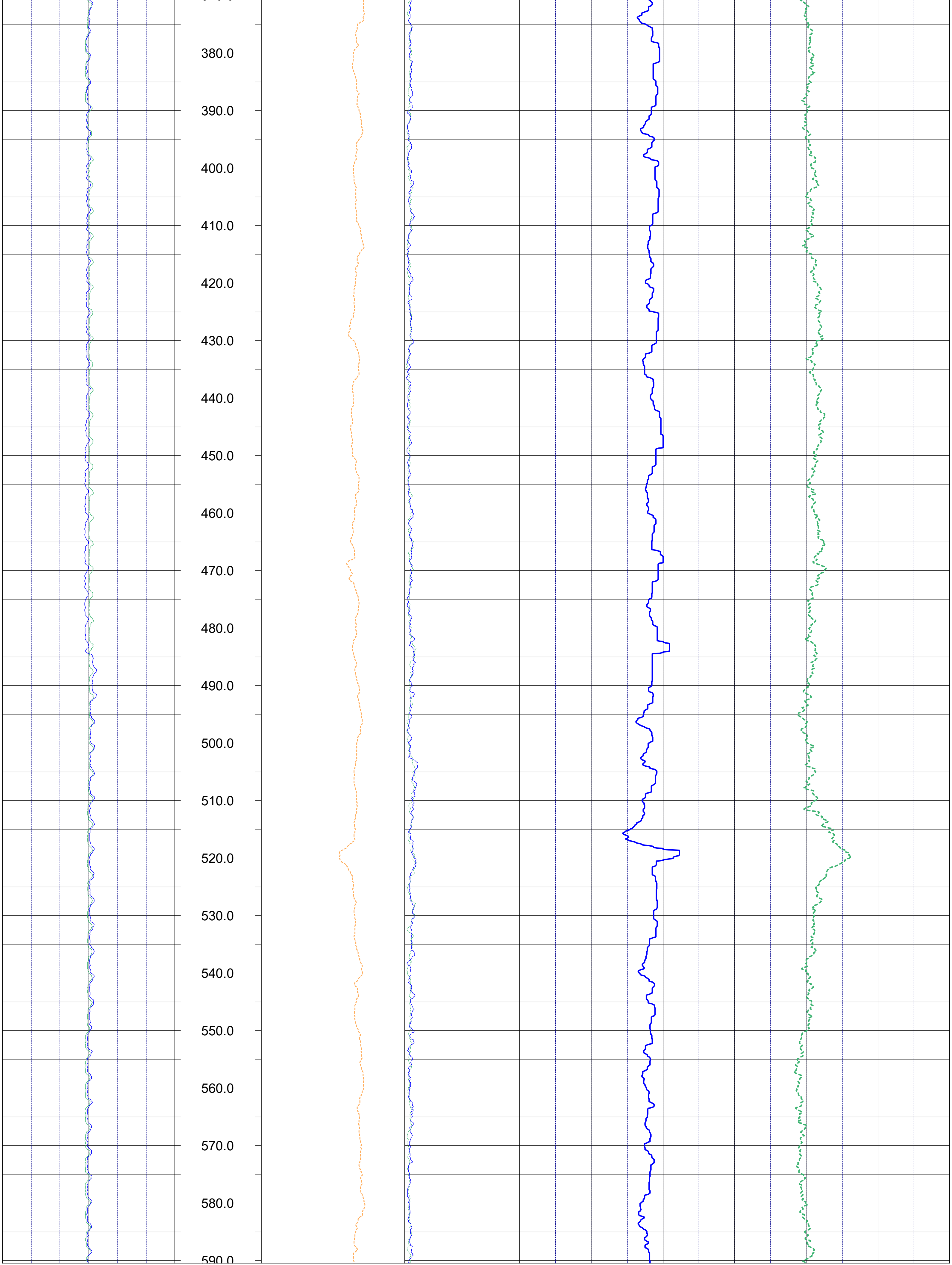
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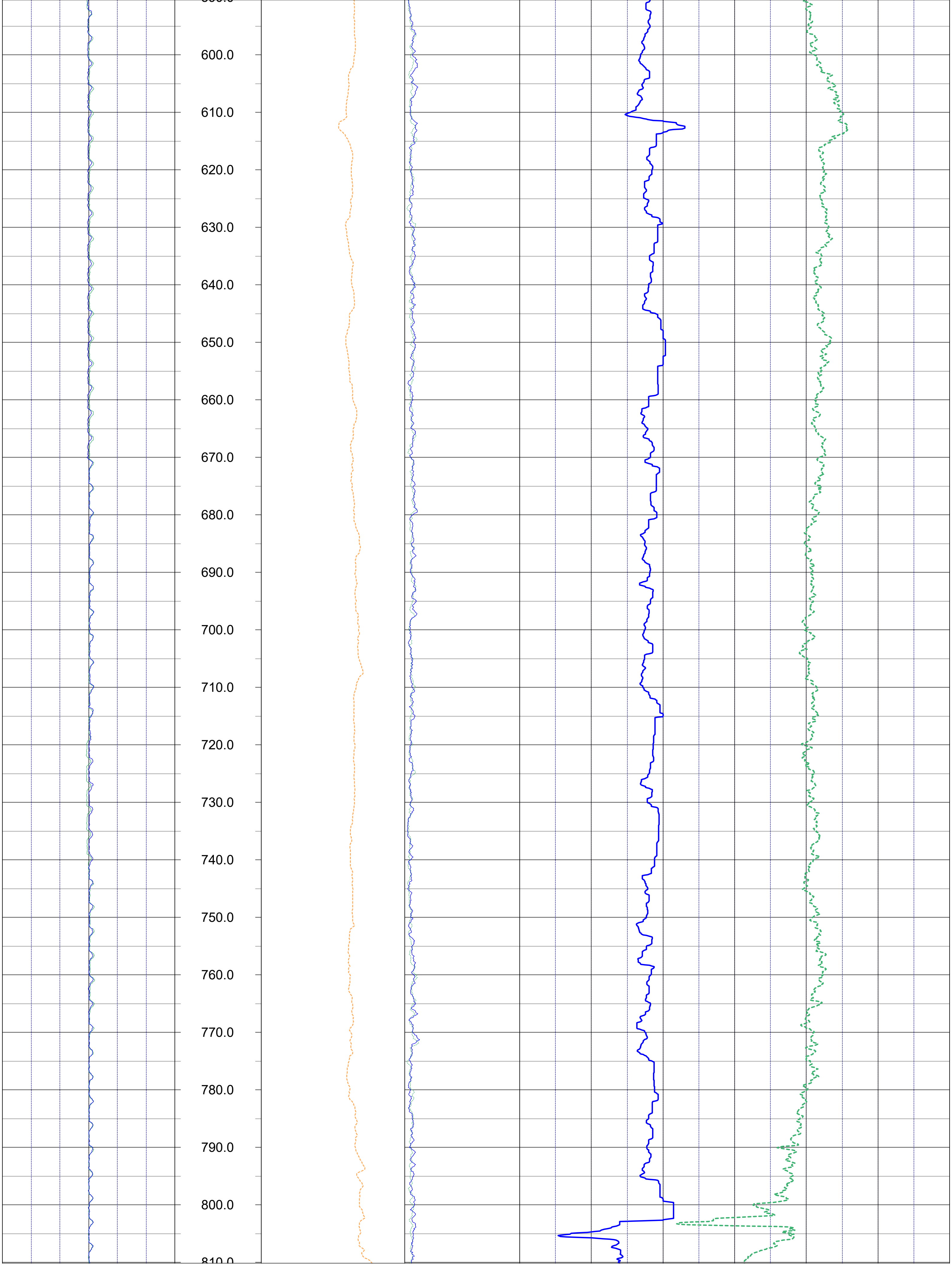
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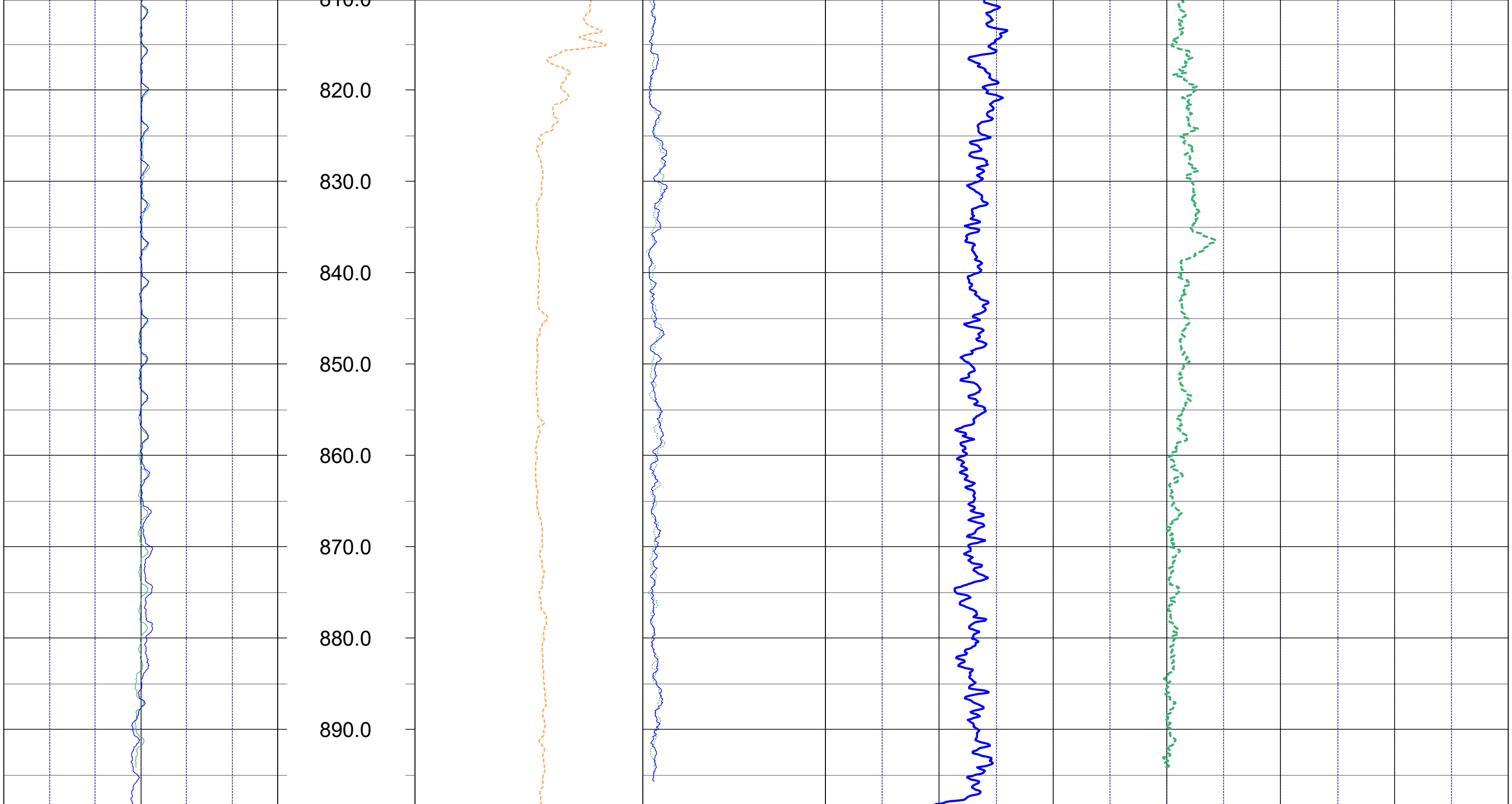

0 ft/min 60			0 CPS 350	-1000 RPM 2000
LSDU		COMMENTS	UD GAMM	DYNU
0 ft/min 60	1in:20ft	0 IN 20	0 CPS 350	-1000 RPM 2000
LSDD	Depth	CAL	DD GAMM	DYND

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Florida Licensed Geology Business GB 458

END OF LOG

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www.rmbaker.com

WELL POF-31
UWI POF-31

PROFESSIONAL LICENSES
Geologist PG2186
Geology Business GB458

HEADER NOTES:
WELL WAS FLOWING NATURALLY AT A VISUALLY ESTIMATED 100-150 GPM

COMP	SFWMD
LOC	SUMICA SITE
FLD	SR 60
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
DUAL INDUCTION
FLOWMETER
WATER QUALITY
VIDEO

PERMANENT DATUM:

LOG MEASURED FROM: GROUND SURFACE

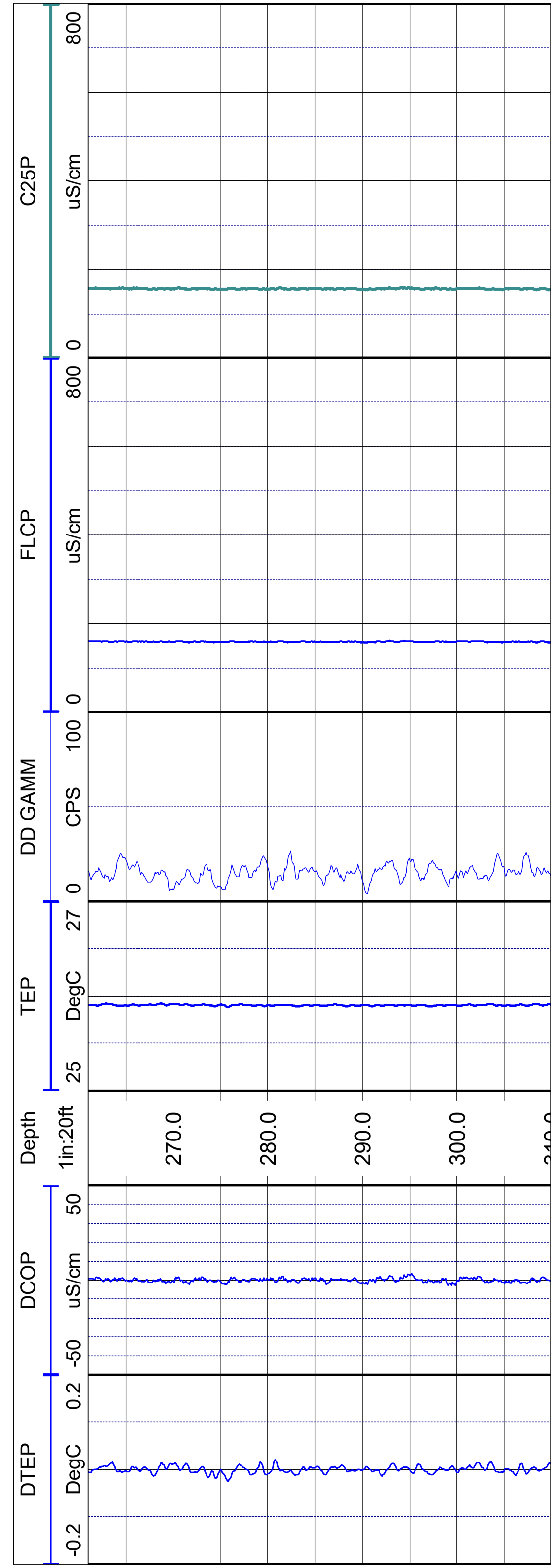
DRILLING MEASURED FROM:

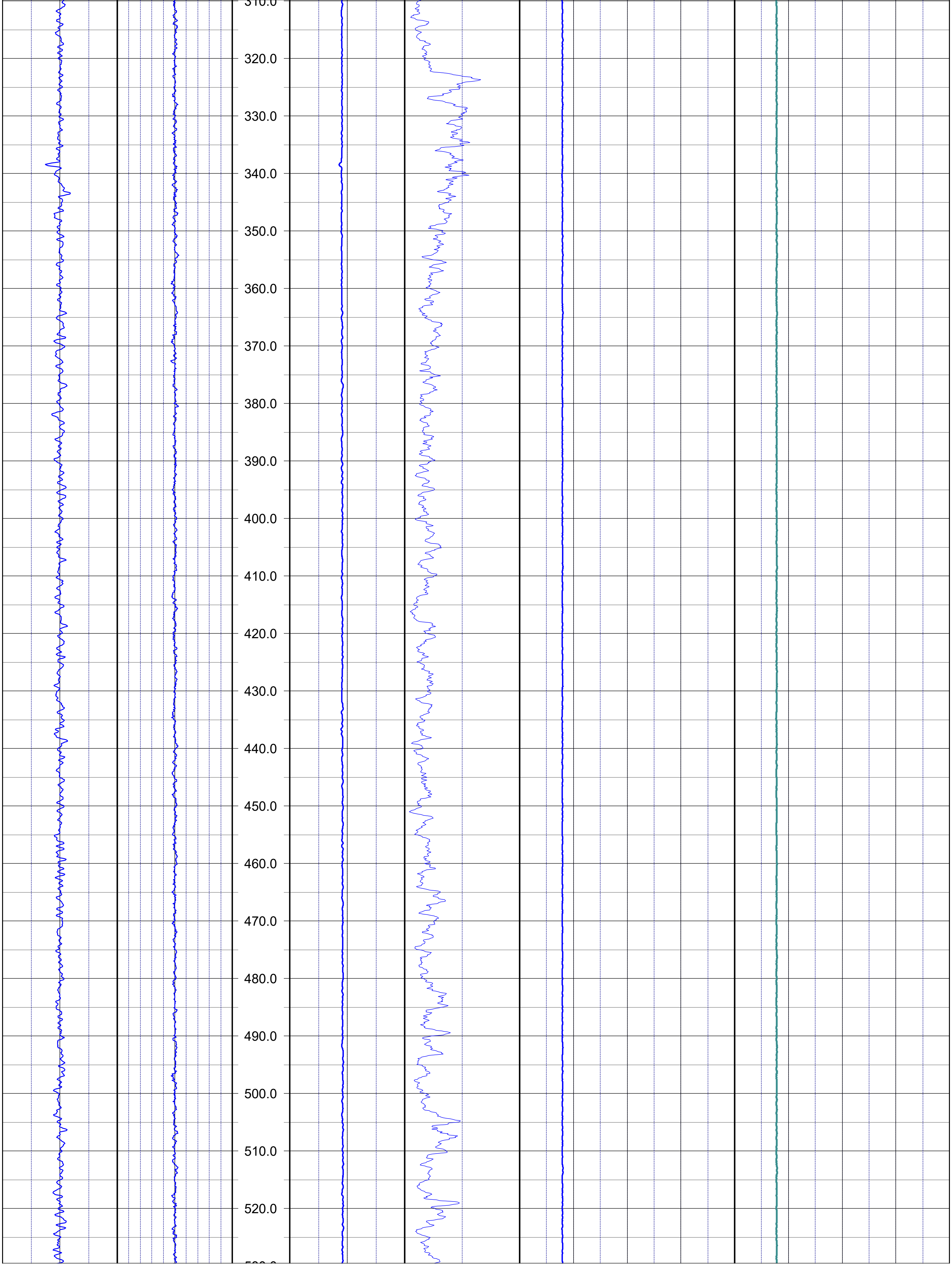
DATE	10 Sep 20	TYPE FLUID IN HOLE	WATER
RUN No	2	LOGGING SPEED (FT/MIN)	30
TYPE LOG	**WATER QUALITY**	TROLLING DIRECTION	DOWN
		PUMPING RATE (GPM)	APPROX 150 GPM
DEPTH-DRILLER	900		
DEPTH-LOGGER	900.2		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	6	70	285	16	STEEL	0	84
2	9.875	270	900	10	PVC	0	270

WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**	calibration correction	**C**
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		

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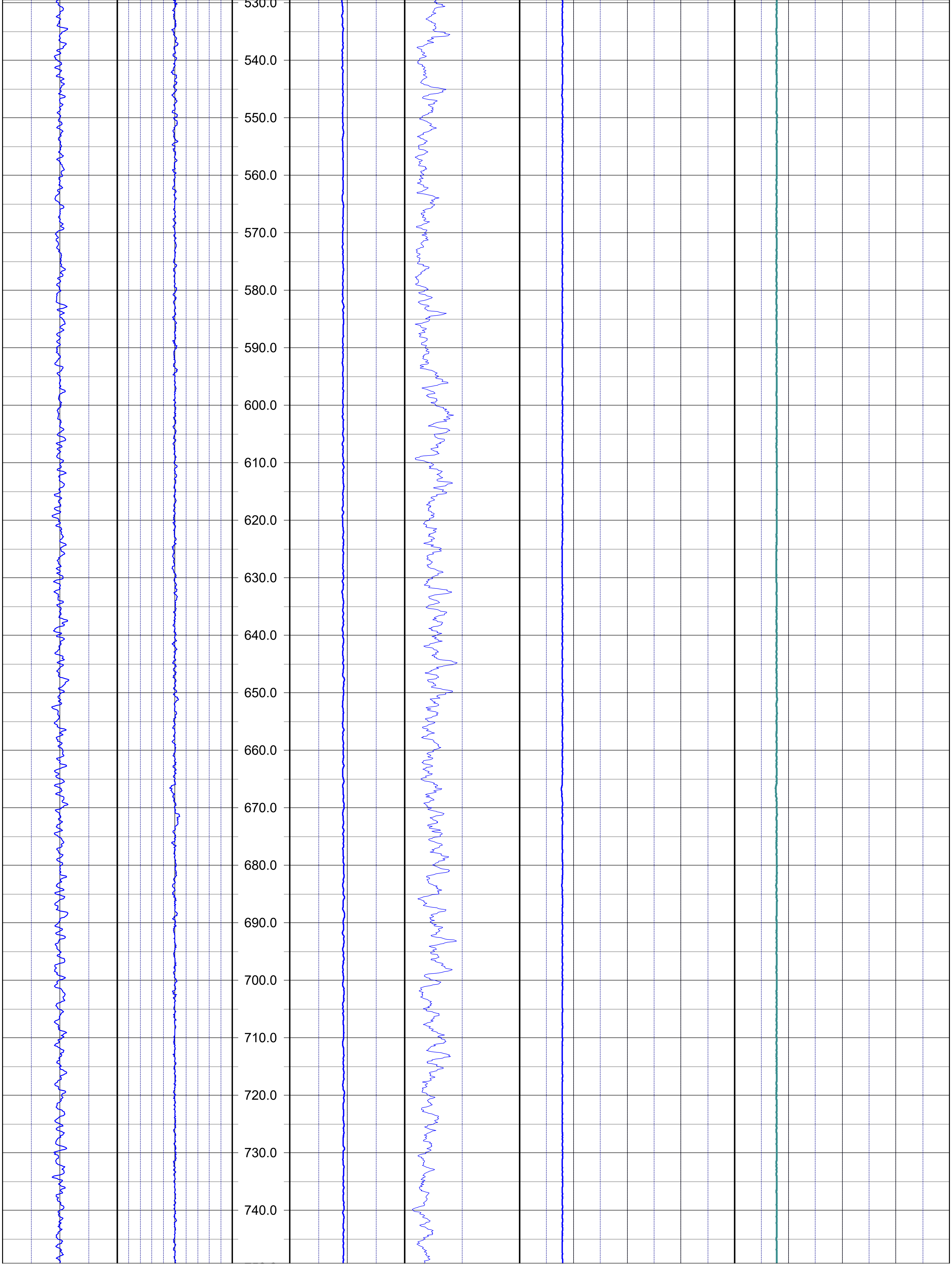
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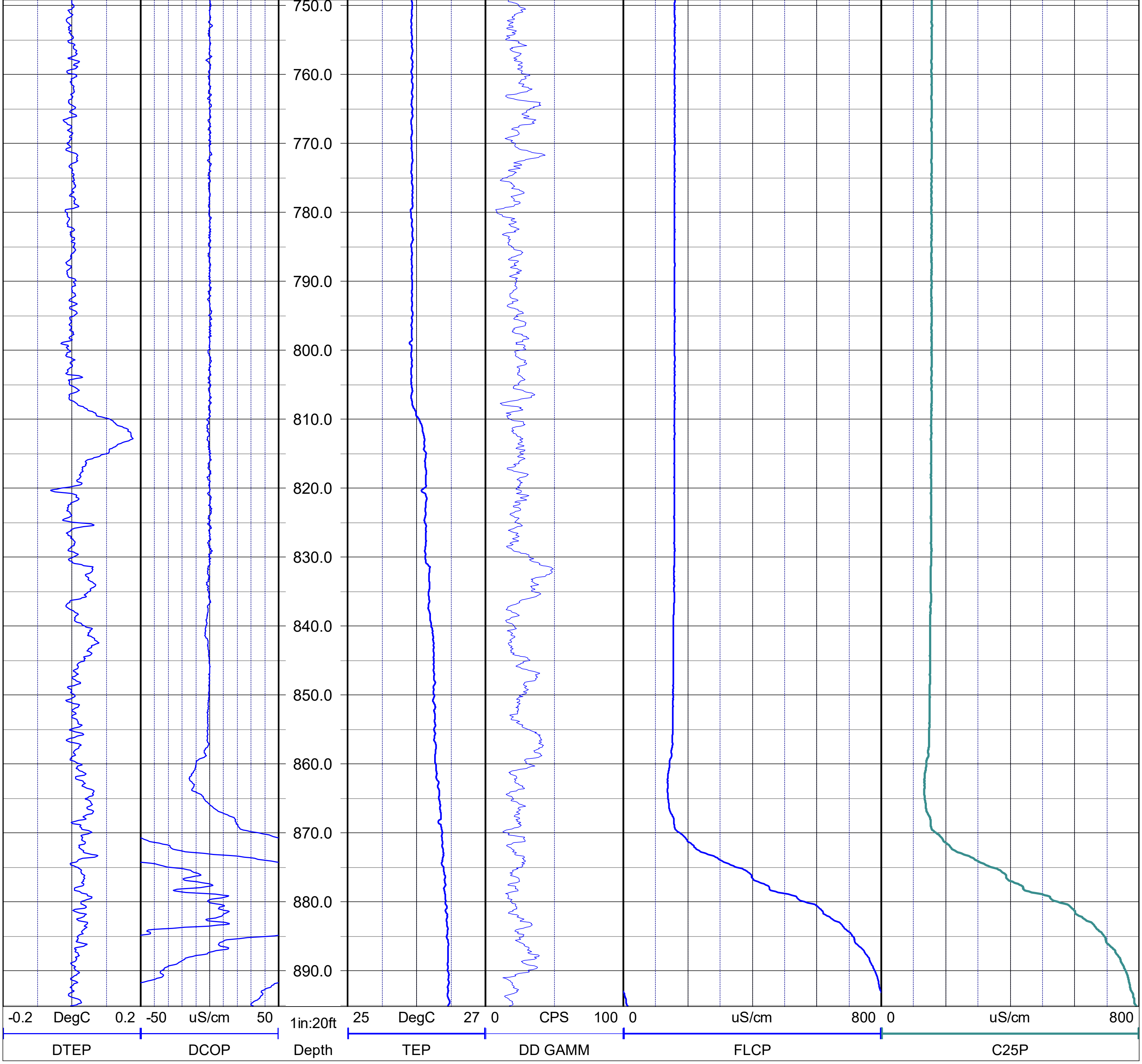

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WELL POF-32
UWI POF-32

PROFESSIONAL LICENSES
Geologist PG2186
Licensed Geology Business

HEADER NOTES:

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60 SUMICA
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
DUAL INDUCTION
WATER QUALITY
FLOWMETER
SONIC
VIDEO

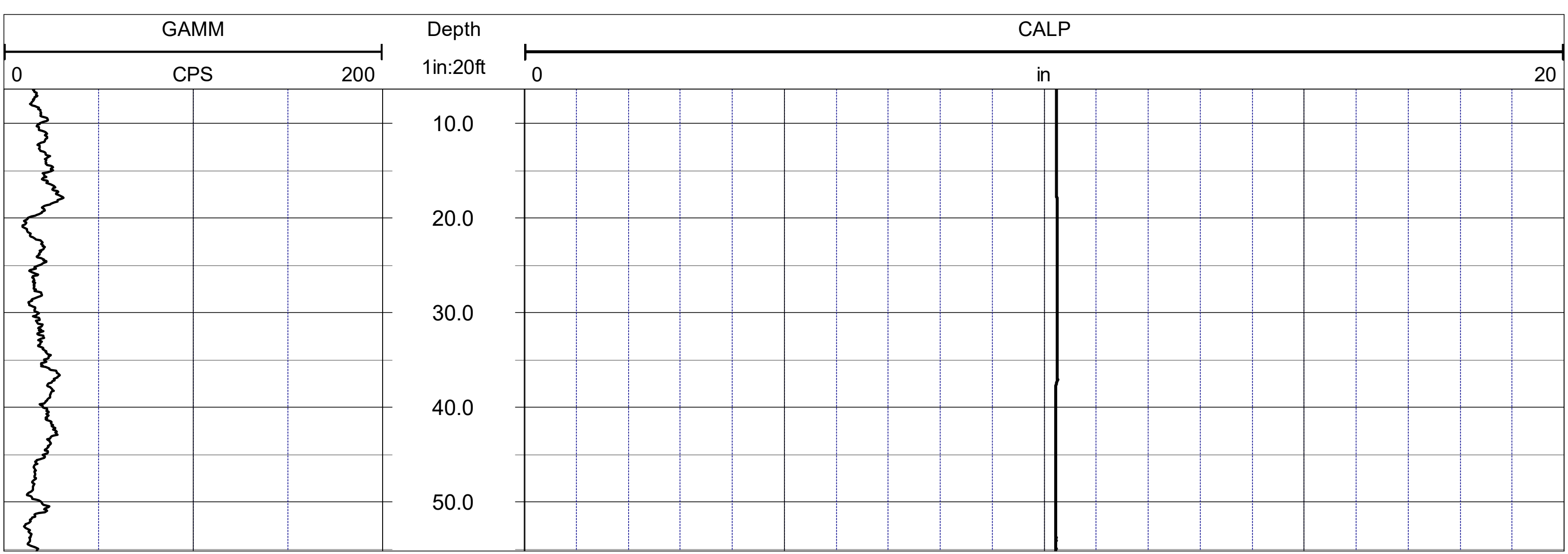
PERMANENT DATUM:
LOG MEASURED FROM: TOP OF CASING
DRILLING MEASURED FROM:

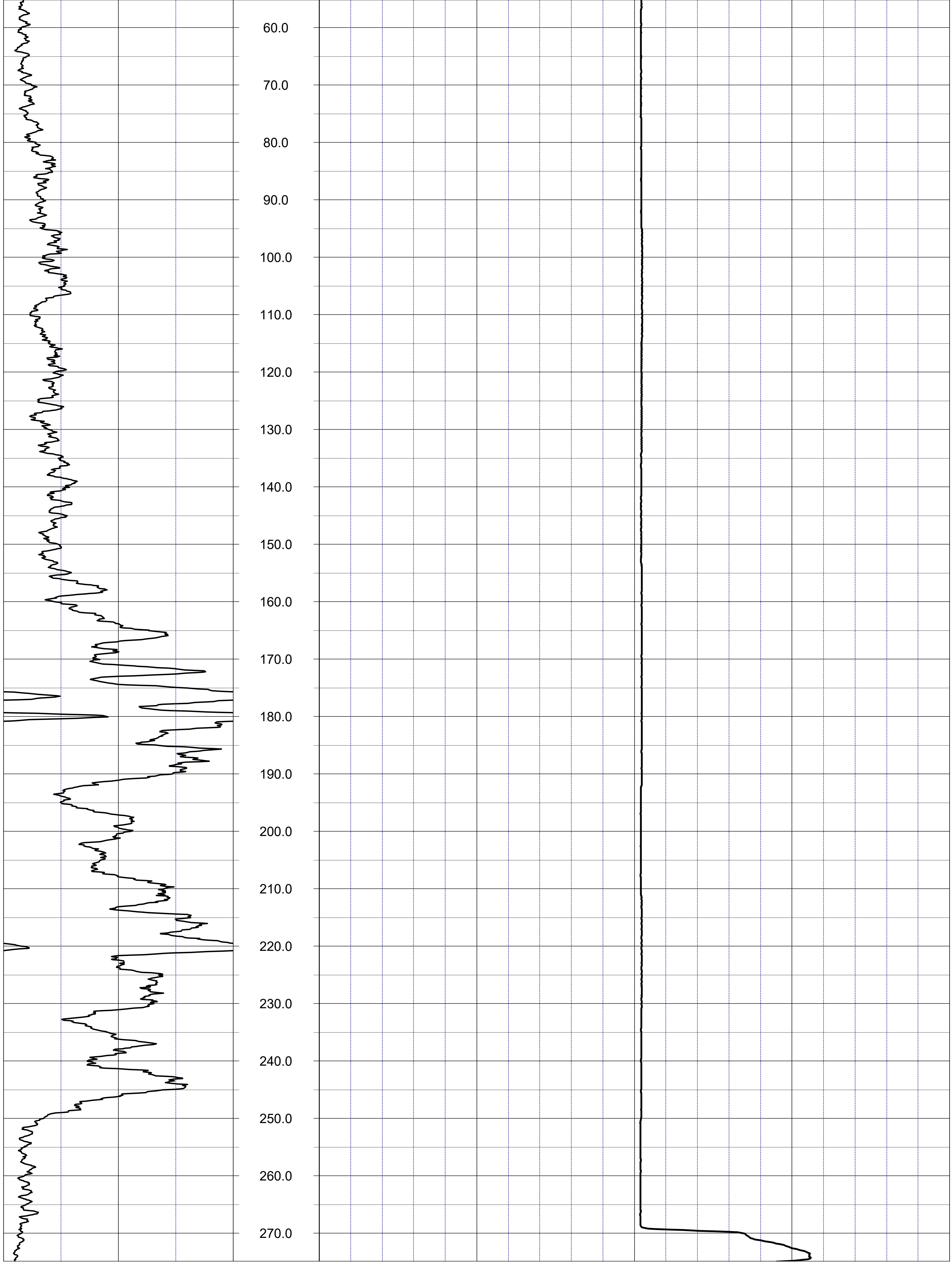
DATE	03 Nov 20	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	40
TYPE LOG	**CALIPER**	TROLLING DIRECTION	UP
DEPTH-DRILLER	1410	PUMPING RATE (GPM)	N/A
DEPTH-LOGGER	1412		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**





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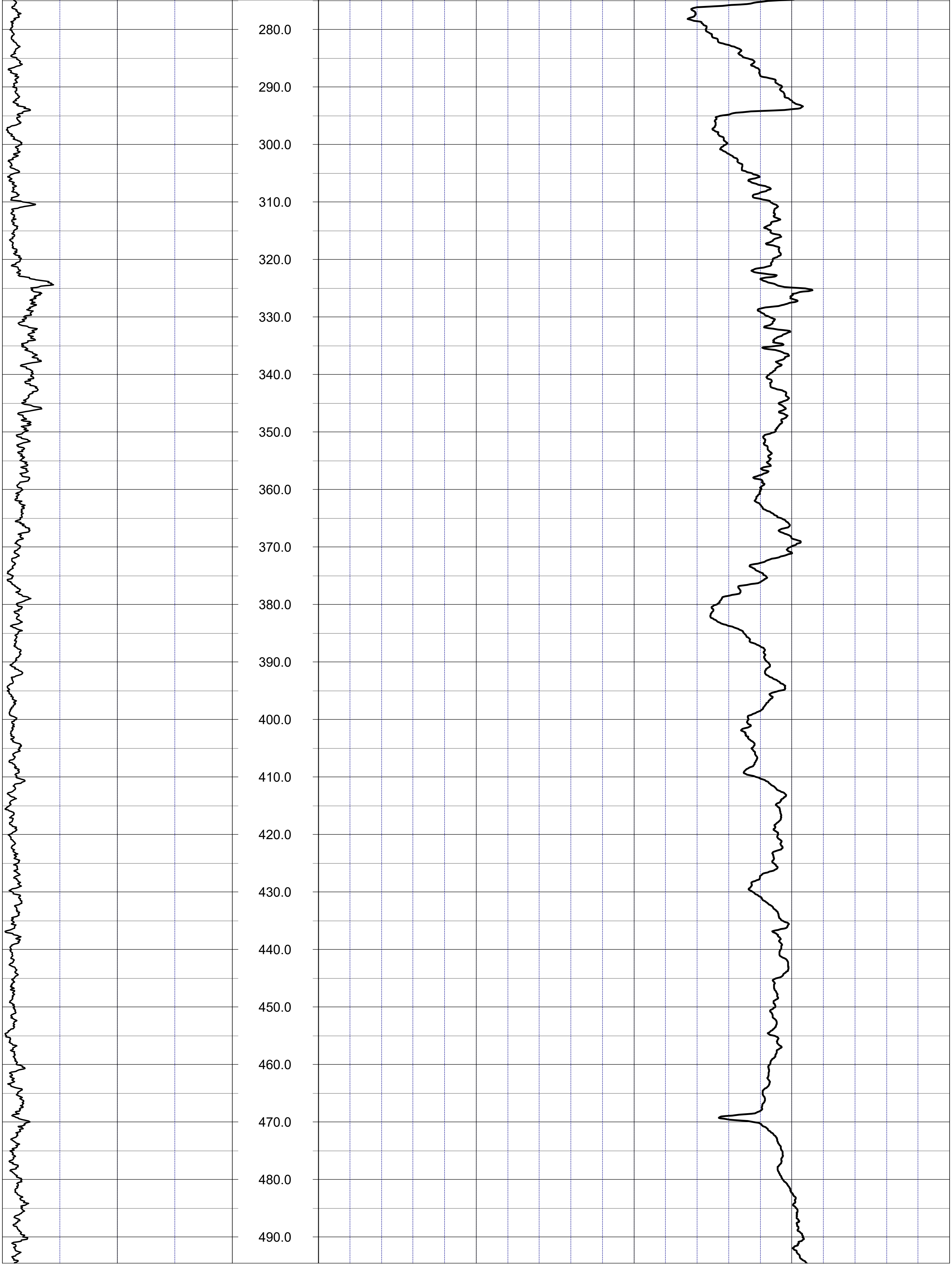
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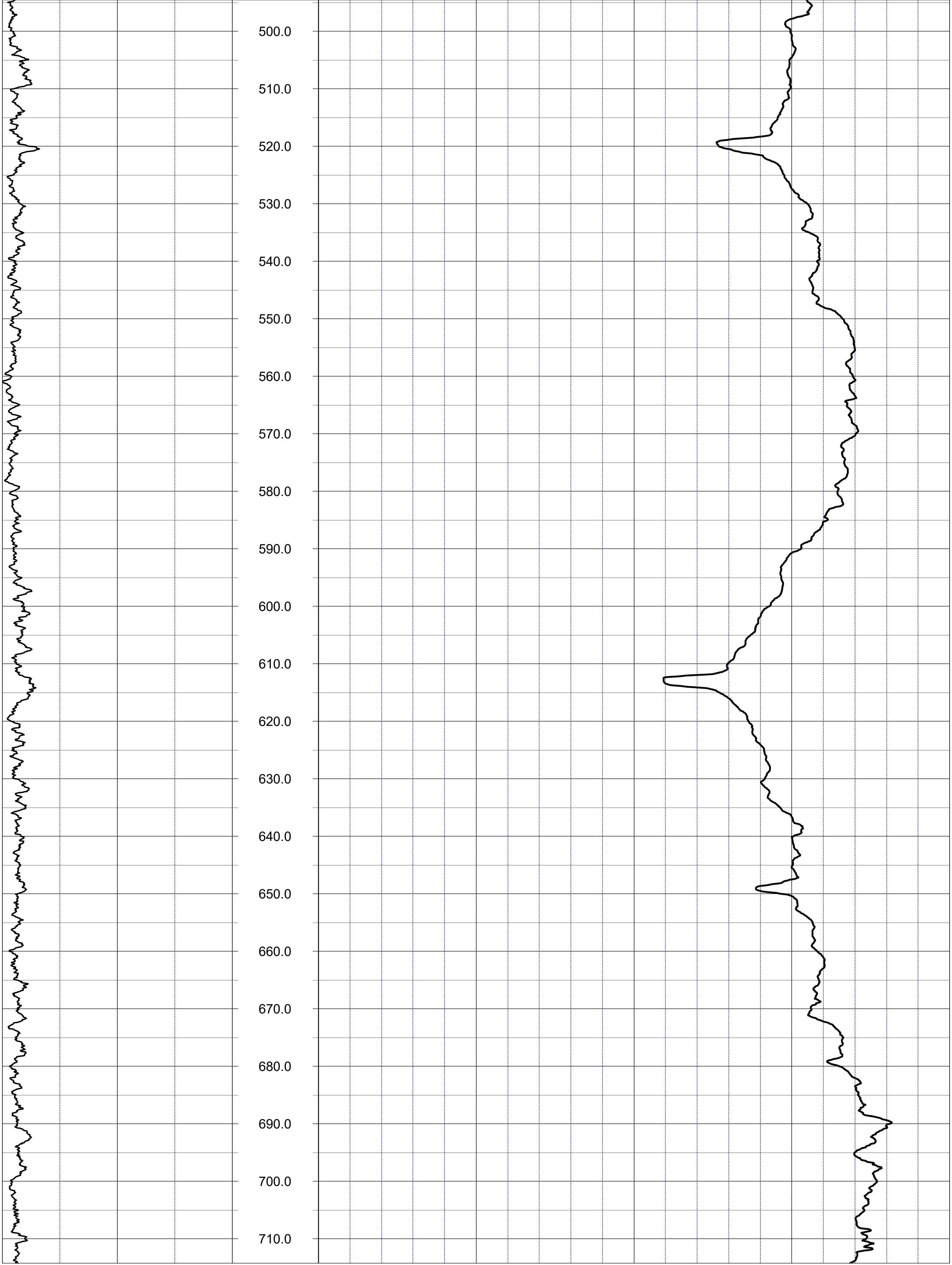
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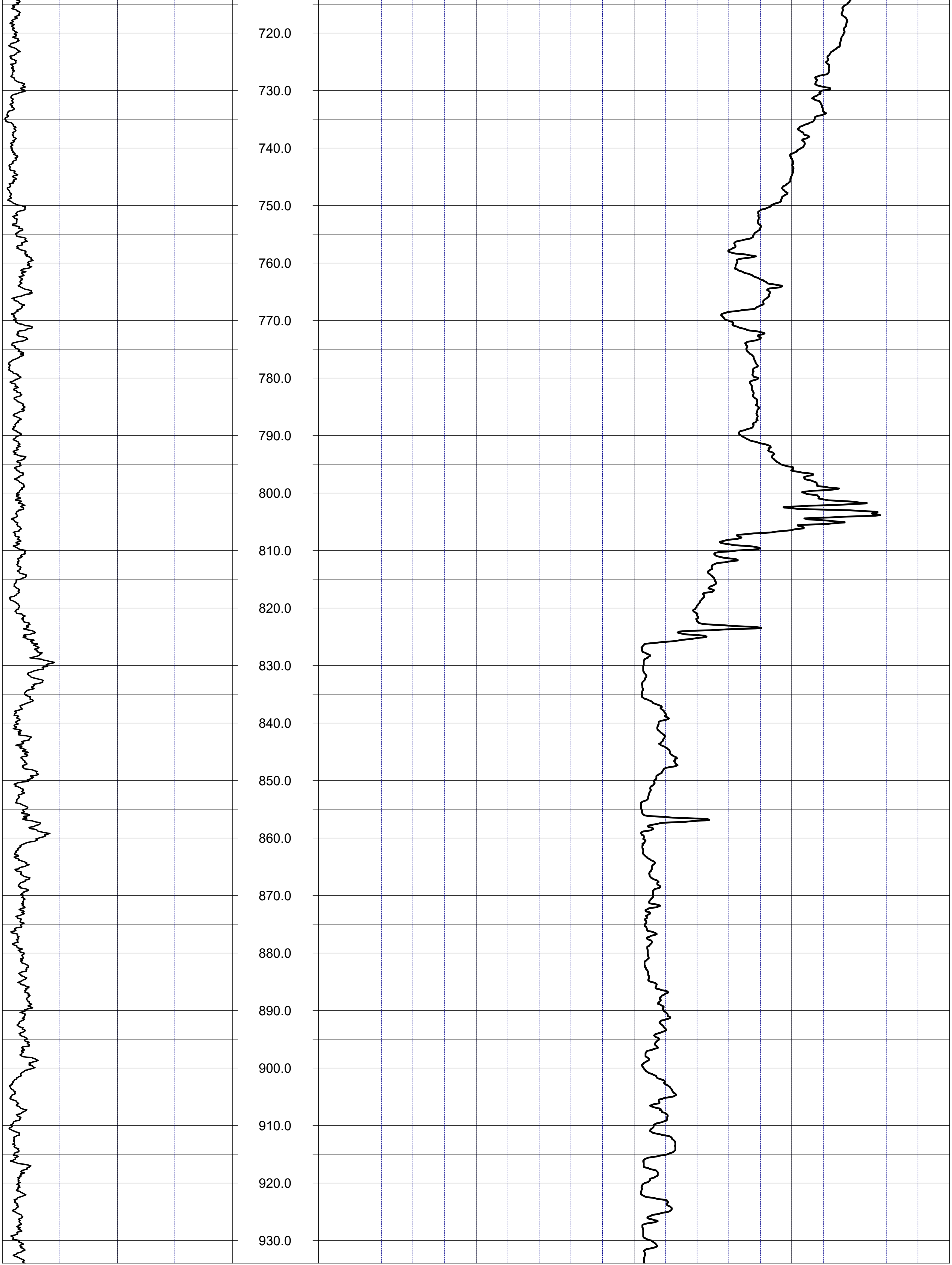
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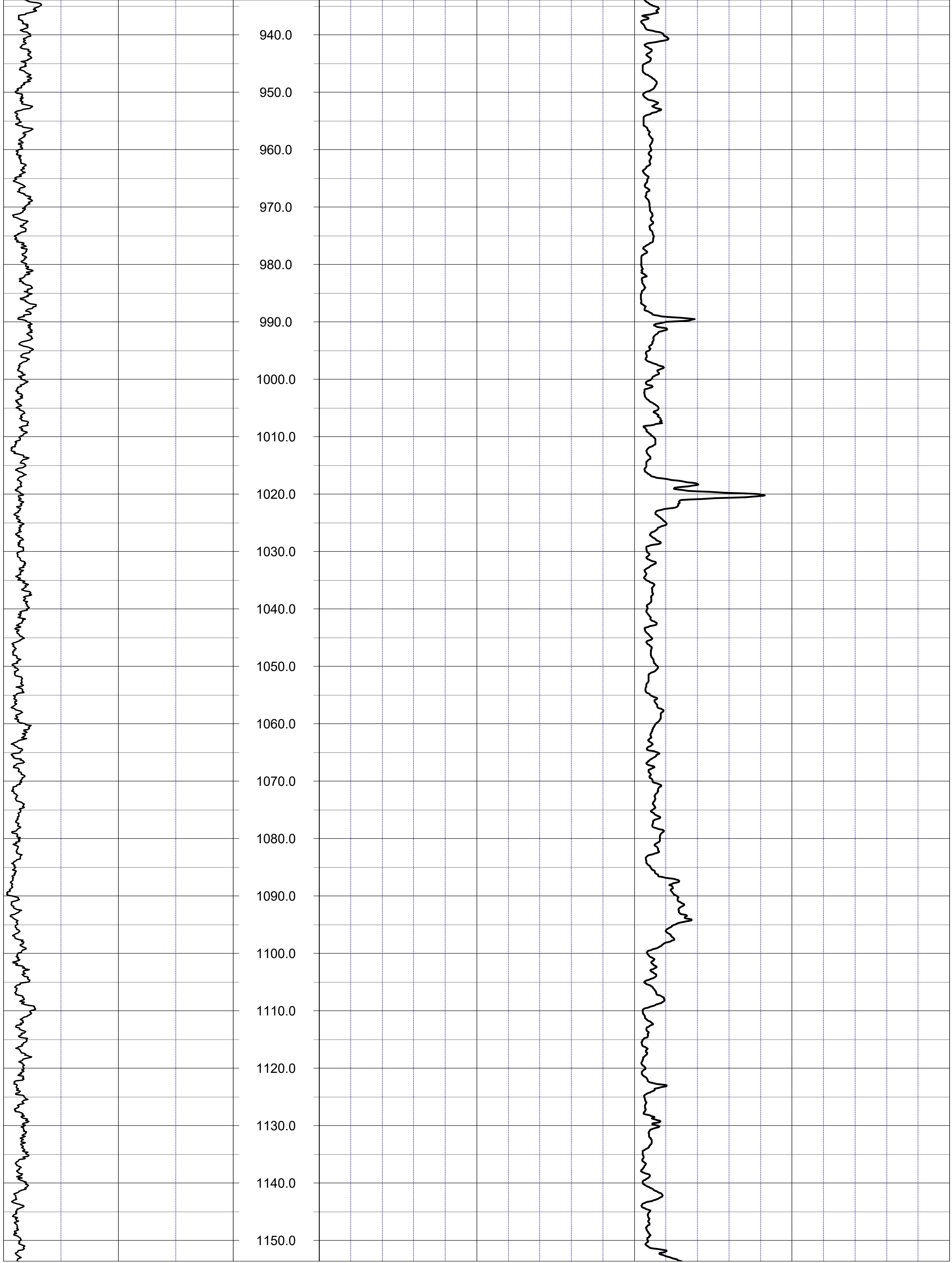
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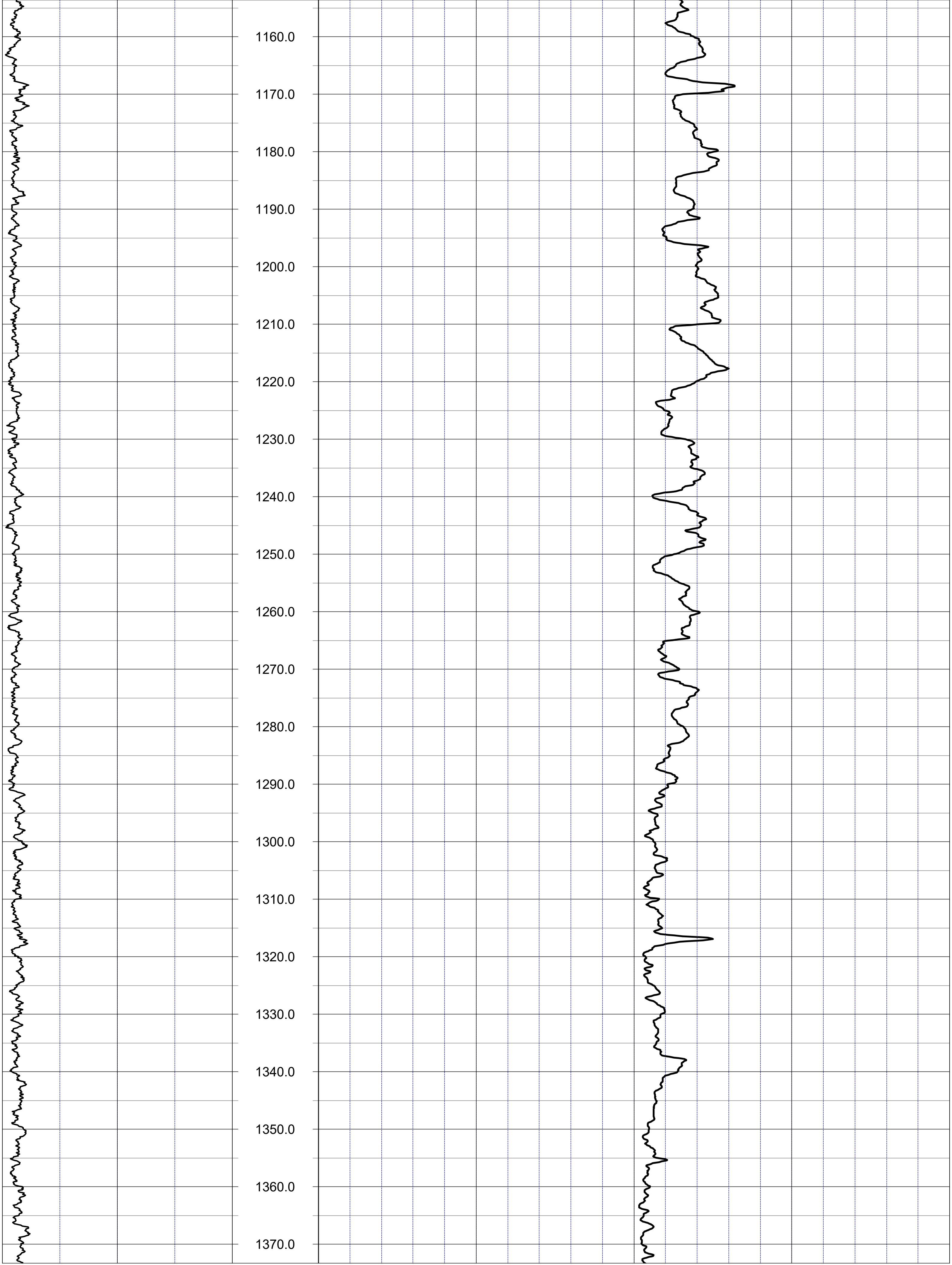
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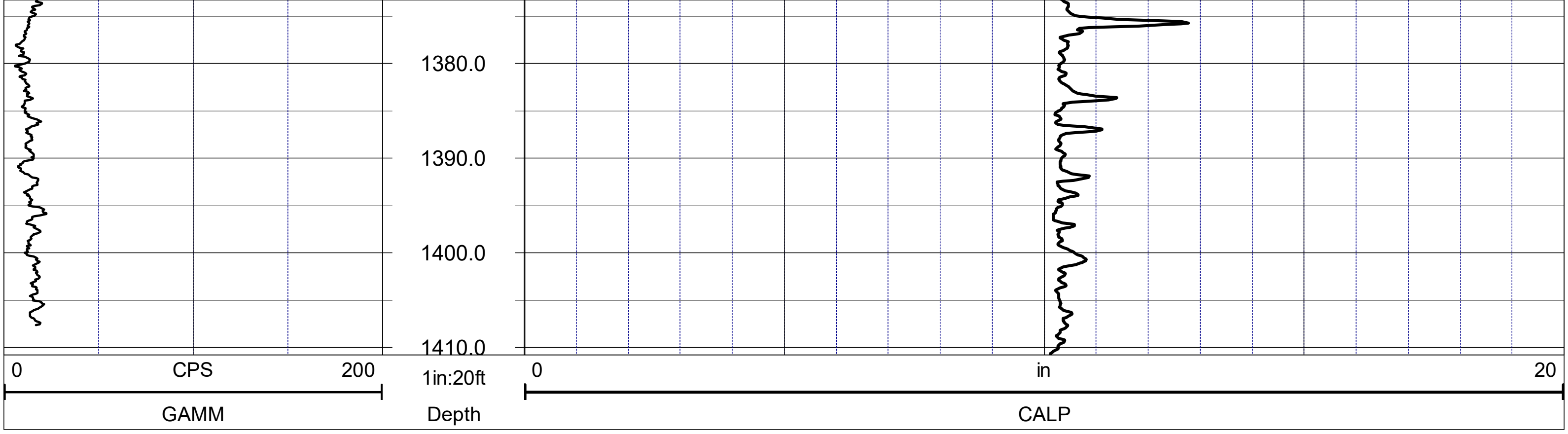

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WELL POF-32
UWI POF-32

PROFESSIONAL LICENSES
Geologist PG2186
Licensed Geology Business

HEADER NOTES:

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60 SUMICA
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
DUAL INDUCTION
WATER QUALITY
FLOWMETER
SONIC
VIDEO

PERMANENT DATUM:
LOG MEASURED FROM: TOP OF CASING
DRILLING MEASURED FROM:

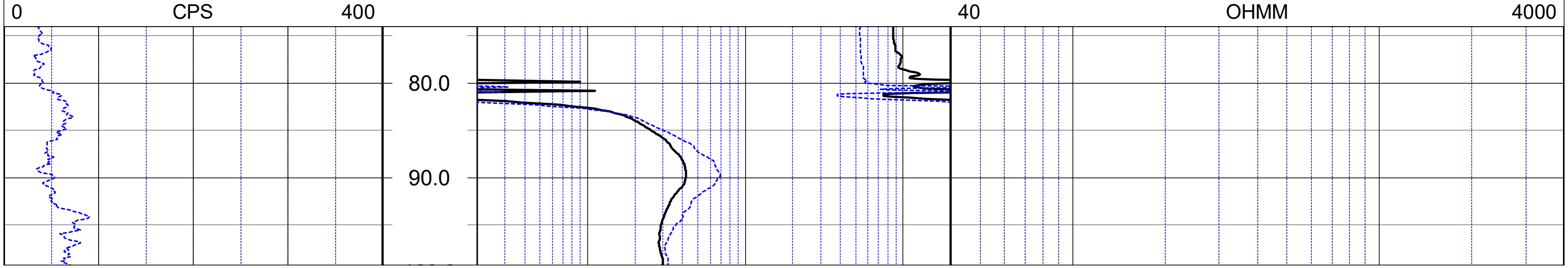
DATE	02 & 04 Nov 20	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	30
TYPE LOG	**ELECTRIC + DUIN**	TROLLING DIRECTION	UP
DEPTH-DRILLER	1410	PUMPING RATE (GPM)	N/A
DEPTH-LOGGER	1412		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

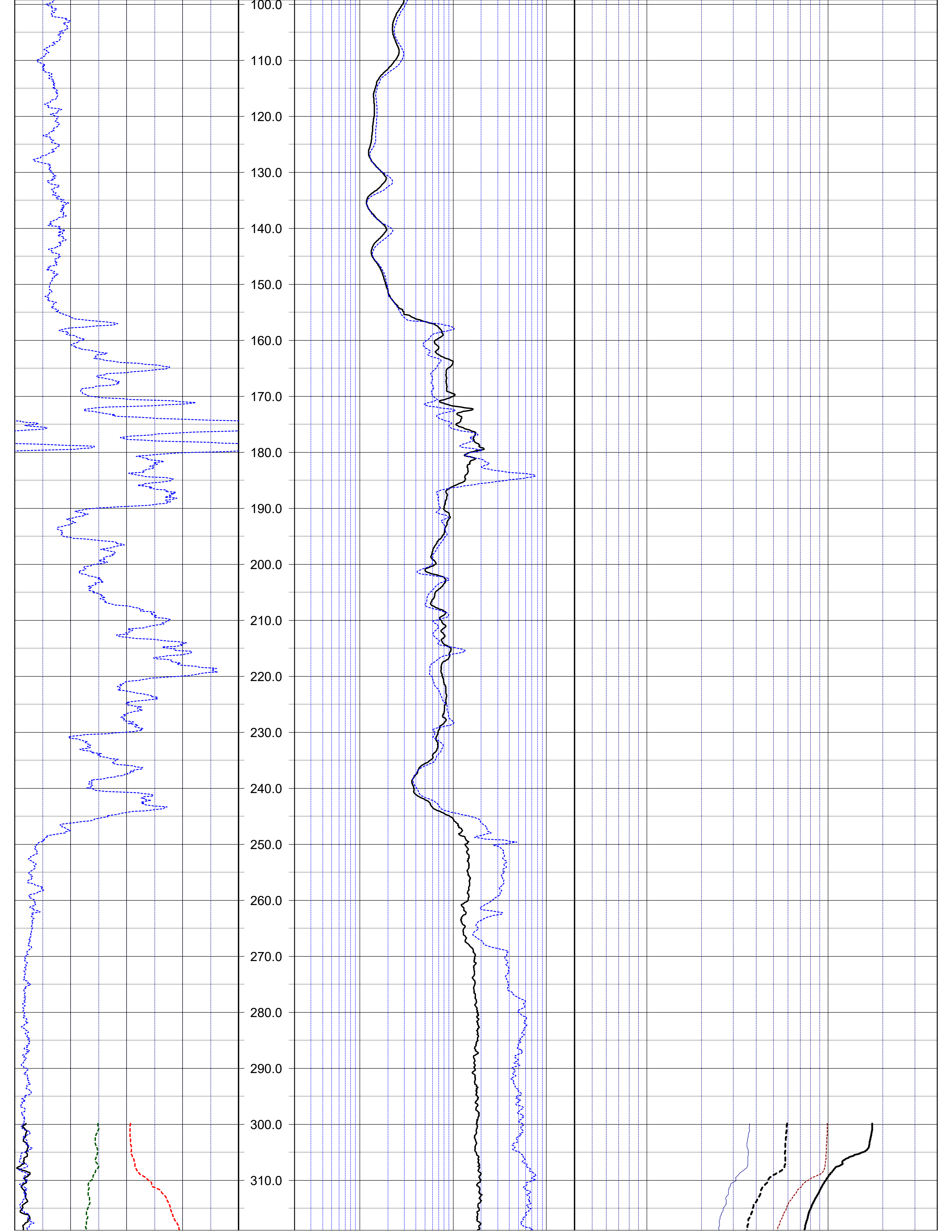
RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**

ESP	Depth	ILD	R8
0 mV 1000	1in:20ft	2 OHMM 2000	40 OHMM 4000
RES		ILM	RSN
0 OHM 700		2 OHMM 2000	40 OHMM 4000
EGAMM			R32
0 CPS 400			40 OHMM 4000
DGAMM			RLN
0 CPS 400			40 OHMM 4000

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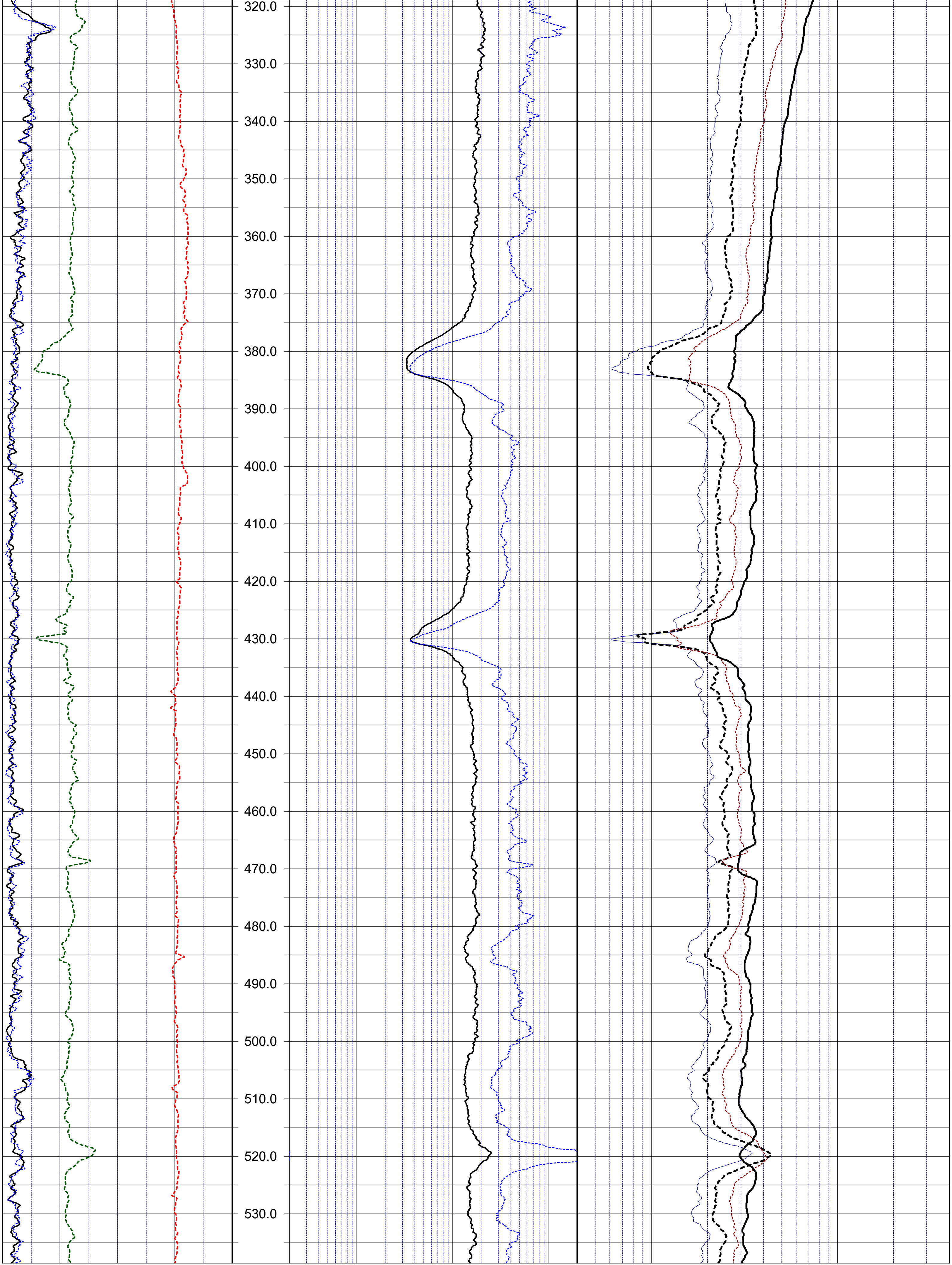
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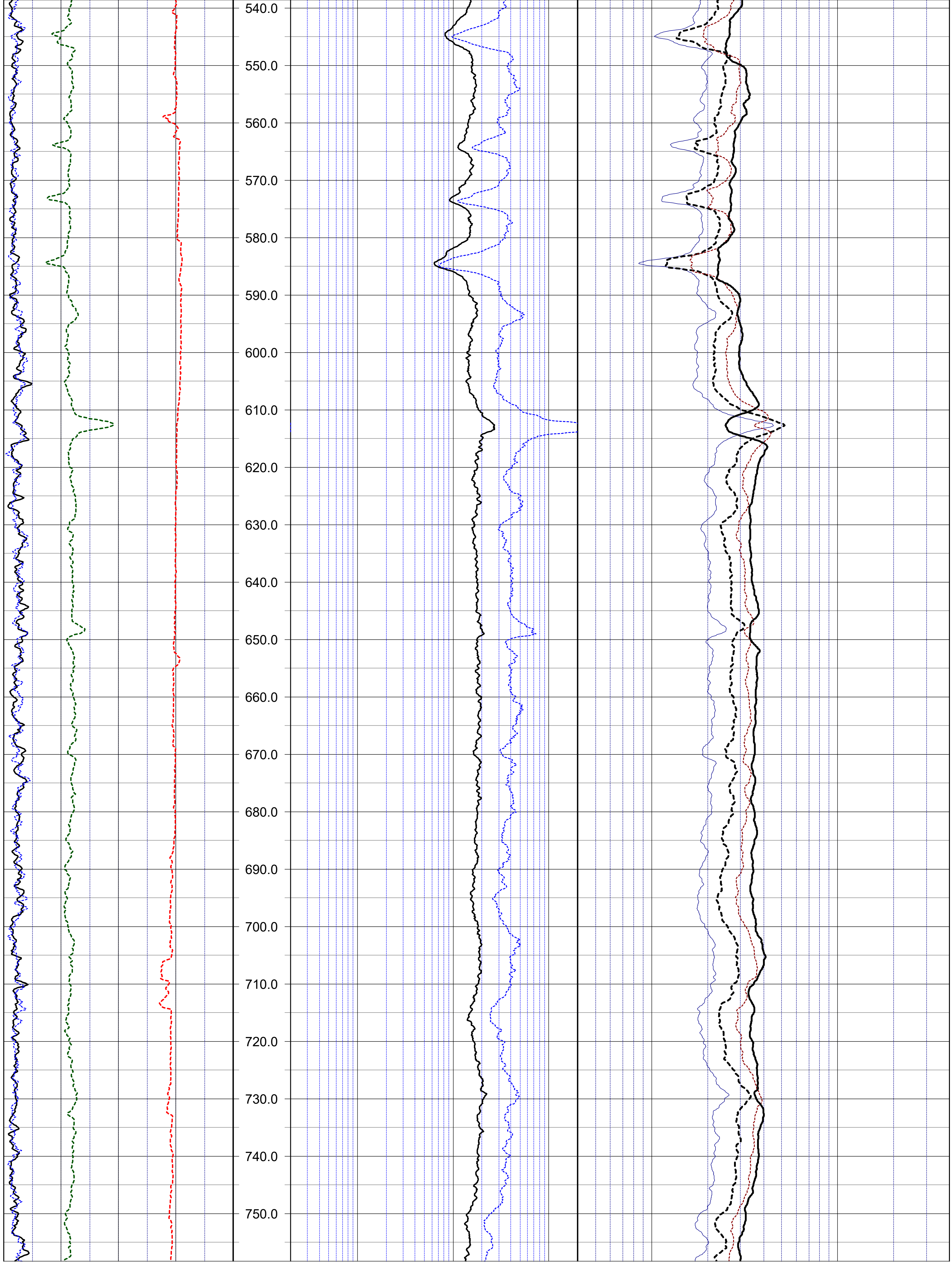
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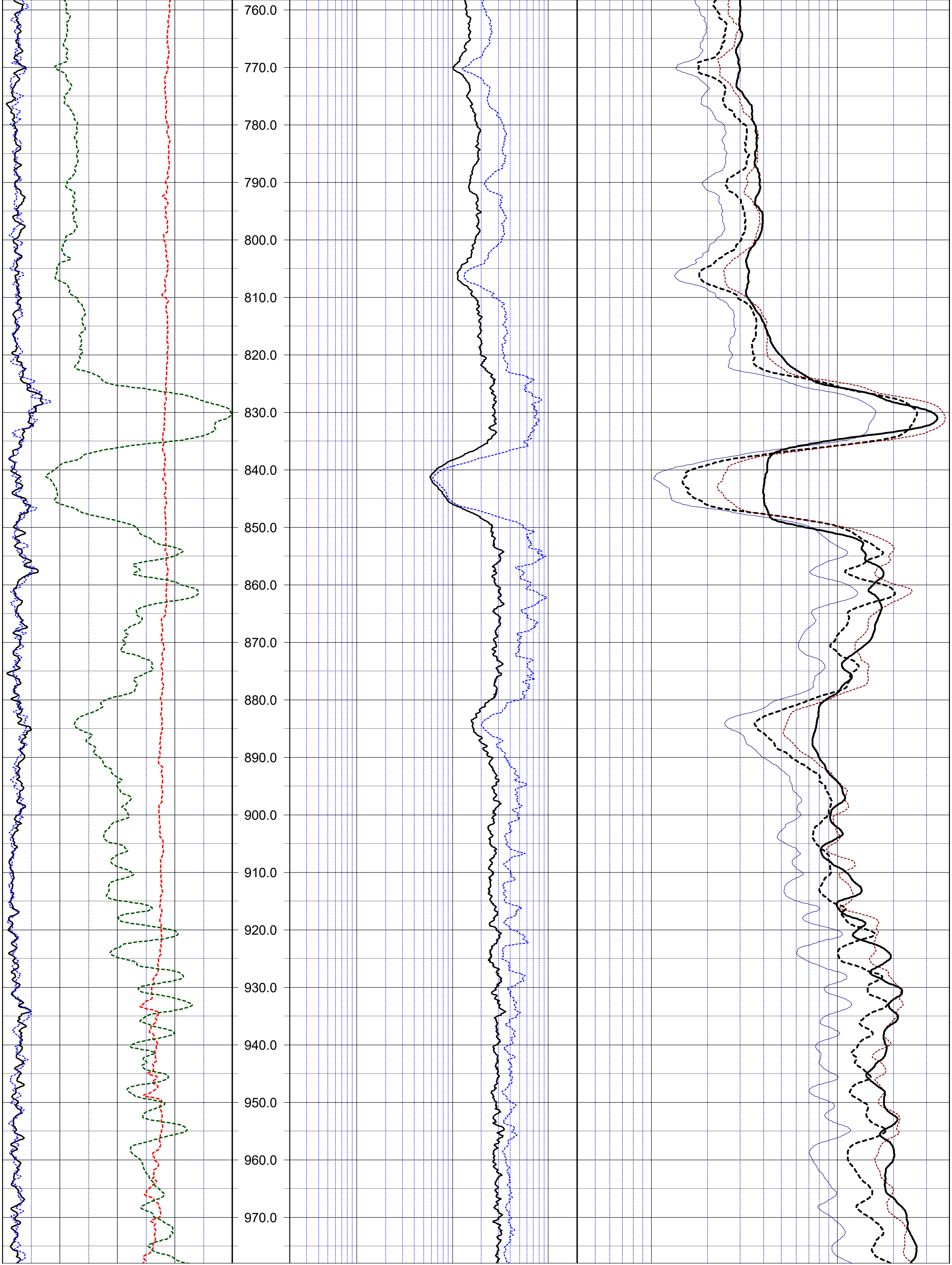
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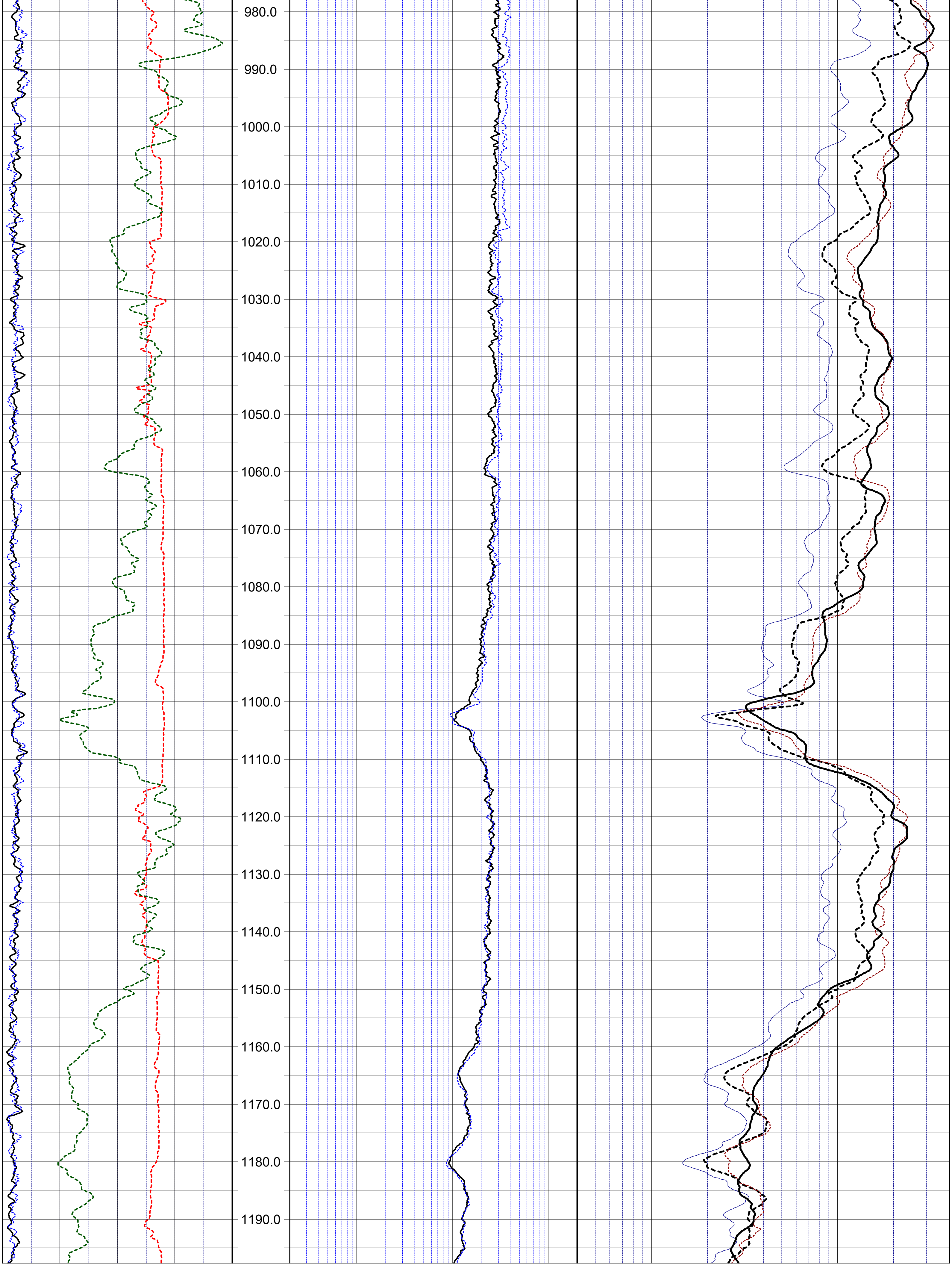
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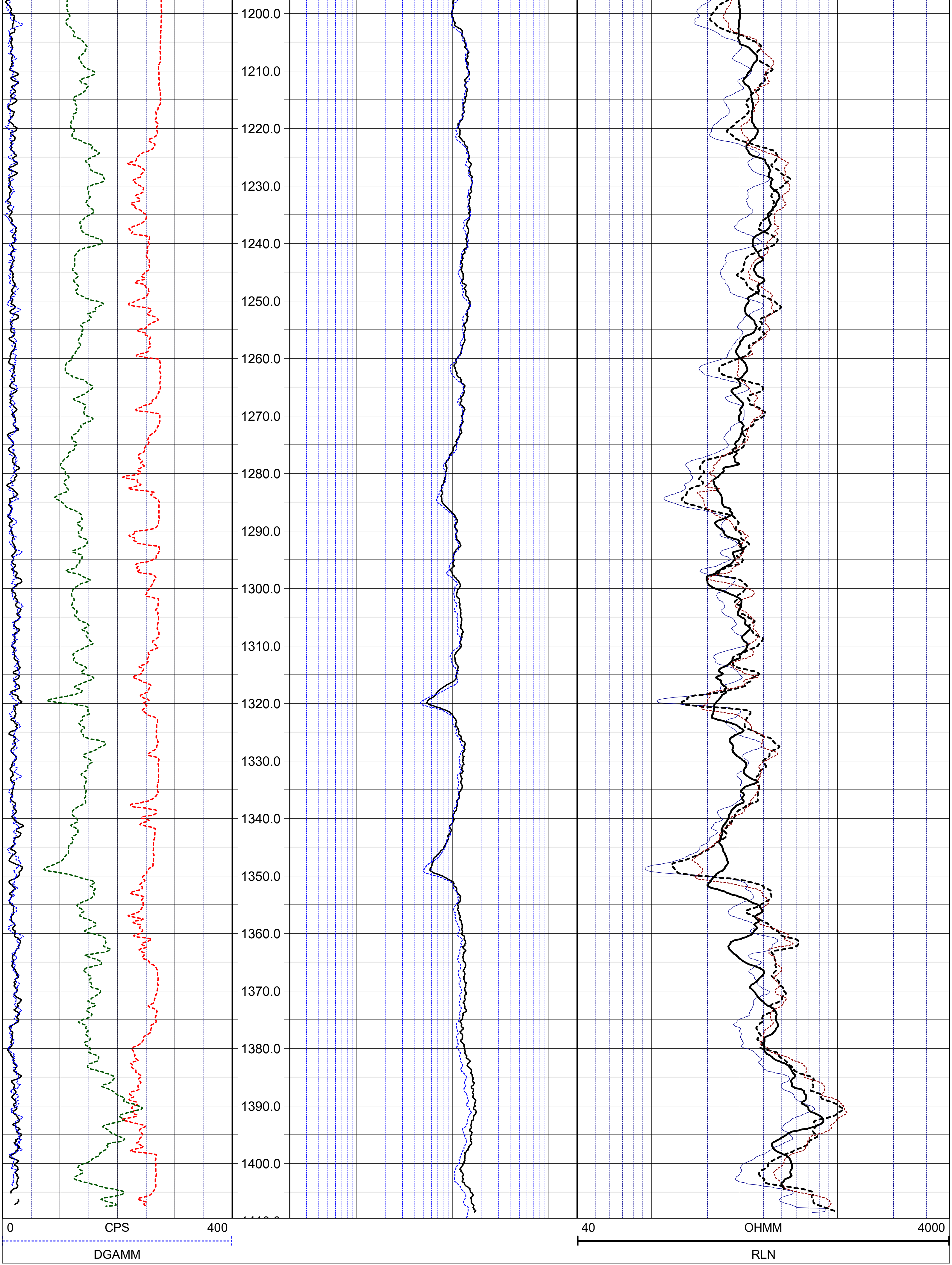
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400
DGAMM
40
OHMM
4000
RLN

0 CPS 400				40 OHMM 4000
EGAMM				R32
0 OHM 700		2 OHMM 2000		40 OHMM 4000
RES		ILM		RSN
0 mV 1000	1in:20ft	2 OHMM 2000		40 OHMM 4000
ESP	Depth	ILD		R8

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UWI POF-32

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Licensed Geology Business

HEADER NOTES:

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60 SUMICA
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X		ALL SERVICES:
LONG		Y		CALIPER
GDAT	WGS84	H DAT		NATURAL GAMMA
SEC		ELEV		ELECTRIC
TWP		V DAT		DUAL INDUCTION
RGE				WATER QUALITY
				FLOWMETER
				SONIC
				VIDEO

PERMANENT DATUM:
LOG MEASURED FROM: TOP OF CASING
DRILLING MEASURED FROM:

DATE	04 Nov 20	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	30
TYPE LOG	**FLOWMETER**	TROLLING DIRECTION	BOTH
DEPTH-DRILLER	1410	PUMPING RATE (GPM)	N/A
DEPTH-LOGGER	1412		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

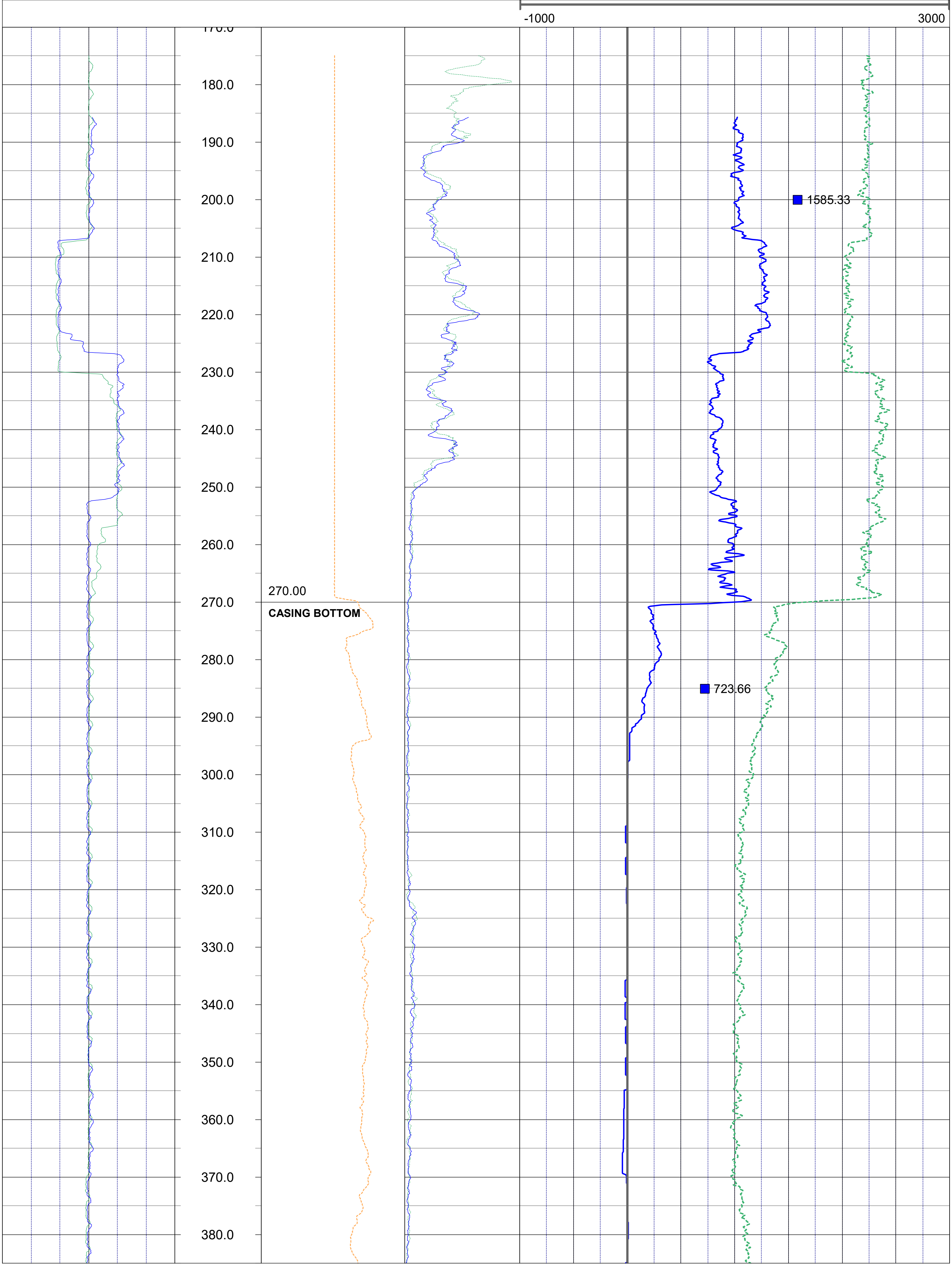
BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270

PROJECT NOTES:
-The spinner rate curves deflect to the positive direction with increasing flow from the well.
-The spinner rate curves are not corrected for borehole diameter.
-The well flowed naturally.

FLOWMETER LOG CODES

down static spinner rate	**FSD**	down static line speed	**LSSD**	natural gamma (w/annot.)	**GAMM**
up static spinner rate	**UTS**	up static line speed	**LSSU**	caliper	**CAL**
down dynamic spinner rate	**DYND**	down dynamic line speed	**LSDD**	repeat designation	**R**
up dynamic spinner rate	**DYNU**	up dynamic line speed	**LSDU**	percent flow	**PFLO**
static station spinner rate	**FSU**	dynamic station spinner rate	**FSP**	GPM flow	**GPMFLO**

LSDD	Depth	CALP	DD GAMM	DYND
0 ft/min 60	1in:20ft	0 in 20	0 CPS 400	-1000 RPM 3000
LSDU		COMMENTS	UD GAMM	DYNU
0 ft/min 60			0 CPS 400	-1000 RPM 3000
				STATIONS - FINAL
				-1000 RPM 3000
				ZERO LINE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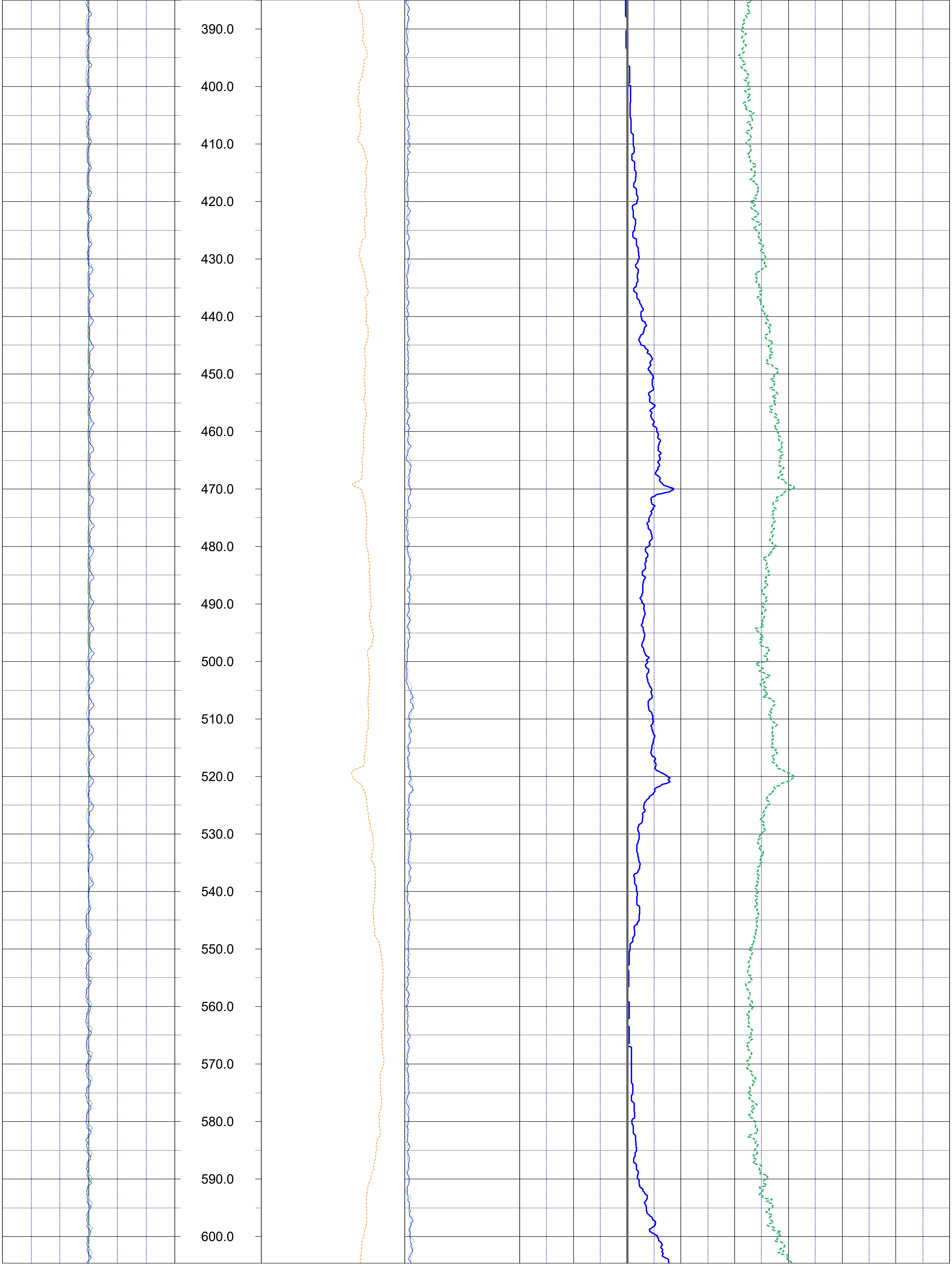
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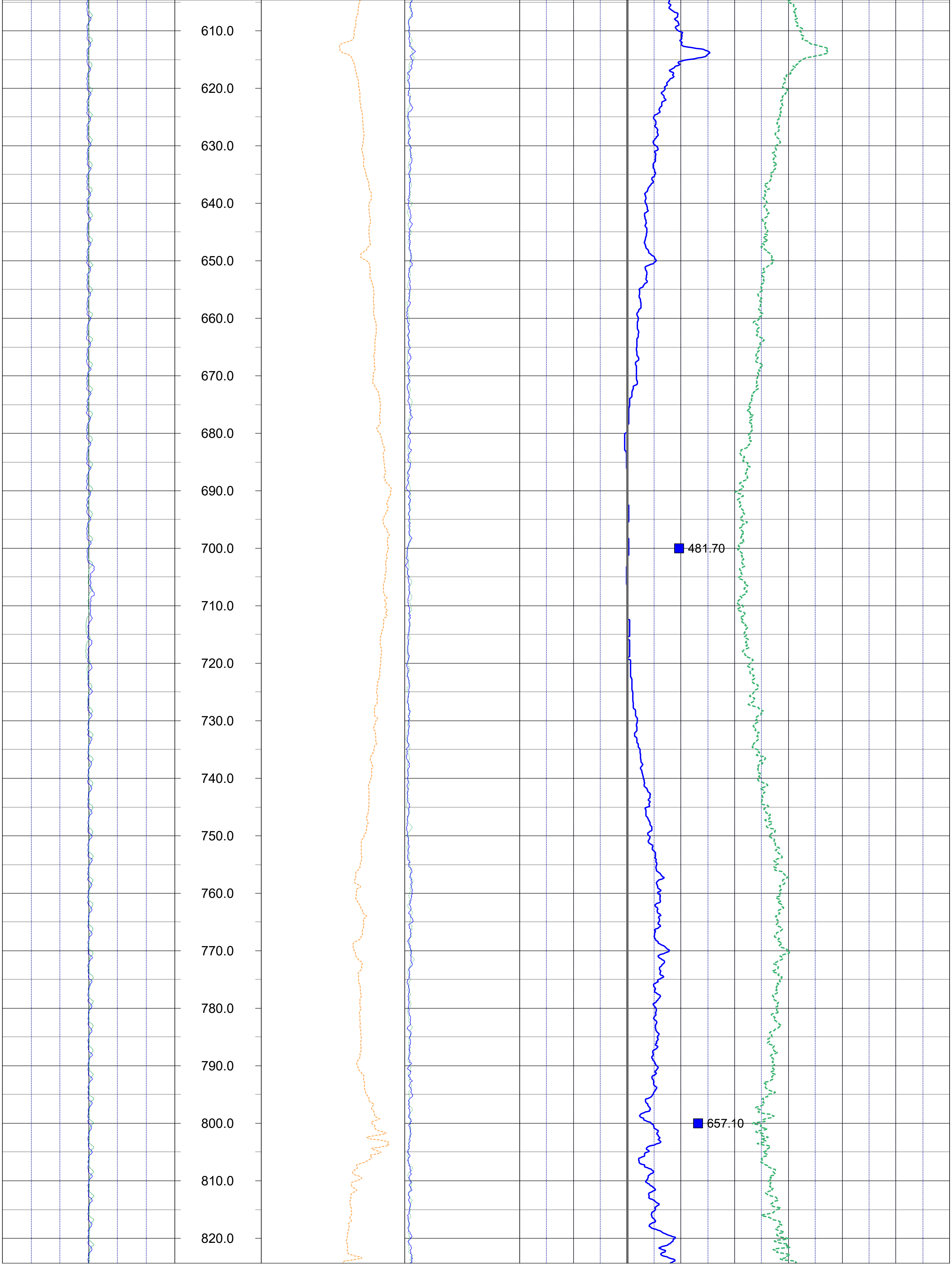

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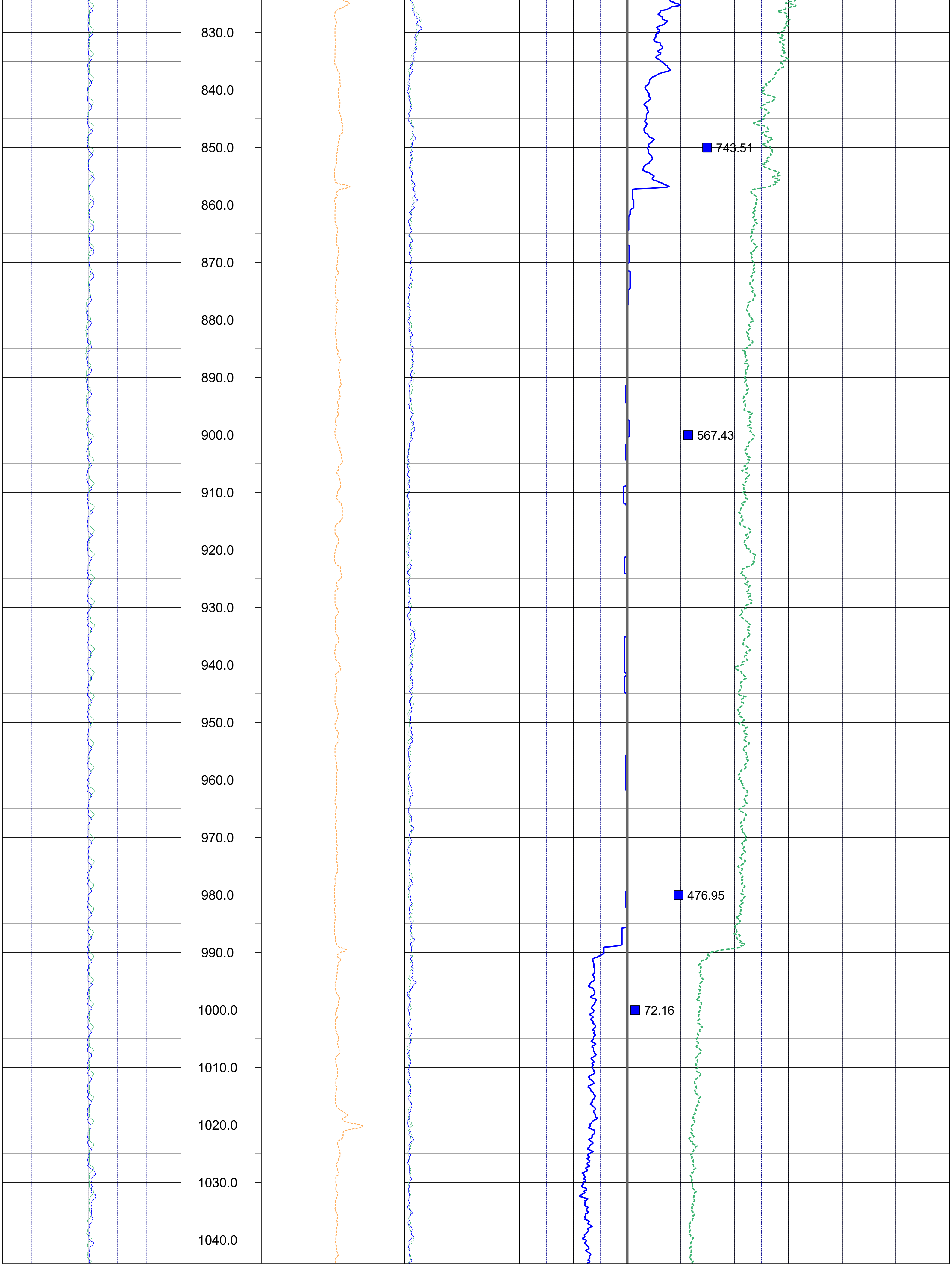
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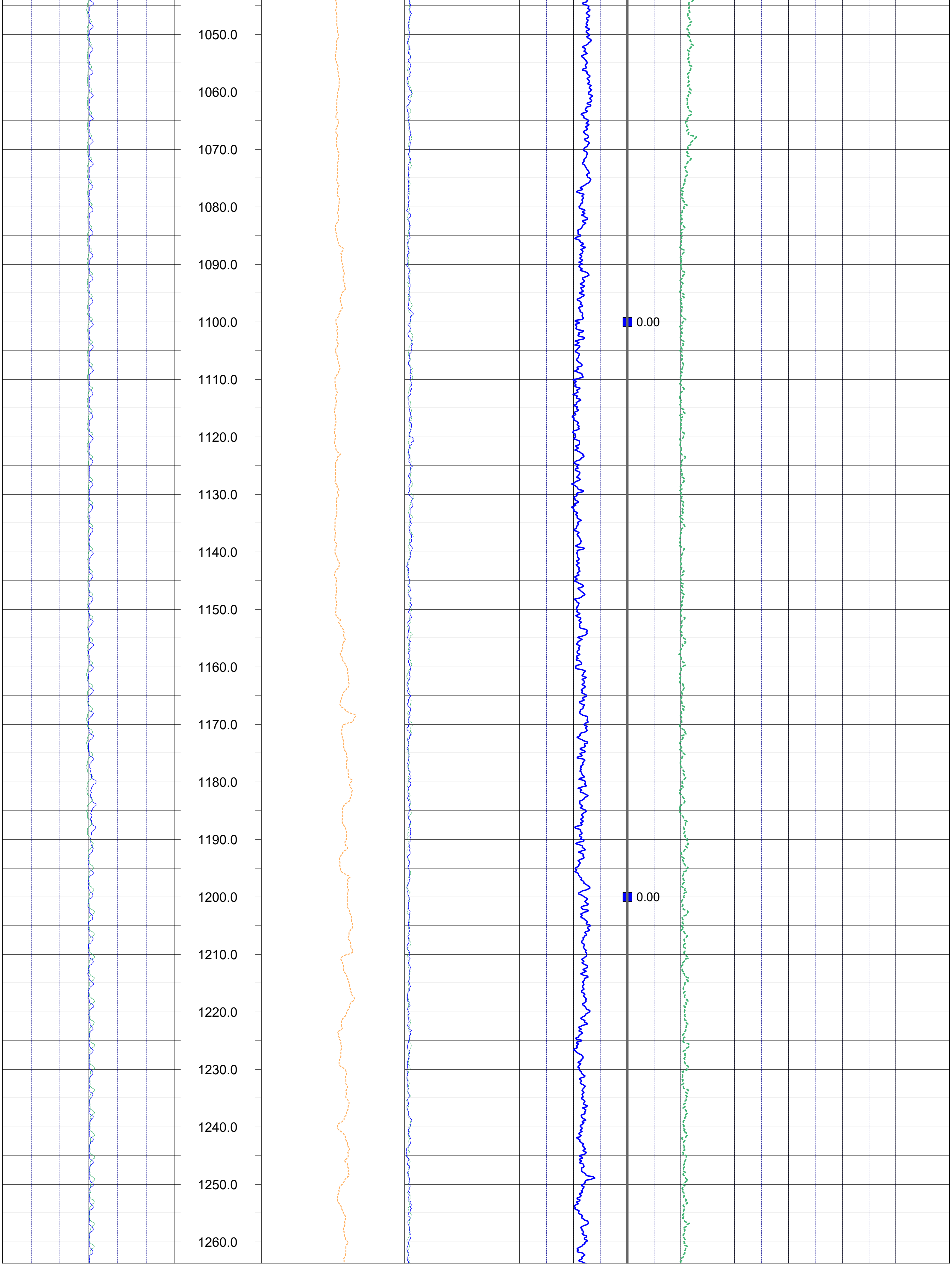
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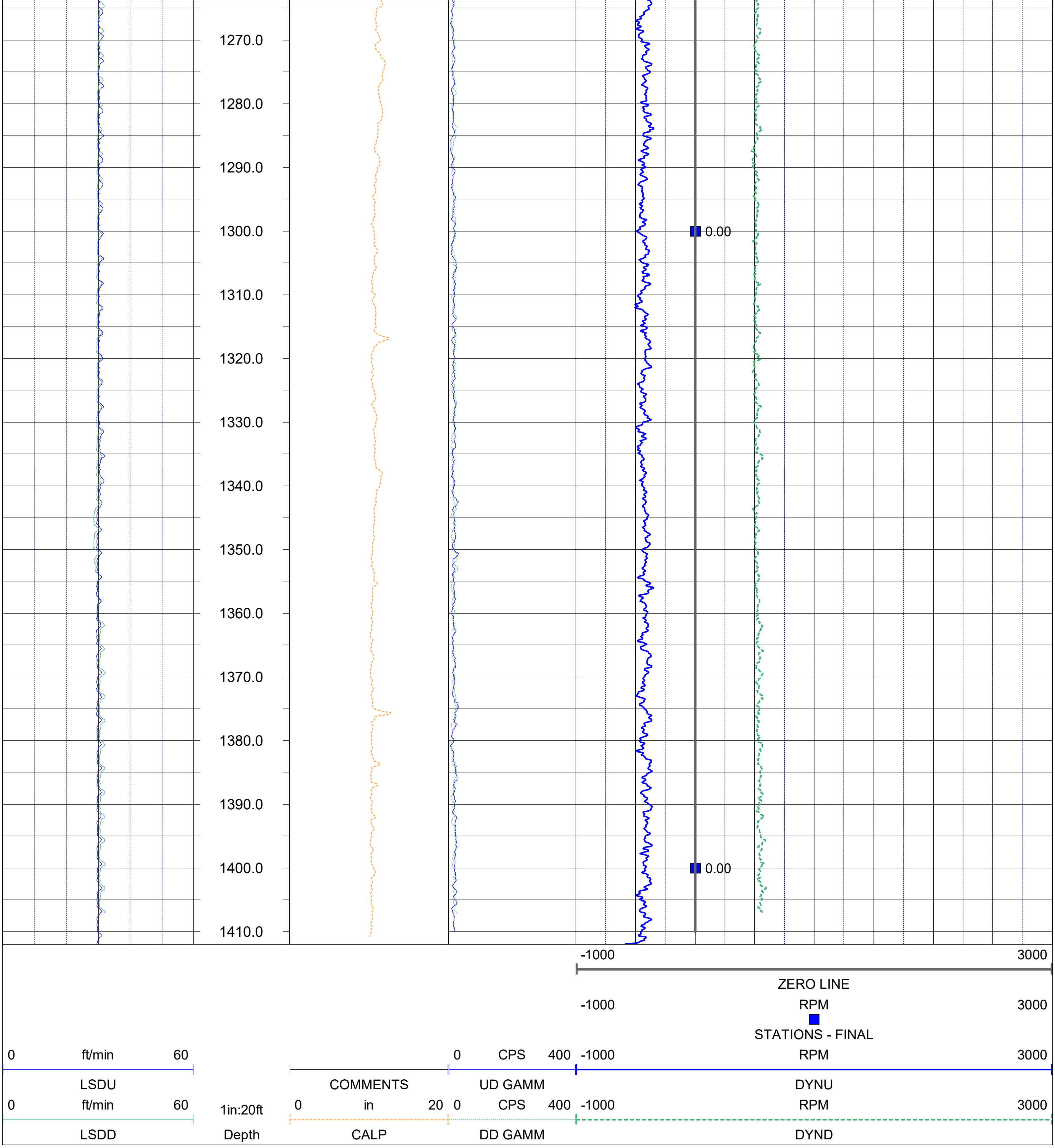

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WELL POF-32
UWI POF-32

PROFESSIONAL LICENSES
Geologist PG2186
Licensed Geology Business

HEADER NOTES:

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60 SUMICA
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
DUAL INDUCTION
WATER QUALITY
FLOWMETER
SONIC
VIDEO

PERMANENT DATUM:
LOG MEASURED FROM: TOP OF CASING
DRILLING MEASURED FROM:

DATE	04 Nov 20	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	15
TYPE LOG	**SONIC**	TROLLING DIRECTION	UP
DEPTH-DRILLER	1410	PUMPING RATE (GPM)	N/A
DEPTH-LOGGER	1412		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270

LOG CODES

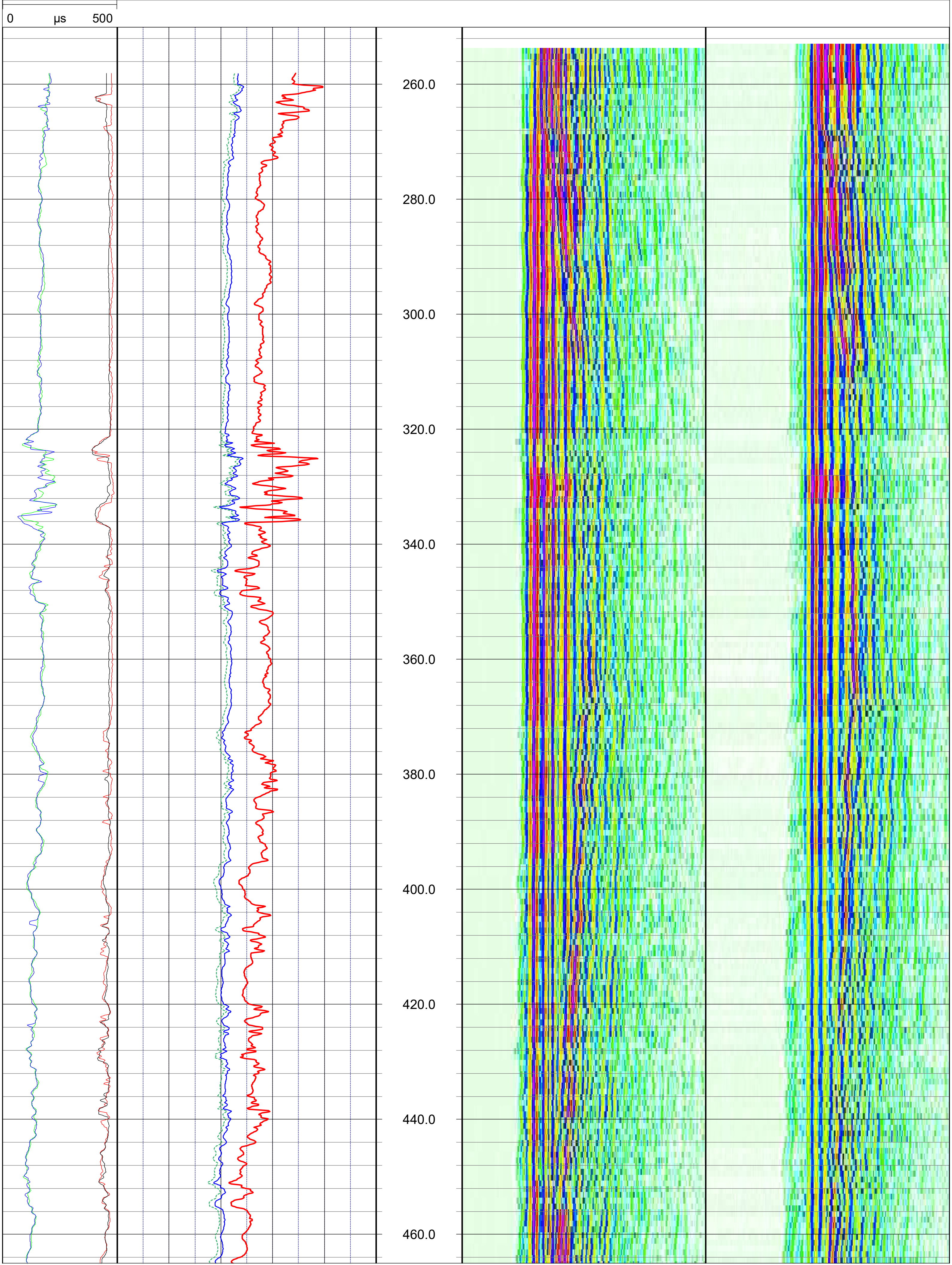
3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**

SONIC POROSITY:
Assuming a carbonate formation, the porosity can be calculated using the Raymer-Hunt-Gardner (RHG) equation:

porosity= 5/8 x ([TT of log - TT of matrix] / TT of log), where "TT of log" is the measured sonic value and the "TT of matrix" is a constant.

The TT of matrix for dolostone is 43.5 microseconds per foot, and for limestone is 47.5 microseconds per foot.

TA			DT			Depth	RX-3		RX-5	
0	μs	500	0	μs/ft	250	1in:20ft	0	1916	0	1916
TB			SPHI - 47.5							
0	μs	500	0	POR	1					
TC			SPHI - 43.5							
0	μs	500	0	POR	1					
TD										



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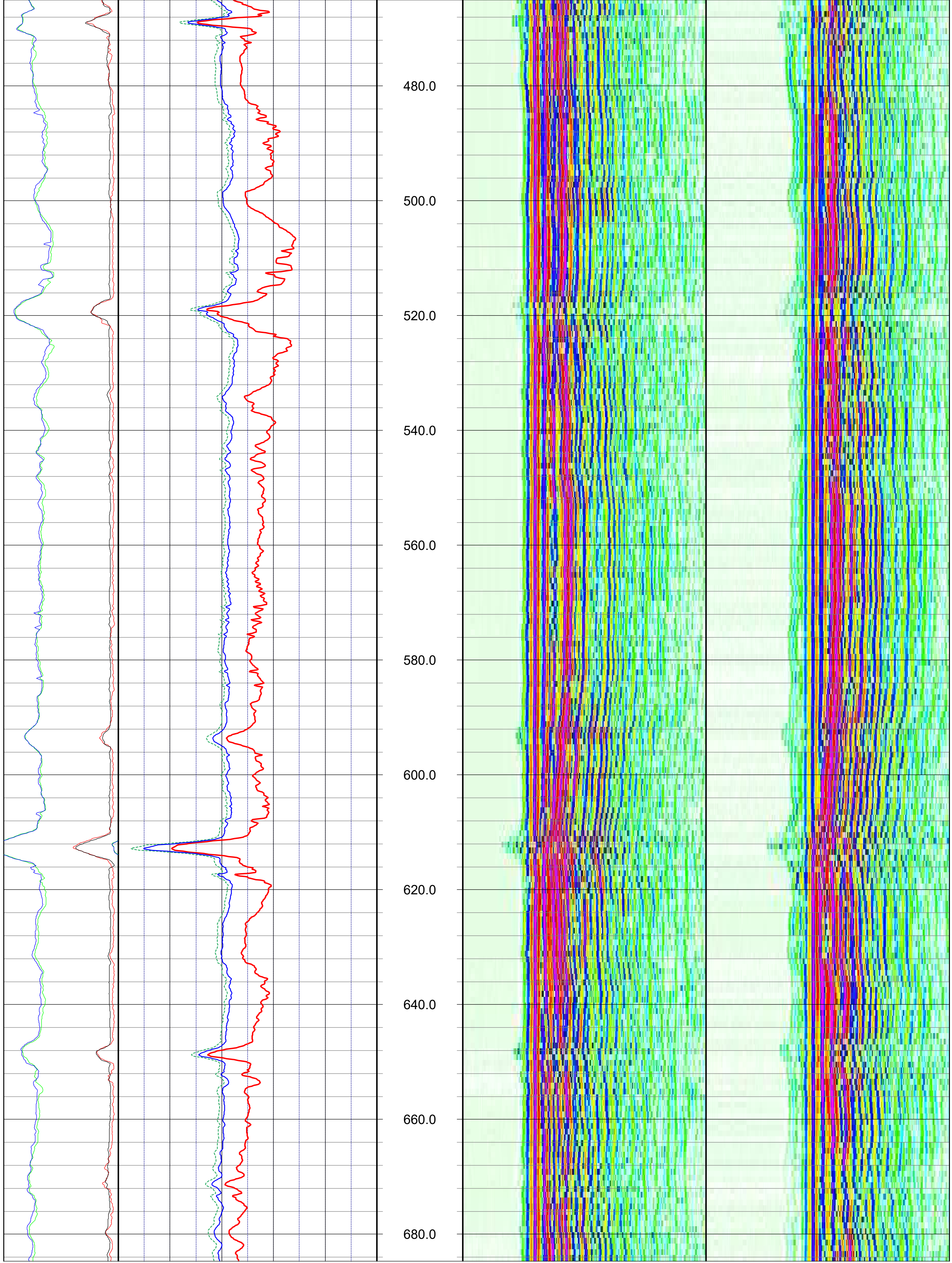

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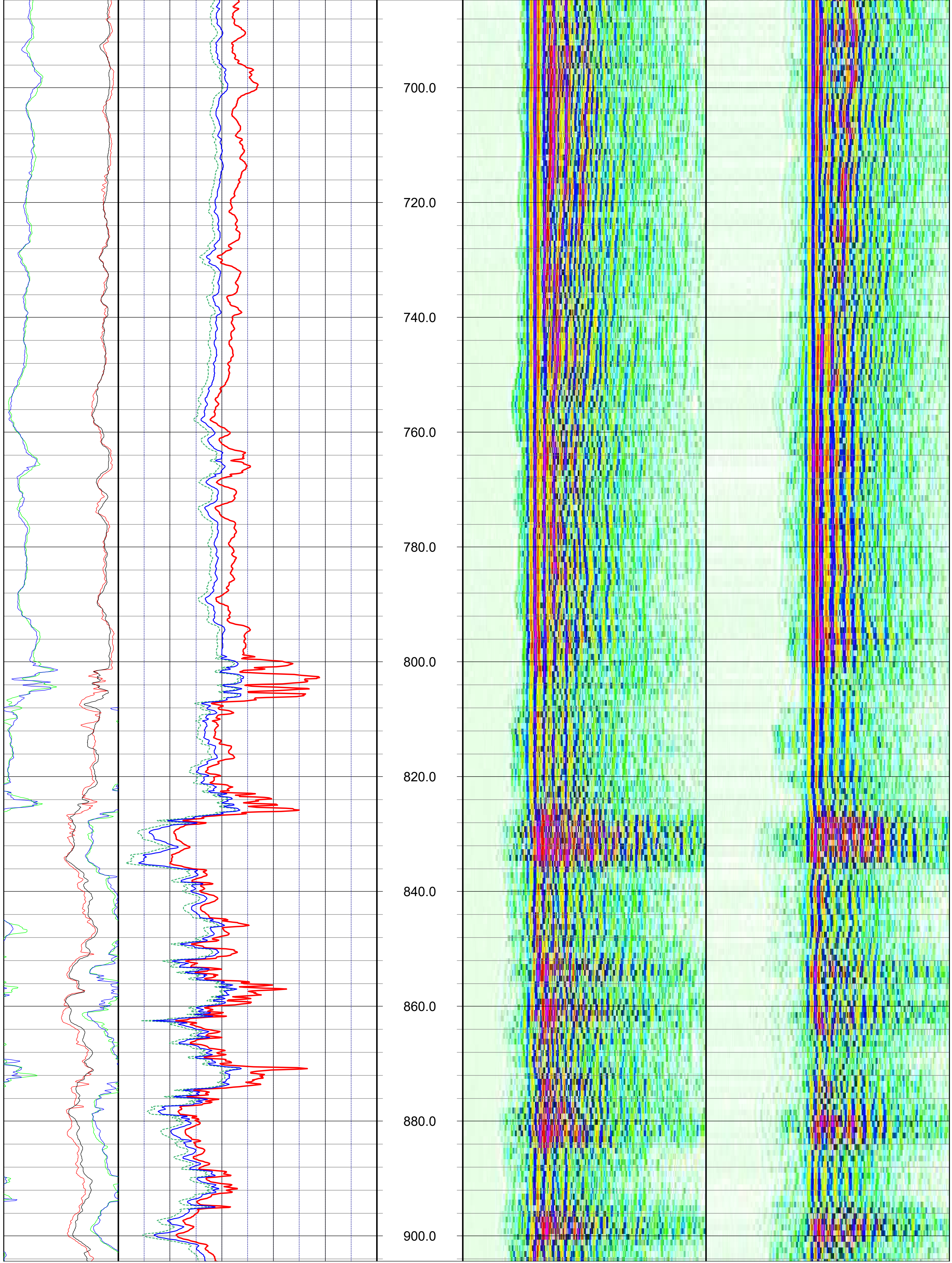
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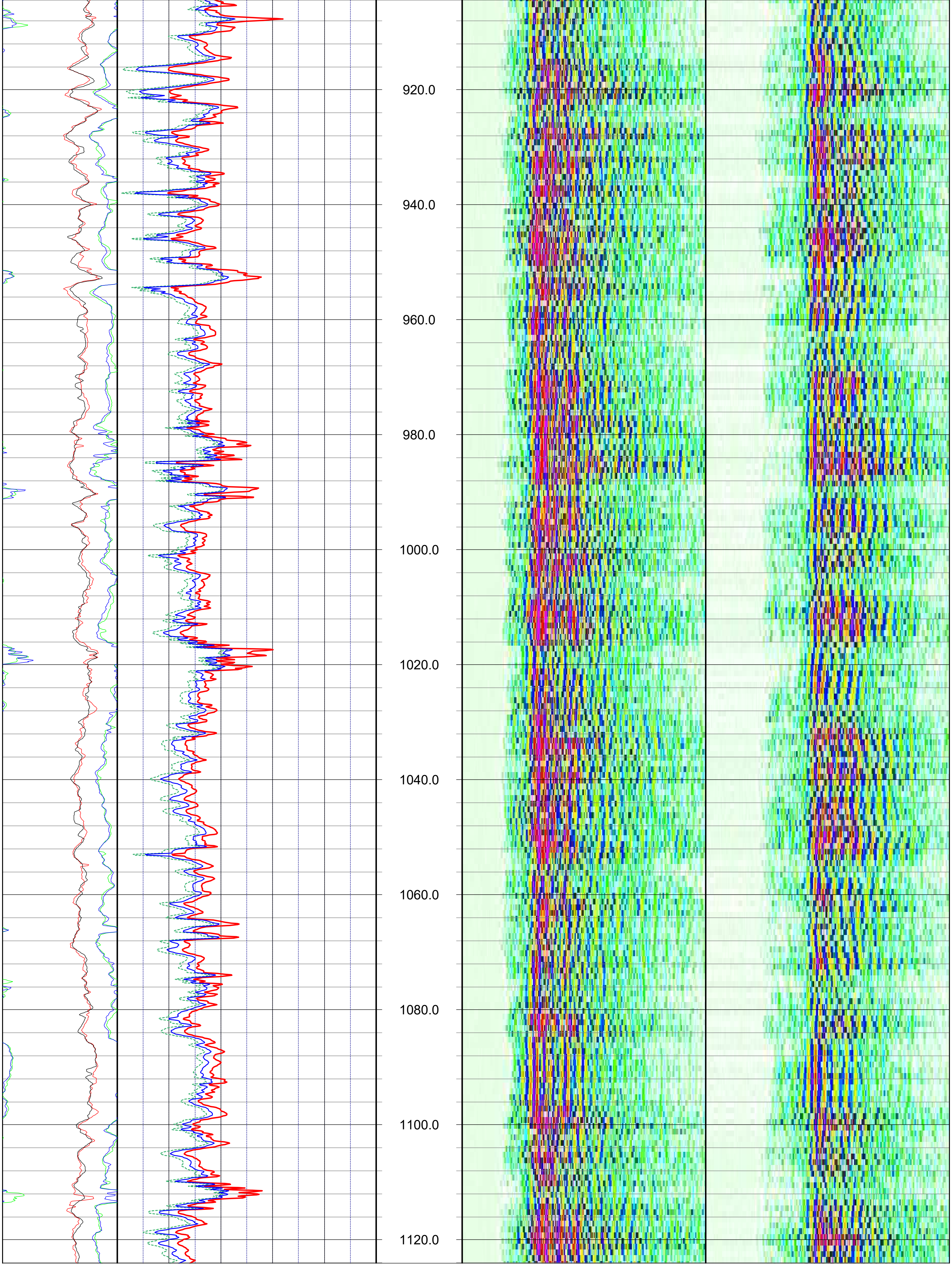
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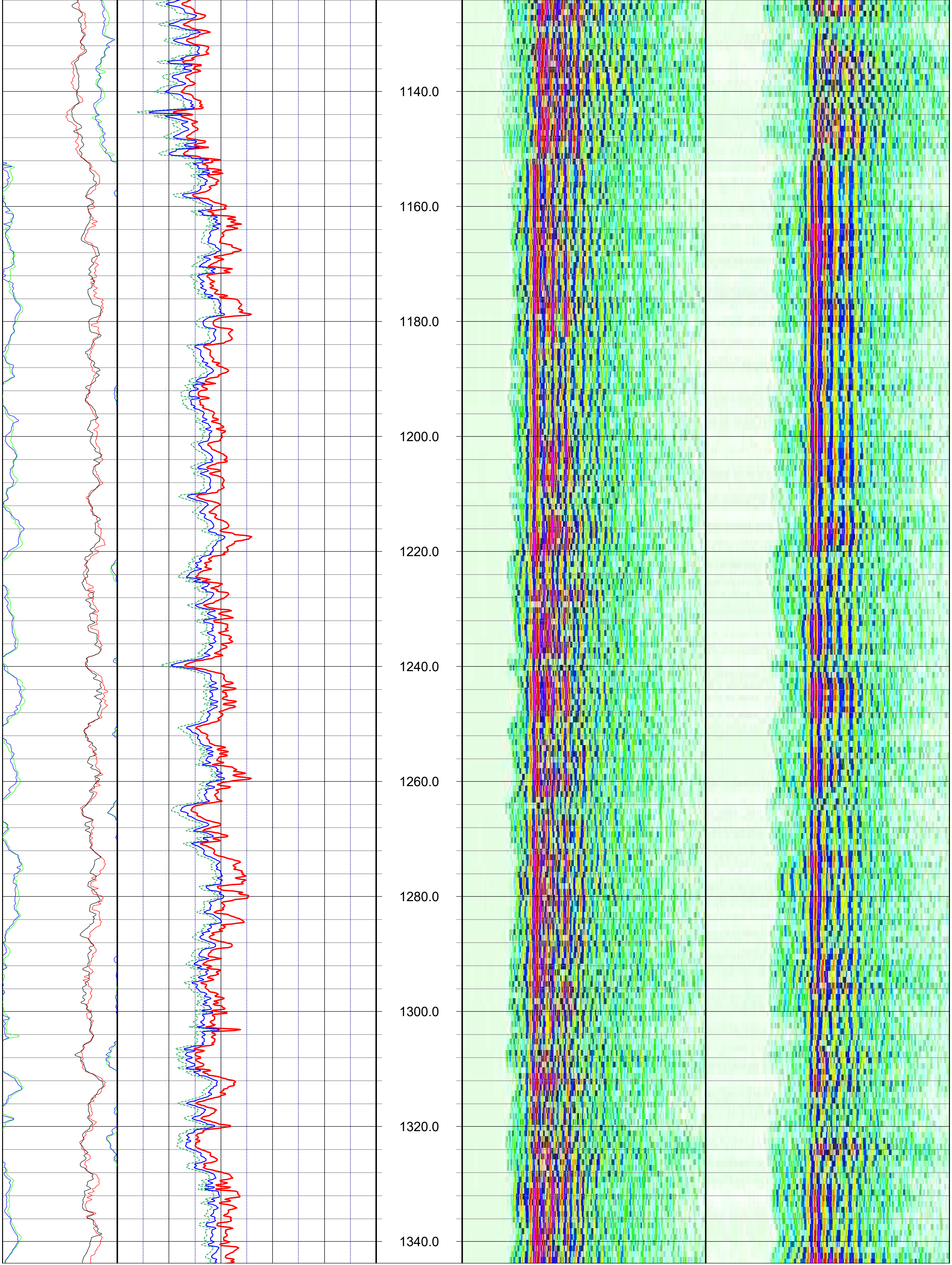
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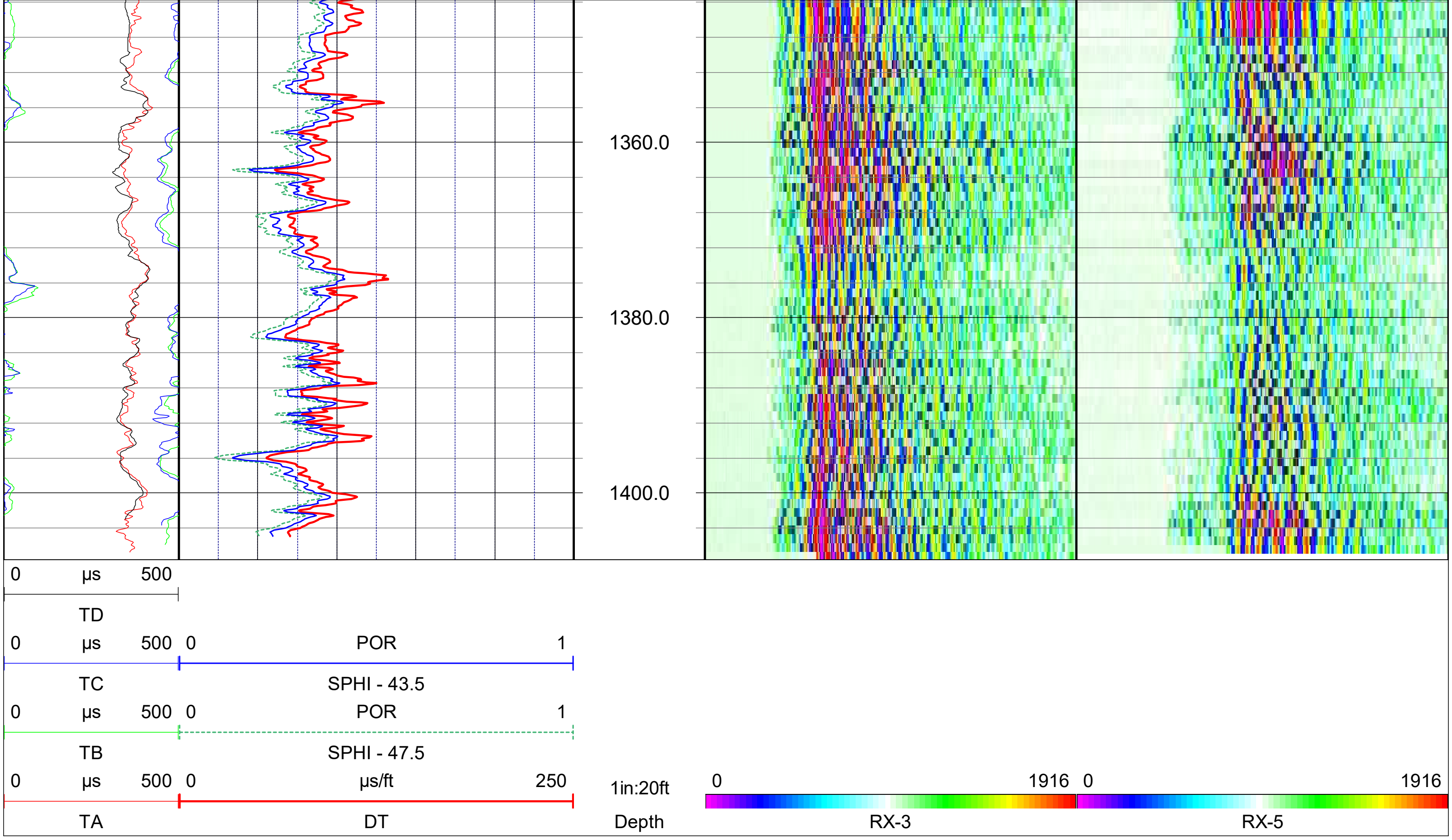

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HEADER NOTES:

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60 SUMICA
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X		ALL SERVICES:
LONG		Y		CALIPER
GDAT	WGS84	H DAT		NATURAL GAMMA
SEC		ELEV		ELECTRIC
TWP		V DAT		DUAL INDUCTION
RGE				WATER QUALITY
				FLOWMETER
				SONIC
				VIDEO

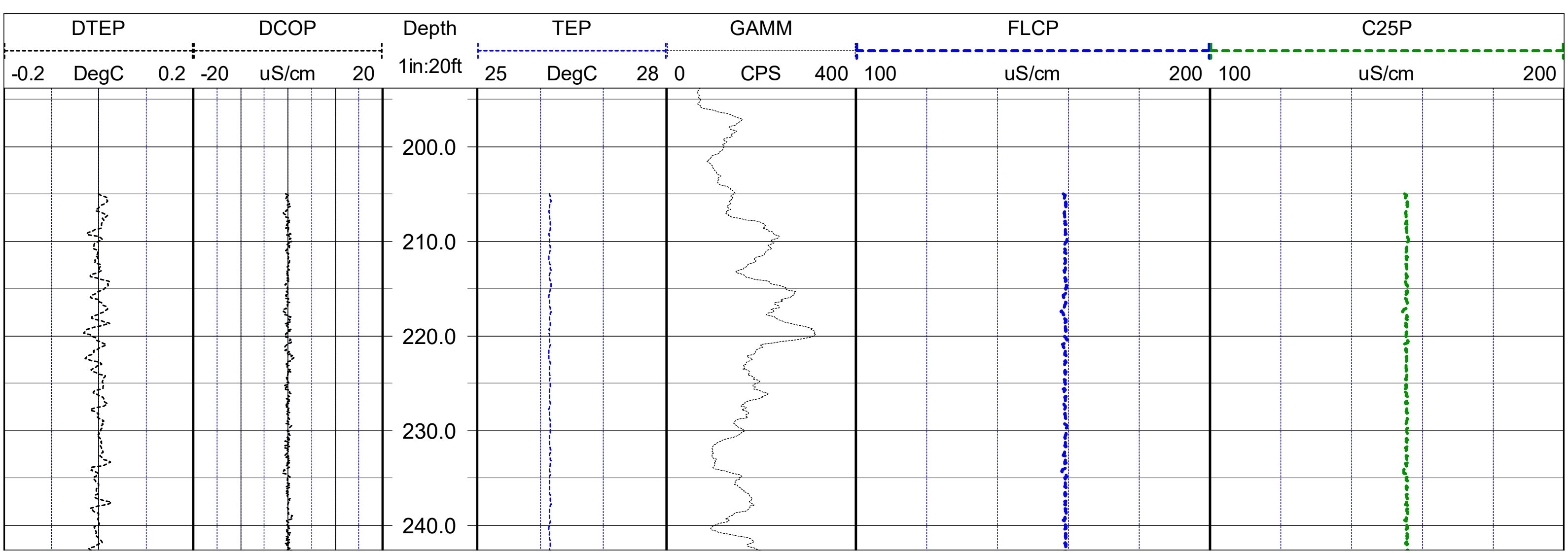
PERMANENT DATUM:
LOG MEASURED FROM: TOP OF CASING
DRILLING MEASURED FROM:

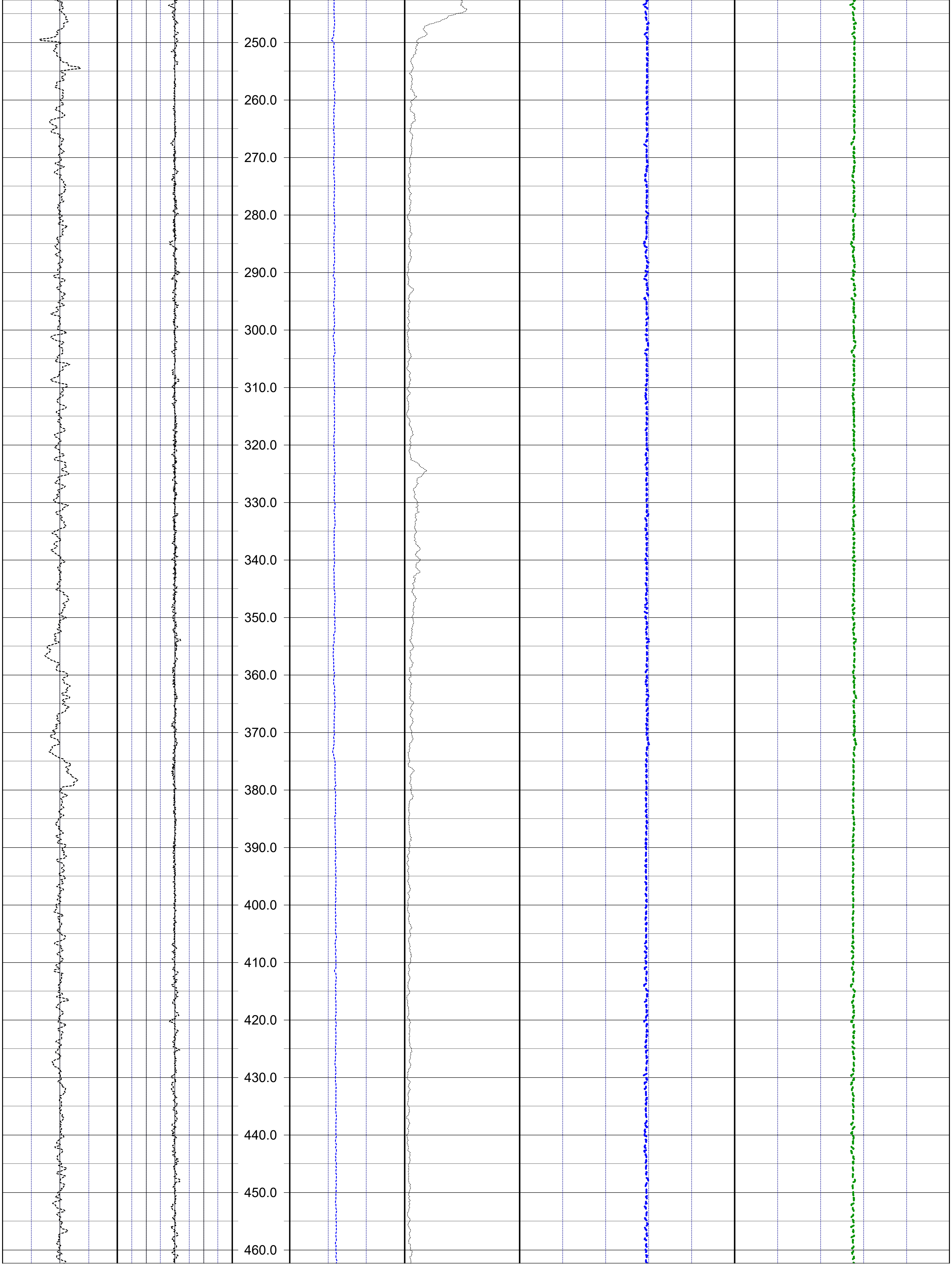
DATE	02 Nov 20	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	30
TYPE LOG	**WATER QUALITY**	TROLLING DIRECTION	DOWN
DEPTH-DRILLER	1410	PUMPING RATE (GPM)	N/A
DEPTH-LOGGER	1412		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270

WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**	calibration correction	**C**
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		

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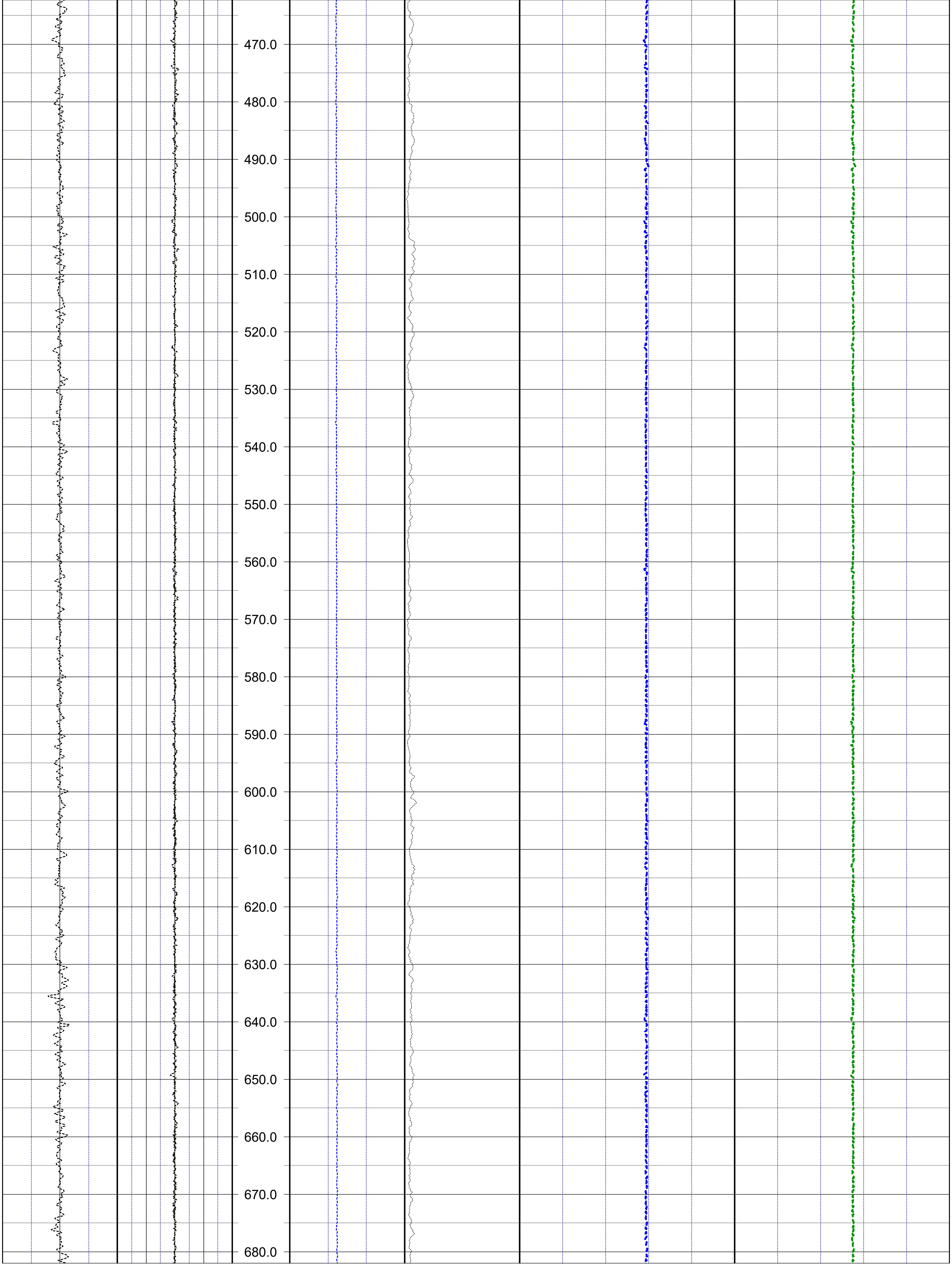
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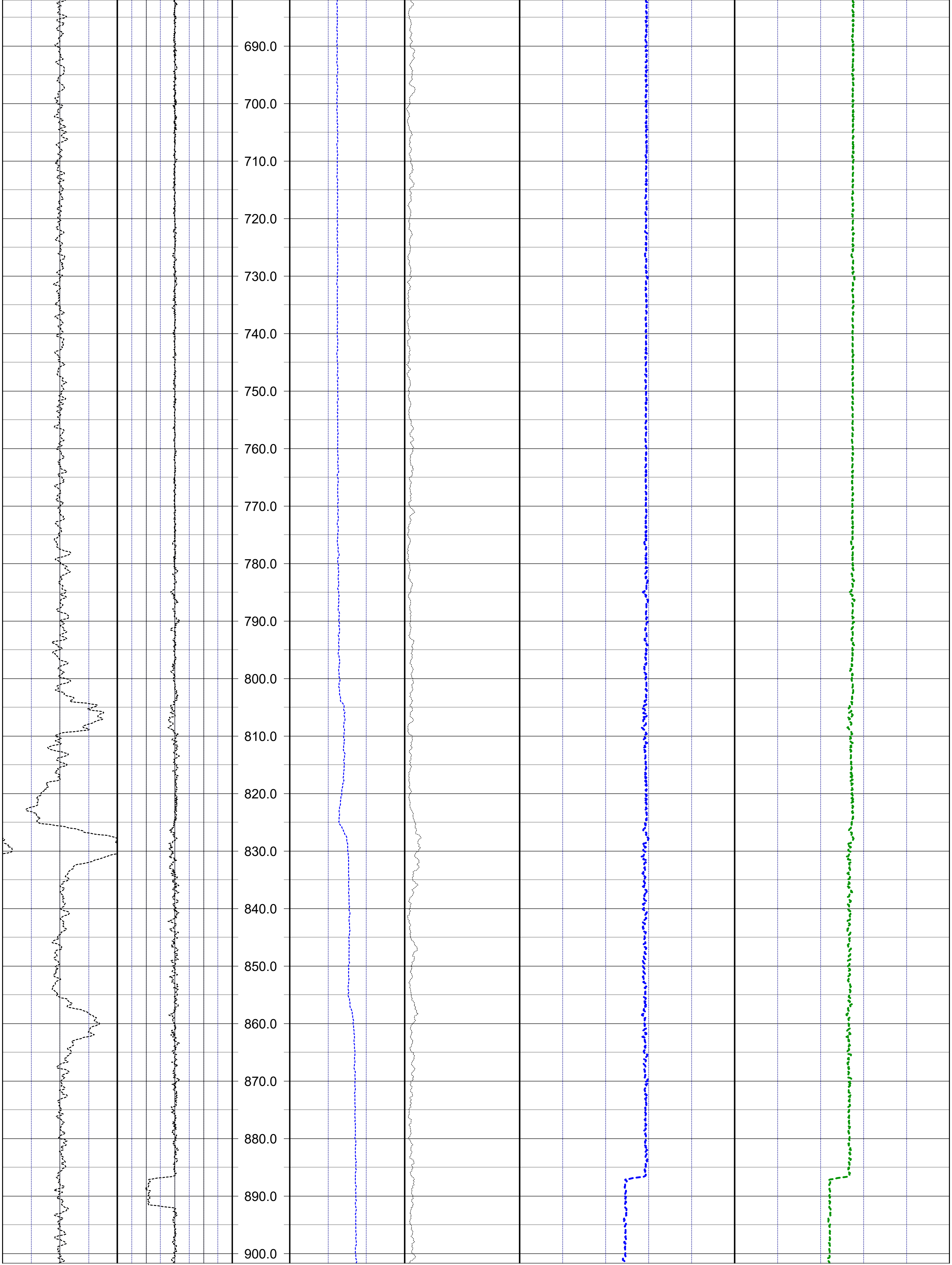
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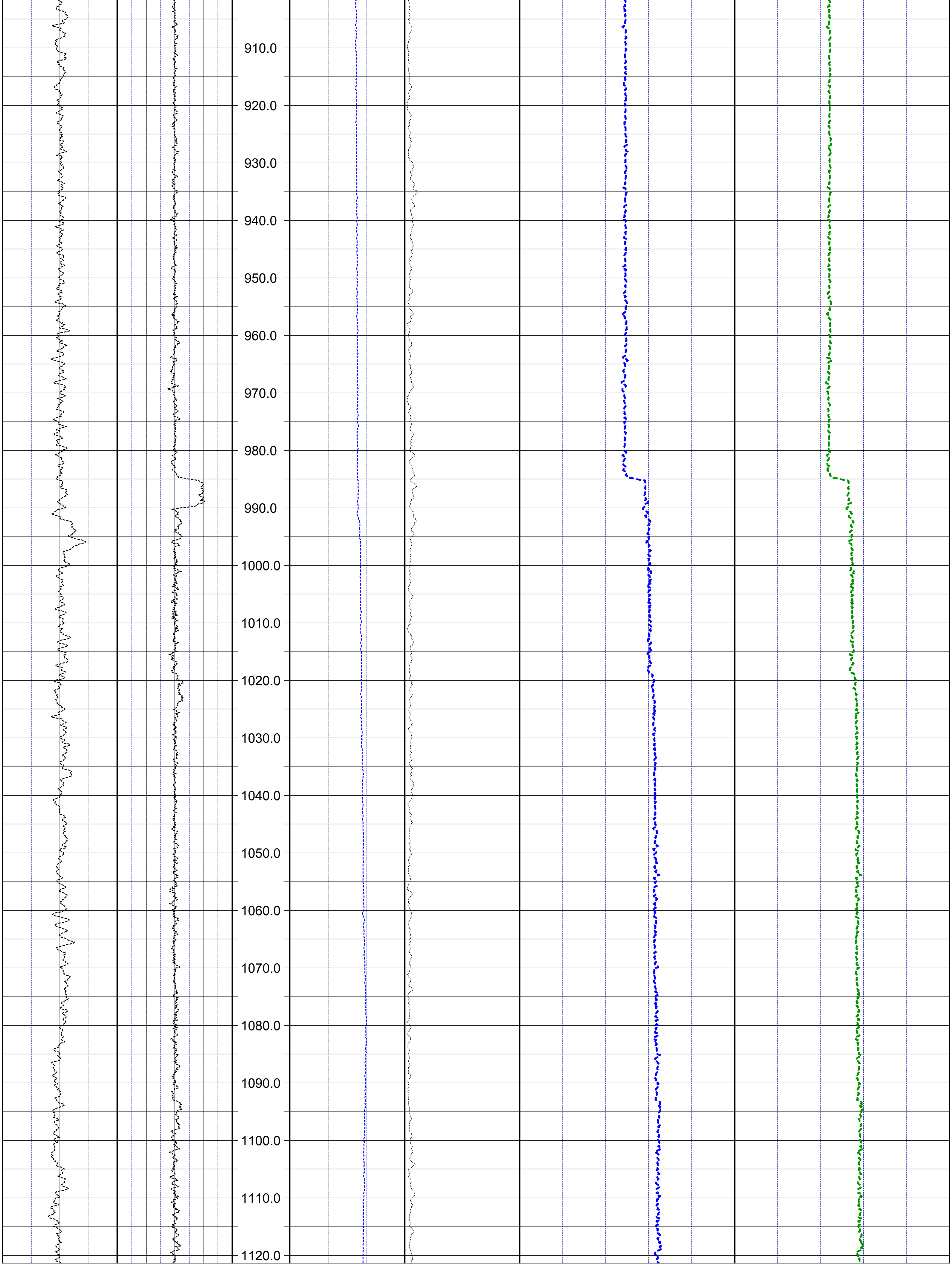
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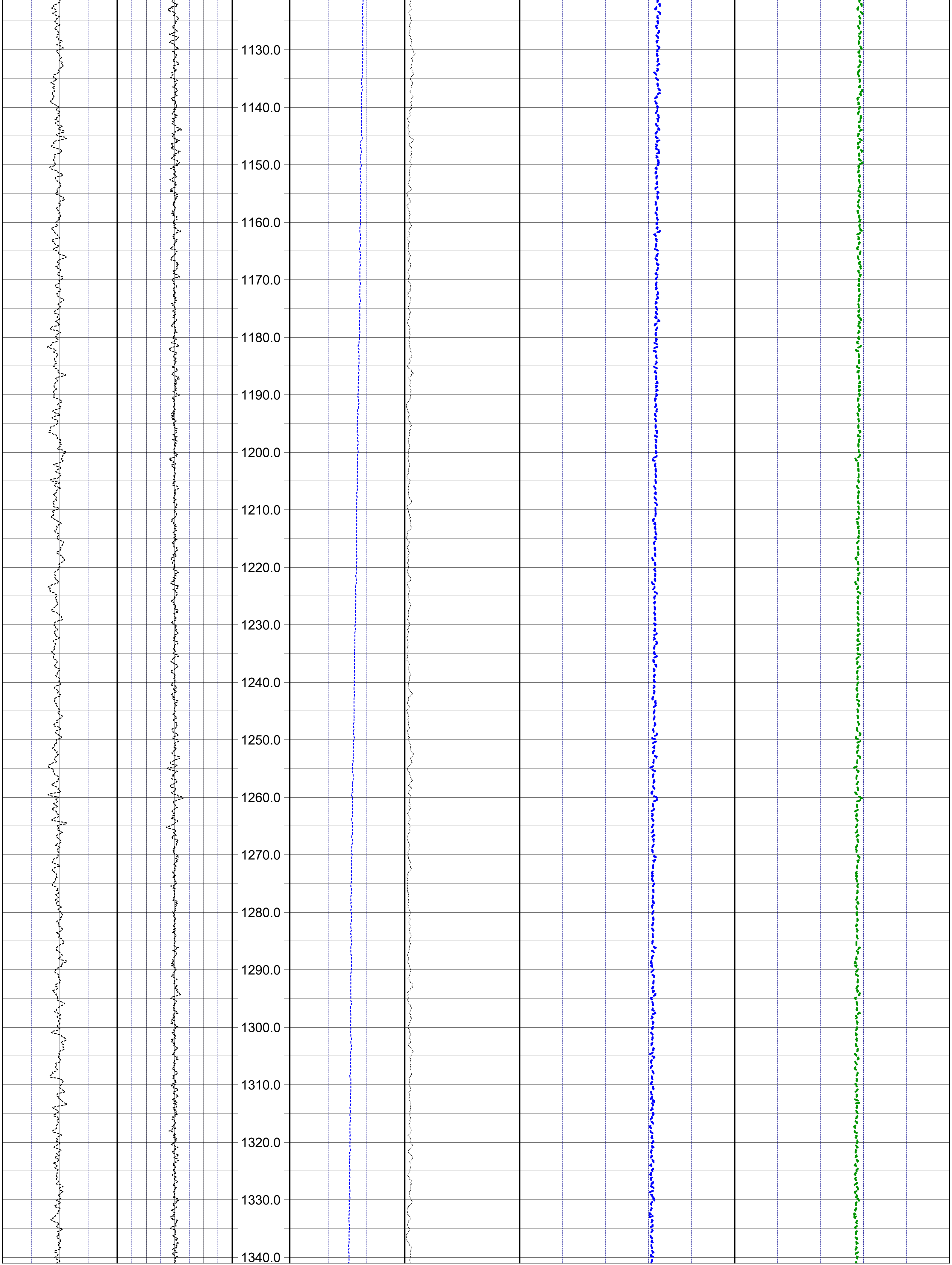
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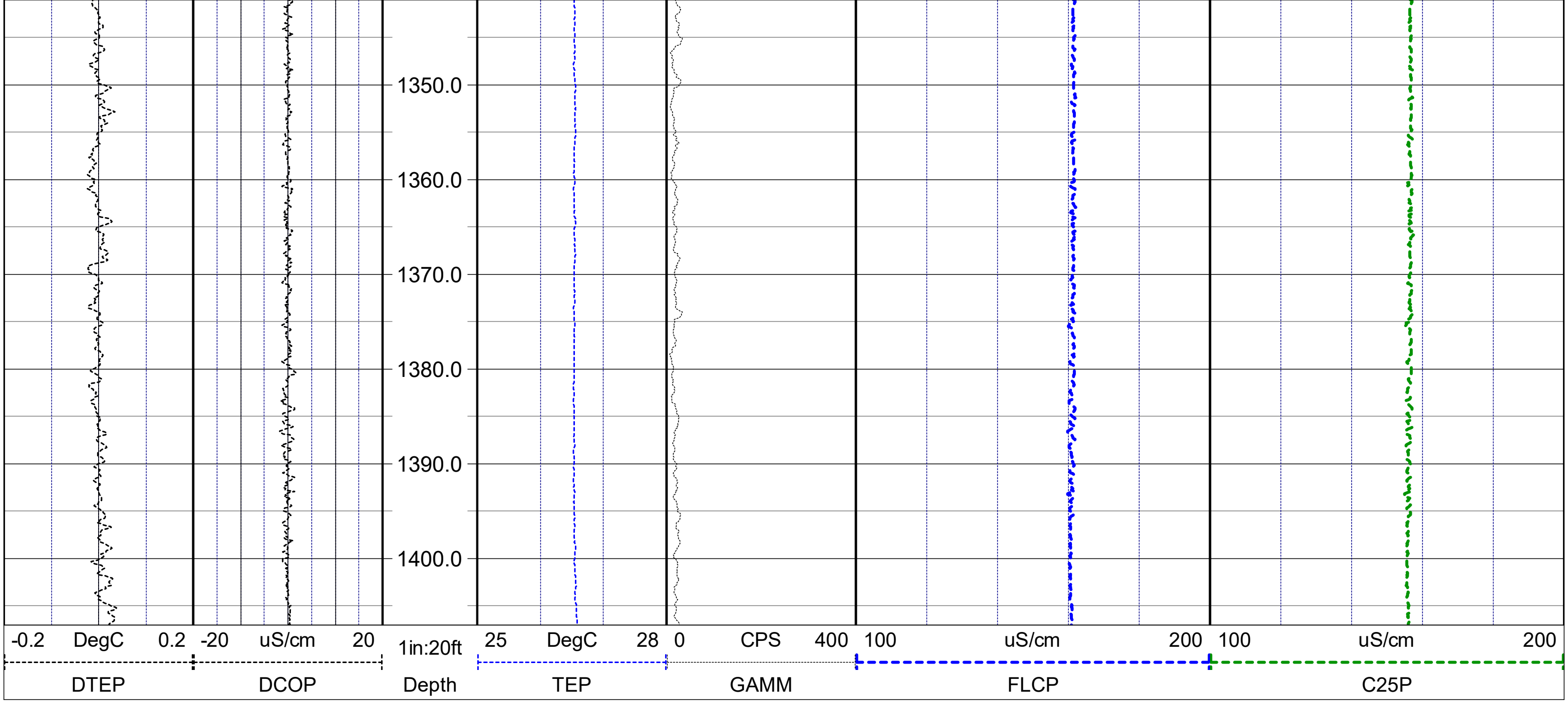

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WELL POF-32
UWI POF-32

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HEADER NOTES:

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60 SUMICA
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
DUAL INDUCTION
WATER QUALITY
FLOWMETER
SONIC

PERMANENT DATUM:

LOG MEASURED FROM: GROUND SURFACE

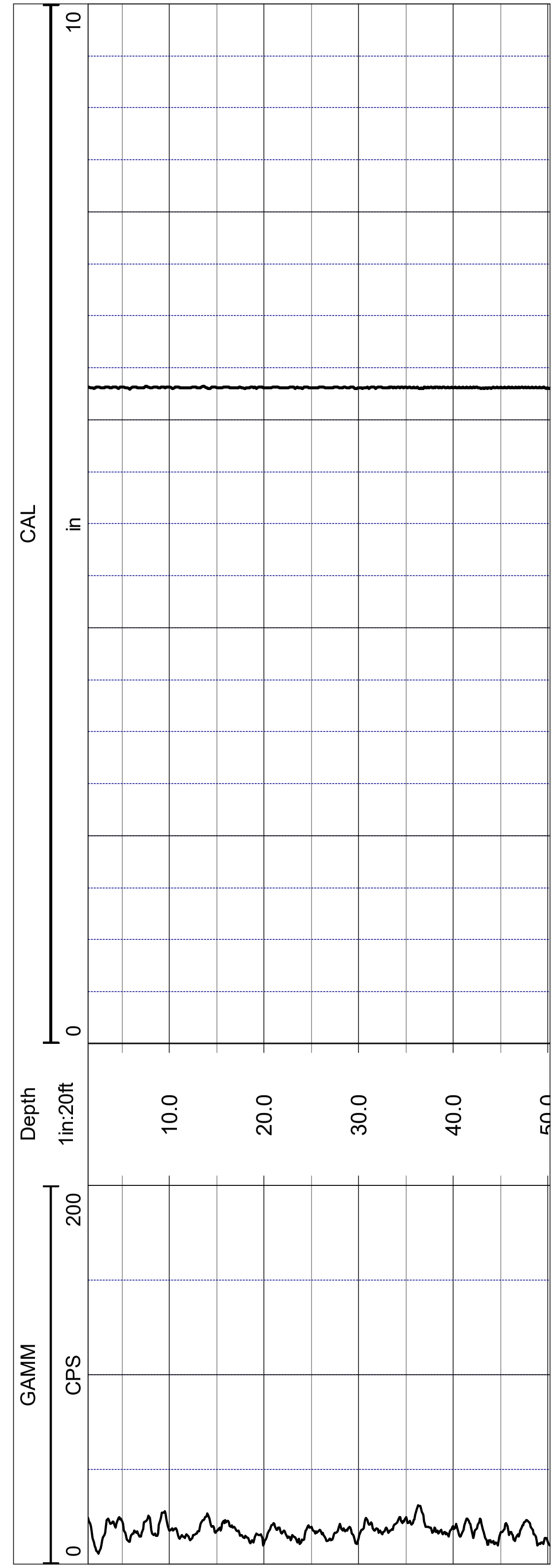
DRILLING MEASURED FROM:

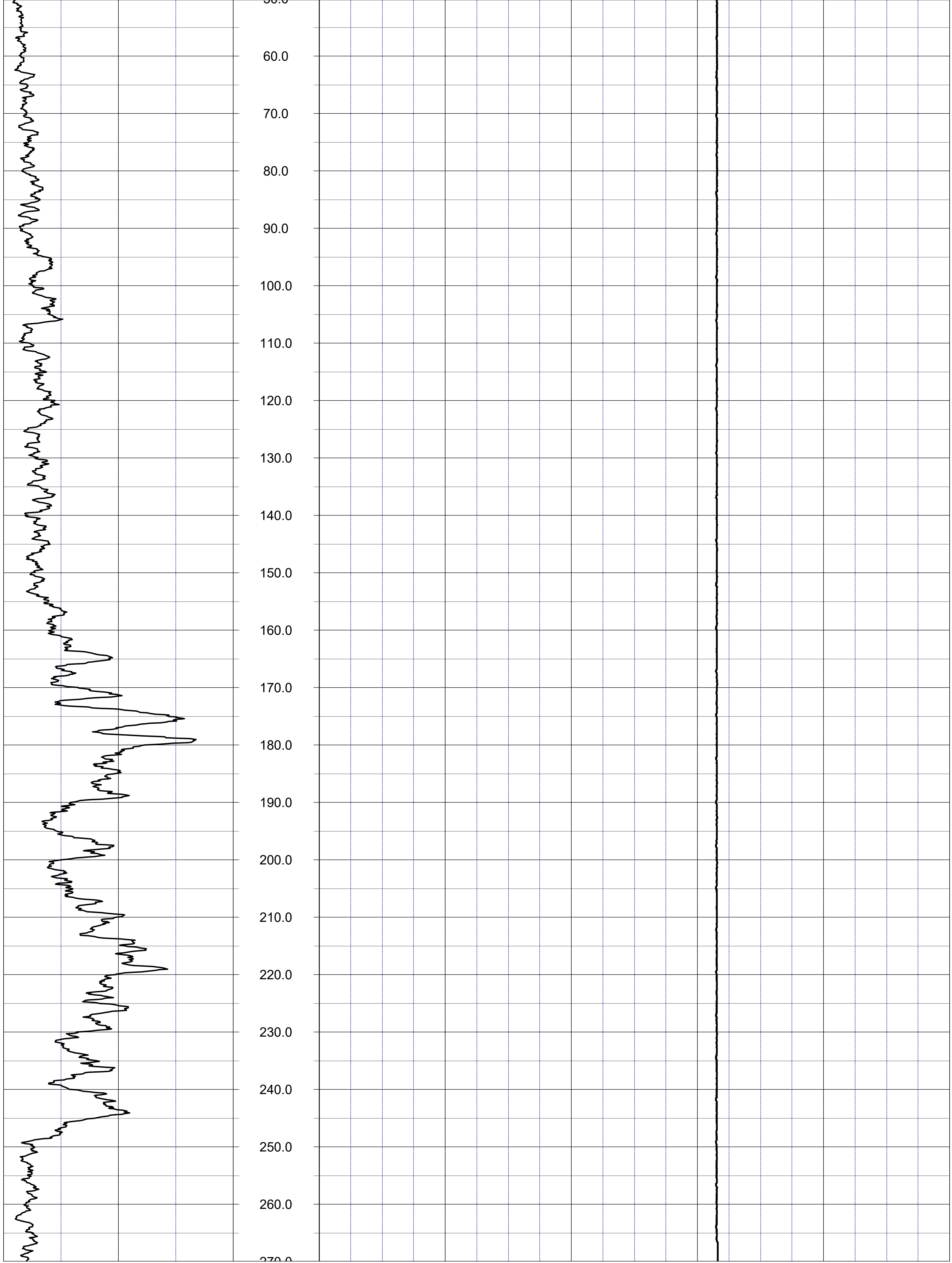
DATE	25 Dec 21	TYPE FLUID IN HOLE	WATER
RUN No	2	LOGGING SPEED (FT/MIN)	40
TYPE LOG	**CALIPER**	TROLLING DIRECTION	UP
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	2000		
DEPTH-LOGGER	1521-OBST.		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270
2	5.875	1407	1500	6	STEEL	0	1407
	4	1500	2000				

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**

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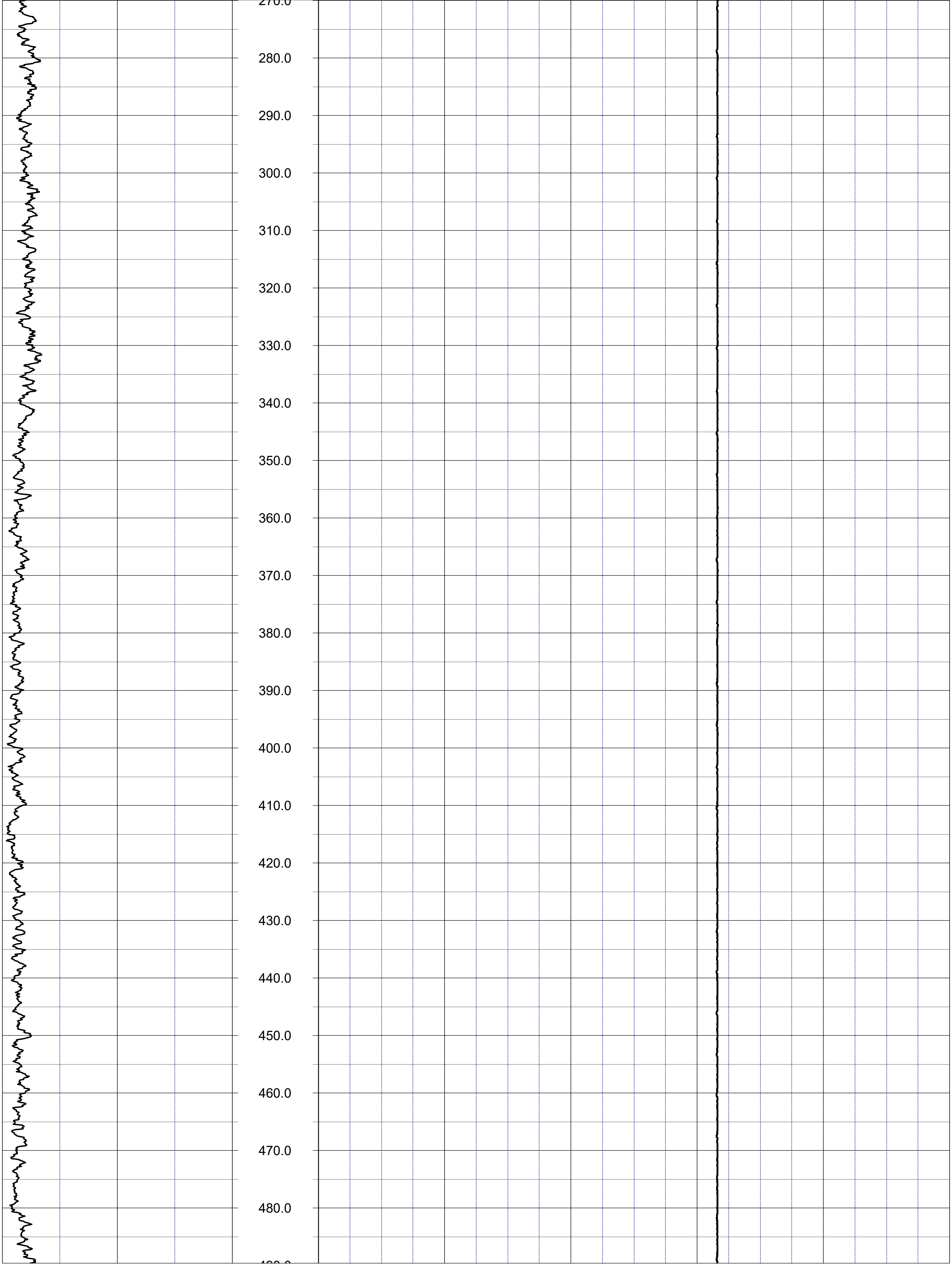
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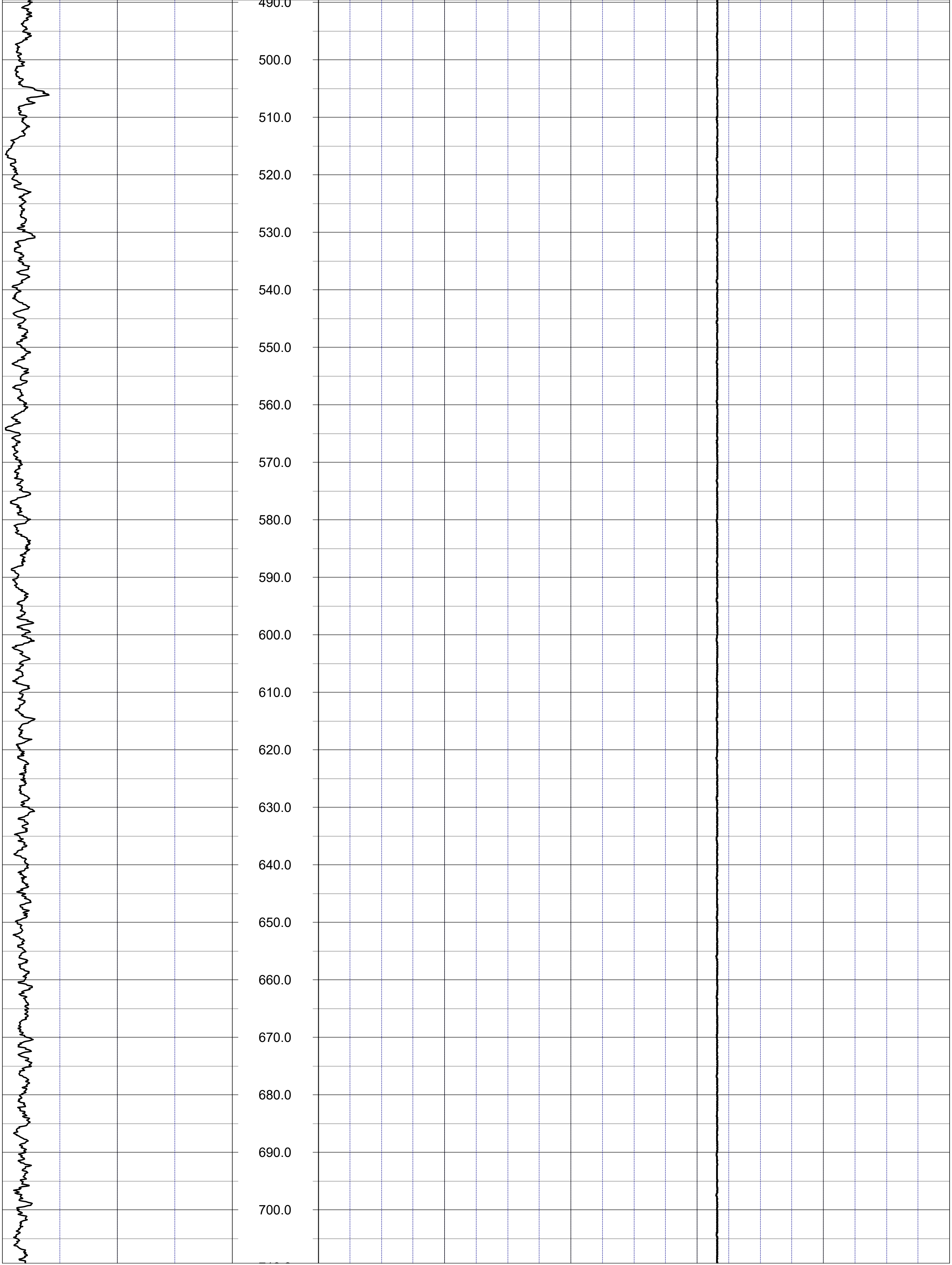
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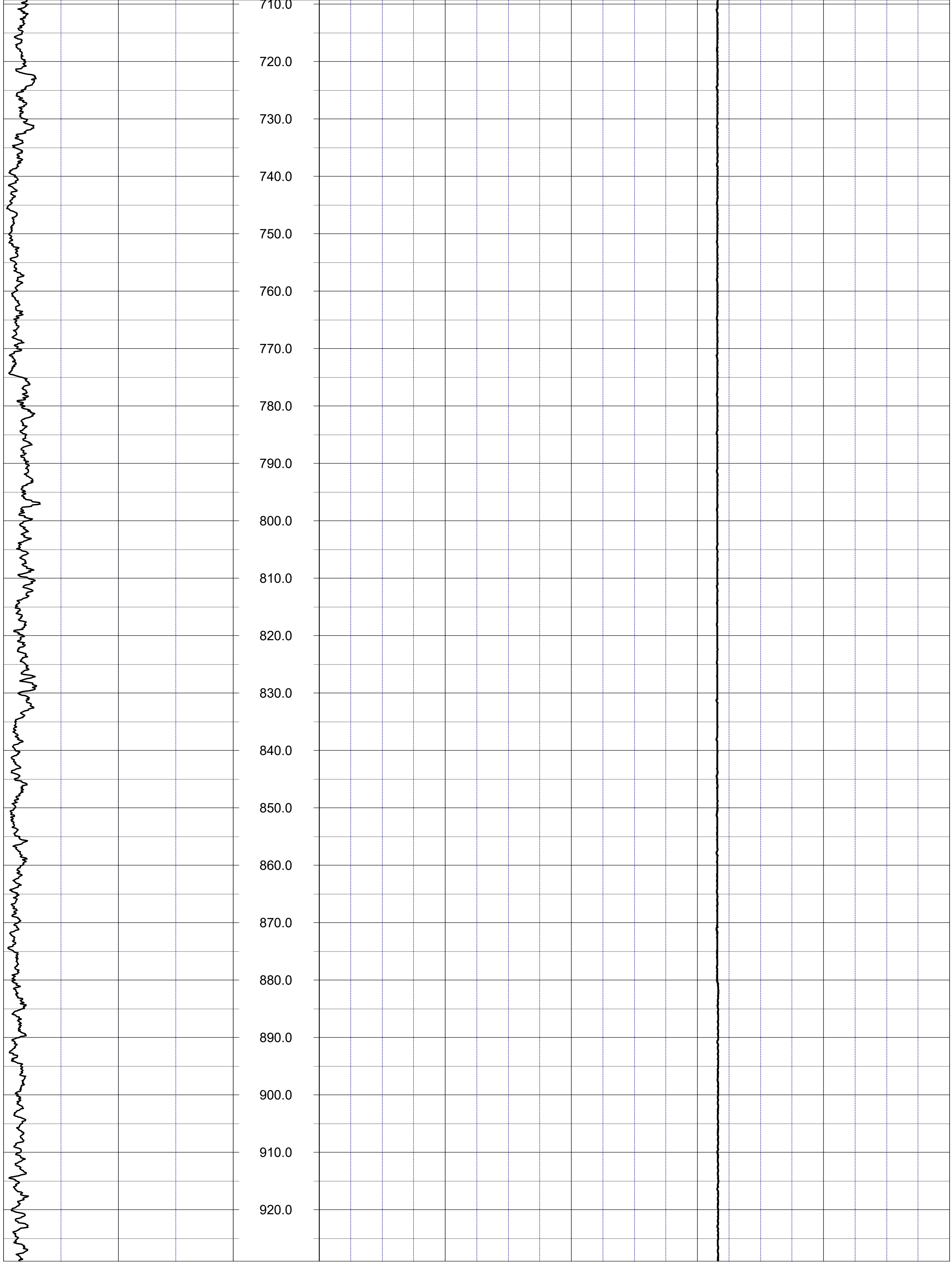
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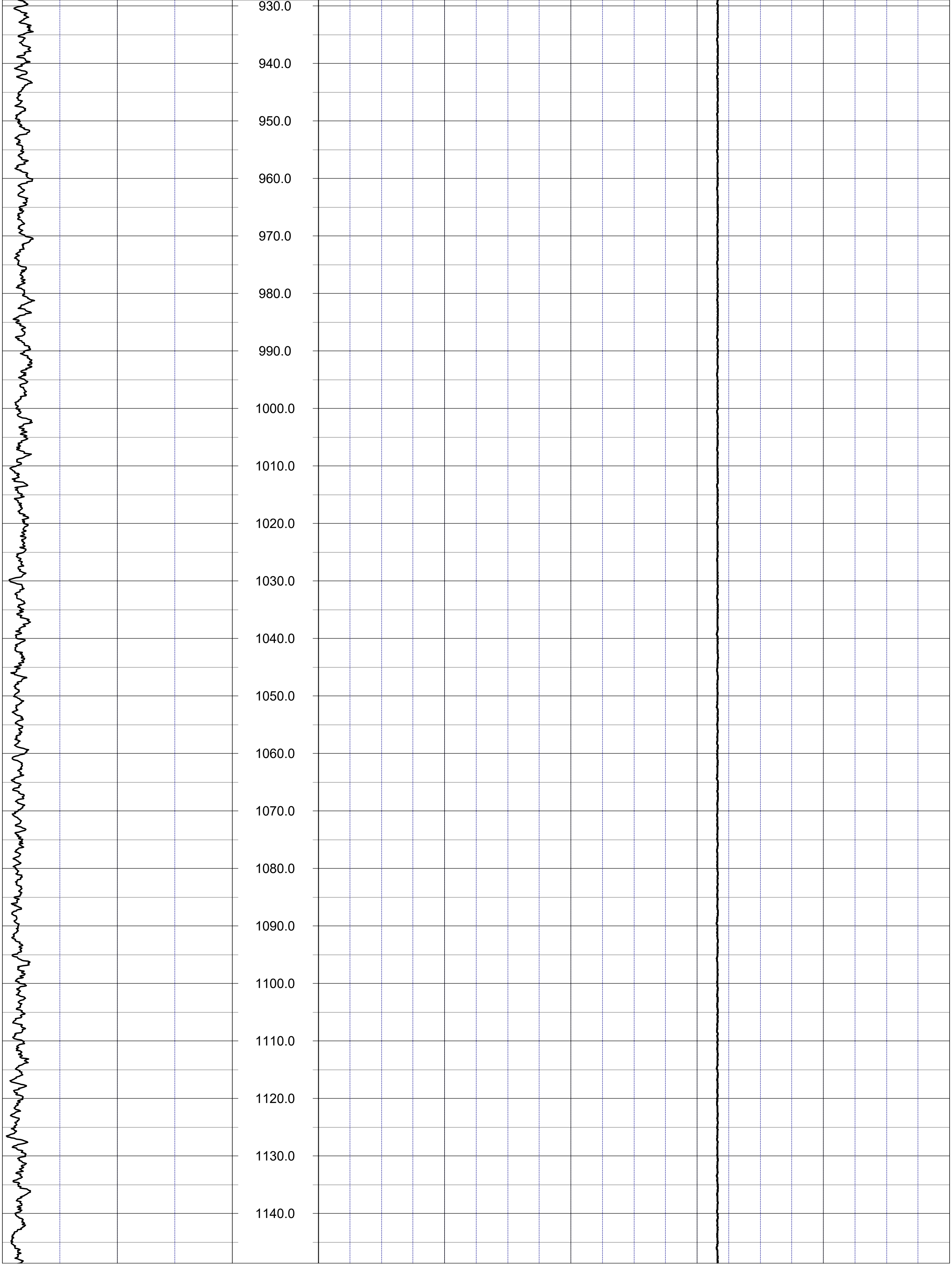
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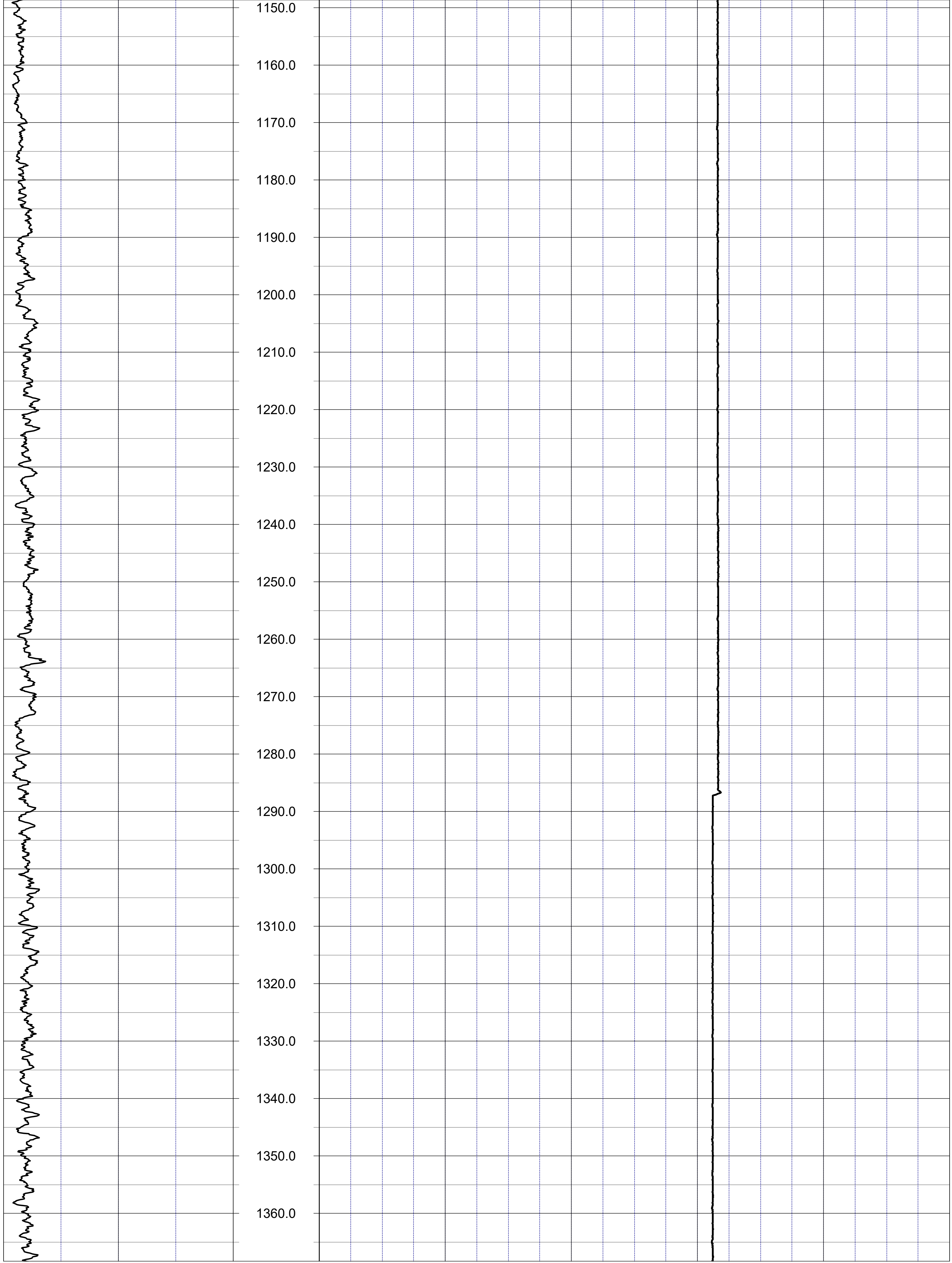
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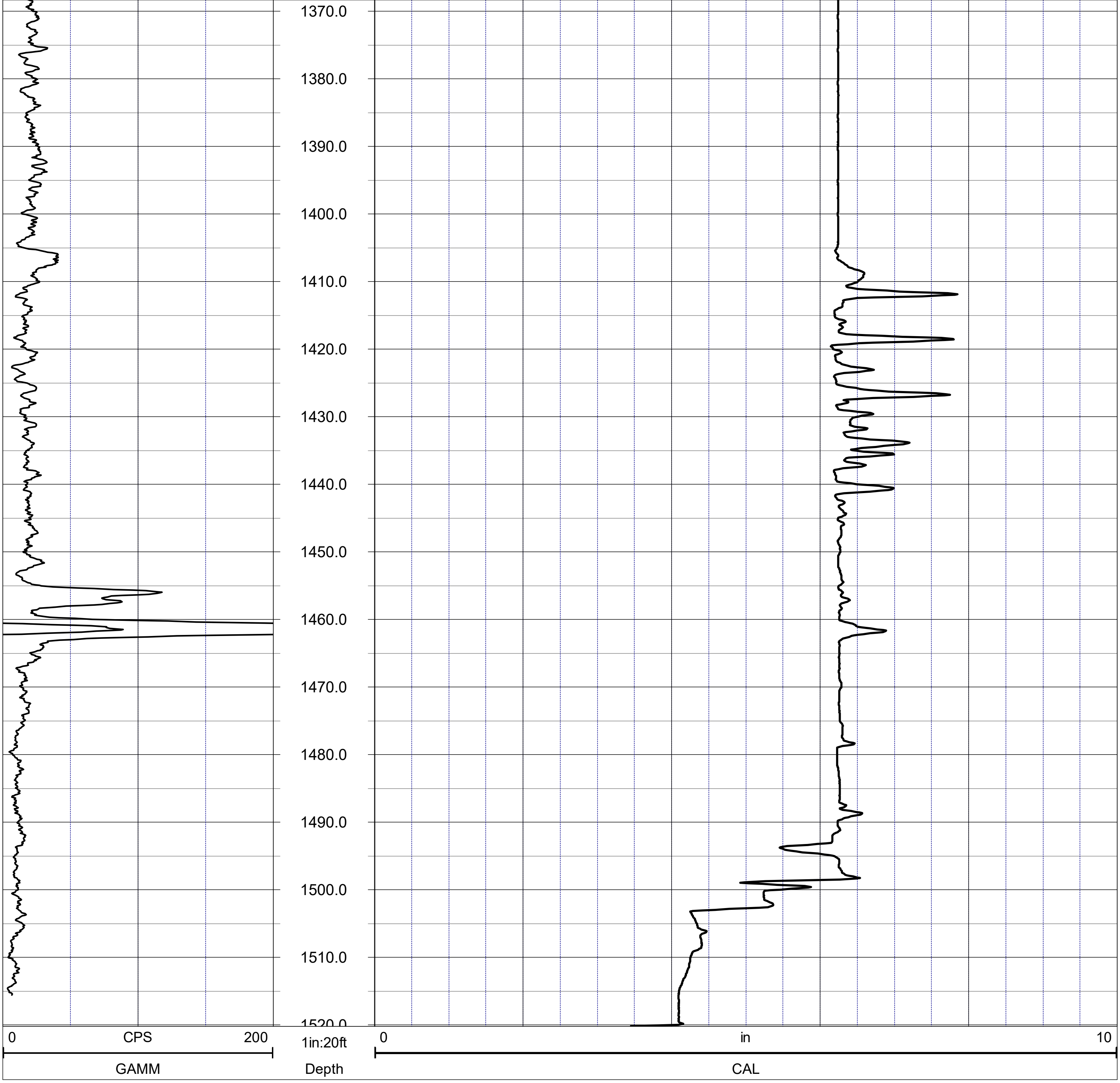

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CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X		ALL SERVICES:
LONG		Y		CALIPER
GDAT	WGS84	H DAT		NATURAL GAMMA ELECTRIC
SEC		ELEV		DUAL INDUCTION
TWP		V DAT		WATER QUALITY FLOWMETER
RGE				SONIC

PERMANENT DATUM:

LOG MEASURED FROM: GROUND SURFACE

DRILLING MEASURED FROM:

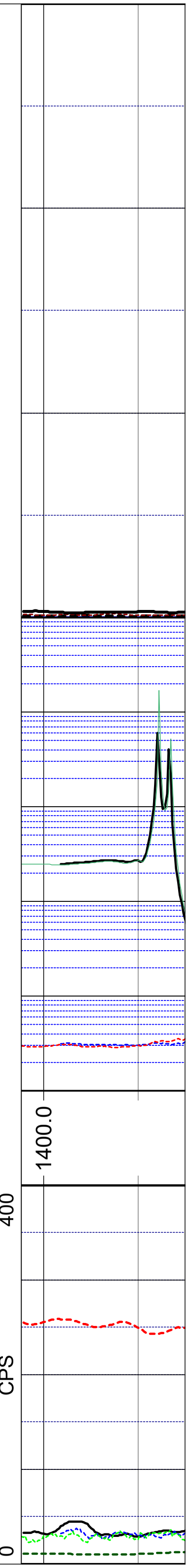
DATE	25 Dec 21	TYPE FLUID IN HOLE	WATER
RUN No	2	LOGGING SPEED (FT/MIN)	30
TYPE LOG	**ELECTRIC+DUIN**	TROLLING DIRECTION	UP
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	2000		
DEPTH-LOGGER	1521-OBST.		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

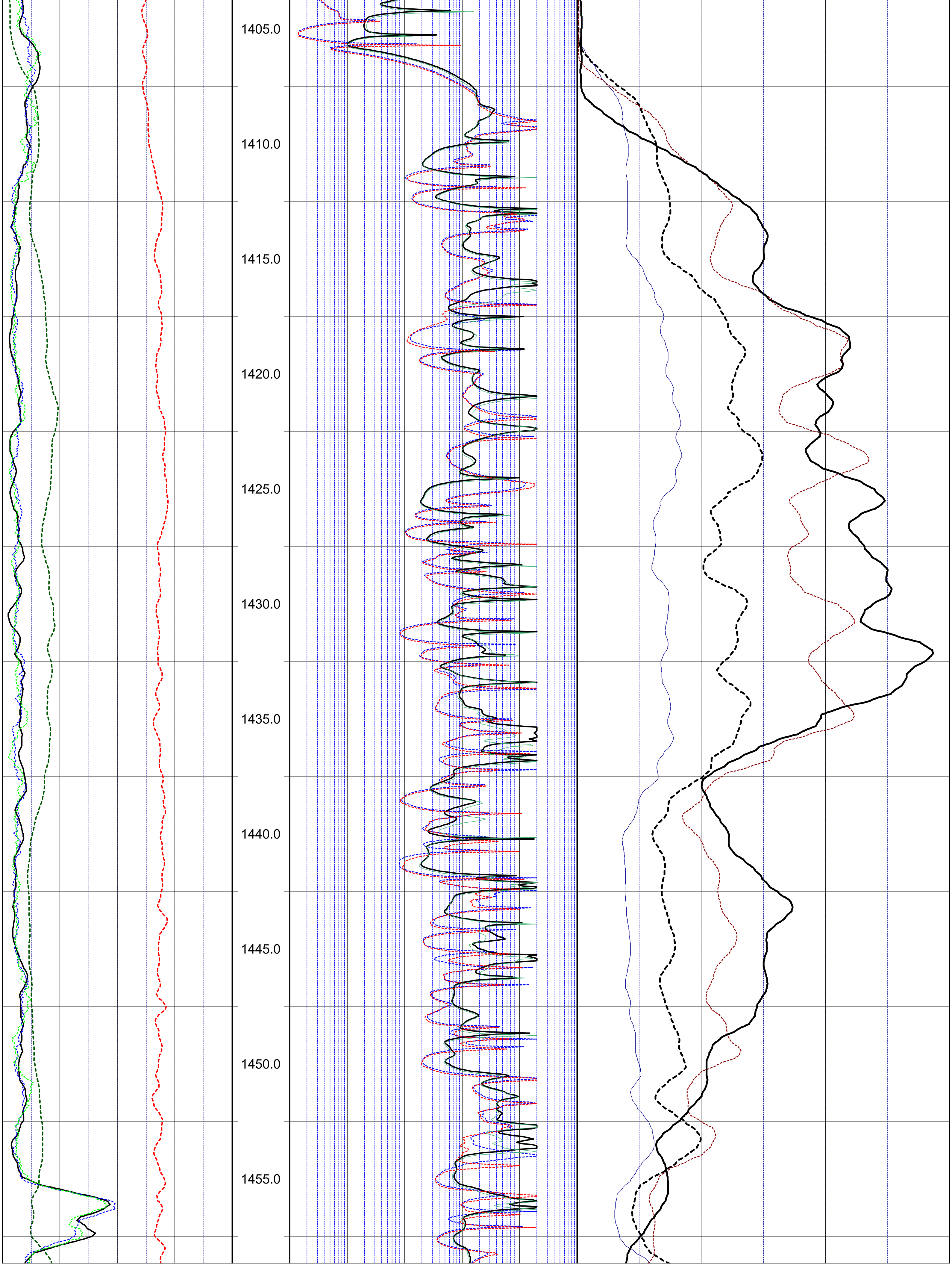
RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270
2	5.875	1407	1500	6	STEEL	0	1407
	4	1500	2000				

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**

ESP	Depth	ILM	R8
0 mV 1000	1in:5ft	0.1 OHMM 10000	0 OHMM 1500
RES		ILD	RSN
0 OHM 700		0.1 OHMM 10000	0 OHMM 1500
EGAMM		ILM#1	R32
0 CPS 400		0.1 OHMM 10000	0 OHMM 1500
DGAMM		ILD#1	RLN
0 CPS 400		0.1 OHMM 10000	0 OHMM 1500
DGAMM#1			
0 CPS 400			

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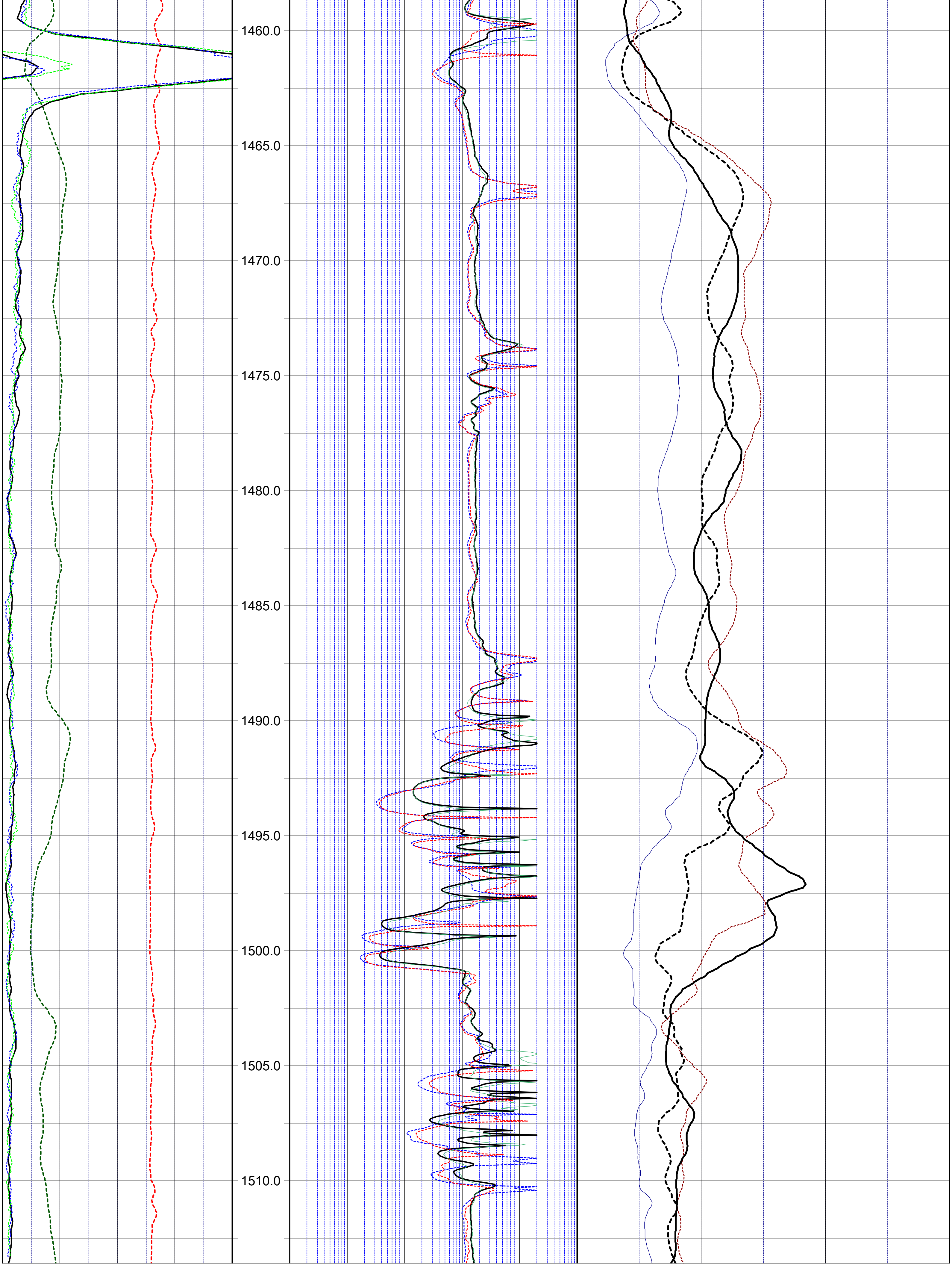

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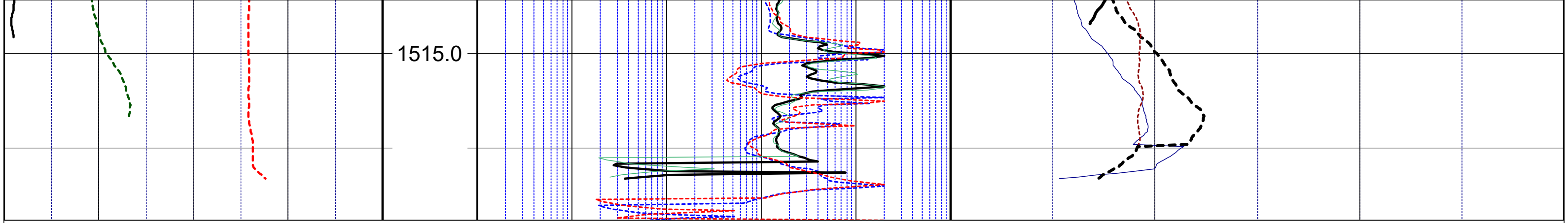

Track 1			Depth	Track 2			Track 3		
0	CPS	400							
	DGAMM#1								
0	CPS	400		0.1	OHMM	10000	0	OHMM	1500
	DGAMM				ILD#1			RLN	
0	CPS	400		0.1	OHMM	10000	0	OHMM	1500
	EGAMM				ILM#1			R32	
0	OHM	700		0.1	OHMM	10000	0	OHMM	1500
	RES				ILD			RSN	
0	mV	1000	1in:5ft	0.1	OHMM	10000	0	OHMM	1500
	ESP		Depth		ILM			R8	

NOTES:

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WELL POF-32
UWI POF-32

PROFESSIONAL LICENSES
Geologist PG2186
Licensed Geology Business

HEADER NOTES:

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60 SUMICA
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X		ALL SERVICES:
LONG		Y		CALIPER
GDAT	WGS84	H DAT		NATURAL GAMMA
SEC		ELEV		ELECTRIC
TWP		V DAT		DUAL INDUCTION
RGE				WATER QUALITY FLOWMETER SONIC

PERMANENT DATUM:

LOG MEASURED FROM: GROUND SURFACE

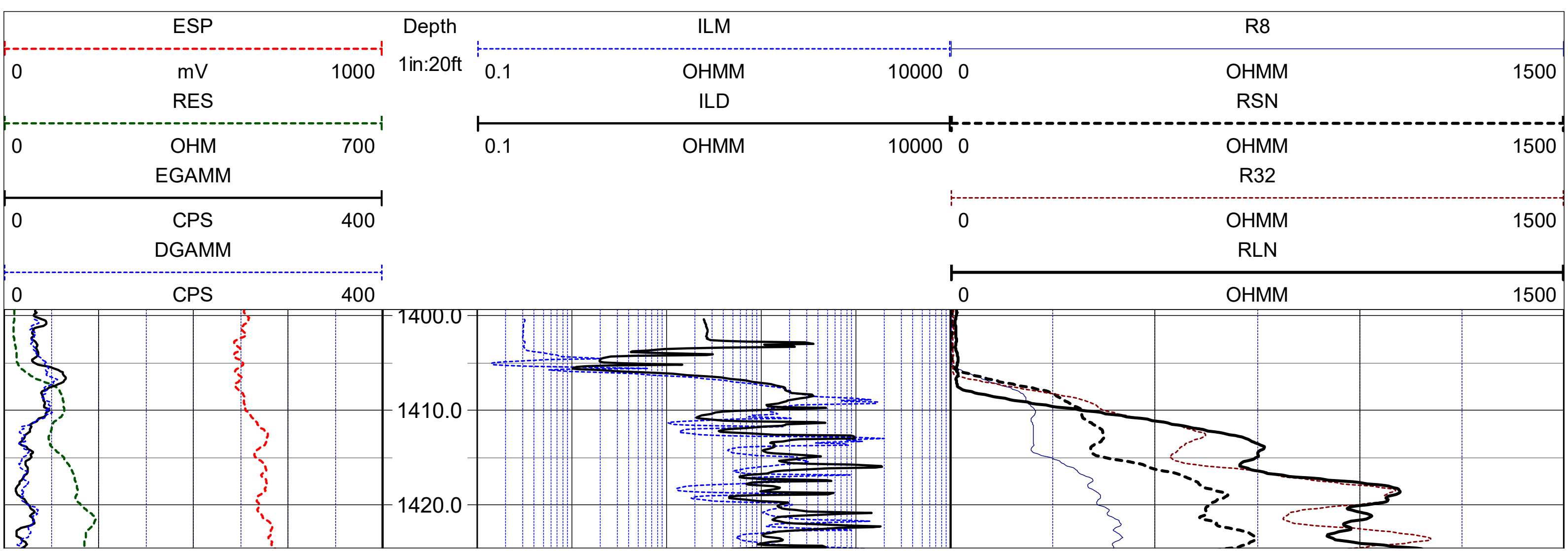
DRILLING MEASURED FROM:

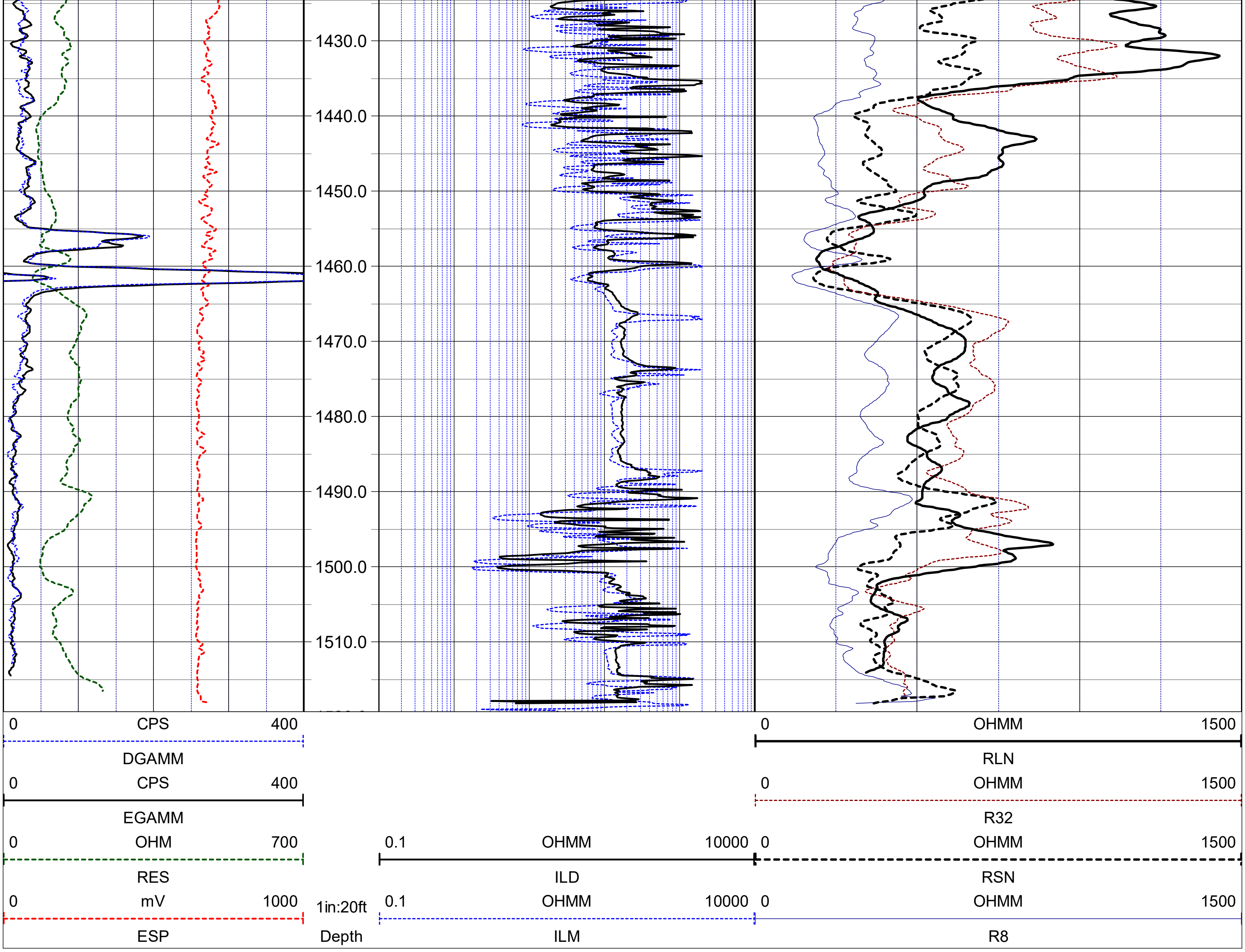
DATE	25 Dec 21	TYPE FLUID IN HOLE	WATER
RUN No	2	LOGGING SPEED (FT/MIN)	30
TYPE LOG	**ELECTRIC+DUIN**	TROLLING DIRECTION	UP
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	2000		
DEPTH-LOGGER	1521-OBST.		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270
2	5.875	1407	1500	6	STEEL	0	1407
	4	1500	2000				

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**





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WELL POF-32
UWI POF-32

PROFESSIONAL LICENSES
Geologist PG2186
Licensed Geology Business

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60 SUMICA
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

HEADER NOTES:

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
DUAL INDUCTION
WATER QUALITY
FLOWMETER
SONIC

PERMANENT DATUM:
LOG MEASURED FROM: GROUND SURFACE
DRILLING MEASURED FROM:

DATE	25 Dec 21	TYPE FLUID IN HOLE	WATER
RUN No	2	LOGGING SPEED (FT/MIN)	20
TYPE LOG	**FLOWMETER**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	2000		
DEPTH-LOGGER	1521-OBST.		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

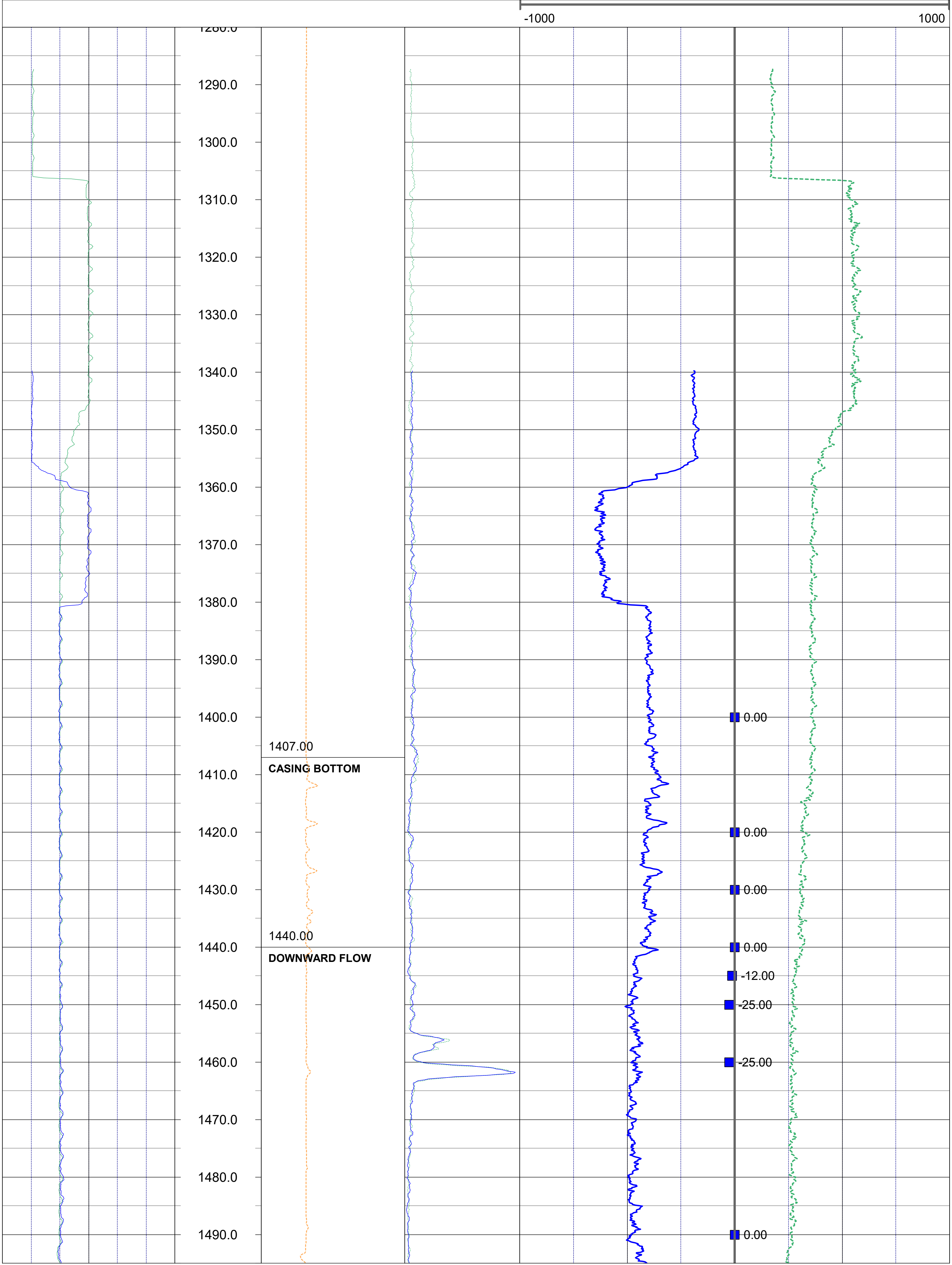
RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270
2	5.875	1407	1500	6	STEEL	0	1407
	4	1500	2000				

PROJECT NOTES:
-The spinner rate curves deflect to the positive direction with increasing flow from the well.
-The spinner rate curves are not corrected for borehole diameter.
-The well was not pumped and did not flow at the surface.

FLOWMETER LOG CODES

down static spinner rate	**FSD**	down static line speed	**LSSD**	natural gamma (w/annot.)	**GAMM**
up static spinner rate	**UTS**	up static line speed	**LSSU**	caliper	**CAL**
down dynamic spinner rate	**DYND**	down dynamic line speed	**LSDD**	repeat designation	**R**
up dynamic spinner rate	**DYNU**	up dynamic line speed	**LSDU**	percent flow	**PFLO**
static station spinner rate	**FSU**	dynamic station spinner rate	**FSP**	GPM flow	**GPMFLO**

LSSD	Depth	CAL	DS GAMM	FSD
0 ft/min 60	1in:20ft	0 in 20	0 CPS 400	-1000 RPM 1000
LSSU		COMMENTS	US GAMM	UTS
0 ft/min 60			0 CPS 400	-1000 RPM 1000
				STATIONS - FINAL
				-1000 RPM 1000
				ZERO LINE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1380.0
1390.0
1400.0
1407.00
CASING BOTTOM
1410.0
1420.0
1430.0
1440.00
1440.0
DOWNWARD FLOW
1450.0
1460.0
1470.0
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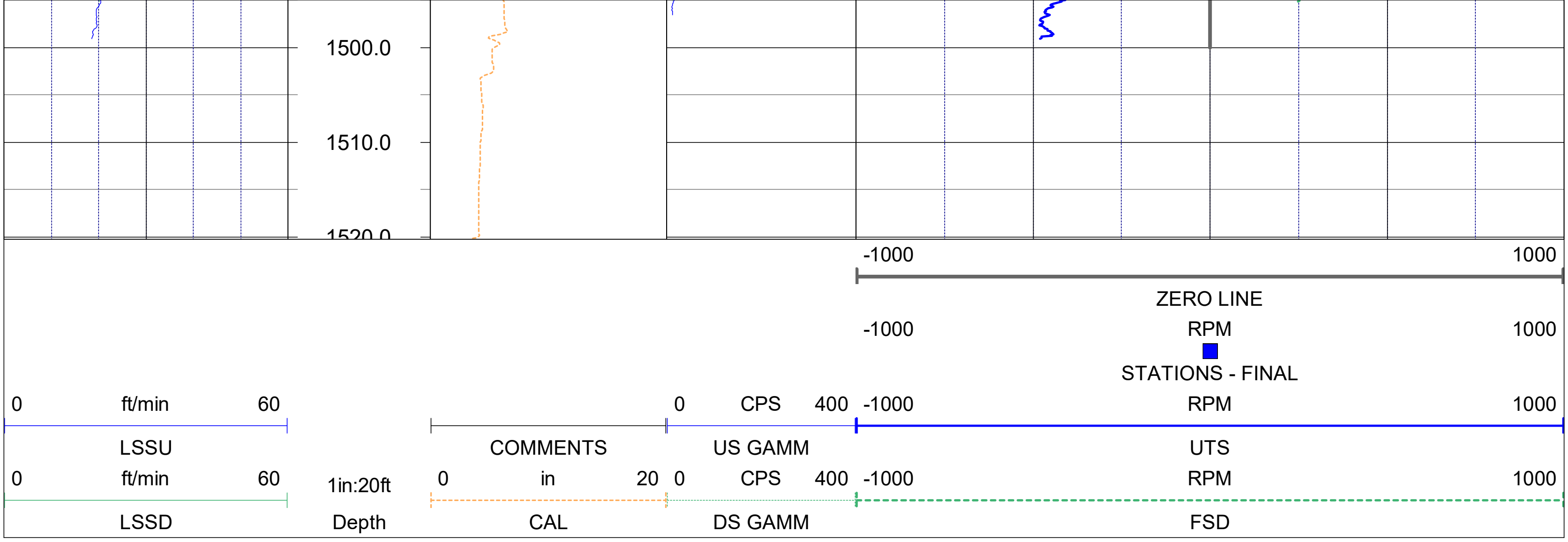
0.00
0.00
0.00
0.00
-12.00
-25.00
-25.00
0.00



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WELL POF-32
UWI POF-32

PROFESSIONAL LICENSES
Geologist PG2186
Licensed Geology Business

HEADER NOTES:

COMP	SFWMD		
LOC	HESPERIDES ROAD		
FLD	SR 60 SUMICA		
CNTY	POLK		
STAT	FL		
PROV	FL		
CTRY	USA		
LATI		X	ALL SERVICES: CALIPER, NATURAL GAMMA, ELECTRIC, DUAL INDUCTION, WATER QUALITY, FLOWMETER, SONIC
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

PERMANENT DATUM:

LOG MEASURED FROM: GROUND SURFACE

DRILLING MEASURED FROM:

DATE	25 Dec 21	TYPE FLUID IN HOLE	WATER
RUN No	2	LOGGING SPEED (FT/MIN)	15
TYPE LOG	**SONIC**	TROLLING DIRECTION	UP
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	2000		
DEPTH-LOGGER	1521-OBST.		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270
2	5.875	1407	1500	6	STEEL	0	1407
4		1500	2000				

LOG CODES

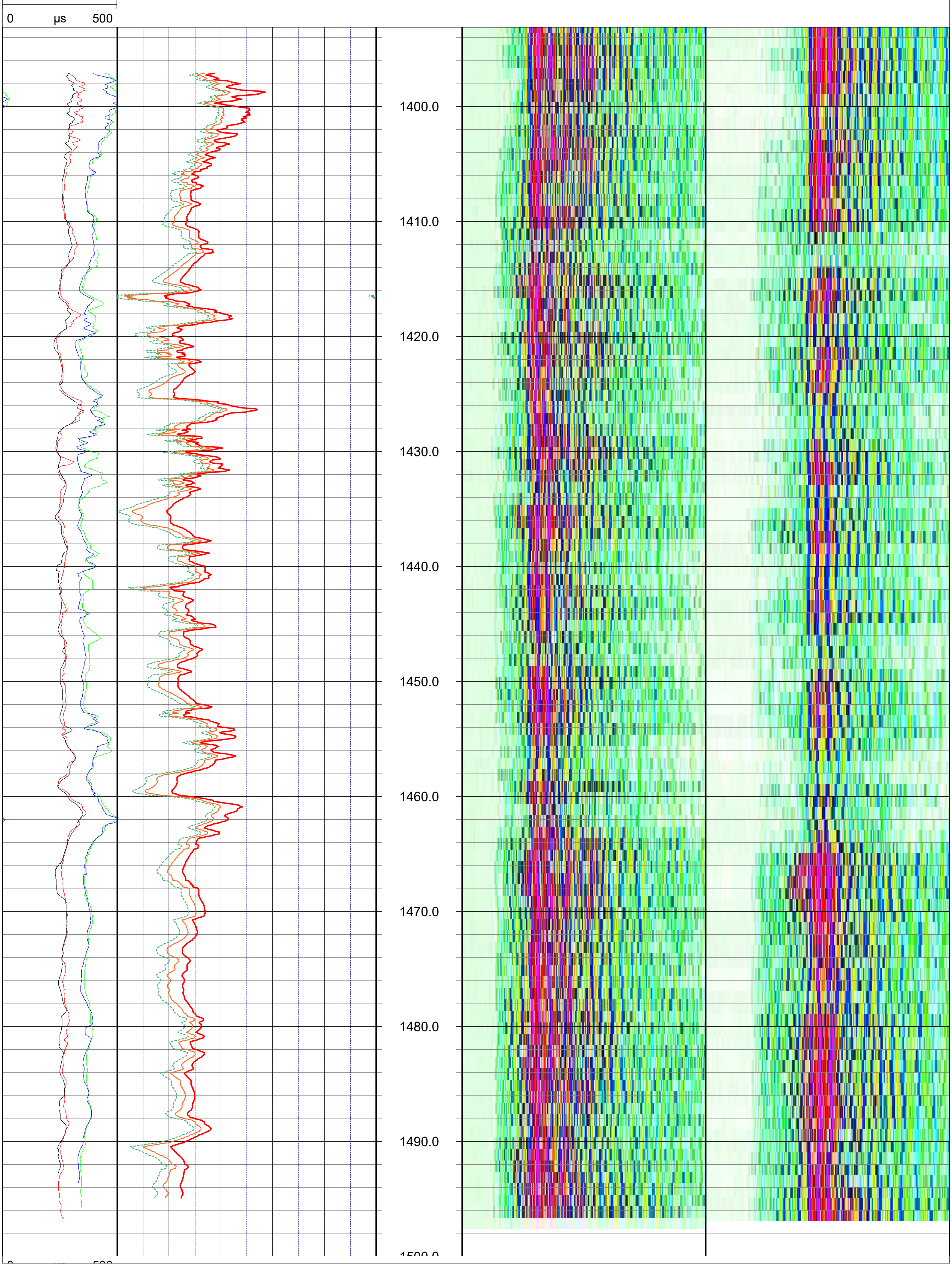
3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**

SONIC POROSITY:
Assuming a carbonate formation, the porosity can be calculated using the Raymer-Hunt-Gardner (RHG) equation:

porosity= 5/8 x ([TT of log - TT of matrix] / TT of log), where "TT of log" is the measured sonic value and the "TT of matrix" is a constant.

The TT of matrix for dolostone is 43.5 microseconds per foot, and for limestone is 47.5 microseconds per foot.

	TA			DT		Depth		RX-3			RX-5	
0	μs	500	0	μs/ft	250	1in:10ft	0		1916	0		1916
	TB			SPHI - 47.5								
0	μs	500	0	POR	1							
	TC			SPHI - 43.5								
0	μs	500	0	POR	1							
	TD											



0 µs 500
1400.0
1410.0
1420.0
1430.0
1440.0
1450.0
1460.0
1470.0
1480.0
1490.0

0 µs 500				
TD				
0 µs 500	0 POR 1			
TC	SPHI - 43.5			
0 µs 500	0 POR 1			
TB	SPHI - 47.5			
0 µs 500	0 µs/ft 250	1in:10ft	0 1916	0 1916
TA	DT	Depth	RX-3	RX-5

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WELL POF-32
UWI POF-32

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Licensed Geology Business

HEADER NOTES:

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60 SUMICA
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
DUAL INDUCTION
WATER QUALITY
FLOWMETER
SONIC

PERMANENT DATUM:

LOG MEASURED FROM: GROUND SURFACE

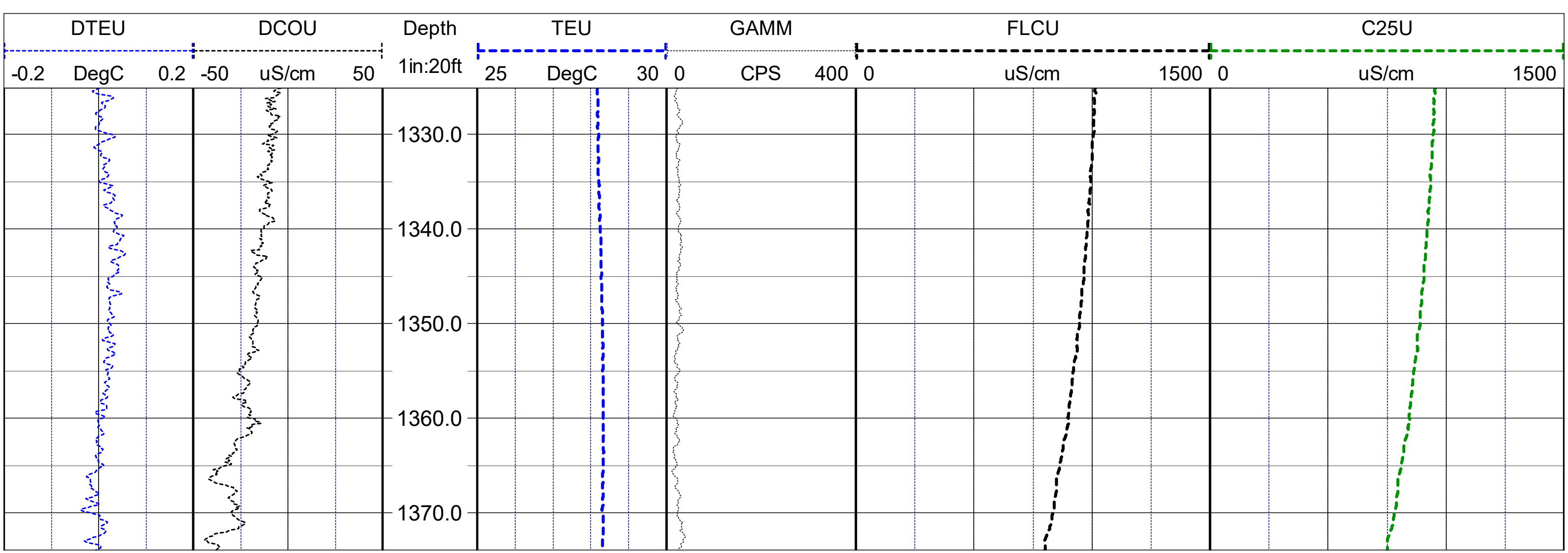
DRILLING MEASURED FROM:

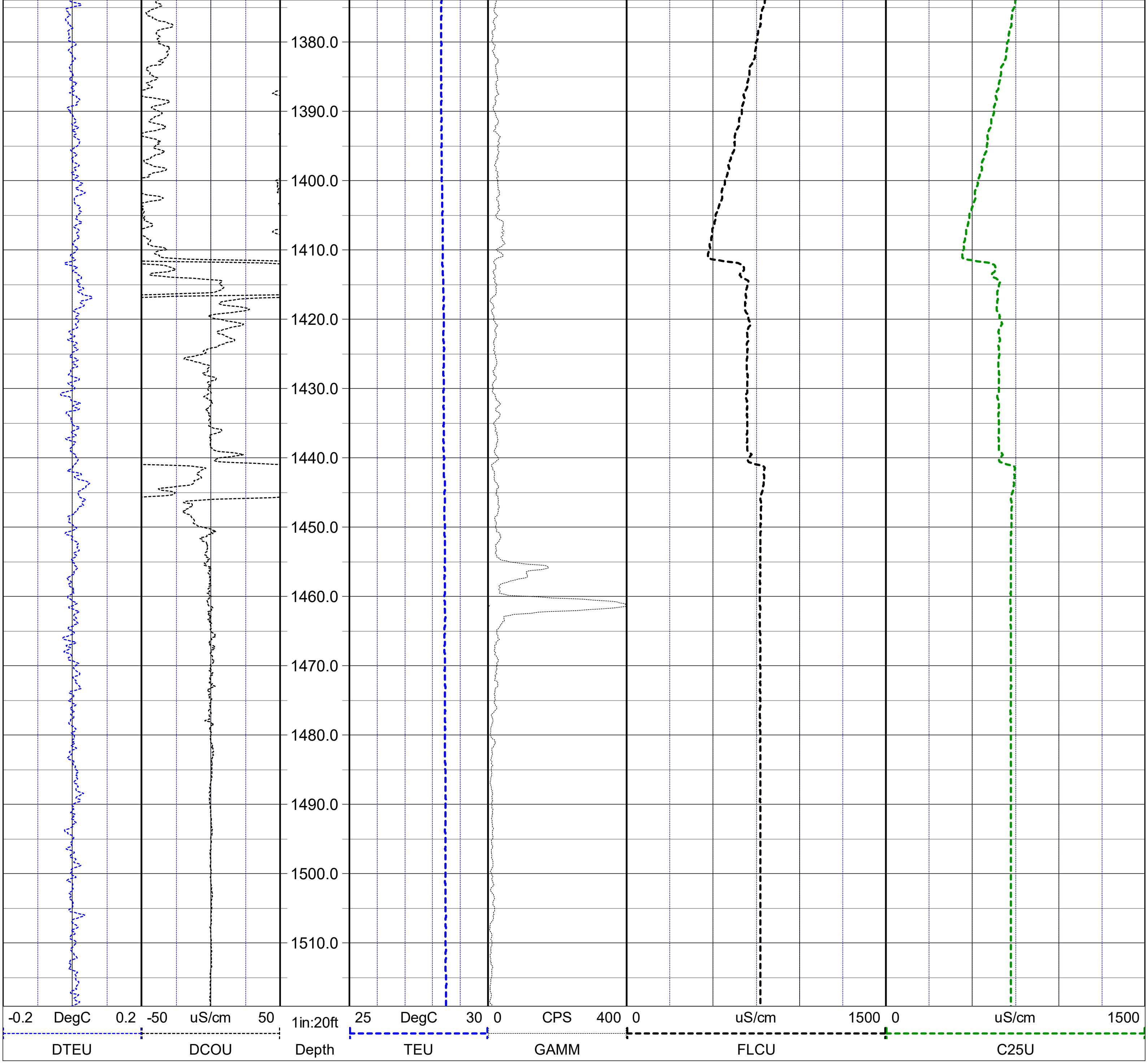
DATE	25 Jan 21	TYPE FLUID IN HOLE	WATER
RUN No	2	LOGGING SPEED (FT/MIN)	30
TYPE LOG	**WATER QUALITY**	TROLLING DIRECTION	DOWN
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	2000		
DEPTH-LOGGER	1521-OBST.		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270
2	5.875	1407	1500	6	STEEL	0	1407
	4	1500	2000				

WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**	calibration correction	**C**
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		





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HEADER NOTES:
1407-1521ft logged Jan 25; 1520-2000 ft logged Jan 28

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60 SUMICA
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
DUAL INDUCTION
WATER QUALITY
FLOWMETER
SONIC

PERMANENT DATUM:

LOG MEASURED FROM: GROUND SURFACE

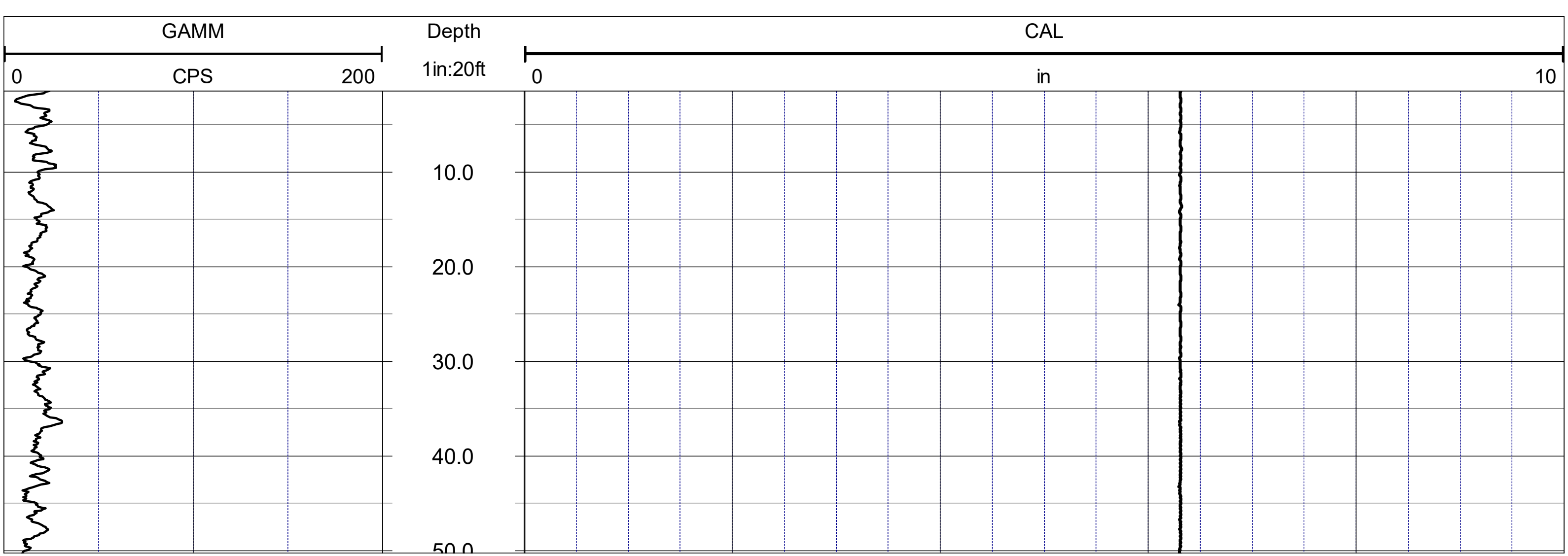
DRILLING MEASURED FROM:

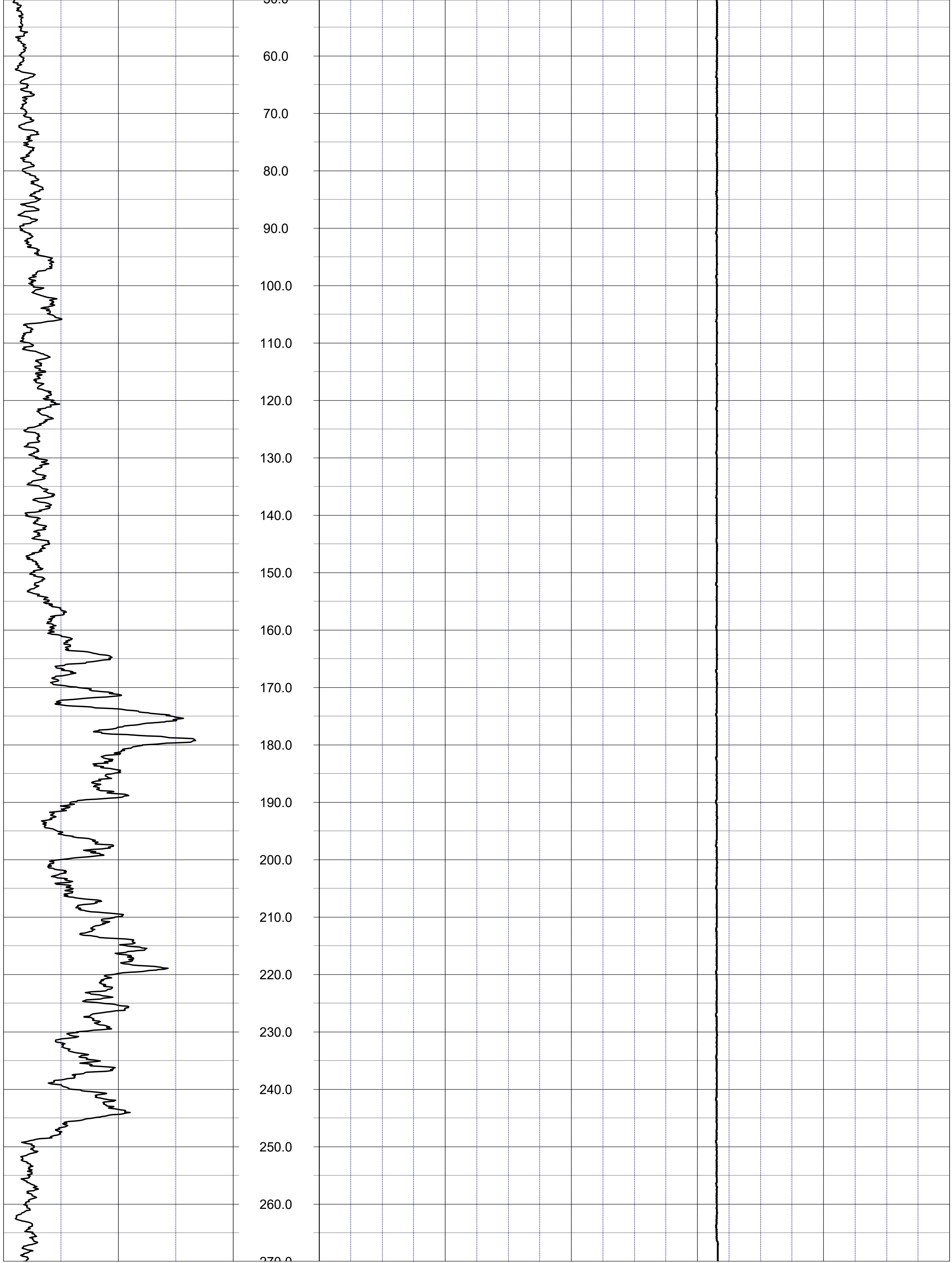
DATE	25&28 Jan 21	TYPE FLUID IN HOLE	WATER
RUN No	2	LOGGING SPEED (FT/MIN)	40
TYPE LOG	**CALIPER**	TROLLING DIRECTION	UP
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	2000		
DEPTH-LOGGER	1997.4		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270
2	5.875	1407	1500	6	STEEL	0	1407
	4	1500	2000				

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**





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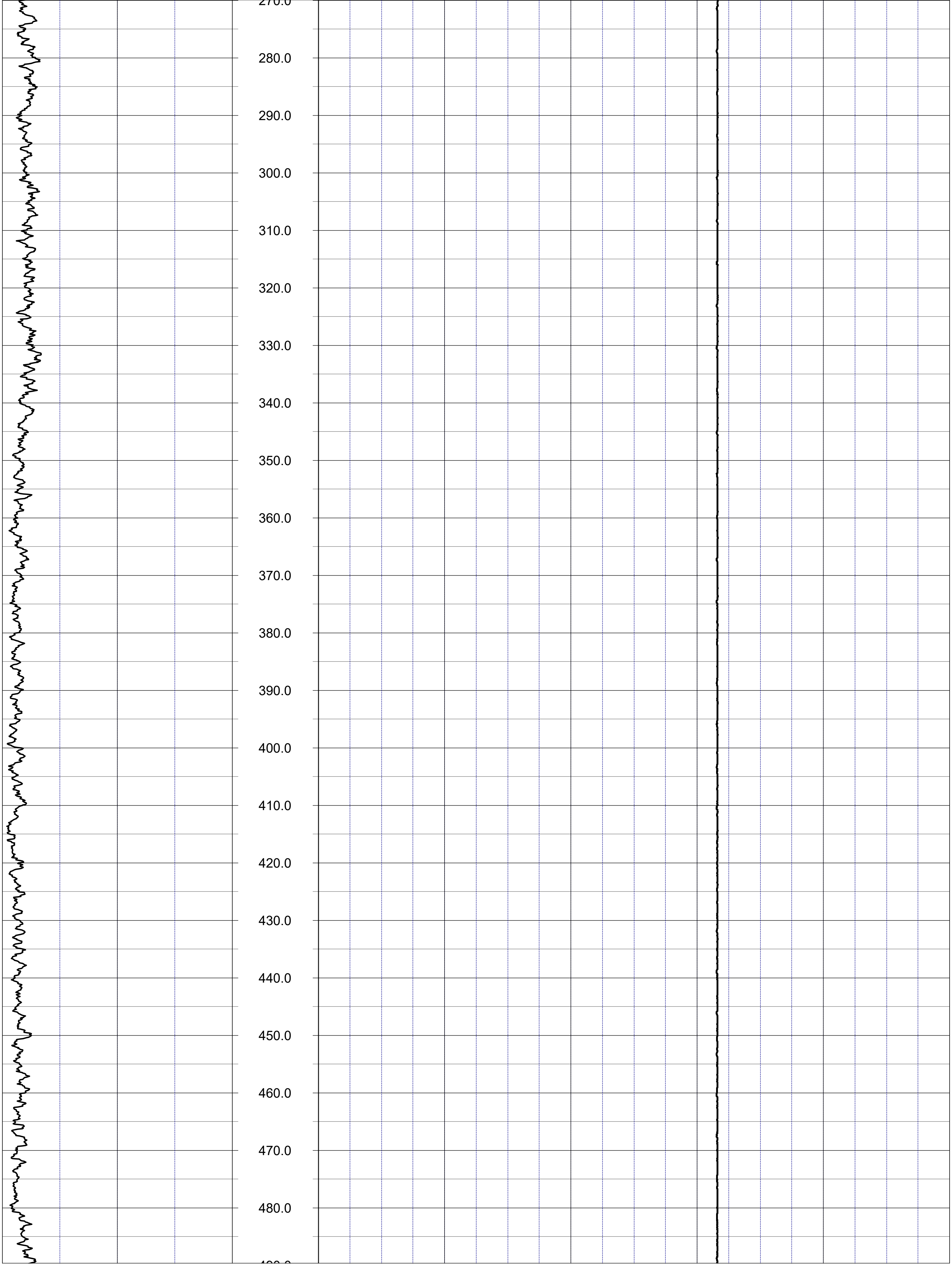
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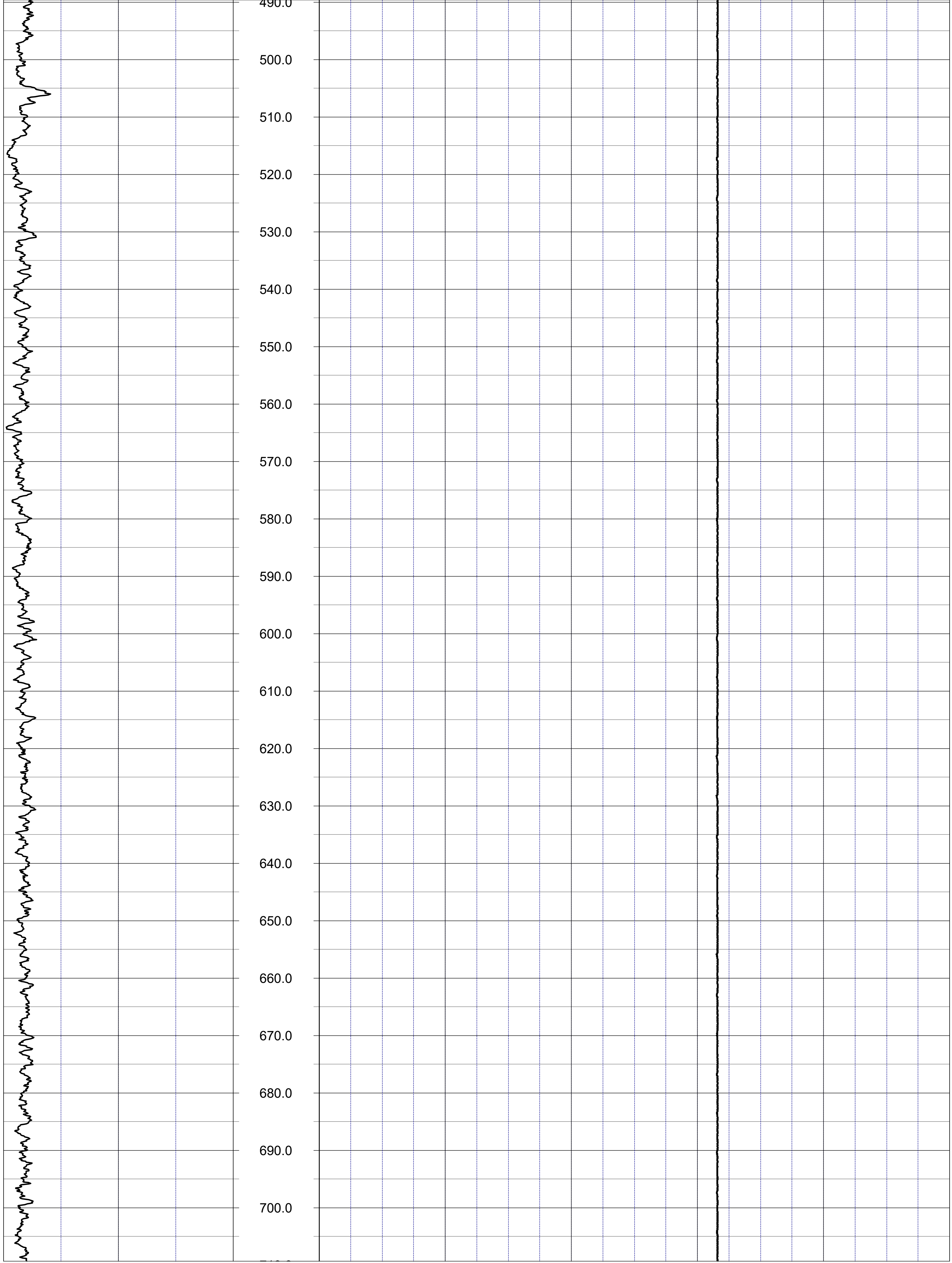
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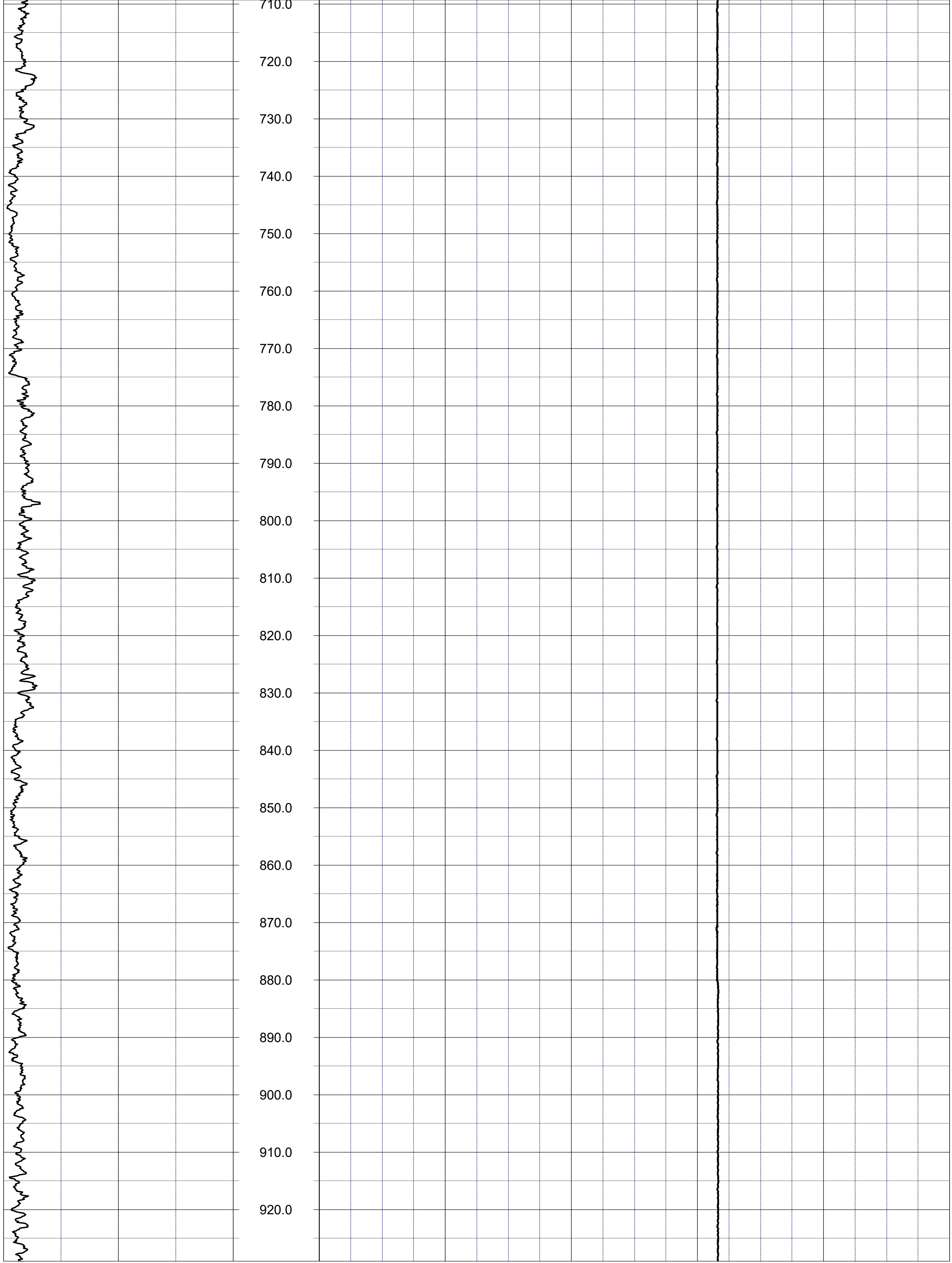

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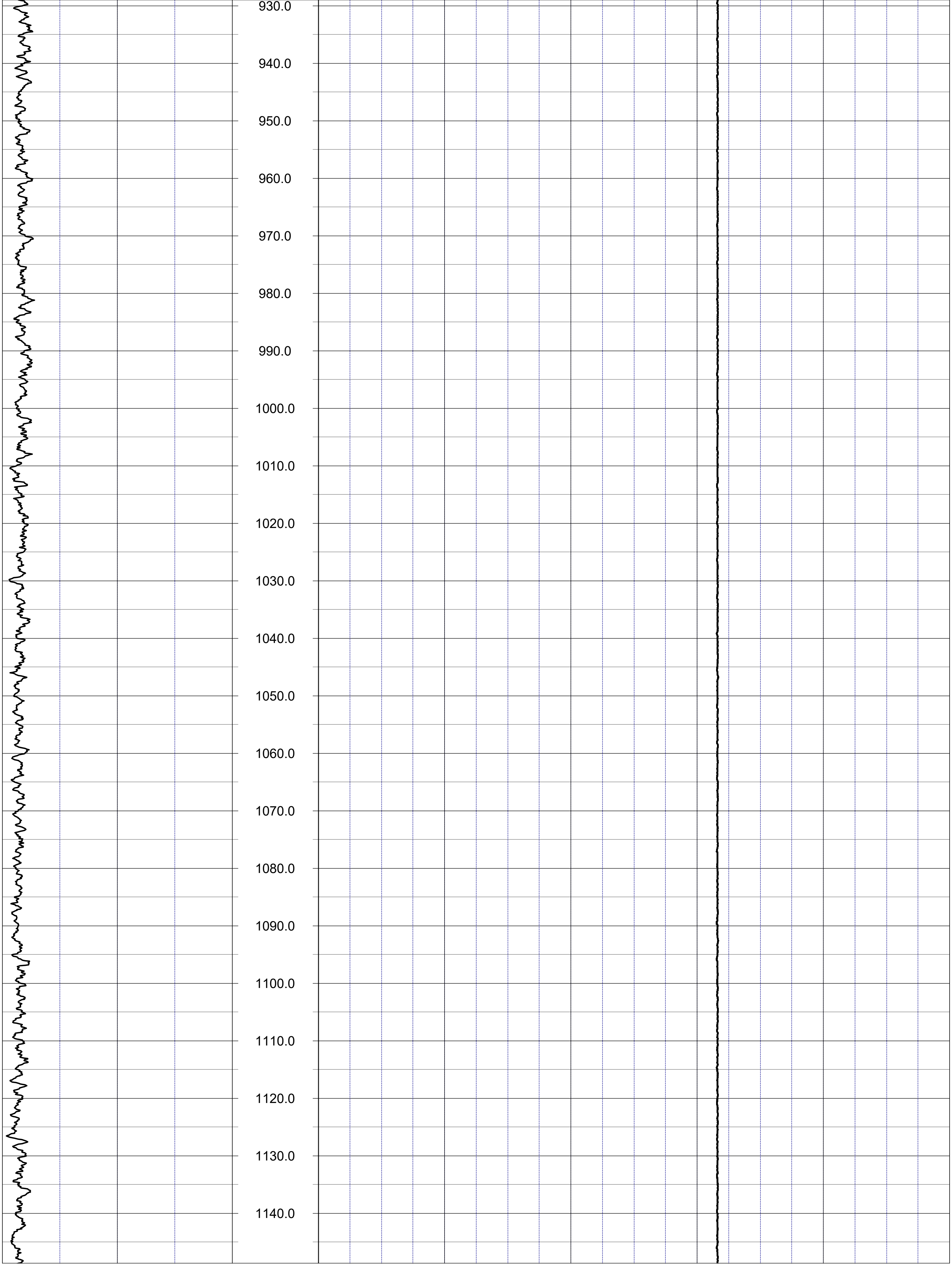
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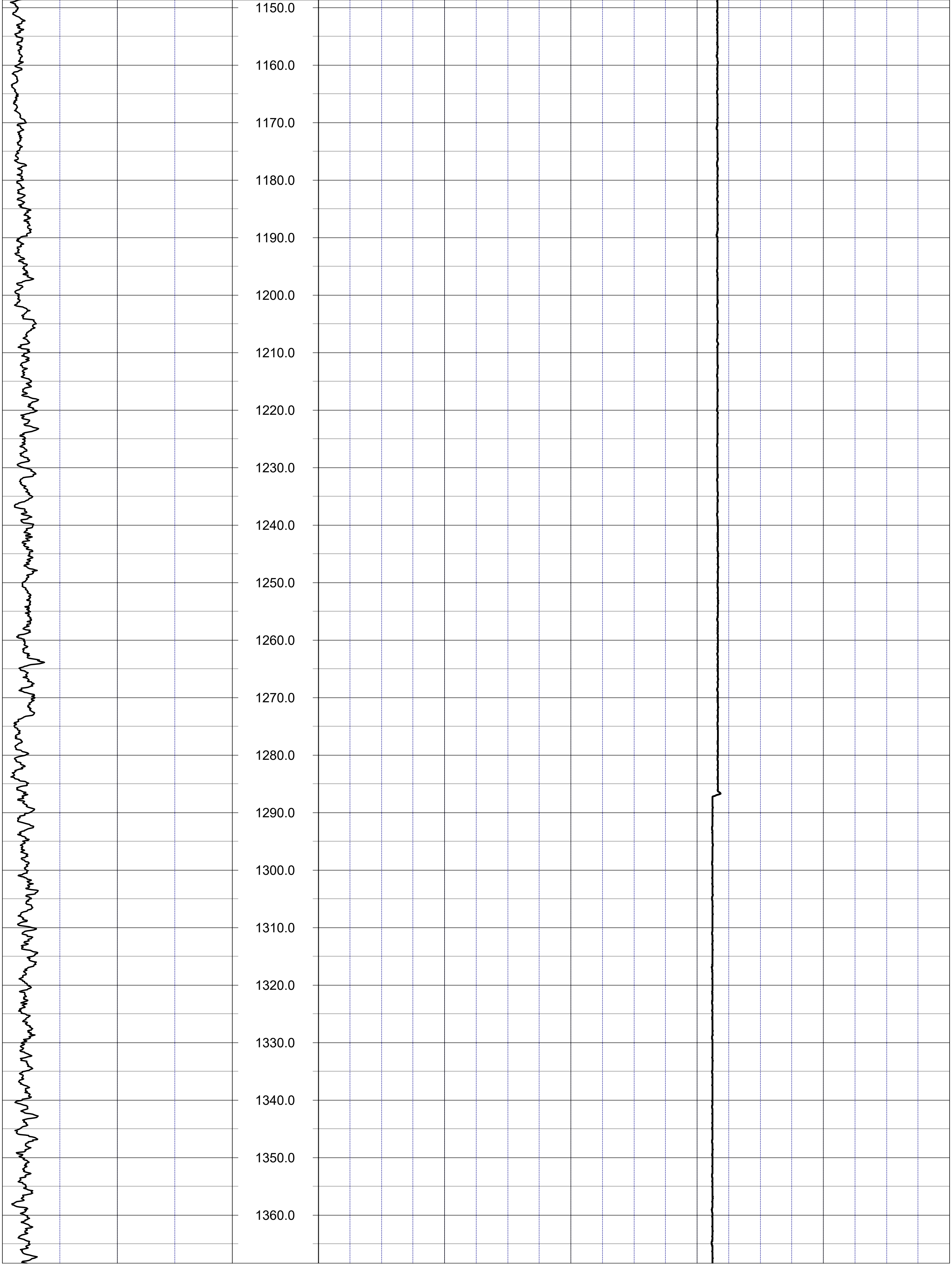
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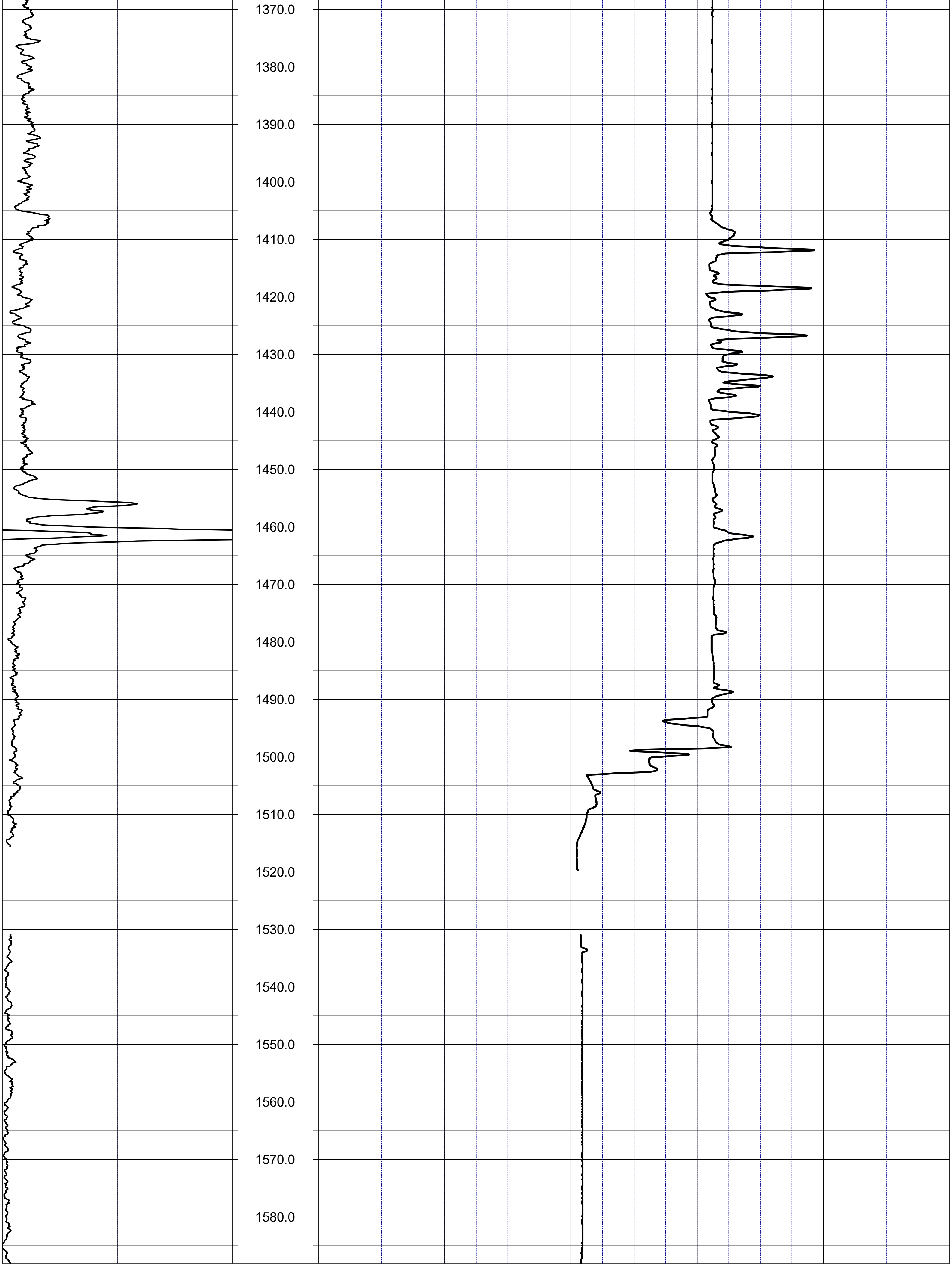
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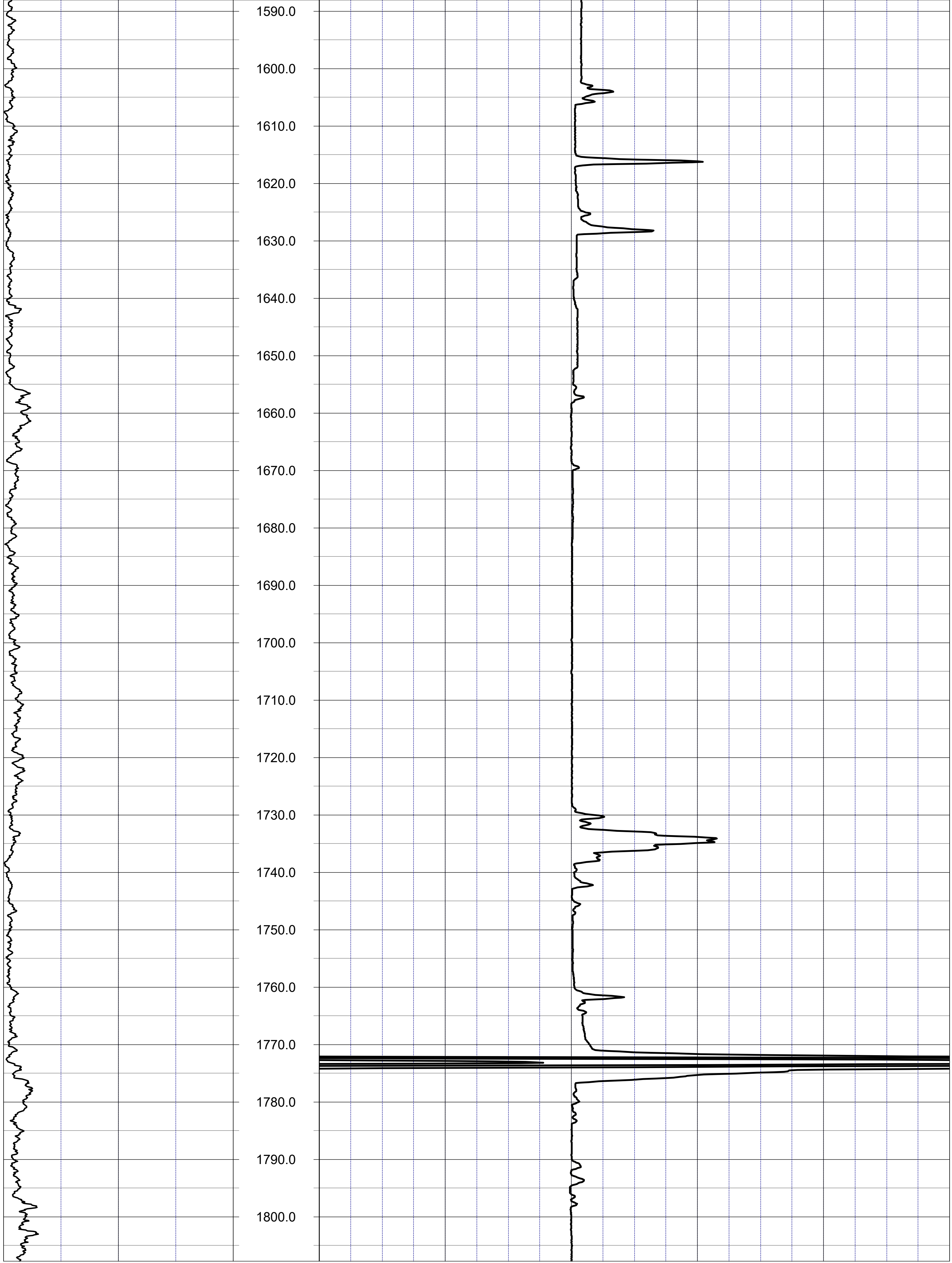
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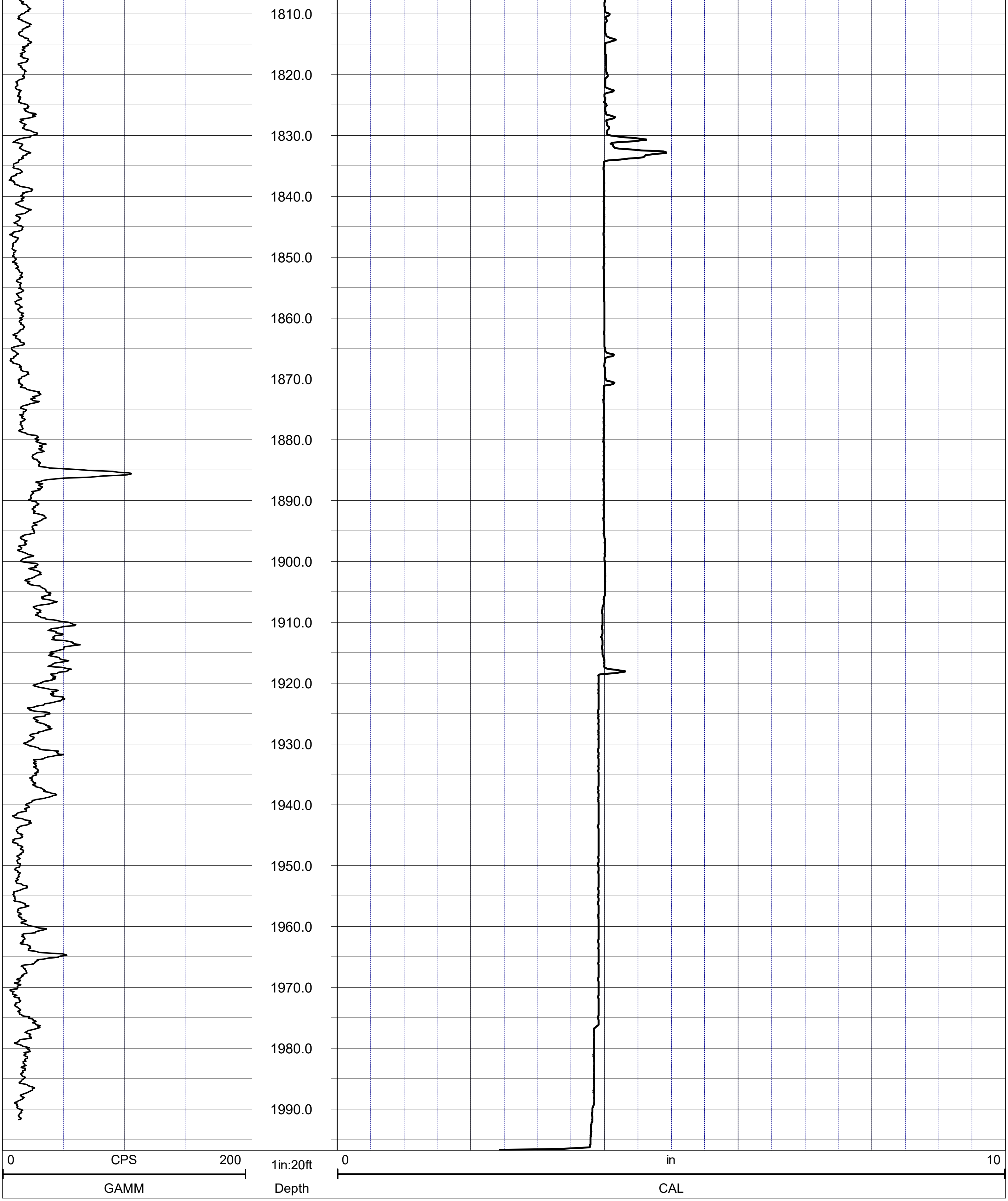

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Florida Geology Business Licensed by PG2[illegible]

END OF LOG

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Geology and Geophysics

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WELL POF-32
UWI POF-32

PROFESSIONAL LICENSES
Geologist PG2186
Licensed Geology Business

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60 SUMICA
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

HEADER NOTES:
1407-1521 ft logged Jan 25; 1520-2000 ft logged Jan 28

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
DUAL INDUCTION
WATER QUALITY
FLOWMETER
SONIC

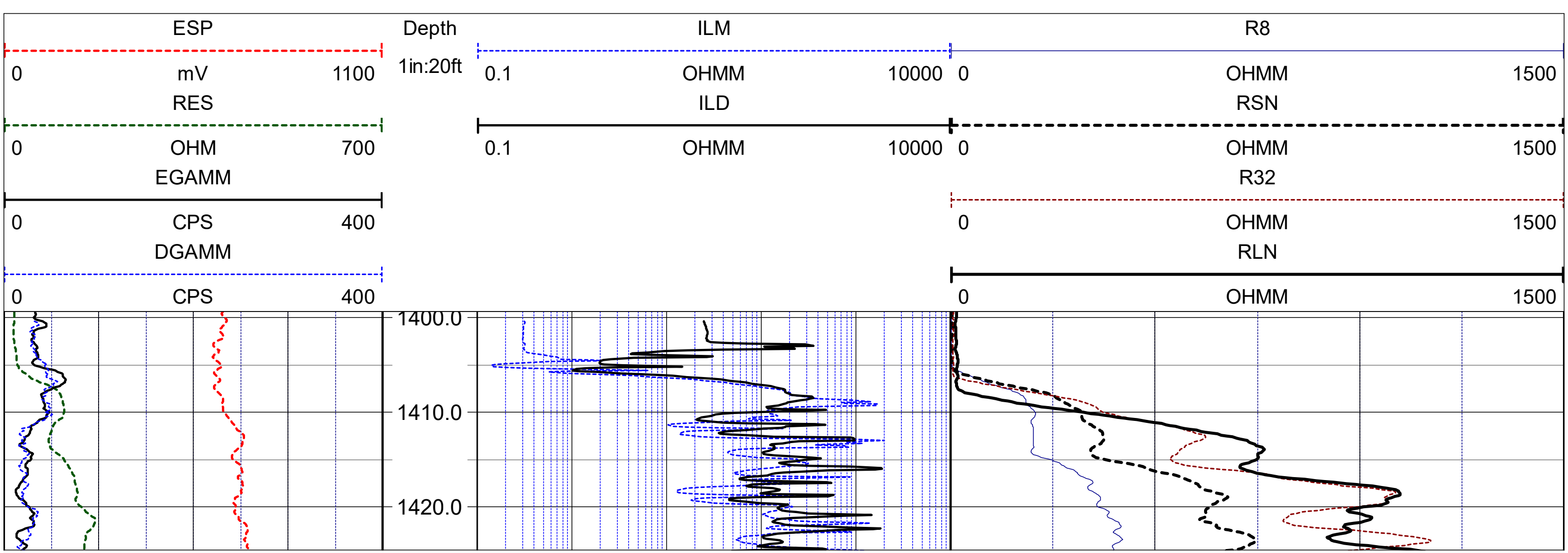
PERMANENT DATUM:
LOG MEASURED FROM: GROUND SURFACE
DRILLING MEASURED FROM:

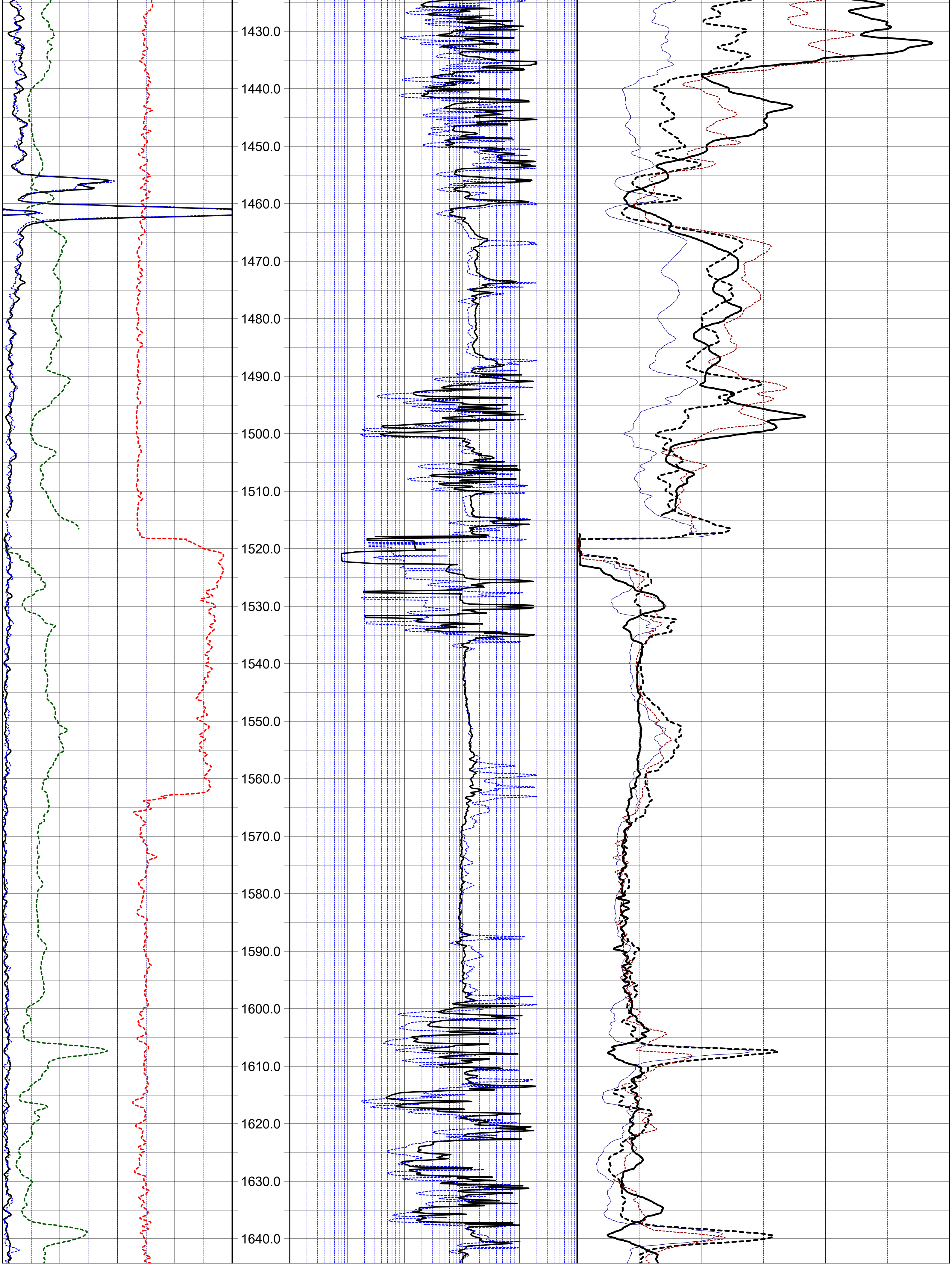
DATE	25&28 Jan 21	TYPE FLUID IN HOLE	WATER
RUN No	2	LOGGING SPEED (FT/MIN)	35
TYPE LOG	ELECTRIC+DUIN	TROLLING DIRECTION	UP
DEPTH-DRILLER	2000	PUMPING RATE (GPM)	N/A
DEPTH-LOGGER	1997.4		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270
2	5.875	1407	1500	6	STEEL	0	1407
	4	1500	2000				

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**

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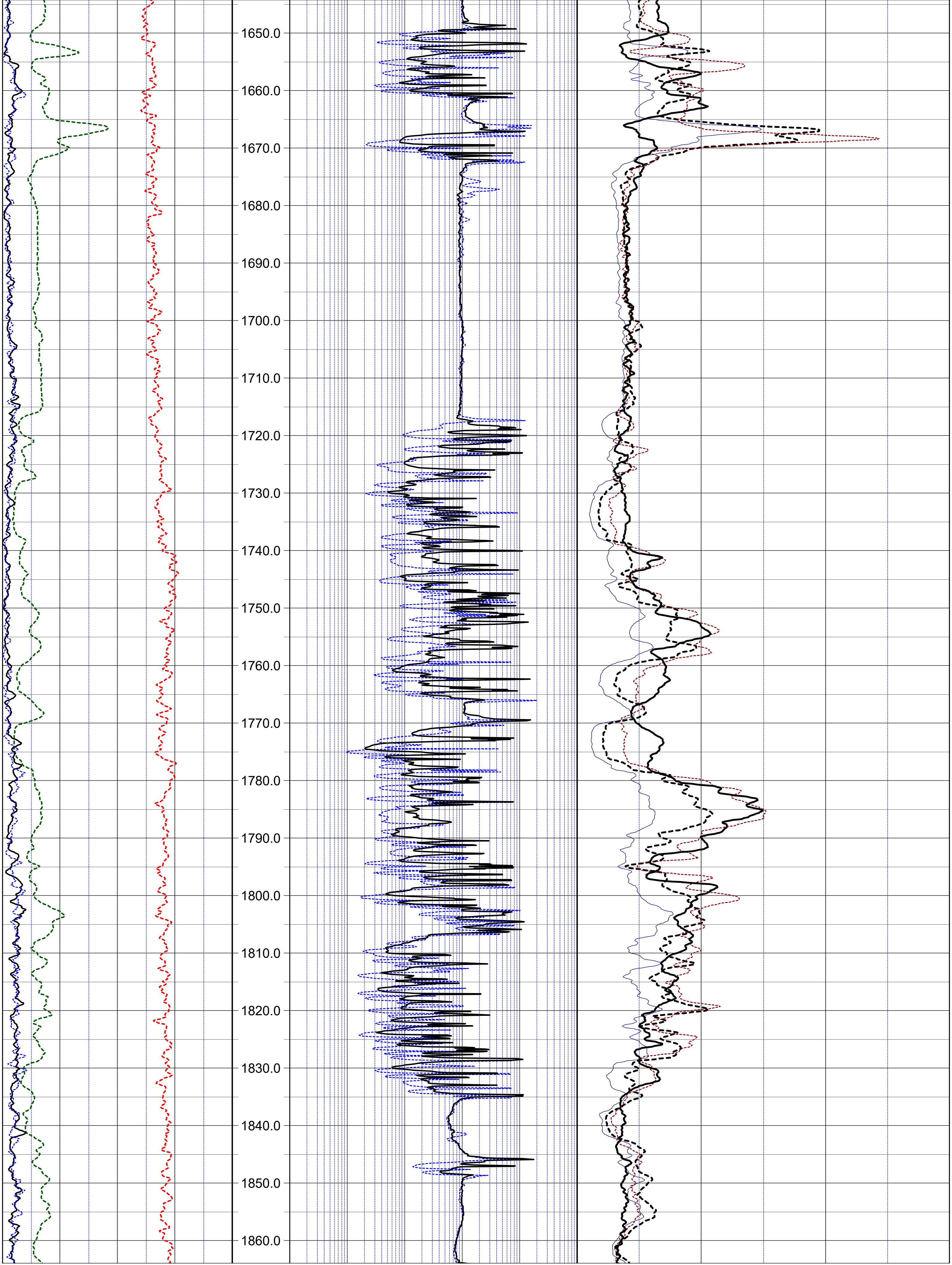
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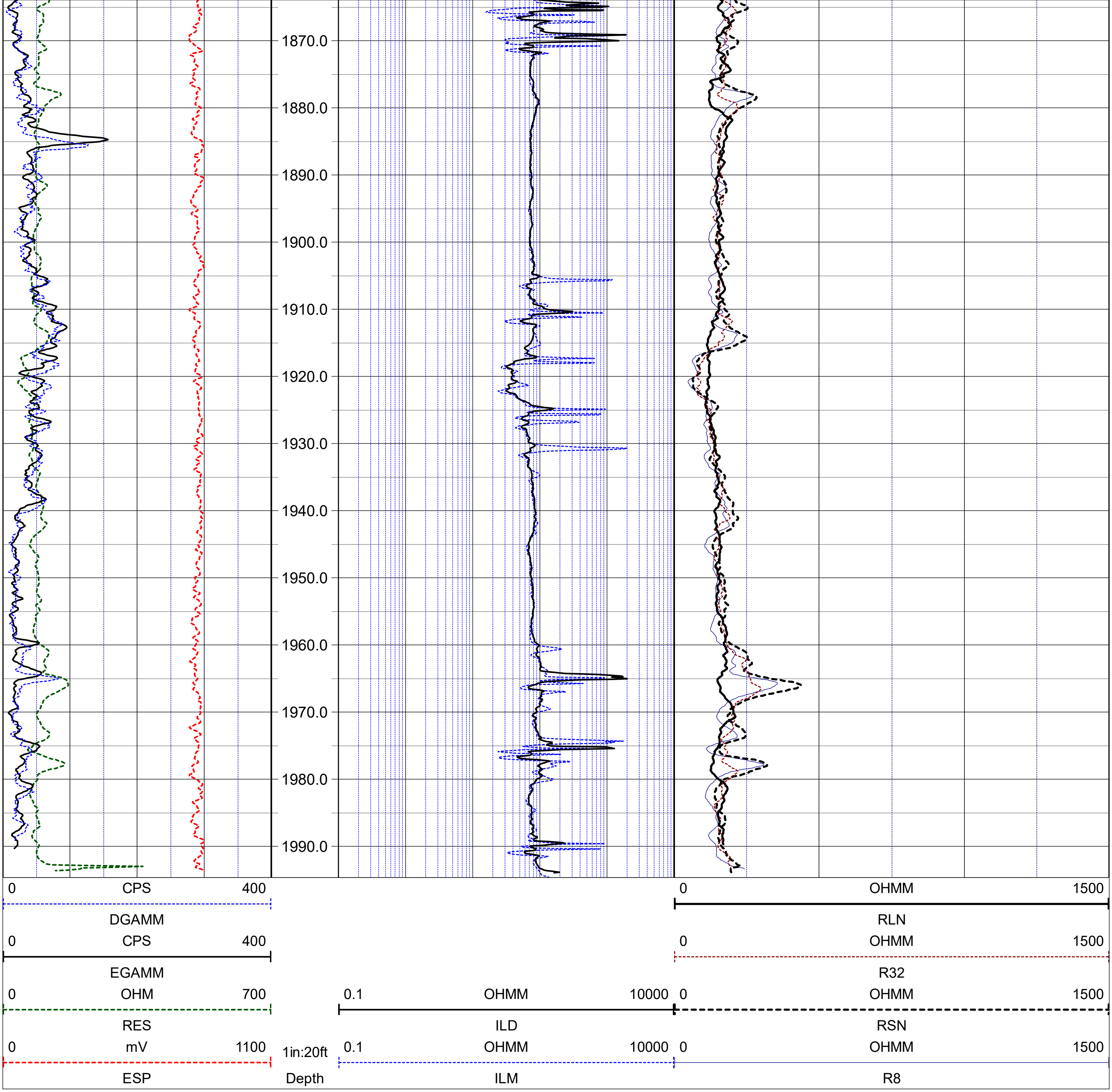

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WELL POF-32
UWI POF-32

PROFESSIONAL LICENSES
Geologist PG2186
Licensed Geology Business

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60 SUMICA
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

HEADER NOTES:
1407-1521 ft logged Jan 25; 1520-2000 ft logged Jan 28

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

PERMANENT DATUM:
LOG MEASURED FROM: GROUND SURFACE
DRILLING MEASURED FROM:

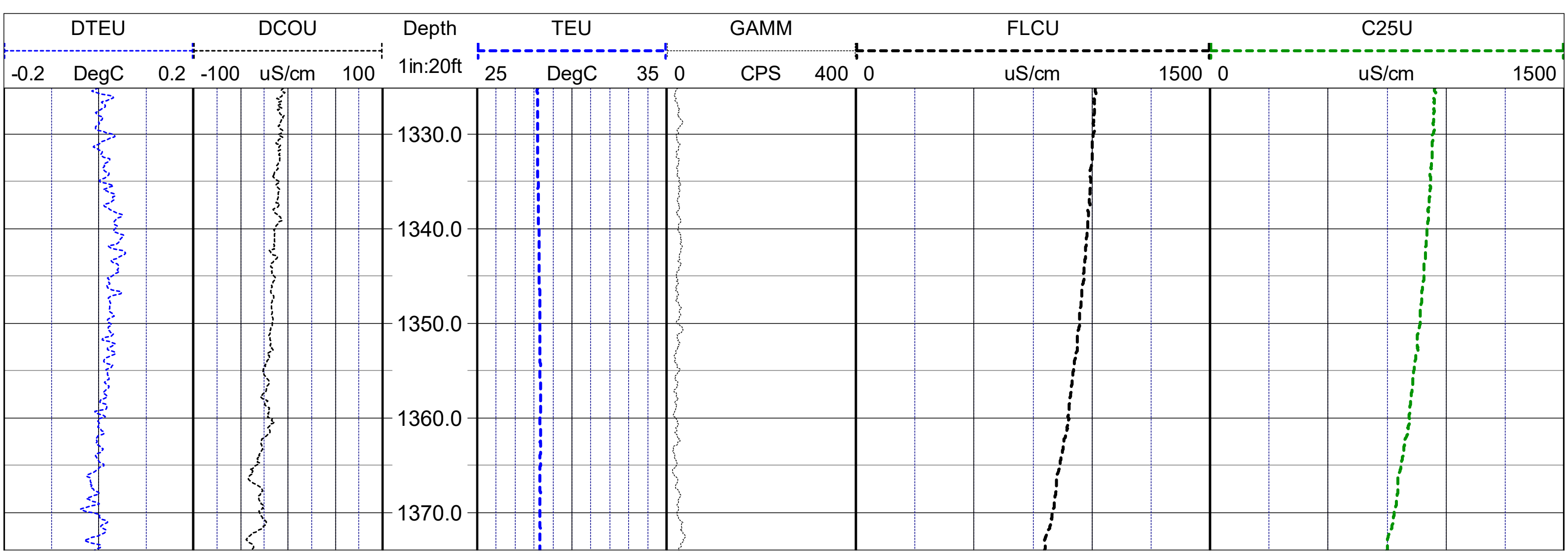
ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
DUAL INDUCTION
WATER QUALITY
FLOWMETER
SONIC

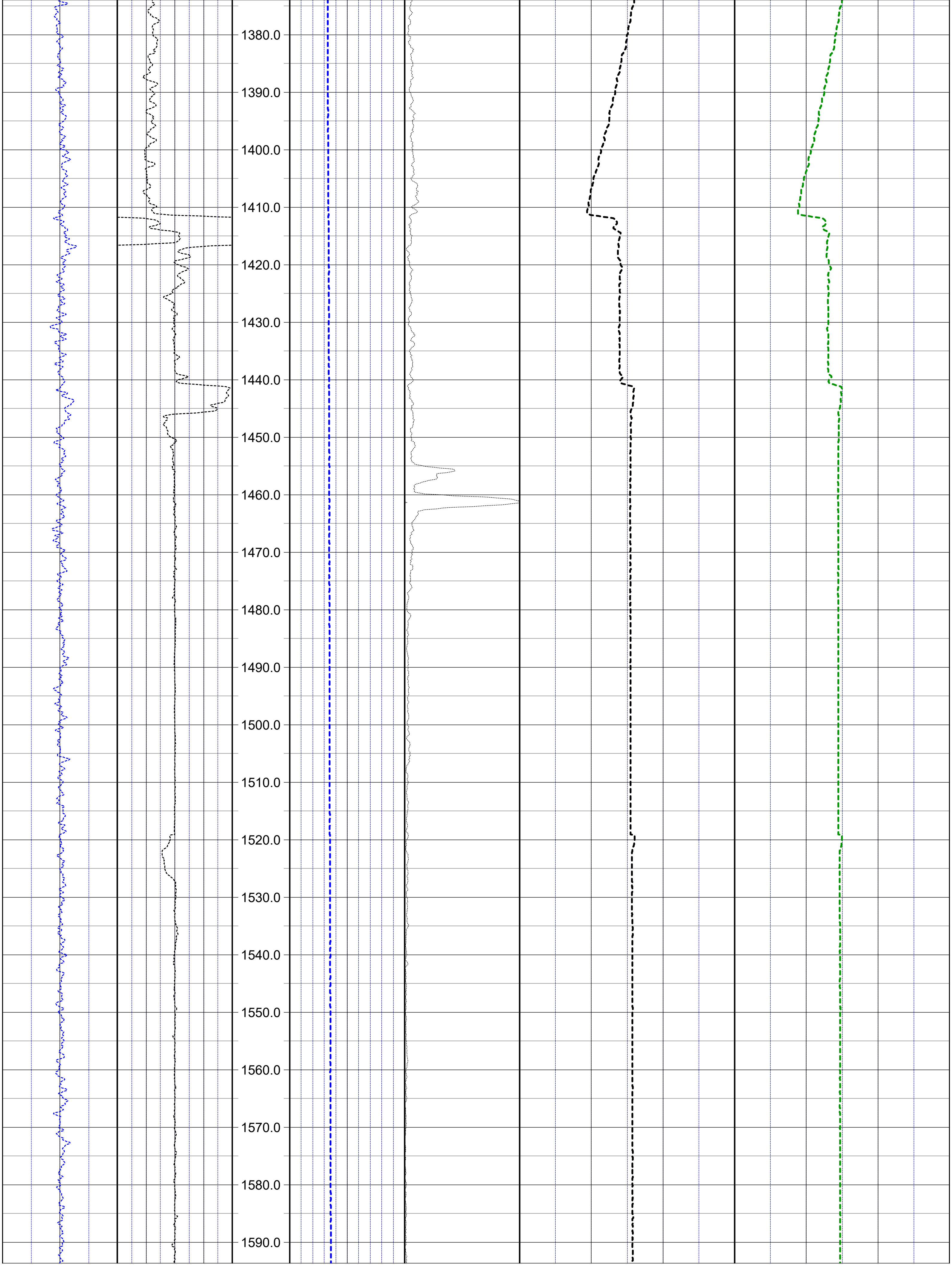
DATE	25 Jan 21	TYPE FLUID IN HOLE	WATER
RUN No	2	LOGGING SPEED (FT/MIN)	30
TYPE LOG	**WATER QUALITY**	TROLLING DIRECTION	DOWN
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	2000		
DEPTH-LOGGER	1997.4		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270
2	5.875	1407	1500	6	STEEL	0	1407
	4	1500	2000				

WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**	calibration correction	**C**
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		





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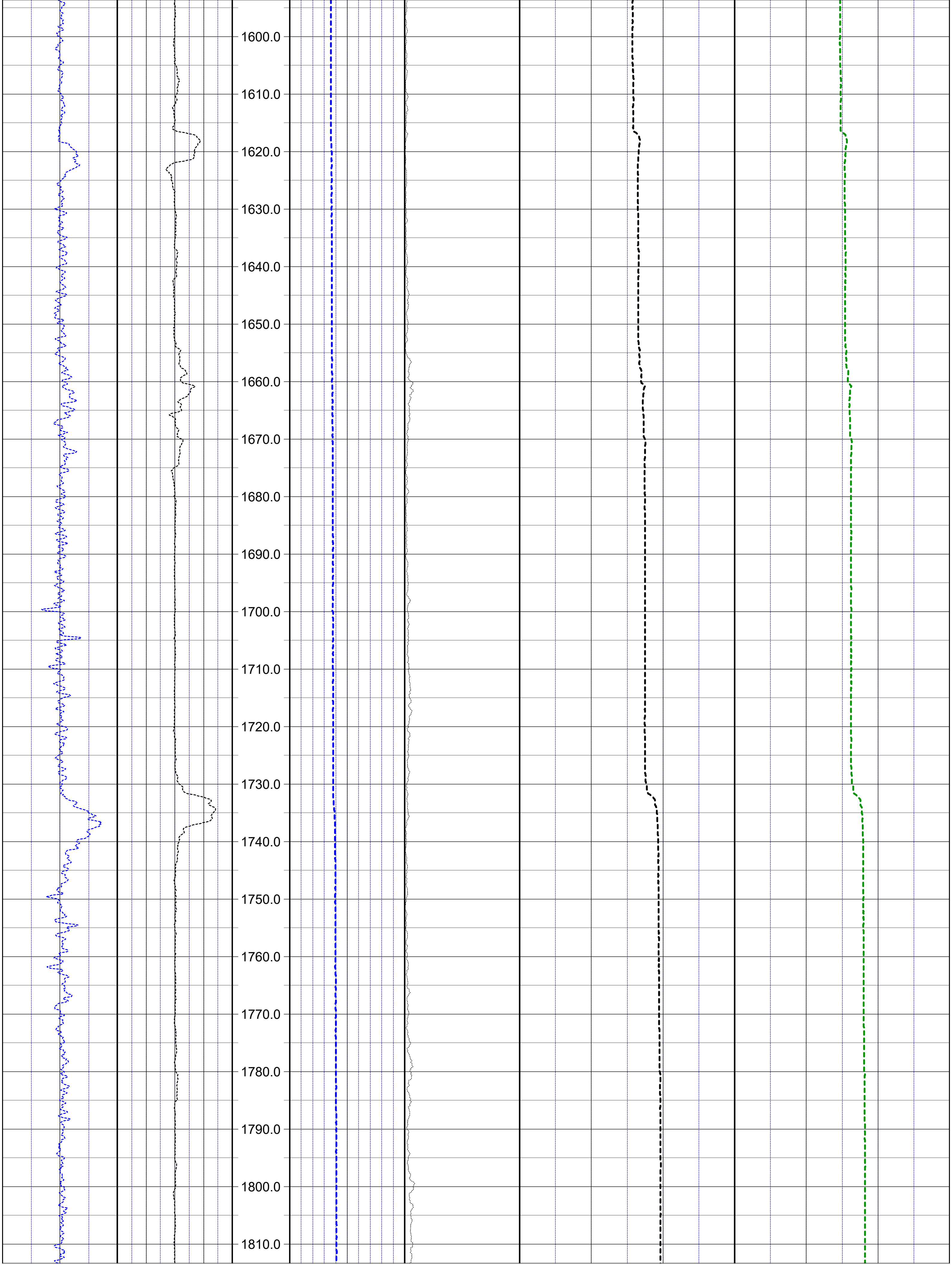
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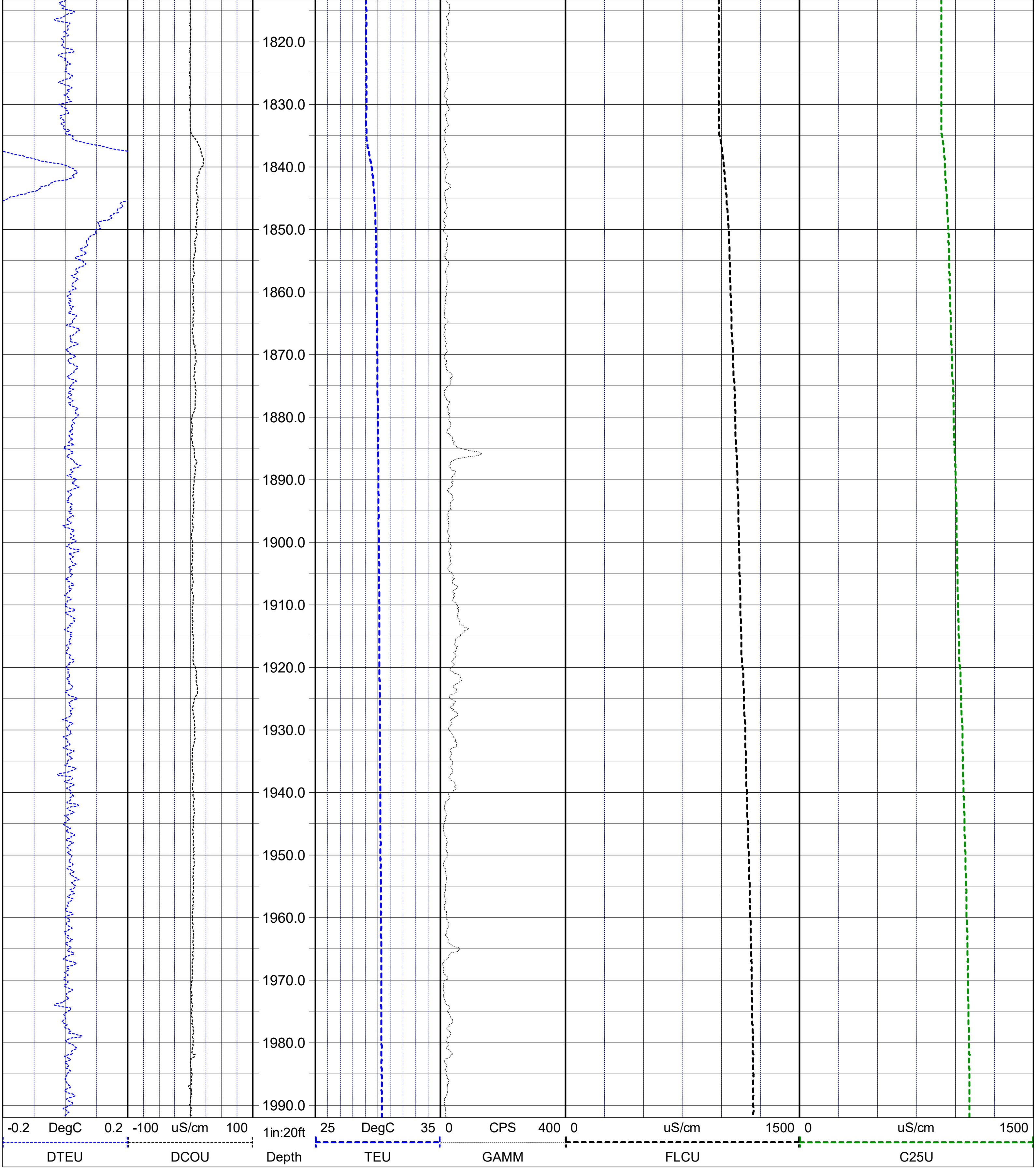

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WELL POF-32
UWI POF-32

PROFESSIONAL LICENSES
Geologist PG2186
Licensed Geology Business

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60 SUMICA
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

HEADER NOTES:
The sonic sonde confirmed the total depth at 1843.3. During the video the borehole became obstructed at 1775 feet, and so no other logs were performed below the obstruction.

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
FLOWMETER
SONIC

PERMANENT DATUM:
LOG MEASURED FROM: GROUND SURFACE
DRILLING MEASURED FROM:

DATE	09 Apr 21	TYPE FLUID IN HOLE	WATER
RUN No	4	LOGGING SPEED (FT/MIN)	15
TYPE LOG	SONIC	TROLLING DIRECTION	UP
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	1840		
DEPTH-LOGGER	1843.3		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

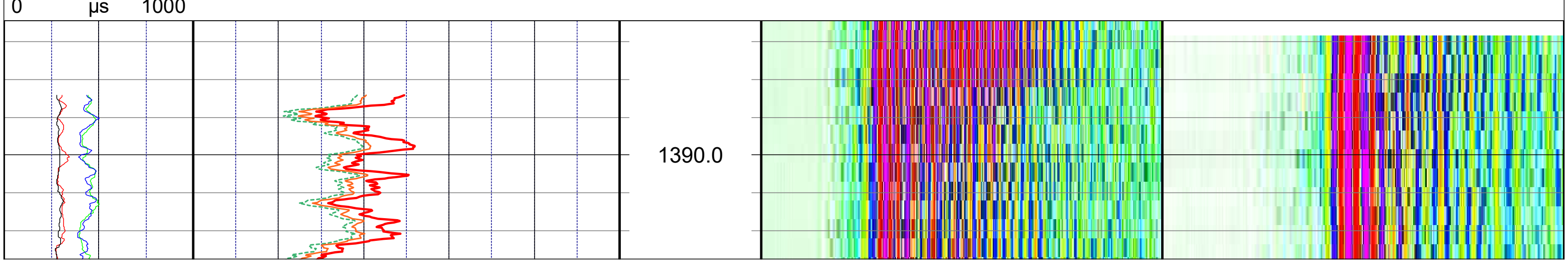
BOREHOLE RECORD			
RUN NO.	BIT	FROM	TO
1	9.875	270	1412
2	5.875	1407	1500
3	4	1500	2000
4	5.875	1407	1843.3

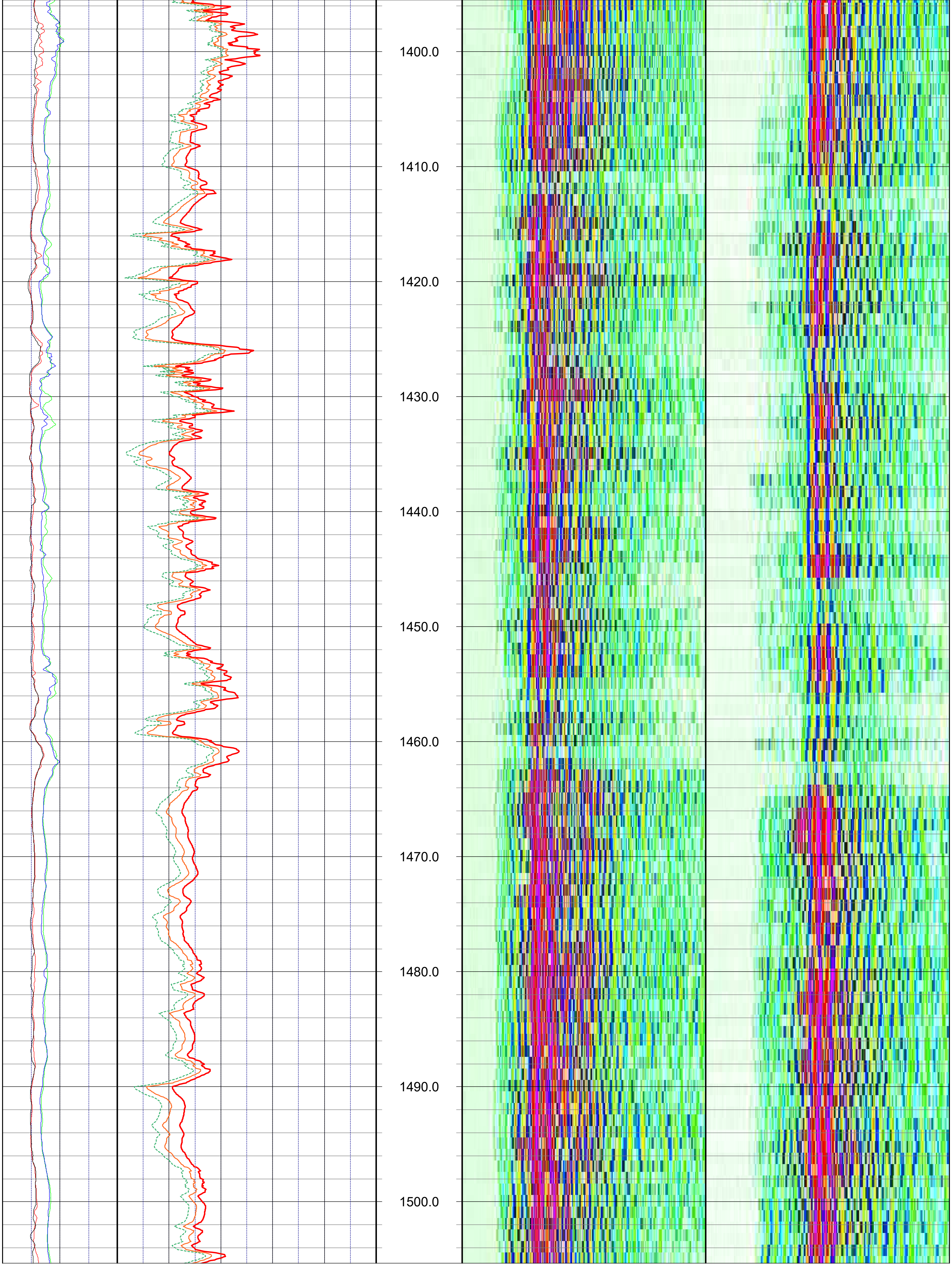
CASING RECORD			
SIZE	MAT.	FROM	TO
10	PVC	0	270
6	STEEL	0	1407

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**

TA	DT	Depth	RX-3	RX-5
0 μs 1000	0 μs/ft 250	1in:10ft	0 1916	0 1916
TB	SPHI - 47.5			
0 μs 1000	0 POR 1			
TC	SPHI - 43.5			
0 μs 1000	0 POR 1			
TD				
0 μs 1000				

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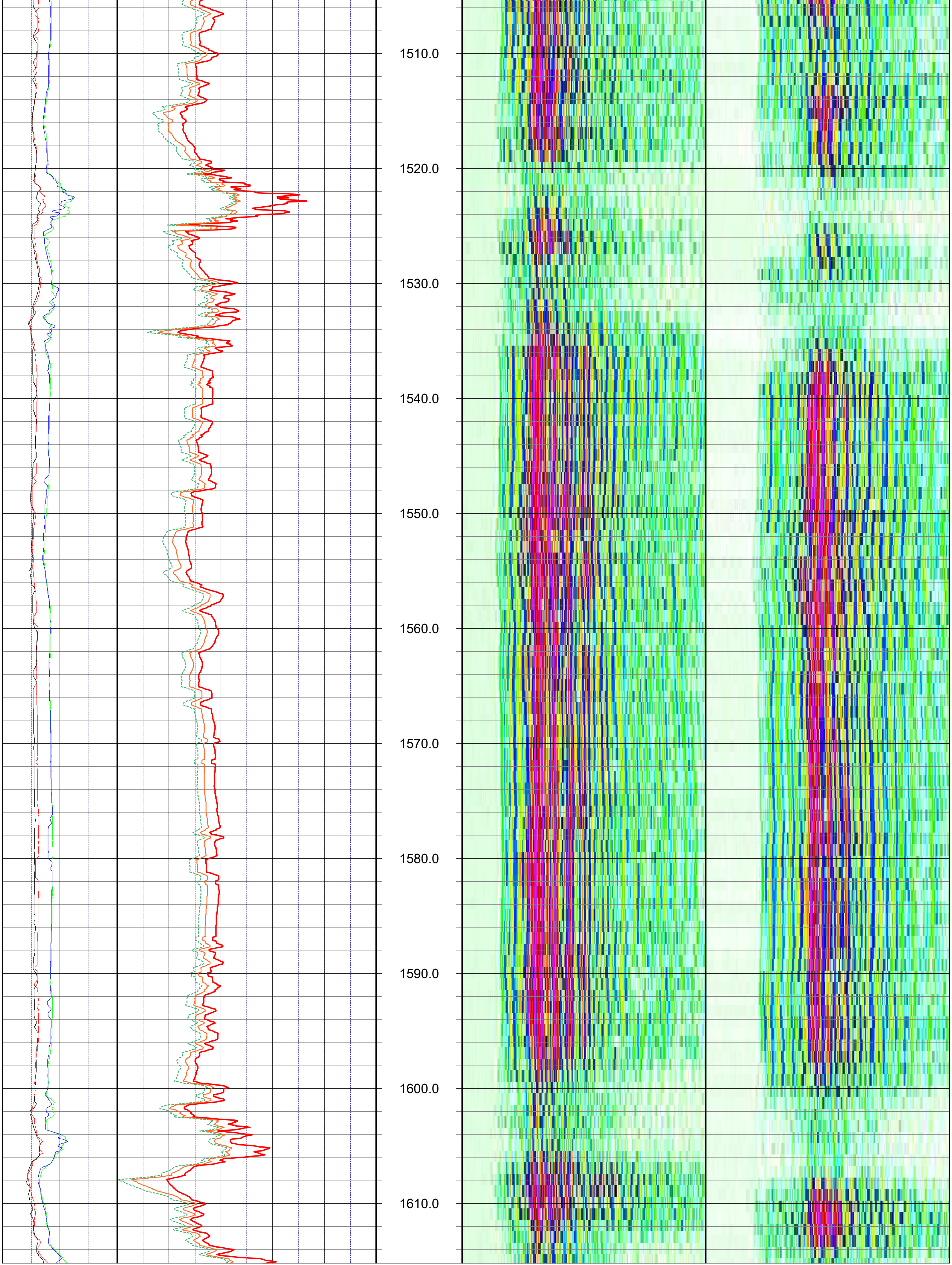
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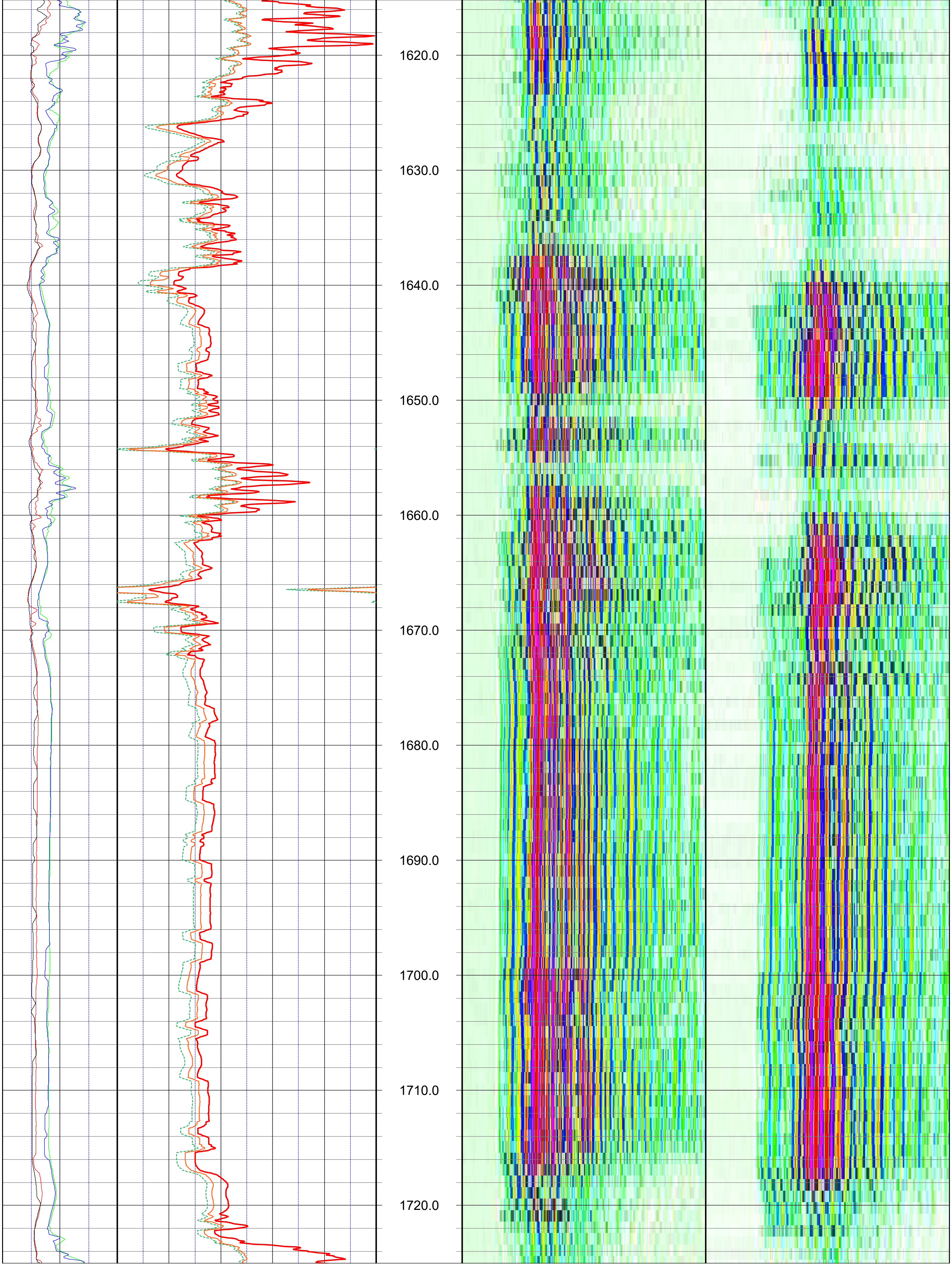
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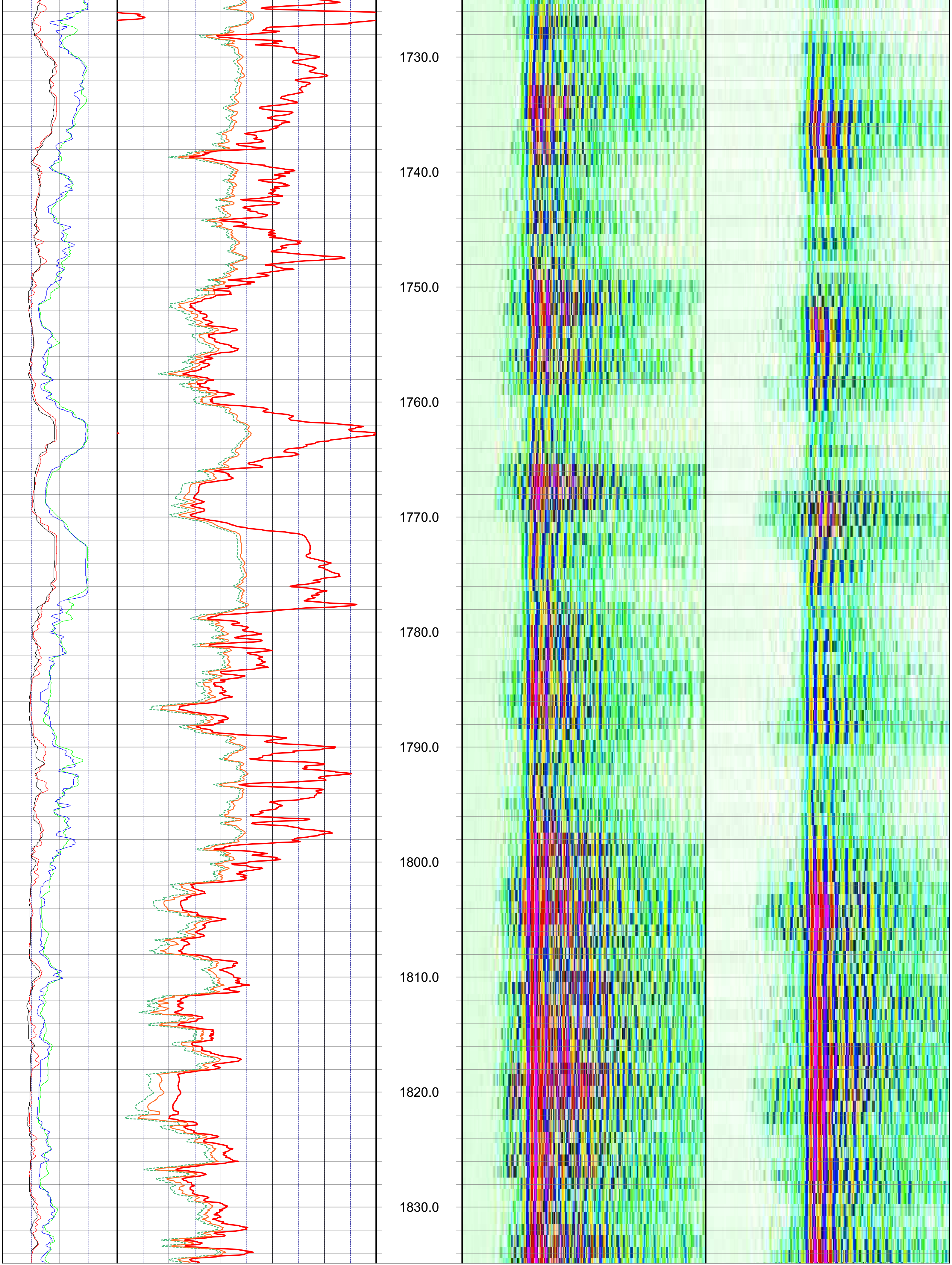
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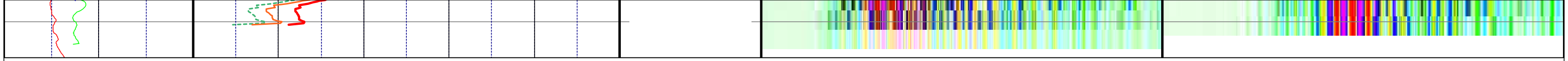

0 µs 1000			
TD			
0 µs 1000	0 POR 1		
TC	SPHI - 43.5		
0 µs 1000	0 POR 1		
TB	SPHI - 47.5		
0 µs 1000	0 µs/ft 250	1in:10ft	0 1916	0 1916
TA	DT	Depth	RX-3	RX-5

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WELL POF-32
UWI POF-32

PROFESSIONAL LICENSES
Geologist PG2186
Licensed Geology Business

HEADER NOTES:
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COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60 SUMICA
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
FLOWMETER
SONIC

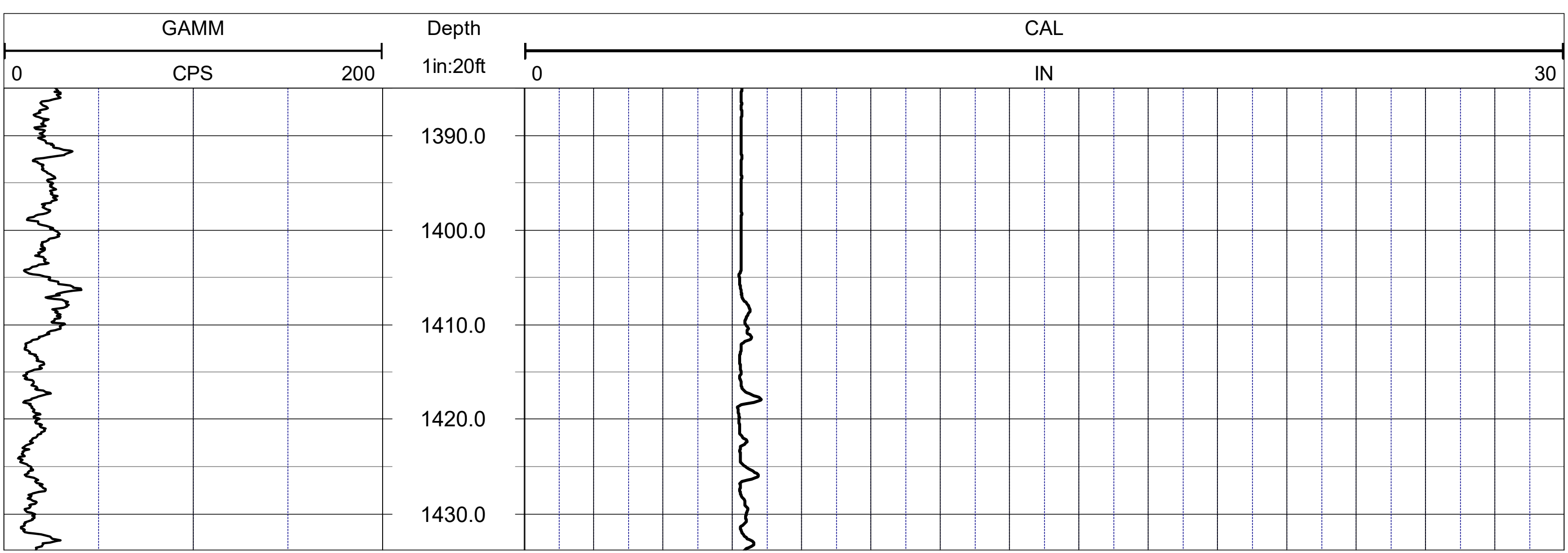
PERMANENT DATUM:
LOG MEASURED FROM: GROUND SURFACE
DRILLING MEASURED FROM:

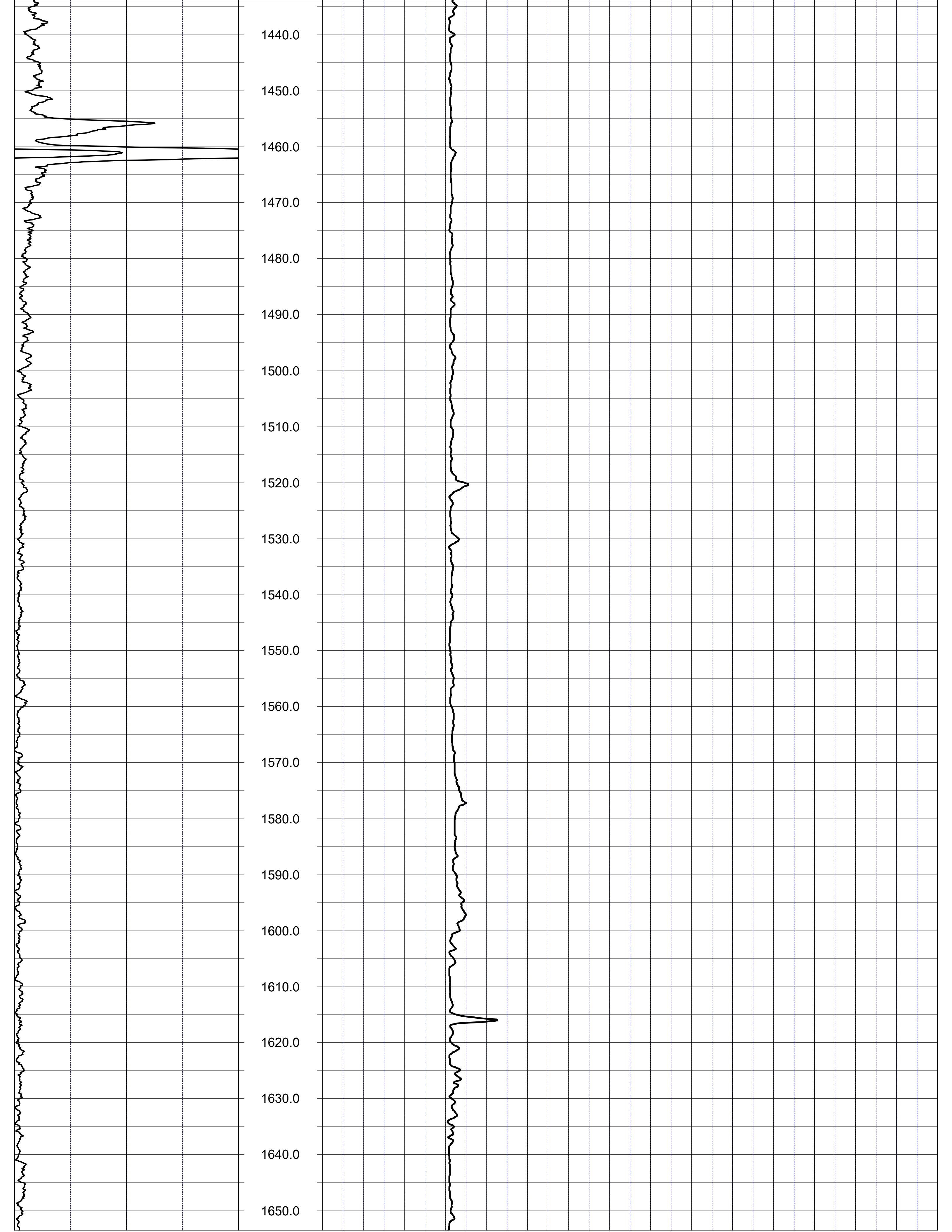
DATE	09 Apr 21	TYPE FLUID IN HOLE	WATER
RUN No	4	LOGGING SPEED (FT/MIN)	35
TYPE LOG	**CALIPER**	TROLLING DIRECTION	UP
DEPTH-DRILLER	1840	PUMPING RATE (GPM)	N/A
DEPTH-LOGGER	1843.3		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

RUN	BOREHOLE RECORD		CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270
2	5.875	1407	1500	6	STEEL	0	1407
3	4	1500	2000				
4	5.875	1407	1843.3				

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**

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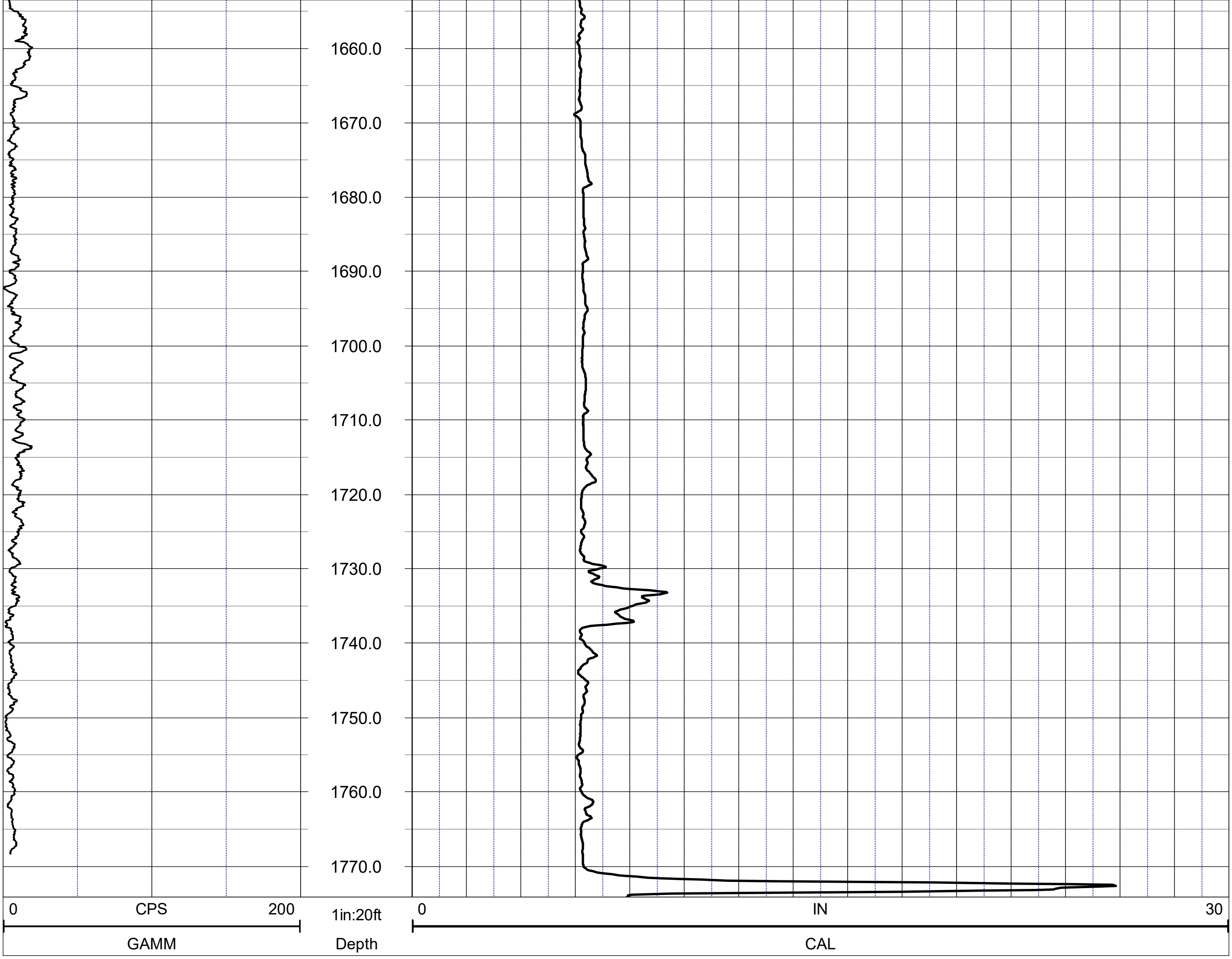

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COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60 SUMICA
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

LATI		X		ALL SERVICES:
LONG		Y		CALIPER
GDAT	WGS84	H DAT		NATURAL GAMMA
SEC		ELEV		ELECTRIC
TWP		V DAT		FLOWMETER
RGE				SONIC

PERMANENT DATUM:

LOG MEASURED FROM: GROUND SURFACE

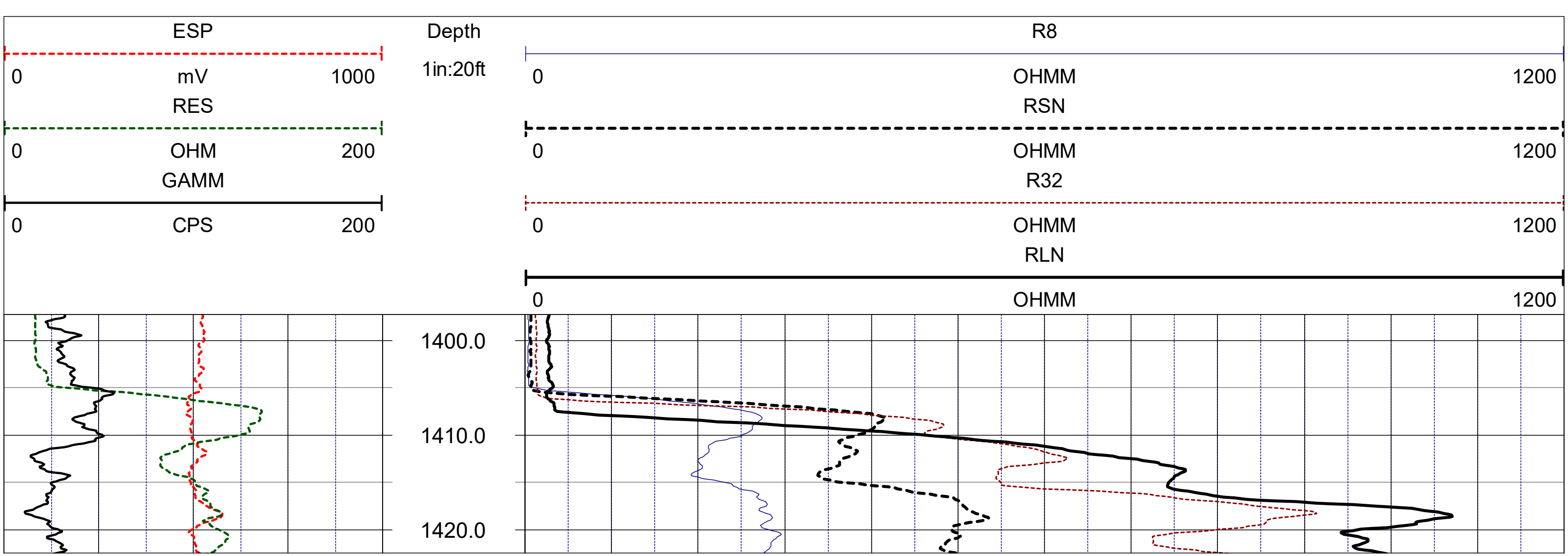
DRILLING MEASURED FROM:

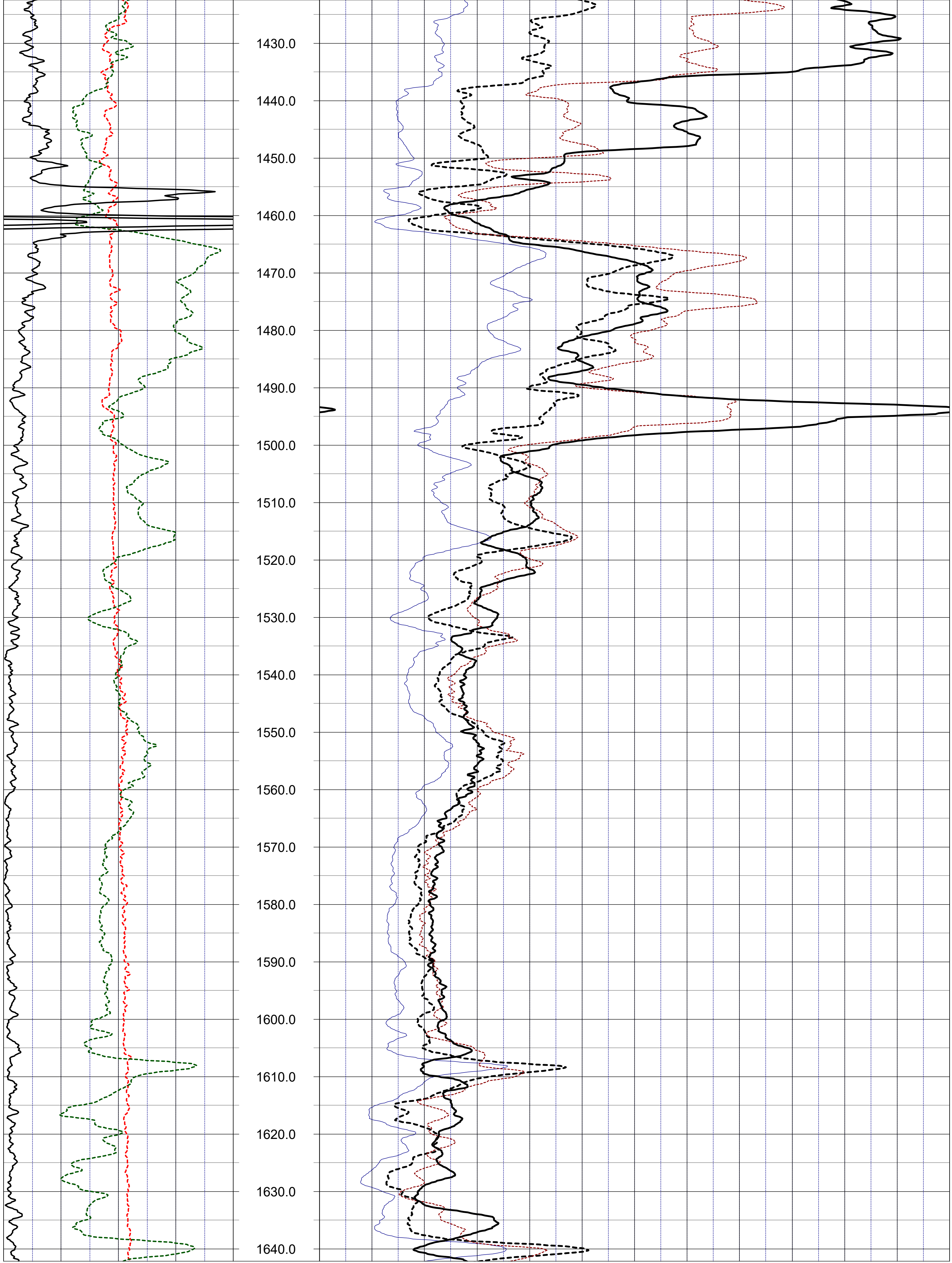
DATE	09 Apr 21	TYPE FLUID IN HOLE	WATER
RUN No	4	LOGGING SPEED (FT/MIN)	35
TYPE LOG	**ELECTRIC**	TROLLING DIRECTION	UP
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	1840		
DEPTH-LOGGER	1843.3		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270
2	5.875	1407	1500	6	STEEL	0	1407
3	4	1500	2000				
4	5.875	1407	1843.3				

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**

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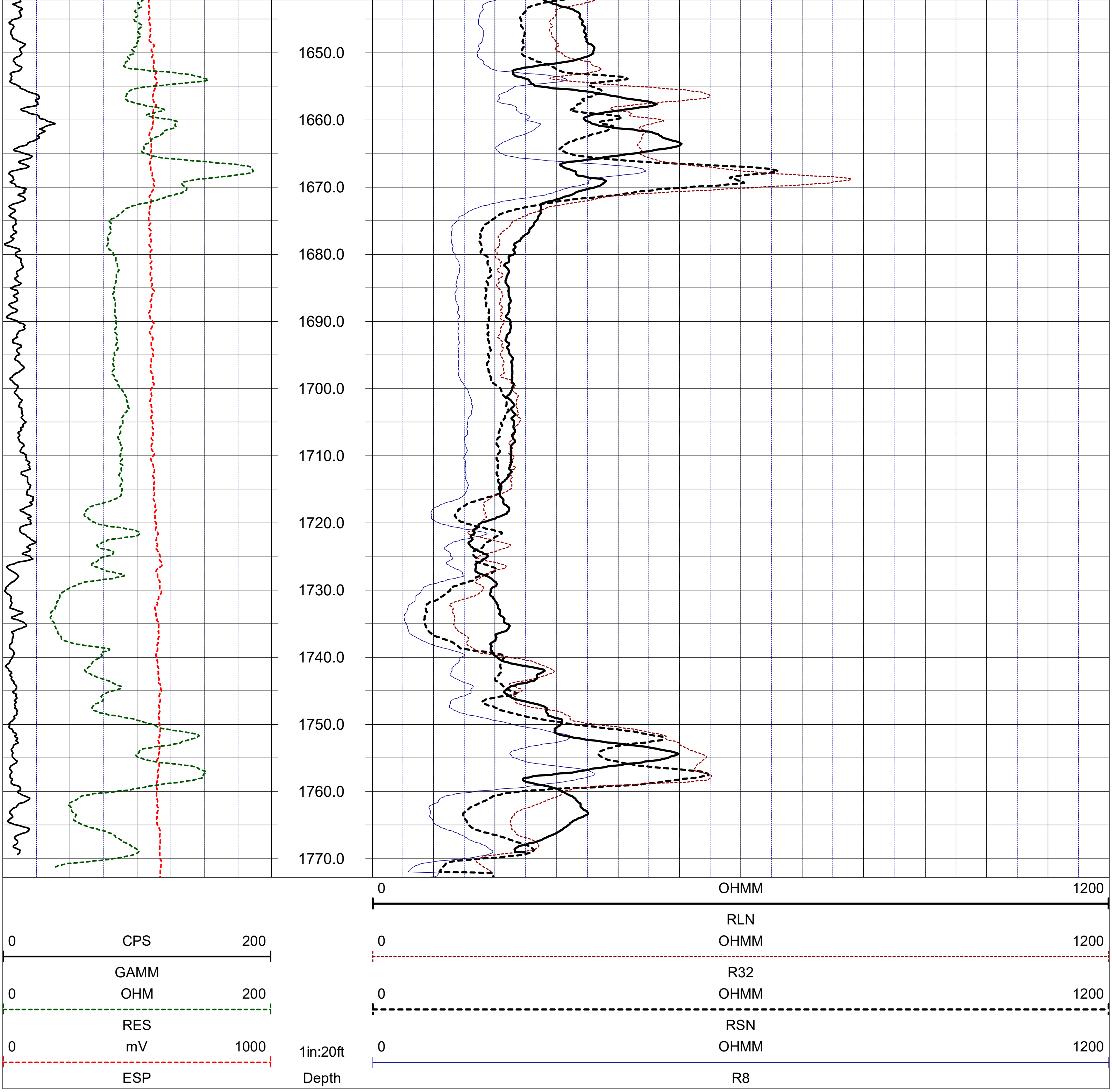

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END OF LOG

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rob@rmbaker.com
www.rmbaker.com

WELL POF-32
UWI POF-32

PROFESSIONAL LICENSES
Geologist PG2186
Licensed Geology Business

COMP	SFWMD
LOC	HESPERIDES ROAD
FLD	SR 60 SUMICA
CNTY	POLK
STAT	FL
PROV	FL
CTRY	USA

HEADER NOTES:
The sonic sonde confirmed the total depth at 1843.3. During the video the borehole became obstructed at 1775 feet, and so no other logs were performed below the obstruction.

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
CALIPER
NATURAL GAMMA
ELECTRIC
FLOWMETER
SONIC

PERMANENT DATUM:
LOG MEASURED FROM: GROUND SURFACE
DRILLING MEASURED FROM:

DATE	09 Apr 21	TYPE FLUID IN HOLE	WATER
RUN No	4	LOGGING SPEED (FT/MIN)	30
TYPE LOG	**FLOWMETER**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	1840		
DEPTH-LOGGER	1843.3		
DRILLER	HUSS DRILLING		
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY	SFWMD	LIC	N/A

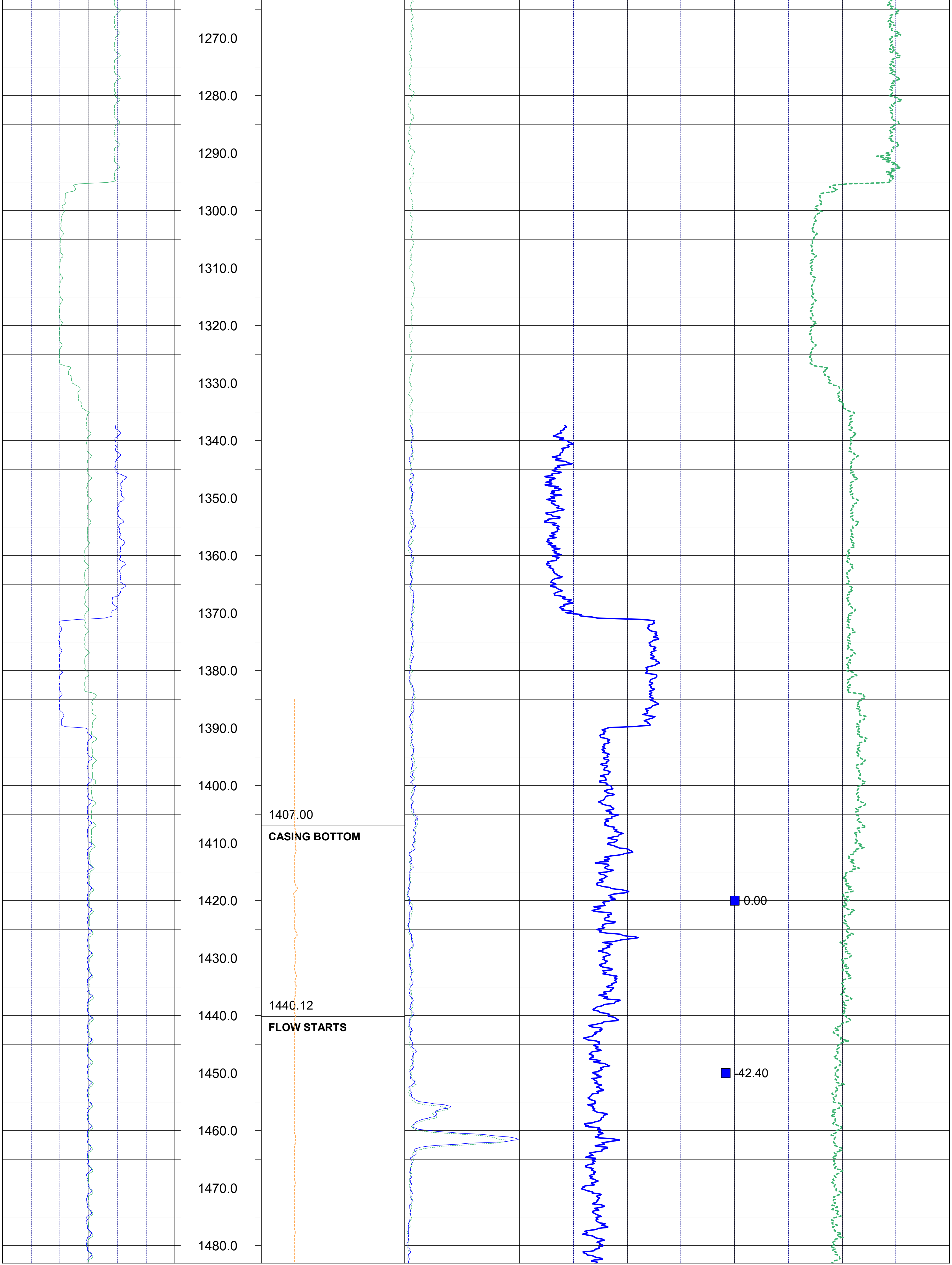
BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	9.875	270	1412	10	PVC	0	270
2	5.875	1407	1500	6	STEEL	0	1407
3	4	1500	2000				
4	5.875	1407	1843.3				

PROJECT NOTES:
-The spinner rate curves deflect to the positive direction with increasing flow from the well.
-The spinner rate curves are not corrected for borehole diameter.
-The well was in a "static" condition; flow encountered was natural and uninduced.

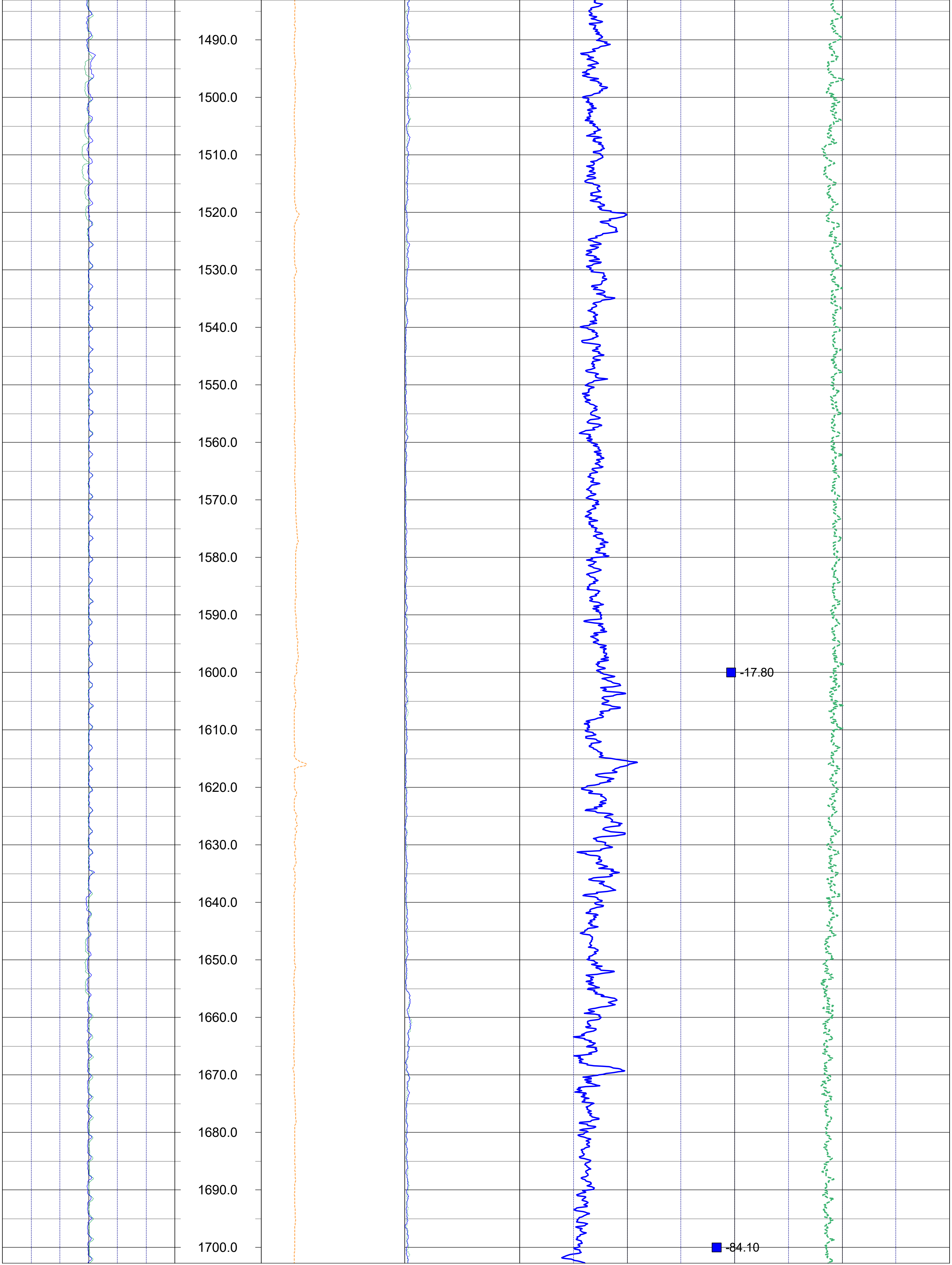
FLOWMETER LOG CODES					
down static spinner rate	**FSD**	down static line speed	**LSSD**	natural gamma (w/annot.)	**GAMM**
up static spinner rate	**UTS**	up static line speed	**LSSU**	caliper	**CAL**
down dynamic spinner rate	**DYND**	down dynamic line speed	**LSDD**	repeat designation	**R**
up dynamic spinner rate	**DYNU**	up dynamic line speed	**LSDU**	percent flow	**PFLO**
static station spinner rate	**FSU**	dynamic station spinner rate	**FSP**	GPM flow	**GPMFLO**

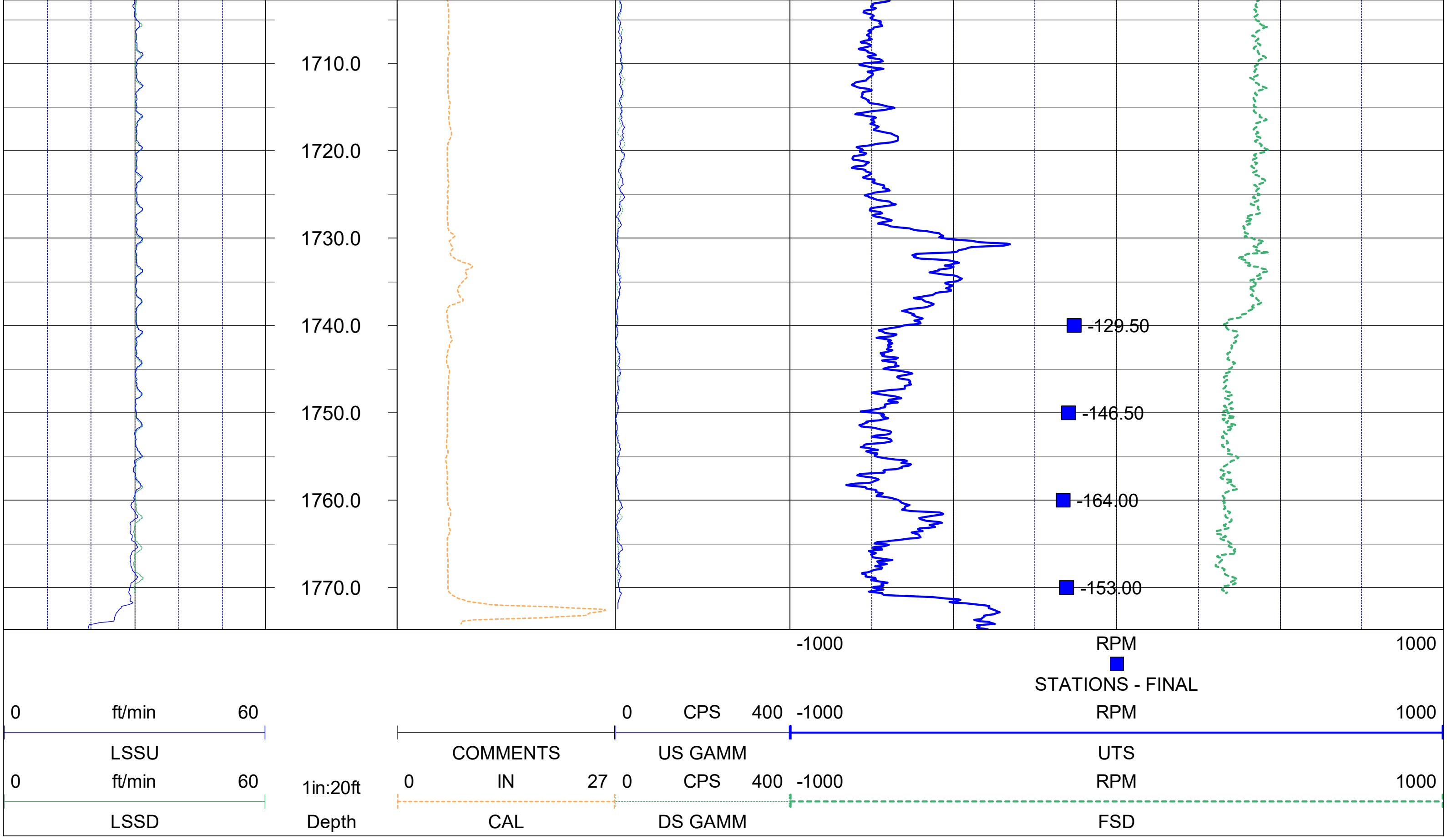
LSSD 0 ft/min 60 LSSU 0 ft/min 60	Depth 1in:20ft	CAL 0 IN 27 COMMENTS	DS GAMM 0 CPS 400 US GAMM 0 CPS 400	FSD -1000 RPM 1000 UTS -1000 RPM 1000 STATIONS - FINAL -1000 RPM 1000

1200.0



1270.0
1280.0
1290.0
1300.0
1310.0
1320.0
1330.0
1340.0
1350.0
1360.0
1370.0
1380.0
1390.0
1400.0
1407.00
CASING BOTTOM
1410.0
1420.0
0.00
1430.0
1440.12
FLOW STARTS
1440.0
1450.0
-42.40
1460.0
1470.0
1480.0


1490.0
1500.0
1510.0
1520.0
1530.0
1540.0
1550.0
1560.0
1570.0
1580.0
1590.0
1600.0
-17.80
1610.0
1620.0
1630.0
1640.0
1650.0
1660.0
1670.0
1680.0
1690.0
1700.0
-84.10



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END OF LOG

APPENDIX E:
OPTICAL BOREHOLE IMAGING LOGS

![USGS science for a changing world]

USGS Caribbean-Florida Water Science Center

WELL	POF-32	PROJECT	SFWMD OBI Logging	DATE OF COMPLETION	October 2020
LOCATION	27-51-23.08 N (GPS, NAD 83)	ELEVATION	GL ?? Feet (Survey, NGVD29)	WELL DEPTH	1,409 Feet TD
	081-22-31.72 W	DATE OF OBI/ABI LOGGING	30 October 2020		

Depth 1ft:3ft

Optical Borehole Image (QL40-OBI-2G)

0° 90° 180° 270° 0°

270

275

280


285
290

295

300

305


310
315
320

325
330
335


340
345
350


355
360
365


370
375
380


385
390
395

400

405

410

415

420


425
430
435


440
445
450

455
460
465

470

475

480


485
490
495


500
505
510


515
520
525


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535
540

545

550

555

560

565


570
575
580


585
590
595

600

605

610

615

620

625

630

635

640

645

650

655


660
665
670

670

675

680


685
690
695

700

705

710


715
720
725


730
735
740

745
750
755

760
765
770


775
780
785


790
795

800

805

810

815

820

825


830
835
840


845
850
855


860
865
870


875
880
885

890
895
900

905
910
915


920
925


930
935
940

945
950
955


960
965
970


975
980
985


990
995
1000


1005
1010
1015


1020
1025
1030


1035
1040
1045


1050
1055


1060
1065
1070


1075
1080
1085


1090
1095
1100


1105
1110
1115

1120

1125

1130

1135
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1145

1150

1155

1160


1165
1170
1175

1180

1185


1190
1195
1200


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1365
1370
1375


1380
1385
1390


1395
1400
1405

USGS Caribbean-Florida Water Science Center

WELL	POF-32	PROJECT	SFWMD OBI Logging	DATE OF COMPLETION	February 2021
LOCATION	27-51-22.97 N (GPS, NAD 83)	ELEVATION	GL ?? Feet (Survey NGVD 29)	WELL DEPTH	1,840 Feet TD
	081-22-31.72 W	DATE OF OBI/ABI LOGGING	16 February 2021		

POF-32(Sumica) OBI Lower Section


1415.0
1420.0
1425.0

1430.0
1435.0
1440.0

1445.0
1450.0
1455.0


1460.0
1465.0
1470.0


1475.0
1480.0
1485.0


1490.0
1495.0
1500.0


1505.0
1510.0


1515.0
1520.0
1525.0


1530.0
1535.0
1540.0


1545.0
1550.0
1555.0


1560.0
1565.0
1570.0


1575.0
1580.0
1585.0


1590.0
1595.0
1600.0


1605.0
1610.0
1615.0


1620.0
1625.0
1630.0

1635.0

1640.0

1645.0

1650.0

1655.0


1660.0
1665.0
1670.0


1675.0
1680.0
1685.0

1690.0

1695.0

1700.0


1705.0
1710.0
1715.0


1720.0
1725.0
1730.0

1735.0
1740.0
1745.0


1750.0
1755.0

1760.0

1765.0

1770.0


1775.0
1780.0
1785.0


1790.0
1795.0
1800.0


1805.0
1810.0
1815.0


1820.0
1825.0

APPENDIX F:
POF-31 AND POF-32 LITHOLOGIC DESCRIPTIONS

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	85.0	90.0	5.0	SANDY CLAY; GRAY (N5)	SANDY CLAY						GRAY : N5			
POF-31	90.0	100.0	10.0	SANDY CLAY, 40% VERY PALE ORANGE SHELL FRAGMENTS; GRAY (N5)	SANDY CLAY						GRAY : N5			
POF-31	100.0	120.0	20.0	VERY PALE ORANGE SHELL FRAGMENTS, 20% DARK GREY CLAY, AND 20% GREENISH-GREY SANDSTONE	SHELL						VERY PALE ORANGE : 10YR 8/2			
POF-31	120.0	125.0	5.0	VERY PALE ORANGE SHELL FRAGMENTS, 10% DARK GREY CLAY, 30% GRAY SANDSTONE	SHELL						VERY PALE ORANGE : 10YR 8/2			
POF-31	125.0	140.0	15.0	VERY PALE ORANGE SHELL FRAGMENTS, 5% DARK GREY CLAY, AND 30% GREY SANDSTONE	SHELL						VERY PALE ORANGE : 10YR 8/2			
POF-31	140.0	145.0	5.0	LIGHT BROWNISH GRAY SHELL FRAGMENTS, 30% GREY SANDSTONE, 3% PHOSPHATE 1% QUARTZ SAND	SHELL						LIGHT BROWNISH GRAY : 5YR 6/1			
POF-31	145.0	155.0	10.0	LIGHT BROWNISH GRAY SHELL FRAGMENTS, 40% GREY SANDSTONE, 3% DARK GREY CLAY, 1% PHOSPHATE, 1% QUARTZ SAND	SHELL						LIGHT BROWNISH GRAY : 5YR 6/1			
POF-31	155.0	160.0	5.0	LIGHT BROWISH GRAY SHELL FRAGMENTS, 20% GRAY PHOSPHATIC DOLOSTONE, 3% DARK GREY CLAY, 2% PHOSPHATE	SHELL						LIGHT BROWNISH GRAY : 5YR 6/1			
POF-31	160.0	175.0	15.0	LIGHT GRAY PHOSPHATIC DOLOSTONE, 10% LIGHT BROWISH GRAY SHELL FRAGMENTS, 7% DARK GREY CLAY, 5% PHOSPHATE	DOLOMITE						LIGHT GRAY : N7			
POF-31	175.0	185.0	10.0	LIGHT GRAY PHOSPHATIC DOLOSTONE, 15% DARK GREY CLAY, 10% LIGHT BROWNISH GRAY SHELL FRAGMENTS, 5% PHOSPHATE GRAINS	DOLOMITE						LIGHT GRAY : N7			
POF-31	185.0	200.0	15.0	LIGHT GRAY PHOSPHATIC DOLOSTONE, 5% GREY CLAY, 20% SHELL FRAGMENTS, 7% PHOSPHATE GRAINS	DOLOMITE						LIGHT GRAY : N7			
POF-31	200.0	205.0	5.0	LIGHT GRAY PHOSPHATIC DOLOSTONE, 30% GREY CLAY, 10% SHELL FRAGMENTS, 5% PHOSPHATE GRAINS	DOLOMITE						LIGHT GRAY : N7			
POF-31	205.0	225.0	20.0	DARK GREY CLAY, 30% LIGHT GRAY PHOSPHATIC DOLOSTONE, 10% SHELL FRAGMENTS, 10% PHOSPHATE GRAINS	CLAY						DARK GRAY : N3			
POF-31	225.0	230.0	5.0	DARK GREY CLAY, 30% LIGHT GRAY DOLOSTONE, 10% SHELL FRAGMENTS, 5% PHOSPHATE GRAINS, 1% SHARKS TEETH FRAGMENTS	CLAY						DARK GRAY : N3			
POF-31	230.0	245.0	15.0	DARK GREY CLAY, 30% LIGHT GRAY DOLOSTONE, 10% SHELL FRAGMENTS, 20% PHOSPHATE GRAINS	CLAY						DARK GRAY : N3			
POF-31	245.0	250.0	5.0	LIGHT GRAY DOLOSTONE, 10% LIGHT GREEN CLAY, 10% SHELL FRAGMENTS, 20% PHOSPHATE GRAINS	DOLOMITE						LIGHT GRAY : N7			
POF-31	250.0	255.0	5.0	LIGHT GRAY DOLOSTONE, 10% LIGHT GREEN CLAY, 30% SHELL FRAGMENTS, 5% PHOSPHATE GRAINS, 1% SHARKS TEETH FRAGMENTS, 10% VERY PALE ORANGE LIMESTONE, FORAMINIFERA	DOLOMITE				LEPIDOCYCLINA	FORAMINIFERA	LIGHT GRAY : N7			
POF-31	255.0	260.0	5.0	LIGHT GRAY DOLOSTONE, 5% LIGHT GREEN CLAY, 30% SHELL FRAGMENTS, 5% PHOSPHATE GRAINS, 10% VERY PALE ORANGE LIMESTONE, FORAMINIFERA	DOLOMITE				LEPIDOCYCLINA	FORAMINIFERA	LIGHT GRAY : N7			
POF-31	260.0	265.0	5.0	LIGHT GRAY DOLOSTONE, 40% SHELL FRAGMENTS, 1% PHOSPHATE, 10% VERY PALE ORANGE LIMESTONE, FORAMINIFERA	DOLOMITE				LEPIDOCYCLINA	FORAMINIFERA	LIGHT GRAY : N7			
POF-31	265.0	270.0	5.0	LIGHT GRAY DOLOSTONE, 10% VERY PALE ORANGE LIMESTONE, 30% SHELL FRAGMENTS, 10% LIGHT GREEN CLAY, FORAMINIFERA, LEPIDOCYCLINA	DOLOMITE				LEPIDOCYCLINA	FORAMINIFERA	LIGHT GRAY : N7			
POF-31	270.0	280.0	10.0	VERY PALE ORANGE SHELL FRAGMENTS, 10% VERY PALE ORANGE LIMESTONE, FORAMINIFERA, LEPIDOCYCLINA	SHELL				LEPIDOCYCLINA	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	280.0	285.0	5.0	VERY PALE ORANGE SHELL FRAGMENTS, 20% VERY PALE ORANGE LIMESTONE, FORAMINIFERA, LEPIDOCYCLINA	SHELL				LEPIDOCYCLINA	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	285.0	290.0	5.0	VERY PALE ORANGE LIMESTONE, 30% SHELL FRAGMENTS, FORAMINIFERA, LEPIDOCYCLINA	LIMESTONE-WACKESTONE				LEPIDOCYCLINA	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	290.0	292.0	2.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; LEPIDOCYCLINA	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR	LEPIDOCYCLINA	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	292.0	302.0	10.0	NO RECOVERY										
POF-31	302.0	304.0	2.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; MILIOLID	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR	MILIOLID	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	304.0	314.0	10.0	NO RECOVERY										
POF-31	314.0	315.3	1.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; LEPIDOCYCLINA	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR	LEPIDOCYCLINA	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	315.3	317.0	1.7	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; POOR INDURATION; LEPIDOCYCLINA	LIMESTONE-PACKSTONE	30	INTERGRANULAR	POOR	LEPIDOCYCLINA	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	317.0	319.6	2.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; LEPIDOCYCLINA	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR	LEPIDOCYCLINA	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	319.6	320.0	0.4	NO RECOVERY										
POF-31	320.0	320.6	0.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; LEPIDOCYCLINA, BIVALVES, GASTROPODS	LIMESTONE-WACKESTONE	30	INTERGRANULAR	POOR	LEPIDOCYCLINA, BIVALVES, GASTROPODS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	320.6	321.2	0.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; LEPIDOCYCLINA, BIVALVES, GASTROPODS	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE	LEPIDOCYCLINA, BIVALVES, GASTROPODS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	321.2	322.4	1.2	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; LEPIDOCYCLINA, BIVALVES, GASTROPODS	LIMESTONE-WACKESTONE	30	INTERGRANULAR	POOR	LEPIDOCYCLINA, BIVALVES, GASTROPODS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	322.4	323.1	0.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; LEPIDOCYCLINA, BIVALVES, GASTROPODS	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE	LEPIDOCYCLINA, BIVALVES, GASTROPODS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	323.1	323.7	0.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; LEPIDOCYCLINA, BIVALVES, GASTROPODS	LIMESTONE-WACKESTONE	30	INTERGRANULAR	POOR	LEPIDOCYCLINA, BIVALVES, GASTROPODS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	323.7	324.0	0.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; GOOD INDURATION; LEPIDOCYCLINA, BIVALVES, GASTROPODS	LIMESTONE-WACKESTONE	20	INTERGRANULAR	GOOD	LEPIDOCYCLINA, BIVALVES, GASTROPODS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	324.0	330.0	6.0	NO RECOVERY										
POF-31	330.0	330.6	0.6	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-MUDSTONE	20	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	330.6	333.3	2.7	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	333.3	334.0	0.7	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR		MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	334.0	334.6	0.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR		MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	334.6	336.5	1.9	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, GASTROPODS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	GASTROPODS	MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	336.5	336.7	0.2	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, GASTROPODS	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR	GASTROPODS	MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	336.7	338.5	1.8	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; BIVALVES, GASTROPODS	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	GASTROPODS	MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	338.5	340.0	1.5	NO RECOVERY			INTERGRANULAR							
POF-31	340.0	340.5	0.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, GASTROPODS	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR	GASTROPODS	MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	340.5	341.1	0.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; BIVALVES, GASTROPODS	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	GASTROPODS	MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	341.1	341.3	0.2	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; BIVALVES, GASTROPODS	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE	GASTROPODS	MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	341.3	343.0	1.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, GASTROPODS	LIMESTONE-WACKESTONE	30	INTERGRANULAR	POOR	GASTROPODS	MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	343.0	344.0	1.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, GASTROPODS, LEPIDOCYCLINA	LIMESTONE-WACKESTONE	30	INTERGRANULAR	POOR	GASTROPODS, LEPIDOCYCLINA	MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	344.0	346.0	2.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGHT INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, GASTROPODS, LEPIDOCYCLINA, PELLETS	LIMESTONE-WACKESTONE	30	INTERGRANULAR	POOR	GASTROPODS, LEPIDOCYCLINA, PELLETS	MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	346.0	348.0	2.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, GASTROPODS, PELLETS	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR	GASTROPODS, PELLETS	MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	348.0	350.0	2.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR, INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, GASTROPODS	LIMESTONE-WACKESTONE	20	INTRAGRANULAR	POOR	GASTROPODS	MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	350.0	354.9	4.9	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES	LIMESTONE-WACKESTONE	20	INTRAGRANULAR	POOR		MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	354.9	356.0	1.1	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; BIVALVES, ECHINOIDS, FORAMINIFERA	LIMESTONE-WACKESTONE	20	INTRAGRANULAR	POOR	ECHINOIDS, FORAMINIFERA	MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	356.0	356.7	0.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS, FORAMINIFERA	LIMESTONE-WACKESTONE	30	INTRAGRANULAR	POOR	ECHINOIDS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	356.7	357.5	0.8	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS, FORAMINIFERA, AND BIVALVES	LIMESTONE-WACKESTONE	20	INTRAGRANULAR	POOR	ECHINOIDS, BIVALVES	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	357.5	358.0	0.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS, FORAMINIFERA	LIMESTONE-WACKESTONE	20	INTRAGRANULAR	POOR	ECHINOIDS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	358.0	360.0	2.0	NO RECOVERY										
POF-31	360.0	361.1	1.1	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION; MOLLUSKS	LIMESTONE-WACKESTONE	10	MOLDIC	POOR		MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	361.1	362.7	1.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION; MOLLUSKS	LIMESTONE-WACKESTONE	20	MOLDIC	POOR		MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	362.7	363.0	0.3	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); MODERATE MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION; MOLLUSKS	LIMESTONE-WACKESTONE	20	MOLDIC	POOR		MOLLUSKS	GRAYISH ORANGE : 10YR 7/4			
POF-31	363.0	367.6	4.6	LIMESTONE (PACKSTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR, MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION; MOLLUSKS	LIMESTONE-PACKSTONE	30	INTRAGRANULAR	POOR	FORAMINIFERA, ECHINOIDS	MOLLUSKS	GRAYISH ORANGE : 10YR 7/4			
POF-31	367.6	368.0	0.4	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION; MOLLUSKS	LIMESTONE-PACKSTONE	20	MOLDIC	POOR		MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	368.0	368.5	0.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-WACKESTONE	20	MOLDIC	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	368.5	369.0	0.5	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	369.0	370.0	1.0	NO RECOVERY	NO SAMPLE									
POF-31	370.0	372.0	2.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	20	MOLDIC	POOR	FORAMINIFERA	MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	372.0	373.6	1.6	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); POOR MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	10	MOLDIC	POOR	FORAMINIFERA	MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	373.6	378.0	4.4	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION; LAMINATIONS	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2			
POF-31	378.0	380.0	2.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	380.0	381.1	1.1	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; LAMINATIONS, FORAMINIFERA, GASTROPODS, BIVALVES	LIMESTONE-MUDSTONE	20	INTERGRANULAR	POOR	GASTROPODS, BIVALVES, LAMINATIONS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	381.1	386.2	5.1	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, GASTROPODS, BIVALVES	LIMESTONE-MUDSTONE	20	INTERGRANULAR	POOR	GASTROPODS, BIVALVES	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	386.2	389.0	2.8	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	389.0	390.0	1.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, GASTROPODS, BIVALVES	LIMESTONE-MUDSTONE	20	INTERGRANULAR	POOR	GASTROPODS, BIVALVES	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	390.0	391.5	1.5	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION, LAMINATIONS	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2			
POF-31	391.5	394.3	2.8	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR, MOLDIC, AND INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, GASTROPODS, BIVALVES	LIMESTONE-WACKESTONE	30	INTERGRANULAR	POOR	GASTROPODS, BIVALVES	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	394.3	400.0	5.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION; GASTROPODS, BIVALVES	LIMESTONE-WACKESTONE	30	INTERGRANULAR	POOR	GASTROPODS, BIVALVES	MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	400.0	401.3	1.3	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); POOR INTERGRANULAR AND VUGGY POROSITY; POOR INDURATION; ECHINOIDS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR		ECHINOIDS	YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	401.3	403.7	2.4	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	403.7	404.4	0.7	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	404.4	405.1	0.7	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	405.1	406.9	1.8	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS, SOME LAMINATIONS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	SOME LAMINATIONS	ECHINOIDS	YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	406.9	407.3	0.4	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	407.3	408.2	0.9	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR POROSITY; MODERATE INDURATION; ECHINOIDS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE		ECHINOIDS	YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	408.2	408.7	0.5	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION; ECHINOIDS	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	POOR		ECHINOIDS	YELLOWISH GRAY (2) : 5Y 8/1			

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	408.7	410.0	1.3	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR		ECHINOIDS	YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	410.0	410.9	0.9	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR AND VUGGY POROSITY; POOR INDURATION; FRACTURED	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR	FRACTURED		YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	410.9	413.3	2.4	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR AND VUGGY POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	413.3	413.9	0.6	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR AND VUGGY POROSITY; POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	413.9	415.2	1.3	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); MODERATE INTERGRANULAR, MOLDIC, AND VUGGY POROSITY; POOR INDURATION; ECHINOIDS; TURITELLA MOLDS	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR	TURITELLA MOLDS	ECHINOIDS	YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	415.2	416.0	0.8	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR AND VUGGY POROSITY; POOR INDURATION; ECHINOIDS	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR		ECHINOIDS	YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	416.0	417.0	1.0	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR AND VUGGY POROSITY; POOR INDURATION; ECHINOIDS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR		ECHINOIDS	YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	417.0	419.5	2.5	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR AND VUGGY POROSITY; POOR INDURATION; ECHINOIDS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR		ECHINOIDS	YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	419.5	420.0	0.5	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	420.0	422.9	2.9	LIMESTONE (WACKESTONE); PALE BROWN (5YR 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR		ECHINOIDS	PALE BROWN : 5YR 5/2			
POF-31	422.9	423.9	1.0	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION, ECHINOIDS	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR		ECHINOIDS	YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	423.9	424.3	0.4	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION; ECHINOIDS	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	POOR		ECHINOIDS	YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	424.3	426.5	2.2	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; SOME FRACTURES, ECHINOIDS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	SOME FRACTURES	ECHINOIDS	YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	426.5	427.3	0.8	LIMESTONE (WACKESTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION; ECHINOIDS	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	POOR		ECHINOIDS	YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	427.3	427.9	0.6	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	427.9	428.5	0.6	LIMESTONE (PACKSTONE); YELLOWISH GREY (5Y 8/1); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; SOME LAMINATIONS	LIMESTONE-PACKSTONE	20	INTERGRANULAR	MODERATE	LAMINATIONS		YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	428.5	429.0	0.5	LIMESTONE (MUDSTONE); YELLOWISH GREY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION; LAMINATIONS	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR	LAMINATIONS		YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	429.0	429.6	0.6	CLAY; LIGHT GREENISH GRAY (5GY 8/1); NO OBSERVABLE POROSITY; POOR INDURATION; LAMINATIONS	CLAY	0	NO OBSERVABLE	POOR	LAMINATIONS		LIGHT GREENISH GRAY : 5GY 8/1			
POF-31	429.6	430.0	0.4	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); MODERATE INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	430.0	431.0	1.0	LIMESTONE (PACKSTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR		FORAMINIFERA	PALE BROWN : 5YR 5/2			
POF-31	431.0	432.7	1.7	LIMESTONE (WACKESTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; SOME LAMINATIONS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	LAMINATIONS		PALE BROWN : 5YR 5/2			
POF-31	432.7	434.0	1.3	LIMESTONE (PACKSTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR		FORAMINIFERA	PALE BROWN : 5YR 5/2			
POF-31	434.0	440.0	6.0	NO RECOVERY										
POF-31	440.0	441.1	1.1	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, ECHINOIDS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	ECHINOIDS	FORAMINIFERA	YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	441.1	441.8	0.7	LIMESTONE (WACKESTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR		FORAMINIFERA	PALE BROWN : 5YR 5/2			
POF-31	441.8	442.8	1.0	LIMESTONE (PACKSTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR		FORAMINIFERA	PALE BROWN : 5YR 5/2			
POF-31	442.8	444.2	1.4	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	444.2	445.8	1.6	LIMESTONE (PACKSTONE); PALE BROWN (5Y 5/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS, ORGANICS	LIMESTONE-PACKSTONE	20	INTERGRANULAR	MODERATE	ECHINOIDS, ORGANICS	FORAMINIFERA	PALE BROWN : 5YR 5/2			
POF-31	445.8	446.5	0.7	LIMESTONE (WACKESTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR		FORAMINIFERA	PALE BROWN : 5YR 5/2			
POF-31	446.5	447.7	1.2	LIMESTONE (PACKSTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR		FORAMINIFERA	PALE BROWN : 5YR 5/2			
POF-31	447.7	448.0	0.3	LIMESTONE (MUDSTONE); WHITE (N9); NO OBSERVABLE POROSITY; MODERATE INDURATION	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	MODERATE			WHITE : N9			
POF-31	448.0	448.3	0.3	LIMESTONE (PACKSTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR		FORAMINIFERA	PALE BROWN : 5YR 5/2			
POF-31	448.3	449.0	0.7	LIMESTONE (MUDSTONE); WHITE (N9); NO OBSERVABLE POROSITY; POOR INDURATION; FRACTURED	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR	FRACTURES		WHITE : N9			
POF-31	449.0	450.0	1.0	NO RECOVERY										
POF-31	450.0	450.5	0.5	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	450.5	451.3	0.8	LIMESTONE (MUDSTONE); YELLOWISH GRAY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	451.3	451.9	0.6	LIMESTONE (PACKSTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE			PALE BROWN : 5YR 5/2			
POF-31	451.9	452.8	0.9	LIMESTONE (PACKSTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR POROSITY; LOW INDURATION; ECHINOIDS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR		ECHINOIDS	PALE BROWN : 5YR 5/2			
POF-31	452.8	454.2	1.4	LIMESTONE (WACKESTONE); PALE BROWN (5Y 5/2); LOW INTERGRANULAR AND MOLDIC POROSITY; LOW INDURATION; ECHINOIDS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR		ECHINOIDS	PALE BROWN : 5YR 5/2			
POF-31	454.2	454.9	0.7	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; LAMINATIONS	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	454.9	455.8	0.9	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR		FORAMINIFERA	YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	455.8	456.5	0.7	LIMESTONE (PACKSTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; LAMINATIONS, SOME FRACTURES, FORAMINIFERA	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR	LAMINATIONS, FRACTURES	FORAMINIFERA	YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	456.5	457.4	0.9	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; FRACTURES	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	FRACTURES		YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	457.4	457.7	0.3	CLAY; WHITE (N9); NO OBSERVABLE POROSITY; POOR INDURATION;	CLAY	0	NO OBSERVABLE	POOR			WHITE : N9			

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	457.7	460.0	2.3	NO RECOVERY										
POF-31	460.0	461.6	1.6	LIMESTONE (MUDSTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR	ECHINOIDS		YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	461.6	463.7	2.1	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS, SOME LAMINATIONS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	ECHINOIDS, LAMINATIONS		YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	463.7	464.2	0.5	LIMESTONE (MUDSTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	464.2	467.0	2.8	CLAY; WHITE (N9); NO OBSERVABLE POROSITY; POOR INDURATION;	CLAY	0	NO OBSERVABLE	POOR			WHITE : N9			
POF-31	467.0	470.0	3.0	NO RECOVERY										
POF-31	470.0	471.2	1.2	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	471.2	471.9	0.7	LIMESTONE (PACKSTONE); PALE BROWN (5YR 5/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-PACKSTONE	20	INTERGRANULAR	POOR			PALE BROWN : 5YR 5/2			
POF-31	471.9	475.5	3.6	LIMESTONE (MUDSTONE); PALE BROWN (5YR 5/2); NO OBSERVABLE POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR			PALE BROWN : 5YR 5/2			
POF-31	475.5	476.0	0.5	LIMESTONE (WACKESTONE); PALE BROWN (5YR 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR			PALE BROWN : 5YR 5/2			
POF-31	476.0	477.9	1.9	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	477.9	478.6	0.7	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	478.6	479.4	0.8	LIMESTONE (MUDSTONE); YELLOWISH GRAY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	479.4	480.0	0.6	NO RECOVERY										
POF-31	480.0	481.5	1.5	LIMESTONE (WACKESTONE); PALE BROWN (5YR 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	ORGANICS		PALE BROWN : 5YR 5/2			
POF-31	481.5	485.8	4.3	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; ORGANICS, LAMINATIONS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	ORGANICS, LAMINATIONS		YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	485.8	487.0	1.2	CLAY; YELLOWISH GRAY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION;	CLAY	0	NO OBSERVABLE	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	487.0	490.0	3.0	NO RECOVERY										
POF-31	490.0	491.0	1.0	CLAY; YELLOWISH GRAY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION;	CLAY	0	NO OBSERVABLE	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	491.0	492.4	1.4	LIMESTONE (MUDSTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	492.4	493.0	0.6	LIMESTONE (WACKESTONE); PALE BROWN (5YR 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR			PALE BROWN : 5YR 5/2			
POF-31	493.0	493.7	0.7	CARBONATE GRAVELLY SAND; YELLOWISH GRAY (5Y 8/1); HIGH INTERGRANULAR POROSITY; UNCONSOLIDATED	GRAVELLY SANDS	30	INTERGRANULAR	CONSOLIDAT	CARBONATE SAND AND GRAVEL		YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	493.7	496.5	2.8	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	496.5	500.0	3.5	NO RECOVERY										
POF-31	500.0	501.9	1.9	LIMESTONE (WACKESTONE); PALE BROWN (5YR 5/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; SOME LAMINATIONS	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR	LAMINATIONS		PALE BROWN : 5YR 5/2			
POF-31	501.9	503.6	1.7	LIMESTONE (MUDSTONE); YELLOWISH GRAY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION; FRACTURES	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR	FRACTURES		YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	503.6	505.0	1.4	LIMESTONE (WACKESTONE); PALE BROWN (5YR 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; SOME LAMINATIONS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	LAMINATIONS		PALE BROWN : 5YR 5/2			
POF-31	505.0	505.9	0.9	LIMESTONE (MUDSTONE); PALE BROWN (5YR 5/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FRACTURED	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR	FRACTURES		PALE BROWN : 5YR 5/2			
POF-31	505.9	506.8	0.9	LIMESTONE (WACKESTONE); WHITE (N9); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR		FORAMINIFERA	WHITE : N9			
POF-31	506.8	510.0	3.2	NO RECOVERY										
POF-31	510.0	511.0	1.0	LIMESTONE (WACKESTONE); PALE BROWN (5YR 5/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; LAMINATIONS, CROSS BEDDING	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR	LAMINATIONS, CROSS BEDDING		PALE BROWN : 5YR 5/2			
POF-31	511.0	512.3	1.3	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; LAMINATIONS, FORAMINIFERA	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR	LAMINATIONS	FORAMINIFERA	YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	512.3	515.2	2.9	LIMESTONE (MUDSTONE); WHITE (N9); NO OBSERVABLE POROSITY; POOR INDURATION; FRACTURED	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR	FRACTURES		WHITE : N9			
POF-31	515.2	516.5	1.3	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MODERATE MOLDIC AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	20	MOLDIC	GOOD			GRAYISH ORANGE : 10YR 7/4			
POF-31	516.5	519.2	2.7	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); HIGH MOLDIC AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	30	MOLDIC	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	519.2	520.0	0.8	NO RECOVERY										
POF-31	520.0	524.1	4.1	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS, SOME FRACTURES, THIN CLAY LAMINATIONS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	LAMINATIONS, FRACTURES	ECHINOIDS	YELLOWISH GRAY (2) : 5Y 8/1	CLAY	5	
POF-31	524.1	525.5	1.4	LIMESTONE (WACKESTONE); YELLOWISH GRAY (5Y 8/1); LOW INTERGRANULAR POROSITY; POOR INDURATION; FRACTURED, CLAYEY	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	LAMINATIONS, FRACTURES	ECHINOIDS	YELLOWISH GRAY (2) : 5Y 8/1	CLAY	10	
POF-31	525.5	526.5	1.0	CLAY; YELLOWISH GRAY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION;	CLAY	0	NO OBSERVABLE	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-31	526.5	530.0	3.5	NO RECOVERY										
POF-31	530.0	532.0	2.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE MOLDIC AND INTERGRANULAR POROSITY; MODERATE INDURATION; GASTROPODS, FORAMINIFERA	LIMESTONE-WACKESTONE	20	MOLDIC	MODERATE	GASTROPODS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	532.0	534.0	2.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	534.0	535.1	1.1	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE MOLDIC AND INTERGRANULAR POROSITY; MODERATE INDURATION; ORGANICS	LIMESTONE-WACKESTONE	20	MOLDIC	MODERATE	ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	535.1	535.7	0.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	535.7	539.0	3.3	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	539.0	540.0	1.0	NO RECOVERY										
POF-31	540.0	541.6	1.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	541.6	542.3	0.7	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR			VERY PALE ORANGE : 10YR 8/2			

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	542.3	543.6	1.3	LIMESTONE (MUDSTONE); YELLOWISH GRAY (5Y 8/1); NO OBSERVABLE POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR			YELLOWISH GRAY : 5Y 7/2			
POF-31	543.6	545.0	1.4	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; ECHINOIDS, FORAMINIFERA	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	FORAMINIFERA	ECHINOIDS	VERY PALE ORANGE : 10YR 8/2			
POF-31	545.0	546.0	1.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	546.0	547.7	1.7	CLAY; VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION;	CLAY	0	NO OBSERVABLE	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	547.7	550.0	2.3	NO RECOVERY										
POF-31	550.0	550.7	0.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	550.7	551.6	0.9	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	551.6	553.2	1.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; ECHINOIDS	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE		ECHINOIDS	VERY PALE ORANGE : 10YR 8/2			
POF-31	553.2	554.0	0.8	CLAY; VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION;	CLAY	0	NO OBSERVABLE	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	554.0	556.0	2.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR		ECHINOIDS	VERY PALE ORANGE : 10YR 8/2			
POF-31	556.0	557.0	1.0	LIMESTONE (MUDSTONE); WHITE (N9); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR		ECHINOIDS	WHITE : N9			
POF-31	557.0	558.0	1.0	LIMESTONE (MUDSTONE); WHITE (N9); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS, CLAYEY	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR		ECHINOIDS	WHITE : N9	CLAY	40	
POF-31	558.0	560.0	2.0	LIMESTONE (WACKESTONE); WHITE (N9); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION; ECHINOIDS, GASTROPODS	LIMESTONE-MUDSTONE	30	INTERGRANULAR	MODERATE	GASTROPODS	ECHINOIDS	WHITE : N9			
POF-31	560.0	561.6	1.6	LIMESTONE(WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR		ECHINOIDS	VERY PALE ORANGE : 10YR 8/2			
POF-31	561.6	562.0	0.4	LIMESTONE(MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR		ECHINOIDS	VERY PALE ORANGE : 10YR 8/2			
POF-31	562.0	569.2	7.2	LIMESTONE(WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR		ECHINOIDS	VERY PALE ORANGE : 10YR 8/2			
POF-31	569.2	570.0	0.8	NO RECOVERY										
POF-31	570.0	571.0	1.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR		ECHINOIDS	VERY PALE ORANGE : 10YR 8/2			
POF-31	571.0	571.9	0.9	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION; LAMINATIONS	LIMESTONE-MUDSTONE	10	NO OBSERVABLE	POOR	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2			
POF-31	571.9	577.2	5.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW MOLDIC AND INTERGRANULAR POROSITY; POOR INDURATION; FRACTURED	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	577.2	577.6	0.4	CLAY; VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION;	CLAY	0	NO OBSERVABLE	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	577.6	578.5	0.9	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FRACTURED	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	578.5	580.3	1.8	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR	FALLOTELLA	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	580.3	581.1	0.8	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION; ORGANICS, FORAMINIFERA	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	POOR	ORGANICS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	581.1	582.3	1.2	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, ORGANICS, FRACTURED	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR	ORGANICS, FRACTURED	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	582.3	582.8	0.5	CLAY; PALE YELLOWISH BROWN (10YR 6/2); NO OBSERVABLE POROSITY; POOR INDURATION; ORGANICS	CLAY	0	NO OBSERVABLE	POOR	ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	582.8	584.0	1.2	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FRACTURED	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	584.0	585.0	1.0	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA, ORGANICS, FRACTURED	LIMESTONE-PACKSTONE	20	INTERGRANULAR	POOR	FALLOTELLA, ORGANICS, FRACTURED	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	585.0	586.1	1.1	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA, FRACTURED	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR	FALLOTELLA, FRACTURED	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	586.1	587.3	1.2	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FRACTURED	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	587.3	590.0	2.7	NO RECOVERY										
POF-31	590.0	591.3	1.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; ECHINOIDS, FORAMINIFERA, FALLOTELLA	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	FORAMINIFERA, FALLOTELLA	ECHINOIDS	VERY PALE ORANGE : 10YR 8/2			
POF-31	591.3	591.6	0.3	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA, FRACTURED	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR	FALLOTELLA, FRACTURED	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	591.6	592.6	1.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	FALLOTELLA	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	592.6	593.0	0.4	LIMESTONE (PACKSTONE); GRAYISH ORANGE (10YR 7/4); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR	FALLOTELLA	FORAMINIFERA	GRAYISH ORANGE : 10YR 7/4			
POF-31	593.0	594.4	1.4	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA, FRACTURED	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	FALLOTELLA, FRACTURED	FORAMINIFERA	GRAYISH ORANGE : 10YR 7/4			
POF-31	594.4	595.9	1.5	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, ECHINOIDS, FRACTURED	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR	ECHINOIDS, FRACTURED	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	595.9	596.2	0.3	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION; FRACTURED, CLAYEY	LIMESTONE-PACKSTONE	0	NO OBSERVABLE	POOR	ECHINOIDS, FRACTURED	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-31	596.2	596.8	0.6	CLAY; VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION	CLAY	0	NO OBSERVABLE	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	596.8	598.1	1.3	LIMESTONE (PACKSTONE); GRAYISH ORANGE (10YR 7/4); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR		FORAMINIFERA	GRAYISH ORANGE : 10YR 7/4			
POF-31	598.1	599.2	1.1	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION; LAMINATIONS	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2			
POF-31	599.2	599.5	0.3	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR		FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	599.5	600.0	0.5	NO RECOVERY										
POF-31	600.0	601.1	1.1	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; LAMINATIONS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2			
POF-31	601.1	601.5	0.4	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION; LAMINATIONS	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	POOR	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2			
POF-31	601.5	603.0	1.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; LAMINATIONS, FORAMINIFERA	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	LAMINATIONS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	603.0	604.1	1.1	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION; LAMINATIONS	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	POOR	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2			
POF-31	604.1	605.4	1.3	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR		FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	605.4	606.2	0.8	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, ECHINOIDS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	ECHINOIDS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	606.2	607.4	1.2	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA, ECHINOIDS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR	FALLOTELLA, ECHINOIDS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	607.4	609.5	2.1	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FORAMINIFERA, FALLOTELLA, ECHINOIDS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	FALLOTELLA, ECHINOIDS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	609.5	610.0	0.5	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE VUGGY POROSITY; MODERATE INDURATION; LAMINATIONS	DOLOMITE	20	MOLDIC	MODERATE	LAMINATIONS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	610.0	611.3	1.3	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; MODERATE MOLDIC AND PINPOINT POROSITY; GOOD INDURATION; BIVALVES, ECHINOIDS	DOLOMITE	20	MOLDIC	MODERATE	BIVALVES	ECHINOIDS	PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	611.3	612.5	1.2	LIMESTONE (MUDSTONE); WHITE (N9); NO OBSERVABLE POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR			WHITE : N9			
POF-31	612.5	617.2	4.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS, FALLOTELLA	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE	ECHINOIDS, FALLOTELLA	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	617.2	618.5	1.3	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR, MOLDIC AND VUGGY POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS	LIMESTONE-PACKSTONE	30	INTERGRANULAR	MODERATE	ECHINOIDS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	618.5	621.2	2.7	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; LAMINATIONS	LIMESTONE-MUDSTONE	20	INTERGRANULAR	MODERATE	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2			
POF-31	621.2	626.7	5.5	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS, FALLOTELLA	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE	ECHINOIDS, FALLOTELLA	FORAMINIFERA	GRAYISH ORANGE : 10YR 7/4			
POF-31	626.7	632.5	5.8	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA	LIMESTONE-MUDSTONE	20	INTERGRANULAR	MODERATE		FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	632.5	634.5	2.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS, FRACTURED	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	ECHINOIDS, FRACTURED	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	634.5	638.0	3.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS, FRACTURED	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE	FRACTURED, ECHINOIDS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	638.0	638.8	0.8	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE		FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	638.8	640.0	1.2	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE	ECHINOIDS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	640.0	641.7	1.7	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE	ECHINOIDS	FORAMINIFERA	GRAYISH ORANGE : 10YR 7/4			
POF-31	641.7	646.8	5.1	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA, LEPIDOCYCLINA	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	LEPIDOCYCLINA	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	646.8	648.5	1.7	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	648.5	650.0	1.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION; FRACTURED, FORAMINIFERA	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	FRACTURED	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	650.0	654.0	4.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE		FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	654.0	654.6	0.6	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	654.6	657.0	2.4	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS	LIMESTONE-PACKSTONE	30	INTERGRANULAR	MODERATE	ECHINOIDS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	657.0	657.7	0.7	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA	LIMESTONE-MUDSTONE	10	INTERGRANULAR	MODERATE		FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	657.7	658.4	0.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE		FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	658.4	660.0	1.6	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS	LIMESTONE-PACKSTONE	30	INTERGRANULAR	MODERATE	ECHINOIDS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	660.0	661.7	1.7	LIMESTONE (GRAINSTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS, BIVALVES, FALLOTELLA	LIMESTONE-GRAINSTONE	30	INTERGRANULAR	MODERATE	ECHINOIDS, BIVALVES, FALLOTELLA	FORAMINIFERA	GRAYISH ORANGE : 10YR 7/4			
POF-31	661.7	662.5	0.8	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); MODERATE INTERGRANULAR, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS, FRACTURED, BIVALVES, GASTROPODS	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	ECHINOIDS, FRACTURED, BIVALVES, GASTROPODS	FORAMINIFERA	GRAYISH ORANGE : 10YR 7/4			
POF-31	662.5	665.8	3.3	LIMESTONE (PACKSTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, ECHINOIDS, FALLOTELLA, FRACTURED	LIMESTONE-PACKSTONE	30	INTERGRANULAR	MODERATE	ECHINOIDS, FRACTURED, FALLOTELLA	FORAMINIFERA	GRAYISH ORANGE : 10YR 7/4			
POF-31	665.8	668.5	2.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR, VUGGY, AMD MOLDIC POROSITY; MODERATE INDURATION; FRACTURED, FORAMINIFERA, BIVALVES, GASTROPODS, ECHINOIDS	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	FRACTURED, BIVALVES, GASTROPODS, ECHINOIDS	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	668.5	670.0	1.5	NO RECOVERY										
POF-31	670.0	670.7	0.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND VUGGY POROSITY; MODERATE INDURATION; FORAMINIFERA	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE		FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	670.7	671.6	0.9	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, FALLOTELLA, BIVALVE, FRACTURED	LIMESTONE-MUDSTONE	10	INTERGRANULAR	MODERATE	FALLOTELLA, BIVALVES, FRACTURED	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	671.6	672.5	0.9	LIMESTONE (GRAINSTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, BIVALVES	LIMESTONE-GRAINSTONE	30	INTERGRANULAR	MODERATE	BIVALVES	FORAMINIFERA	GRAYISH ORANGE : 10YR 7/4			
POF-31	672.5	675.3	2.8	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FRACTURED, BIVALVES	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	FRACTURED	MOLLUSKS	VERY PALE ORANGE : 10YR 8/2			
POF-31	675.3	680.0	4.7	NO RECOVERY										
POF-31	680.0	684.5	4.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, SOME FRACTURES	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	SOME FRACTURES	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	684.5	687.5	3.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE		FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	687.5	690.0	2.5	NO RECOVERY										
POF-31	690.0	690.1	0.1	LIMESTONE (GRAINSTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA	LIMESTONE-GRAINSTONE	30	INTERGRANULAR	MODERATE		FORAMINIFERA	GRAYISH ORANGE : 10YR 7/4			
POF-31	690.1	694.0	3.9	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE		FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	694.0	695.0	1.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA	LIMESTONE-MUDSTONE	10	INTERGRANULAR	MODERATE		FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	695.0	696.3	1.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE		FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	696.3	697.8	1.5	CLAY; VERY PALE ORANGE (10YR 8/2); NO OBSERVABLE POROSITY; POOR INDURATION	CLAY	0	NO OBSERVABLE	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	697.8	700.0	2.2	NO RECOVERY										
POF-31	700.0	703.6	3.6	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA	LIMESTONE-PACKSTONE	20	INTERGRANULAR	MODERATE		FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	703.6	706.4	2.8	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE		FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	706.4	709.5	3.1	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; FORAMINIFERA, SOME FRACTURES	LIMESTONE-PACKSTONE	20	INTERGRANULAR	MODERATE	SOME FRACTURES	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	709.5	710.0	0.5	NO RECOVERY										
POF-31	710.0	711.3	1.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION; FRACTURED	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	711.3	712.3	1.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION; FRACTURED	LIMESTONE-MUDSTONE	10	INTERGRANULAR	MODERATE	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	712.3	716.0	3.7	NO RECOVERY										
POF-31	716.0	716.5	0.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	716.5	720.0	3.5	NO RECOVERY										
POF-31	720.0	721.0	1.0	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	721.0	722.5	1.5	LIMESTONE (PACKSTONE); GRAYISH ORANGE (10YR 7/4); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-PACKSTONE	20	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	722.5	726.0	3.5	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	726.0	728.0	2.0	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	728.0	730.0	2.0	NO RECOVERY										
POF-31	730.0	731.0	1.0	LIMESTONE (PACKSTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FORAMINIFERA, GATROPOD, FRACTURED	LIMESTONE-PACKSTONE	30	INTERGRANULAR	MODERATE	GASTROPODS, FRACTURED	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-31	731.0	734.3	3.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	734.3	736.4	2.1	LIMESTONE (GRAINSTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR AND MOLDIC POROSITY; GOOD INDURATION; FORAMINIFERA, GASTROPODS	LIMESTONE-GRAINSTONE	30	INTERGRANULAR	GOOD	GASTROPODS	FORAMINIFERA	GRAYISH ORANGE : 10YR 7/4			
POF-31	736.4	744.6	8.2	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; SOME FRACTURES, GASTROPODS	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	SOME FRACTURES, GASTROPODS		VERY PALE ORANGE : 10YR 8/2			
POF-31	744.6	750.0	5.4	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); POOR INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	750.0	761.0	11.0	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; CHERT, CALCITE, SOME FRACTURES	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	SOME FRACTURES		GRAYISH ORANGE : 10YR 7/4	CHERT		
POF-31	761.0	763.6	2.6	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION; CHERT, FRACTURED	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	FRACTURES		GRAYISH ORANGE : 10YR 7/4	CHERT		
POF-31	763.6	770.0	6.4	NO RECOVERY										
POF-31	770.0	772.0	2.0	LIMESTONE (WACKESTONE); GRAYISH ORANGE (10YR 7/4); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION;	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	772.0	773.0	1.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; MODERATE INDURATION; FRACTURED	LIMESTONE-MUDSTONE	10	INTERGRANULAR	MODERATE	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	773.0	776.0	3.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; SOME FRACTURES	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	SOME FRACTURES		VERY PALE ORANGE : 10YR 8/2			
POF-31	776.0	777.0	1.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION; FRACTURED	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	777.0	780.0	3.0	NO RECOVERY										
POF-31	780.0	783.3	3.3	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION; FRACTURED	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	783.3	785.0	1.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; POOR INDURATION; FRACTURED	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	785.0	790.0	5.0	NO RECOVERY										
POF-31	790.0	791.0	1.0	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); HIGH INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	791.0	792.0	1.0	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-MUDSTONE	20	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	792.0	800.0	8.0	NO RECOVERY										
POF-31	800.0	801.7	1.7	LIMESTONE (WACKESTONE); VERY PALE ORANGE (10YR 8/2); MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; FRACTURED	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	801.7	804.4	2.7	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	804.4	810.0	5.6	NO RECOVERY										
POF-31	810.0	811.3	1.3	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	811.3	815.5	4.2	CALCAREOUS DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; NO OBSERVABLE POROSITY; GOOD INDURATION; CHERT	DOLOMITE	0	NO OBSERVABLE	GOOD	CALCAREOUS		PALE YELLOWISH BROWN : 10YR 6/2	CHERT		
POF-31	815.5	816.0	0.5	LIMESTONE (MUDSTONE); VERY PALE ORANGE (10YR 8/2); LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	816.0	820.0	4.0	NO RECOVERY										
POF-31	820.0	825.3	5.3	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; CHERT, SOME FRACTURES	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	GOOD	CALCAREOUS, SOME FRACTURES		PALE YELLOWISH BROWN : 10YR 6/2	CHERT		
POF-31	825.3	830.0	4.7	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	GOOD	CALCAREOUS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	830.0	833.3	3.3	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	833.3	838.2	4.9	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; SOME FRACTURES	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	GOOD	SOME FRACTURES		PALE YELLOWISH BROWN : 10YR 6/2			

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	838.2	840.0	1.8	DOLOMITIC-LIMESTONE; YELLOWISH GREY (5Y 7/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; ORGANICS	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	MODERATE			YELLOWISH GRAY : 5Y 7/2			
POF-31	840.0	845.0	5.0	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; ORGANICS	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	845.0	847.6	2.6	DOLOMITIC-LIMESTONE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; HIGH PINPOINT AND MOLDIC POROSITY; GOOD INDURATION	DOLOMITIC-LIMESTONE	30	PIN POINT - VUGS	GOOD			GRAYISH ORANGE : 10YR 7/4			
POF-31	847.6	849.5	1.9	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	849.5	850.0	0.5	NO RECOVERY										
POF-31	850.0	854.8	4.8	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURES	DOLOMITE	10	PIN POINT - VUGS	GOOD	FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	850.0	854.8	4.8	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURES	DOLOMITE	10	PIN POINT - VUGS	GOOD	CALCITE CRYSTALS 853.6-854 FT, FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2	CALCITE		
POF-31	845.8	855.7	9.9	DOLOMITIC-LIMESTONE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; INTRACLASTS	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	GOOD	INTRACLASTS		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	855.7	857.3	1.6	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	GOOD	LAMINATIONS, ORGANICS		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	857.3	858.4	1.1	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; NO OBSERVABLE POROSITY; GOOD INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	0	NO OBSERVABLE	GOOD	LAMINATIONS, ORGANICS		GRAYISH ORANGE : 10YR 7/4			
POF-31	858.4	859.4	1.0	DOLOMITE; DARK YELLOWISH ORANGE (10YR 6/6); SUCROSIC; MODERATE PINPOINT POROSITY; MODERATE INDURATION	DOLOMITE	20	PIN POINT - VUGS	MODERATE			DARK YELLOWISH ORANGE : 10YR 6/6			
POF-31	859.4	861.1	1.7	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; ORGANICS	DOLOMITE	10	PIN POINT - VUGS	GOOD	ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	861.1	865.6	4.5	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; LAMINATIONS, SOME FRACTURES, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS, SOME FRACTURES, ORGANICS		GRAYISH ORANGE : 10YR 7/4			
POF-31	865.6	868.2	2.6	DOLOMITIC-LIMESTONE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; MODERATE INDURATION; SOME FRACTURES	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	MODERATE	SOME FRACTURES		GRAYISH ORANGE : 10YR 7/4			
POF-31	868.2	870.0	1.8	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	GOOD	LAMINATIONS, ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	870.0	871.6	1.6	DOLOMITIC-LIMESTONE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	871.6	874.3	2.7	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; SOME FRACTURES, ORGANICS, CARBONATE MUD INFILLING PORES	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	MODERATE	SOME FRACTURES, ORGANICS, CARBONATE MUD INFILLING PORES		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	874.3	876.3	2.0	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; SOME FRACTURES, DOLOSTONE INFILLING OF PORES	DOLOMITE	10	PIN POINT - VUGS	MODERATE	SOME FRACTURES, DOLOSTONE INFILLING OF PORES		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	876.3	878.2	1.9	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; NO OBSERVEABLE POROSITY; MODERATE INDURATION	DOLOMITE	0	PIN POINT - VUGS	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	878.2	880.0	1.8	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; DOLOSTONE INFILLING OF PORES	DOLOMITE	10	PIN POINT - VUGS	MODERATE	DOLOSTONE INFILLING OFPORES		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	880.0	881.8	1.8	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION	DOLOMITE	30	PIN POINT - VUGS	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	881.8	883.7	1.9	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; FRACTURED, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	FRACTURED, ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	883.7	886.0	2.3	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE PINPOINT, MOLDIC, AND VUGGY POROSITY; MODERATE INDURATION; SOME FRACTURES, ORGANICS	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	MODERATE	SOME FRACTURES, ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	886.0	890.0	4.0	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; ORGANICS, VUGS INFILLED WITH DOLOSTONE AND ORGANICS	DOLOMITE	30	PIN POINT - VUGS	MODERATE	VUGS INFILLED WITH DOLOSTONE AND ORGANICS		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	890.0	892.5	2.5	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	892.5	894.1	1.6	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	ORGANICS		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	894.1	897.1	3.0	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; SOME FRACTURES, SOME VUGS INFILLED WITH DOLOSTONE	DOLOMITE	10	PIN POINT - VUGS	GOOD	SOME FRACTURES, SOME VUGS INFILLED WITH DOLOSTONE		GRAYISH ORANGE : 10YR 7/4			
POF-31	897.1	898.4	1.3	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	20	PIN POINT - VUGS	GOOD	LAMINATIONS, ORGANICS		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	898.4	898.9	0.5	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); SUCROSIC; MODERATE PINPOINT AND INTERGRANULAR POROSITY; GOOD INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	20	PIN POINT - VUGS	GOOD	LAMINATIONS, ORGANICS		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	898.9	900.0	1.1	NO RECOVERY										
POF-31	900.0	904.0	4.0	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); SUCROSIC; HIGH PINPOINT, VUGGY, MOLDIC, AND INTERGRANULAR POROSITY; MODERATE INDURATION	DOLOMITE	30	PIN POINT - VUGS	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	904.0	905.0	1.0	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); SUCROSIC; LOW PINPOINT, VUGGY, AND INTERGRANULAR POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	905.0	908.0	3.0	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); SUCROSIC; HIGH PINPOINT, MOLDIC, AND INTERGRANULAR POROSITY; MODERATE INDURATION	DOLOMITE	30	PIN POINT - VUGS	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	908.0	910.0	2.0	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); SUCROSIC; HIGH PINPOINT, VUGGY, MOLDIC, AND INTERGRANULAR POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	910.0	914.8	4.8	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); SUCROSIC; HIGH PINPOINT AND INTERGRANULAR POROSITY; MODERATE INDURATION; ORGANICS	DOLOMITE	30	PIN POINT - VUGS	MODERATE	ORGANICS		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	914.8	919.5	4.7	DOLOMITE; DARK YELLOWISH BROWN (10YR 4/2); MICROCRYSTALLINE; MEDIUM PINPOINT AND MOLDIC POROSITY; MODERATE INDURATION; ORGANICS	DOLOMITE	20	PIN POINT - VUGS	MODERATE	ORGANICS		DARK YELLOWISH BROWN : 10YR 4/2			
POF-31	919.5	920.0	0.5	NO RECOVERY										
POF-31	920.0	921.2	1.2	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	921.2	922.4	1.2	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); SUCROSIC; HIGH PINPOINT AND INTERGRANULAR POROSITY; MODERATE INDURATION	DOLOMITE	30	PIN POINT - VUGS	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	922.4	925.8	3.4	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; SOME FRACTURES	DOLOMITE	10	PIN POINT - VUGS	GOOD	SOME FRACTURES		PALE YELLOWISH BROWN : 10YR 6/2			

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	925.8	927.5	1.7	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); SUCROSIC; MODERATE PINPOINT AND INTERGRANULAR POROSITY; MODERATE INDURATION	DOLOMITE	20	PIN POINT - VUGS	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	927.5	928.8	1.3	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); SUCROSIC; MODERATE PINPOINT, VUGGY, MOLDIC, AND INTERGRANULAR POROSITY; GOOD INDURATION; SOME FRACTURES	DOLOMITE	20	PIN POINT - VUGS	GOOD	SOME FRACTURES		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	928.8	930.0	1.2	NO RECOVERY										
POF-31	930.0	932.4	2.4	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	932.4	934.1	1.7	DOLOMITE; VERY PALE ORANGE (10YR 8/2); MICROCRYSTALLINE; NO OBSERVEABLE POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	0	NO OBSERVABLE	GOOD	FRACTURED		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-31	934.1	935.7	1.6	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT AND MOLDIC POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	935.7	938.1	2.4	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	GOOD	LAMINDATIONS, ORGANICS		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	938.1	938.9	0.8	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; LOW INDURATION	DOLOMITE	30	PIN POINT - VUGS	POOR			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	938.9	940.0	1.1	NO RECOVERY										
POF-31	940.0	941.7	1.7	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; ORGANICS	DOLOMITE	30	PIN POINT - VUGS	MODERATE	ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	941.7	944.7	3.0	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; HIGH PINPOINT, VUGGY, AND MOLDIC POROSITY; GOOD INDURATION; SOME FRACTURES	DOLOMITE	30	PIN POINT - VUGS	GOOD	SOME FRACTURES		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	944.7	946.5	1.8	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PINPOINT, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; SOME FRACTURES	DOLOMITE	10	PIN POINT - VUGS	MODERATE	SOME FRACTURES		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	946.5	949.5	3.0	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; SOME FRACTURES, ORGANICS	DOLOMITE	20	PIN POINT - VUGS	GOOD	SOME FRACTURES, ORGANICS		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	949.5	950.0	0.5	NO RECOVERY										
POF-31	950.0	952.3	2.3	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; SOME FRACTURES, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	GOOD	SOME FRACTURES, ORGANICS		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	952.3	953.8	1.5	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; SOME FRACTURES	DOLOMITE	20	PIN POINT - VUGS	GOOD	SOME FRACTURES		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	953.8	955.0	1.2	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	955.0	956.3	1.3	DOLOMITIC-LIMESTONE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	956.3	957.2	0.9	DOLOMITIC-LIMESTONE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	957.2	960.0	2.8	DOLOMITIC-LIMESTONE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; HIGH PINPOINT AND MOLDIC POROSITY; GOOD INDURATION	DOLOMITIC-LIMESTONE	30	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	960.0	962.4	2.4	DOLOMITIC-LIMESTONE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; HIGH PINPOINT, VUGGY, AND MOLDIC POROSITY; GOOD INDURATION; LAMINATIONS, ORGANICS	DOLOMITIC-LIMESTONE	30	PIN POINT - VUGS	GOOD	LAMINATIONS, ORGANICS		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	962.4	964.1	1.7	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; LAMINATIONS	DOLOMITE	10	PIN POINT - VUGS	GOOD	LAMINATIONS		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	964.1	965.7	1.6	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	965.7	967.3	1.6	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; NO OBSERVABLE POROSITY; MODERATE INDURATION	DOLOMITE	0	NO OBSERVABLE	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	967.3	968.8	1.5	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; MODERATE INDURATION	DOLOMITE	20	PIN POINT - VUGS	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	968.8	970.0	1.2	NO RECOVERY										
POF-31	970.0	971.2	1.2	DOLOMITIC-LIMESTONE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; HIGH PINPOINT, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION	DOLOMITIC-LIMESTONE	30	PIN POINT - VUGS	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	971.2	975.2	4.0	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PIN POINT, VUGGY, AND MOLDIC POROSITY; GOOD INDURATION; SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE	DOLOMITE	20	PIN POINT - VUGS	GOOD	SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	975.2	977.8	2.6	CALCAREOUS DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PIN POINT AND VUGGY POROSITY; MODERATE INDURATION; SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE	DOLOMITE	10	PIN POINT - VUGS	MODERATE	SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	977.8	980.8	3.0	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PIN POINT AND MOLDIC POROSITY; GOOD INDURATION; SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE, ORGANICS, INTRACLASTS	DOLOMITE	20	PIN POINT - VUGS	GOOD	SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE, ORGANICS, INTRACLASTS		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	980.8	982.5	1.7	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PIN POINT AND MOLDIC POROSITY; GOOD INDURATION; SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE	DOLOMITE	10	PIN POINT - VUGS	GOOD	SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	982.5	983.5	1.0	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PIN POINT AND MOLDIC POROSITY; GOOD INDURATION; FRACTURED, CRYSTALLINE CALCITE ON FRACTURE SURFACE	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED, CRYSTALLINE CALCITE ON FRACTURE SURFACE		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	983.5	985.0	1.5	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PIN POINT POROSITY; GOOD INDURATION; SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE	DOLOMITE	10	PIN POINT - VUGS	GOOD	SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	985.0	988.1	3.1	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PIN POINT POROSITY; GOOD INDURATION; FRACTURED, CRYSTALLINE CALCITE ON FRACTURE SURFACE, LAMINATIONS, ORGANICS, INTRACLASTS	DOLOMITE	10	PIN POINT - VUGS	GOOD	FRACTURED, CRYSTALLINE CALCITE ON FRACTURE SURFACE, LAMINATIONS, ORGANICS, INTRACLASTS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	988.1	990.0	1.9	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PIN POINT POROSITY; MODERATE INDURATION; LAMINATIONS, FRACTURED, ORGANICS, CRYSTALLINE CALCITE ON FRACTURE SURFACE	DOLOMITE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS, FRACTURED, ORGANICS, CRYSTALLINE CALCITE ON FRACTURE SURFACE		MODERATE YELLOWISH BROWN : 10YR 5/5			

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	990.0	991.2	1.2	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PIN POINT POROSITY; GOOD INDURATION;FRACTURED, CRYSTALLINE CALCITE ON FRACTURE SURFACE	DOLOMITE	10	PIN POINT - VUGS	GOOD	FRACTURED, CRYSTALLINE CALCITE ON FRACTURE SURFACE		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	991.2	992.3	1.1	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PIN POINT POROSITY; GOOD INDURATION; INTRACLASTS	DOLOMITE	10	PIN POINT - VUGS	GOOD	INTRACLASTS		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	992.3	993.4	1.1	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; GOOD PIN POINT AND MOLDIC POROSITY; GOOD INDURATION; FRACTURED, CRYSTALLINE CALCITE ON FRACTURE SURFACE	DOLOMITE	30	PIN POINT - VUGS	GOOD	FRACTURED, CRYSTALLINE CALCITE ON FRACTURE SURFACE		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	993.4	994.4	1.0	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; MODERATE INDURATION	DOLOMITE	20	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	994.4	995.4	1.0	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; HIGH PINPOINT AND MOLDIC POROSITY; MODERATE INDURATION	DOLOMITE	30	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	995.4	996.9	1.5	DOLOMITIC-LIMESTONE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; LOW PINPOINT AND MOLDIC POROSITY; MODERATE INDURATION	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/5			
POF-31	996.9	998.0	1.1	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; HIGH PINPOINT, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION, SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE	DOLOMITE	30	PIN POINT - VUGS	MODERATE	SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE	BRYOZOANS	GRAYISH ORANGE : 10YR 7/6			
POF-31	998.0	999.3	1.3	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION, SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE	DOLOMITE	20	PIN POINT - VUGS	GOOD	SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE		GRAYISH ORANGE : 10YR 7/4			
POF-31	999.3	1,000.0	0.7	NO RECOVERY										
POF-31	1,000.0	1,001.1	1.1	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PIN POINT AND MOLDIC POROSITY; GOOD INDURATION; ORGANICS	DOLOMITE	10	PIN POINT - VUGS	GOOD	ORGANICS		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	1,001.1	1,002.3	1.2	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PIN POINT AND MOLDIC POROSITY; MODERATE INDURATION; ORGANICS	DOLOMITE	20	PIN POINT - VUGS	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	1,002.3	1,003.4	1.1	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PIN POINT POROSITY; MODERATE INDURATION; LAMINATIONS, INTRACLASTS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS, INTRACLASTS		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	1,003.4	1,004.4	1.0	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PIN POINT POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,004.4	1,006.3	1.9	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; MODERATE INDURATION	DOLOMITE	20	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,006.3	1,008.0	1.7	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE PIN POINT AND MOLDIC POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	20	PIN POINT - VUGS	MODERATE	LAMINATIONS, ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,008.0	1,010.0	2.0	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PIN POINT POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS, ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,010.0	1,012.4	2.4	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	20	PIN POINT - VUGS	MODERATE	LAMINATIONS, ORGANICS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,012.4	1,014.6	2.2	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; LAMINATIONS, SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE	DOLOMITE	10	PIN POINT - VUGS	GOOD	LAMINATIONS, SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,014.6	1,016.4	1.8	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	20	PIN POINT - VUGS	MODERATE	LAMINATIONS, ORGANICS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,016.4	1,018.0	1.6	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,018.0	1,019.5	1.5	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	20	PIN POINT - VUGS	MODERATE	LAMINATIONS, ORGANICS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,019.5	1,020.5	1.0	DOLOMITIC-LIMESTONE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS, ORGANICS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,020.5	1,022.5	2.0	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE PIN POINT AND MOLDIC POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS, INTRACLASTS, CHERT	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	MODERATE	LAMINATIONS, ORGANICS, INTRACLASTS, CHERT		PALE YELLOWISH BROWN : 10YR 6/2	CHERT	5	
POF-31	1,022.5	1,025.5	3.0	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; NO OBSERVEABLE POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	0	NO OBSERVABLE	MODERATE	LAMINATIONS, ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,025.5	1,027.5	2.0	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PIN POINT AND MOLDIC POROSITY; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,027.5	1,029.0	1.5	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PIN POINT AND MOLDIC POROSITY; MODERATE INDURATION; LAMINATIONS, SOME FRACTURES, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS, SOME FRACTURES, ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,029.0	1,030.0	1.0	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PIN POINT POROSITY; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	1,030.0	1,033.0	3.0	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE PIN POINT AND MOLDIC POROSITY; MODERATE INDURATION; FRACTURED, CHERT INTRACLAST	DOLOMITE	20	PIN POINT - VUGS	MODERATE	FRACTURED, CHERT INTRACLAST		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,033.0	1,037.4	4.4	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PIN POINT POROSITY; MODERATE INDURATION; LAMINATION, FRACTURED, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	LAMINATION, FRACTURED, ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,037.4	1,040.0	2.6	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PIN POINT POROSITY; GOOD INDURATION; LAMINATIONS, FRACTURED, ORGANICS, CHERT INTRACLAST	DOLOMITE	10	PIN POINT - VUGS	GOOD	LAMINATIONS, FRACTURED, ORGANICS, CHERT INTRACLAST		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	1,040.0	1,041.8	1.8	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,041.8	1,044.0	2.2	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; LAMINATIONS	DOLOMITE	30	PIN POINT - VUGS	MODERATE	LAMINATIONS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,044.0	1,045.0	1.0	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,045.0	1,048.0	3.0	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/5; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; LAMINATIONS	DOLOMITE	20	PIN POINT - VUGS	GOOD	LAMINATIONS		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	1,048.0	1,050.0	2.0	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/5; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	1,050.0	1,052.0	2.0	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PIN POINT AND VUGGY POROSITY; GOOD INDURATION; SOME FRACTURES	DOLOMITE	20	PIN POINT - VUGS	GOOD	SOME FRACTURES		MODERATE YELLOWISH BROWN : 10YR 5/5			

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	1,052.0	1,058.3	6.3	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; FRACTURED, CRYSTALLINE CALCITE ON FRACTURE SURFACE	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED, CRYSTALLINE CALCITE ON FRACTURE SURFACE		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,058.3	1,060.0	1.7	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PIN POINT POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	1,060.0	1,061.6	1.6	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PIN POINT POROSITY; GOOD INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	GOOD	LAMINATIONS, ORGANICS		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	1,061.6	1,064.3	2.7	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PIN POINT POROSITY; GOOD INDURATION; CRYSTALLINE CALCITE ON FRACTURE SURFACE	DOLOMITE	10	PIN POINT - VUGS	GOOD	CRYSTALLINE CALCITE ON FRACTURE SURFACE		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,064.3	1,067.0	2.7	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE PIN POINT POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,067.0	1,070.0	3.0	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PIN POINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	10	PIN POINT - VUGS	GOOD	FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,070.0	1,072.0	2.0	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; SOME FRACTURES	DOLOMITE	10	PIN POINT - VUGS	GOOD	SOME FRACTURES		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,072.0	1,073.0	1.0	DOLOMITE; DARK YELLOWISH ORANGE : 10YR 6/6; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; GOOD INDURATION; SOME FRACTURES	DOLOMITE	30	PIN POINT - VUGS	GOOD	SOME FRACTURES		DARK YELLOWISH ORANGE : 10YR 6/6			
POF-31	1,073.0	1,074.8	1.8	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/5; MICROCRYSTALLINE; MODERATE PINPOINT, VUGGY, AND MOLDIC POROSITY; GOOD INDURATION; ORGANICS; BIVALVES AND GASTROPODS	DOLOMITE	20	PIN POINT - VUGS	GOOD	ORGANICS; BIVALVES AND GASTROPODS	MOLLUSKS	MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	1,074.8	1,076.3	1.5	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,076.3	1,078.6	2.3	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/5; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; BIVALVES	DOLOMITE	20	PIN POINT - VUGS	GOOD	BIVALVES	MOLLUSKS	MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	1,078.6	1,080.0	1.4	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	30	PIN POINT - VUGS	GOOD	FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,080.0	1,082.7	2.7	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/5; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; GOOD INDURATION; SOME FRACTURED	DOLOMITE	30	PIN POINT - VUGS	GOOD	SOME FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	1,082.7	1,086.6	3.9	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/5; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; LAMINATIONS, SOME FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	LAMINATIONS, SOME FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	1,086.6	1,090.0	3.4	DOLOMITE; DARK YELLOWISH ORANGE : 10YR 6/6; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	30	PIN POINT - VUGS	GOOD	FRACTURED		DARK YELLOWISH ORANGE : 10YR 6/6			
POF-31	1,090.0	1,091.6	1.6	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,091.6	1,092.6	1.0	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	30	PIN POINT - VUGS	GOOD	FRACTURED		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,092.6	1,097.5	4.9	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; GOOD INDURATION; LAMINATIONS, FRACTURED	DOLOMITE	30	PIN POINT - VUGS	GOOD	LAMINATIONS, FRACTURED		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,097.5	1,098.0	0.5	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; POOR INDURATION; FRACTURED, CHERT INTRACLAST	DOLOMITE	30	PIN POINT - VUGS	POOR	FRACTURED, CHERT INTRACLAST		GRAYISH ORANGE : 10YR 7/4	CHERT	5	
POF-31	1,098.0	1,100.0	2.0	NO RECOVERY										
POF-31	1,100.0	1,104.0	4.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; HIGH PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; BIVALVES	DOLOMITE	30	PIN POINT - VUGS	GOOD	BIVALVES		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,104.0	1,105.0	1.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	GOOD	LAMINATIONS, ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,105.0	1,106.0	1.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	20	PIN POINT - VUGS	GOOD	LAMINATIONS, ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,106.0	1,108.4	2.4	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT, VUGGY, AND MOLDIC POROSITY; GOOD INDURATION; BIVALVES	DOLOMITE	20	PIN POINT - VUGS	GOOD	BIVALVES		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,108.4	1,110.0	1.6	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; POOR INDURATION	DOLOMITE	20	PIN POINT - VUGS	POOR			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,110.0	1,111.0	1.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	10	PIN POINT - VUGS	GOOD	FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,111.0	1,113.0	2.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT, VUGGY, AND MOLDIC POROSITY; GOOD INDURATION; LAMINATIONS, BIVALVES, GASTRPODS	DOLOMITE	20	PIN POINT - VUGS	GOOD	LAMINATIONS, BIVALVES, GASTRPODS	MOLLUSKS	PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,113.0	1,114.0	1.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,114.0	1,114.8	0.8	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; LAMINATIONS, ORGANICS	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	GOOD	LAMINATIONS, ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,114.8	1,118.0	3.2	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE, BIVALVES, GASTROPODS	DOLOMITE	20	PIN POINT - VUGS	GOOD	SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE, BIVALVES, GASTROPODS	MOLLUSKS	PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,118.0	1,120.0	2.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE	DOLOMITE	10	PIN POINT - VUGS	GOOD	SOME FRACTURES, CRYSTALLINE CALCITE ON FRACTURE SURFACE		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,120.0	1,120.7	0.7	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; SOME FRACTURES	DOLOMITE	10	PIN POINT - VUGS	GOOD	SOME FRACTURES		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,120.7	1,122.5	1.8	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; LAMINATIONS, SOME FRACTURES	DOLOMITE	10	PIN POINT - VUGS	GOOD	LAMINATIONS, SOME FRACTURES		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,122.5	1,125.8	3.3	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; LOW PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; SOME FRACTURES, BIVALVES, GASTROPODS	DOLOMITE	10	PIN POINT - VUGS	GOOD	SOME FRACTURES, BIVALVES, GASTROPODS	MOLLUSKS	GRAYISH ORANGE : 10YR 7/4			
POF-31	1,125.8	1,130.0	4.2	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; SOME FRACTURES, BIVALVES, GASTROPODS	DOLOMITE	20	PIN POINT - VUGS	GOOD	SOME FRACTURES, BIVALVES, GASTROPODS	MOLLUSKS	PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,130.0	1,131.2	1.2	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; SOME FRACTURES	DOLOMITE	20	PIN POINT - VUGS	MODERATE	SOME FRACTURES		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,131.2	1,131.5	0.3	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; LAMINATIONS, SOME FRACTURES, ORGANICS, INTRACLASTS	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS, SOME FRACTURES, ORGANICS, INTRACLASTS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,131.5	1,134.4	2.9	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; LAMINATIONS, FRACTURED, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS, FRACTURED, ORGANICS		GRAYISH ORANGE : 10YR 7/4			

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	1,134.4	1,136.5	2.1	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FRACTURED, ORGANICS	DOLOMITE	20	PIN POINT - VUGS	MODERATE	FRACTURED, ORGANICS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,136.5	1,139.0	2.5	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/5; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS, ORGANICS		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	1,139.0	1,140.0	1.0	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/5; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	10	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	1,140.0	1,141.7	1.7	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; CRYSTALLINE CALCITE GROWING IN VUGS	DOLOMITE	20	PIN POINT - VUGS	GOOD	CRYSTALLINE CALCITE GROWING IN VUGS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,141.7	1,142.8	1.1	DOLOMITIC-LIMESTONE; MODERATE YELLOWISH BROWN : 10YR 5/5; MICROCRYSTALLINE; LOW PINPOINT AND INTERGRANULAR POROSITY; MODERATE INDURATION; LAMINATIONS	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS		MODERATE YELLOWISH BROWN : 10YR 5/5			
POF-31	1,142.8	1,145.0	2.2	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION	DOLOMITE	20	PIN POINT - VUGS	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,145.0	1,145.8	0.8	DOLOMITE; DARK YELLOWISH BROWN : 10YR 4/2; MICROCRYSTALLINE; NO OBSERVABLE POROSITY; GOOD INDURATION	DOLOMITE	0	NO OBSERVABLE	GOOD			DARK YELLOWISH BROWN : 10YR 4/2			
POF-31	1,145.8	1,147.0	1.2	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION	DOLOMITE	30	PIN POINT - VUGS	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,147.0	1,148.8	1.8	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; LAMINATIONS	DOLOMITE	20	PIN POINT - VUGS	MODERATE	LAMINATIONS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,148.8	1,150.0	1.2	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; CRYSTALLINE CALCITE ON DISSOLUTION SURFACE	DOLOMITE	20	PIN POINT - VUGS	GOOD	CRYSTALLINE CALCITE ON DISSOLUTION SURFACE		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,150.0	1,151.0	1.0	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; CRYSTALLINE CALCITE GROWING IN VUGS	DOLOMITIC-LIMESTONE	30	PIN POINT - VUGS	MODERATE	CRYSTALLINE CALCITE GROWING IN VUGS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,151.0	1,151.6	0.6	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	GOOD	FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,151.6	1,152.5	0.9	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; MODERATE INDURATION; SOME FRACTURES	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	MODERATE	SOME FRACTURES		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,152.5	1,154.8	2.3	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; FRACTURED, ORGANICS	DOLOMITIC-LIMESTONE	30	PIN POINT - VUGS	MODERATE	FRACTURED, ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,154.8	1,157.7	2.9	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; LAMINATIONS, FRACTURED, CHERT	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS, FRACTURED, CHERT		PALE YELLOWISH BROWN : 10YR 6/2	CHERT	5	
POF-31	1,157.7	1,160.0	2.3	NO RECOVERY										
POF-31	1,160.0	1,164.7	4.7	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; FRACTURED, ORGANICS	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	MODERATE	FRACTURED, ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,164.7	1,165.7	1.0	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,165.7	1,168.0	2.3	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,168.0	1,170.0	2.0	NO RECOVERY										
POF-31	1,170.0	1,172.5	2.5	DOLOMITIC-LIMESTONE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; SOME FRACTURES, LAMINATIONS, ORGANICS	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	MODERATE	LAMINATIONS, ORGANICS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,172.5	1,174.2	1.7	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT, VUGGY, AND MOLDIC POROSITY; POOR INDURATION	DOLOMITE	30	PIN POINT - VUGS	POOR			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,174.2	1,176.0	1.8	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS, ORGANICS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,176.0	1,176.6	0.6	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; MODERATE INDURATION	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,176.6	1,179.0	2.4	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; FRACTURED	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	MODERATE	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,179.0	1,180.0	1.0	NO RECOVERY										
POF-31	1,180.0	1,181.3	1.3	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; MODERATE INDURATION	DOLOMITE	20	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,181.3	1,183.0	1.7	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION	DOLOMITE	30	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,183.0	1,185.3	2.3	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; SOME FRACTURES, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	GOOD	SOME FRACTURES, ORGANICS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,185.3	1,186.4	1.1	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT, VUGGY, AND MOLDIC POROSITY; GOOD INDURATION; ORGANICS	DOLOMITE	30	PIN POINT - VUGS	GOOD	ORGANICS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,186.4	1,187.1	0.7	DOLOMITIC-LIMESTONE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; POOR INDURATION	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	POOR			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,187.1	1,189.5	2.4	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT, VUGGY, AND MOLDIC POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,189.5	1,190.0	0.5	NO RECOVERY										
POF-31	1,190.0	1,190.8	0.8	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	10	PIN POINT - VUGS	GOOD	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,190.8	1,191.8	1.0	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,191.8	1,194.3	2.5	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; SOME FRACTURES, ORGANICS	DOLOMITE	20	PIN POINT - VUGS	GOOD	SOME FRACTURES, ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,194.3	1,196.6	2.3	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,196.6	1,197.2	0.6	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FRACTURED, BIVALVES	DOLOMITE	30	PIN POINT - VUGS	MODERATE	FRACTURED, BIVALVES		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,197.2	1,999.0	801.8	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT, VUGGY, AND MOLDIC POROSITY; GOOD INDURATION; BIVALVES	DOLOMITE	20	PIN POINT - VUGS	GOOD	BIVALVES		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,999.0	1,200.8	-798.2	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,200.8	1,204.2	3.4	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; SOME FRACTURES	DOLOMITE	20	PIN POINT - VUGS	GOOD	SOME FRACTURES		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,204.2	1,207.4	3.2	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; SOME FRACTURES, BIVAVLES	DOLOMITE	30	PIN POINT - VUGS	MODERATE	SOME FRACTURES, BIVAVLES		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,207.4	1,208.4	1.0	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			VERY PALE ORANGE : 10YR 8/2			

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	1,208.4	1,210.0	1.6	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,210.0	1,211.0	1.0	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,211.0	1,212.2	1.2	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,212.2	1,214.4	2.2	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; GOOD INDURATION; SOME FRACTURES, ORGANICS	DOLOMITE	30	PIN POINT - VUGS	GOOD	SOME FRACTURES, ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,214.4	1,218.0	3.6	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; MODERATE INDURATION; ORGANICS	DOLOMITE	30	PIN POINT - VUGS	MODERATE	ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,218.0	1,219.0	1.0	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; POOR INDURATION	DOLOMITE	30	PIN POINT - VUGS	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,219.0	1,220.4	1.4	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,220.4	1,221.8	1.4	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,221.8	1,222.7	0.9	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; POOR INDURATION	DOLOMITE	30	PIN POINT - VUGS	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,222.7	1,224.3	1.6	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT, VUGGY, AND MOLDIC POROSITY; GOOD INDURATION; GASTROPODS	DOLOMITE	10	PIN POINT - VUGS	GOOD	GASTROPODS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,224.3	1,225.0	0.7	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,225.0	1,225.7	0.7	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,225.7	1,226.6	0.9	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,226.6	1,228.0	1.4	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,228.0	1,229.6	1.6	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; ORGANICS, BIVAVLES	DOLOMITE	30	PIN POINT - VUGS	GOOD	ORGANICS, BIVAVLES		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,229.6	1,230.0	0.4	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION	DOLOMITIC-LIMESTONE	30	PIN POINT - VUGS	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,230.0	1,230.8	0.8	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,230.8	1,231.6	0.8	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; POOR INDURATION	DOLOMITE	30	PIN POINT - VUGS	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,231.6	1,233.0	1.4	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION	DOLOMITE	30	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,233.0	1,234.0	1.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; POOR INDURATION	DOLOMITE	30	PIN POINT - VUGS	POOR			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,234.0	1,234.5	0.5	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; POOR INDURATION	DOLOMITE	30	PIN POINT - VUGS	POOR			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,234.5	1,236.0	1.5	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; GASTROPODS	DOLOMITE	20	PIN POINT - VUGS	GOOD	GASTROPODS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,236.0	1,237.1	1.1	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; MODERATE INDURATION	DOLOMITE	30	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,237.1	1,239.2	2.1	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,239.2	1,240.0	0.8	NO RECOVERY			PIN POINT - VUGS							
POF-31	1,240.0	1,241.0	1.0	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT, VUGGY, AND MOLDIC POROSITY; GOOD INDURATION; BIVALVES, GASTROPODS	DOLOMITE	20	PIN POINT - VUGS	GOOD	BIVALVES, GASTROPODS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,241.0	1,242.0	1.0	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,242.0	1,243.0	1.0	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; POOR INDURATION	DOLOMITE	30	PIN POINT - VUGS	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,243.0	1,250.0	7.0	NO RECOVERY										
POF-31	1,250.0	1,251.0	1.0	DOLOMITIC-LIMESTONE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITIC-LIMESTONE	30	PIN POINT - VUGS	GOOD	FRACTURED		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,251.0	1,251.4	0.4	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; MODERATE INDURATION; FRACTURED	DOLOMITE	30	PIN POINT - VUGS	MODERATE	FRACTURED		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,251.4	1,253.3	1.9	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; MODERATE INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	MODERATE	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,253.3	1,256.0	2.7	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION	DOLOMITE	30	PIN POINT - VUGS	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,256.0	1,258.0	2.0	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; MODERATE INDURATION; FRACTURED	DOLOMITE	30	PIN POINT - VUGS	MODERATE	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,258.0	1,260.5	2.5	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; POOR INDURATION; FRACTURED	DOLOMITE	10	PIN POINT - VUGS	POOR	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,260.5	1,262.4	1.9	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; MODERATE INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	MODERATE	FRACTURED		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,262.4	1,263.7	1.3	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; POOR INDURATION; SOME FRACTURES	DOLOMITE	20	PIN POINT - VUGS	POOR	SOME FRACTURES		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,263.7	1,267.1	3.4	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; SOME FRACTURES	DOLOMITE	10	PIN POINT - VUGS	MODERATE	SOME FRACTURES		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,267.1	1,268.4	1.3	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; POOR INDURATION; FRACTURED	DOLOMITE	10	PIN POINT - VUGS	POOR	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,268.4	1,270.0	1.6	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; POOR INDURATION	DOLOMITE	20	PIN POINT - VUGS	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,270.0	1,271.7	1.7	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION	DOLOMITE	20	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,271.7	1,274.8	3.1	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; POOR INDURATION; LAMINATIONS, SOME FRACTURES, ORGANICS	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	POOR	LAMINATIONS, SOME FRACTURES, ORGANICS		VERY PALE ORANGE : 10YR 8/2			

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	1,274.8	1,276.3	1.5	DOLOMITIC-LIMESTONE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT AND MOLDIC POROSITY; MODERATE INDURATION; SOME FRACTURES	DOLOMITIC-LIMESTONE	30	PIN POINT - VUGS	MODERATE	SOME FRACTURES		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,276.3	1,278.0	1.7	DOLOMITIC-LIMESTONE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	MODERATE	LAMINATIONS, ORGANICS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,278.0	1,280.0	2.0	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; POOR INDURATION; LAMINATIONS, ORGANICS	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	POOR	LAMINATIONS, ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,280.0	1,282.0	2.0	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; POOR INDURATION	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,282.0	1,284.4	2.4	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; NO OBSERVEABLE POROSITY; POOR INDURATION; LAMINATIONS, ORGANICS	DOLOMITIC-LIMESTONE	0	NO OBSERVABLE	POOR	LAMINATIONS, ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,284.4	1,289.2	4.8	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; POOR INDURATION	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,289.2	1,290.0	0.8	NO RECOVERY										
POF-31	1,290.0	1,291.0	1.0	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; LAMINATIONS, FRACTURED, ORGANICS	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS, FRACTURED, ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,291.0	1,292.2	1.2	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; POOR INDURATION; LAMINATIONS, ORGANICS	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	POOR	LAMINATIONS, ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,292.2	1,293.7	1.5	DOLOMITIC-LIMESTONE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,293.7	1,294.4	0.7	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; POOR INDURATION; SOME FRACTURES	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	POOR	SOME FRACTURES		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,294.4	1,295.6	1.2	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; POOR INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	POOR	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,295.6	1,296.8	1.2	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; POOR INDURATION; LAMINATIONS, ORGANICS	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	POOR	LAMINATIONS, ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,296.8	1,298.2	1.4	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; POOR INDURATION; LAMINATIONS, ORGANICS	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	POOR	LAMINATIONS, ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,298.2	1,299.2	1.0	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; SOME FRACTURES	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	MODERATE	SOME FRACTURES		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,299.2	1,300.0	0.8	NO RECOVERY										
POF-31	1,300.0	1,300.5	0.5	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; SOME FRACTURES	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	MODERATE	SOME FRACTURES		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,300.5	1,301.7	1.2	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; POOR INDURATION; LAMINATIONS, ORGANICS	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	POOR	LAMINATIONS, ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,301.7	1,303.8	2.1	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; NO OBSERVEABLE POROSITY; POOR INDURATION; LAMINATIONS, FRACTURED, ORGANICS	DOLOMITE	0	NO OBSERVABLE	POOR	LAMINATIONS, FRACTURED, ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,303.8	1,307.4	3.6	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; POOR INDURATION; LAMINATIONS, SOME FRACTURES, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	POOR	LAMINATIONS, SOME FRACTURES, ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,307.4	1,307.8	0.4	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; NO OBSERVEABLE POROSITY; GOOD INDURATION	DOLOMITE	0	NO OBSERVABLE	GOOD			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,307.8	1,308.3	0.5	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; LAMINATION, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	LAMINATION, ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,308.3	1,309.2	0.9	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; NO OBSERVEABLE POROSITY; GOOD INDURATION	DOLOMITE	0	NO OBSERVABLE	GOOD			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,309.2	1,310.0	0.8	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,310.0	1,311.8	1.8	DOLOMITE; YELLOWISH GRAY : 5Y 7/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; FRACTURED	DOLOMITE	10	PIN POINT - VUGS	MODERATE			YELLOWISH GRAY : 5Y 7/2			
POF-31	1,311.8	1,313.4	1.6	DOLOMITIC-LIMESTONE; YELLOWISH GRAY : 5Y 7/2; MICROCRYSTALLINE; NO OBSERVEABLE POROSITY; POOR INDURATION; LAMINATIONS, ORGANICS	DOLOMITIC-LIMESTONE	0	NO OBSERVABLE	POOR	FRACTURED		YELLOWISH GRAY : 5Y 7/2			
POF-31	1,313.4	1,314.9	1.5	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS, ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,314.9	1,316.6	1.7	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	20	PIN POINT - VUGS	MODERATE	LAMINATIONS, ORGANICS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,316.6	1,317.6	1.0	DOLOMITE; DARK YELLOWISH ORANGE : 10YR 6/6; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS, ORGANICS		DARK YELLOWISH ORANGE : 10YR 6/6			
POF-31	1,317.6	1,318.3	0.7	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; MODERATE INDURATION; BRECCIATED DOLOSTONE INTRACLASTS	DOLOMITE	20	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,318.3	1,319.2	0.9	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION	DOLOMITE	30	PIN POINT - VUGS	MODERATE	BRECCIATED DOLOSTONE INTRACLASTS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,319.2	1,320.0	0.8	DOLOMITE; YELLOWISH GRAY : 5Y 7/2; MICROCRYSTALLINE; NO OBSERVEABLE POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	0	NO OBSERVABLE	MODERATE	LAMINATIONS, ORGANICS		YELLOWISH GRAY : 5Y 7/2			
POF-31	1,320.0	1,321.4	1.4	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; ORGANICS	DOLOMITE	20	PIN POINT - VUGS	MODERATE	ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,321.4	1,324.0	2.6	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; SOME FRACTURES, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	SOME FRACTURES, ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,324.0	1,325.3	1.3	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; MODERATE INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	20	PIN POINT - VUGS	MODERATE	LAMINATIONS, ORGANICS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,325.3	1,330.0	4.7	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; POOR INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	POOR	LAMINATIONS, ORGANICS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,330.0	1,332.7	2.7	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FRACTURED, CELESTITE CRYSTALS IN VUGS	DOLOMITE	20	PIN POINT - VUGS	MODERATE	FRACTURED, CELESTITE CRYSTALS IN VUGS		GRAYISH ORANGE : 10YR 7/4	CELESTITE	5	
POF-31	1,332.7	1,333.5	0.8	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; POOR INDURATION; LAMINATIONS, SOME FRACTURES, CELESTITE CRYSTALS IN VUGS	DOLOMITE	10	PIN POINT - VUGS	POOR	LAMINATIONS, SOME FRACTURES, CELESTITE CRYSTALS IN VUGS		GRAYISH ORANGE : 10YR 7/4	CELESTITE	5	
POF-31	1,333.5	1,335.6	2.1	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; CELESTITE CRYSTALS IN VUGS	DOLOMITE	20	PIN POINT - VUGS	MODERATE	CELESTITE CRYSTALS IN VUGS		GRAYISH ORANGE : 10YR 7/4	CELESTITE	5	
POF-31	1,335.6	1,338.0	2.4	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; POOR INDURATION; FRACTURED	DOLOMITE	10	PIN POINT - VUGS	POOR	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,338.0	1,340.0	2.0	NO RECOVERY			NO OBSERVABLE				VERY PALE ORANGE : 10YR 8/2			
POF-31	1,340.0	1,341.2	1.2	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; POOR INDURATION; LAMINATIONS, ORGANICS	DOLOMITE	20	PIN POINT - VUGS	POOR	LAMINATIONS, ORGANICS		VERY PALE ORANGE : 10YR 8/2			

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	1,341.2	1,342.0	0.8	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; LAMINATION, ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	LAMINATION, ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,342.0	1,344.0	2.0	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT, VUGGY, AND MOLDIC POROSITY; POOR INDURATION; SOME FRACTURES	DOLOMITE	20	PIN POINT - VUGS	POOR	SOME FRACTURES		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,344.0	1,346.0	2.0	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; POOR INDURATION; FRACTURED	DOLOMITE	10	PIN POINT - VUGS	POOR	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,346.0	1,346.5	0.5	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; NO OBSERVEABLE POROSITY; POOR INDURATION; FRACTURED	DOLOMITE	0	NO OBSERVABLE	POOR	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,346.5	1,347.9	1.4	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; LOW PINPOINT AND MOLDIC POROSITY; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,347.9	1,348.3	0.4	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; NO OBSERVEABLE POROSITY; MODERATE INDURATION	DOLOMITE	0	NO OBSERVABLE	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,348.3	1,350.0	1.7	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; LOW PINPOINT, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,350.0	1,353.9	3.9	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; LAMINATIONS	DOLOMITE	10	PIN POINT - VUGS	GOOD			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,353.9	1,355.4	1.5	CALCAREOUS DOLOMITE; VERY PALE ORANGE (10YR 8/2); MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; SOME FRACTURES, CLAY STRINGERS	DOLOMITE	20	PIN POINT - VUGS	MODERATE	CALCAREOUS, SOME FRACTURES, CLAY STRINGERS		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-31	1,355.4	1,360.0	4.6	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; LAMINATIONS, SOME FRACTURES	DOLOMITE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS, SOME FRACTURES		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,360.0	1,362.5	2.5	CALCAREOUS DOLOMITE; VERY PALE ORANGE (10YR 8/2); MICROCRYSTALLINE; HIGH PINPOINT AND MOLDIC POROSITY; MODERATE INDURATION; FRACTURED, CELESTITE	DOLOMITE	30	PIN POINT - VUGS	MODERATE	FRACTURED		VERY PALE ORANGE : 10YR 8/2	CELESTITE		
POF-31	1,362.5	1,364.9	2.4	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; LAMINATIONS	DOLOMITE	10	PIN POINT - VUGS	GOOD	LAMINATIONS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,364.9	1,368.3	3.4	CALCAREOUS DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; LOW PINPOINT, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; FRACTURED, LAMINATIONS	DOLOMITE	30	PIN POINT - VUGS	MODERATE	FRACTURED, LAMINATIONS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,368.3	1,370.0	1.7	DOLOMITE; GRAYISH ORANGE (10YR 7/4); MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; FRACTURED, GLAY STRINGERS, CALCITE CRYSTALS ON DISSOLUTION SURFACE	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED, CLAY STRINGERS, CALCITE CRYSTALS ON DISSOLUTION SURFACE		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-31	1,370.0	1,371.7	1.7	DOLOMITE; WHITE : N9; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			WHITE : N9			
POF-31	1,371.7	1,372.0	0.3	DOLOMITE; WHITE : N10; MICROCRYSTALLINE; MODERATE PINPOINT, VUGGY, AND MOLDIC POROSITY; GOOD INDURATION; BIVALVES	DOLOMITE	20	PIN POINT - VUGS	GOOD	BIVALVES		WHITE : N10			
POF-31	1,372.0	1,374.4	2.4	DOLOMITE; WHITE : N11; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			WHITE : N11			
POF-31	1,374.4	1,375.8	1.4	DOLOMITE; WHITE : N12; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; LAMINATIONS	DOLOMITE	30	PIN POINT - VUGS	MODERATE	LAMINATIONS		WHITE : N12			
POF-31	1,375.8	1,377.4	1.6	DOLOMITE; WHITE : N13; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		WHITE : N13			
POF-31	1,377.4	1,378.3	0.9	DOLOMITE; WHITE : N14; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			WHITE : N14			
POF-31	1,378.3	1,379.0	0.7	DOLOMITE; WHITE : N15; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED, LAMINATIONS	DOLOMITE	10	PIN POINT - VUGS	GOOD	FRACTURED, LAMINATIONS		WHITE : N15			
POF-31	1,379.0	1,380.0	1.0	NO RECOVERY										
POF-31	1,380.0	1,380.5	0.5	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,380.5	1,382.0	1.5	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; LAMINATIONS	DOLOMITE	20	PIN POINT - VUGS	GOOD	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,382.0	1,384.0	2.0	DOLOMITE; WHITE : N15; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; BIVALVES, GASTROPODS	DOLOMITE	10	PIN POINT - VUGS	GOOD	BIVALVES, GASTROPODS		WHITE : N15			
POF-31	1,384.0	1,385.3	1.3	DOLOMITE; YELLOWISH GRAY : 5Y 7/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			YELLOWISH GRAY : 5Y 7/2			
POF-31	1,385.3	1,386.0	0.7	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; CELESTITE	DOLOMITE	10	PIN POINT - VUGS	GOOD	CELESTITE		VERY PALE ORANGE : 10YR 8/2	CELESTITE	5	
POF-31	1,386.0	1,388.5	2.5	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; ORGANICS, BIVALVES	DOLOMITE	10	PIN POINT - VUGS	GOOD	ORGANICS, BIVALVES		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,388.5	1,390.0	1.5	NO RECOVERY										
POF-31	1,390.0	1,392.2	2.2	DOLOMITE; DARK YELLOWISH BROWN (10YR 4/22); MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; LAMINATIONS	DOLOMITE	10	PIN POINT - VUGS	GOOD	LAMINATIONS		DARK YELLOWISH BROWN : 10YR 4/2			
POF-31	1,392.2	1,392.6	0.4	CALCAREOUS DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,392.6	1,395.7	3.1	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE PINPOINT, MOLDIC, AND VUGGY POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,395.7	1,396.2	0.5	CALCAREOUS DOLOMITE; VERY PALE ORANGE (10YR 8/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; LAMINATIONS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,396.2	1,400.8	4.6	DOLOMITE; VERY PALE ORANGE (10YR 8/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; SOME FRACTURES	DOLOMITE	10	PIN POINT - VUGS	GOOD	SOME FRACTURES		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,400.8	1,401.5	0.7	CALCAREOUS DOLOMITE; VERY PALE ORANGE (10YR 8/2); MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; FRACTURED	DOLOMITE	10	PIN POINT - VUGS	MODERATE	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,401.5	1,403.6	2.1	DOLOMITE; VERY PALE ORANGE (10YR 8/2); MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; LAMINATIONS	DOLOMITE	20	PIN POINT - VUGS	GOOD	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,403.6	1,404.5	0.9	CALCAREOUS DOLOMITE; VERY PALE ORANGE (10YR 8/2); MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION	DOLOMITE	20	PIN POINT - VUGS	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,404.5	1,409.5	5.0	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; MODERATE PINPOINT, MOLDIC, AND VUGGY POROSITY; GOOD INDURATION; FRACTURED, ANHYDRITE CRYSTALS ON DISSOLUTION SURFACES	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2	CELESTITE		
POF-31	1,409.5	1,410.0	0.5	NO RECOVERY										
POF-31	1,410.0	1,411.8	1.8	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT, VUGGY, AND MOLDIC POROSITY; GOOD INDURATION; BIVALVES, ORGANICS	DOLOMITE	20	PIN POINT - VUGS	GOOD	BIVALVES, ORGANICS		GRAYISH ORANGE : 10YR 7/4			
POF-31	1,411.8	1,414.1	2.3	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,414.1	1,415.3	1.2	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; ORGANICS	DOLOMITE	30	PIN POINT - VUGS	MODERATE	ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	1,415.3	1,415.9	0.6	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT, VUGGY, AND MOLDIC POROSITY; GOOD INDURATION; BIVALVES	DOLOMITE	20	PIN POINT - VUGS	GOOD	BIVALVES		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,415.9	1,416.7	0.8	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; LAMINATIONS	DOLOMITE	20	PIN POINT - VUGS	GOOD	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,416.7	1,417.7	1.0	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,417.7	1,418.3	0.6	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,418.3	1,418.9	0.6	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,418.9	1,420.0	1.1	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,420.0	1,420.5	0.5	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,420.5	1,421.7	1.2	DOLOMITIC-LIMESTONE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITIC-LIMESTONE	30	PIN POINT - VUGS	GOOD			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,421.7	1,422.0	0.3	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITIC-LIMESTONE	30	PIN POINT - VUGS	GOOD			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,422.0	1,422.5	0.5	DOLOMITIC-LIMESTONE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; GOOD INDURATION	DOLOMITIC-LIMESTONE	30	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	1,422.5	1,424.6	2.1	DOLOMITIC-LIMESTONE; DARK YELLOWISH BROWN : 10YR 4/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION; ANHYDRITE	DOLOMITIC-LIMESTONE	30	PIN POINT - VUGS	GOOD	CELESTITE		DARK YELLOWISH BROWN : 10YR 4/2	CELESTITE	5	
POF-31	1,424.6	1,425.0	0.4	DOLOMITIC-LIMESTONE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; GOOD INDURATION	DOLOMITIC-LIMESTONE	30	PIN POINT - VUGS	GOOD			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,425.0	1,426.4	1.4	DOLOMITIC-LIMESTONE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	1,426.4	1,427.4	1.0	DOLOMITIC-LIMESTONE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; BIVALVES	DOLOMITIC-LIMESTONE	20	PIN POINT - VUGS	GOOD	BIVALVES		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	1,427.4	1,430.0	2.6	DOLOMITIC-LIMESTONE; DARK YELLOWISH BROWN : 10YR 4/2; MICROCRYSTALLINE; HIGH PINPOINT, VUGGY, AND MOLDIC POROSITY; GOOD INDURATION; SOME FRACTURES, BIVALVES	DOLOMITIC-LIMESTONE	30	PIN POINT - VUGS	GOOD	SOME FRACTURES, BIVALVES		DARK YELLOWISH BROWN : 10YR 4/2			
POF-31	1,430.0	1,431.0	1.0	DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; CELESTITE CRYSTALS IN VUGS	DOLOMITE	10	PIN POINT - VUGS	GOOD	CELESTITE CRYSTALS IN VUGS		PALE YELLOWISH BROWN : 10YR 6/2	CELESTITE		
POF-31	1,431.0	1,435.5	4.5	CALCEREOUS DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; LOW PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; CELESTITE CRYSTALS IN VUGS, LAMINATIONS	DOLOMITE	10	PIN POINT - VUGS	GOOD	CELESTITE CRYSTALS IN VUGS, LAMINATIONS		MODERATE YELLOWISH BROWN : 10YR 5/4	CELESTITE		
POF-31	1,435.5	1,441.0	5.5	DOLOMITE; DARK YELLOWISH BROWN (10YR 4/2); MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; CELESTITE CRYSTALS IN VUGS, LAMINATIONS, SOME FRACTURES	DOLOMITE	20	PIN POINT - VUGS	GOOD	CELESTITE CRYSTALS IN VUGS, LAMINATIONS, SOME FRACTURES		DARK YELLOWISH BROWN : 10YR 4/2	CELESTITE		
POF-31	1,441.0	1,444.5	3.5	DOLOMITE; DARK YELLOWISH BROWN (10YR 4/2); MICROCRYSTALLINE; HIGH PINPOINT, VUGGY. AND MOLDIC POROSITY; GOOD INDURATION; CELESTITE CRYSTALS IN VUGS, FRACTURED	DOLOMITE	30	PIN POINT - VUGS	GOOD	CELESTITE CRYSTALS IN VUGS, FRACTURED		DARK YELLOWISH BROWN : 10YR 4/2	CELESTITE		
POF-31	1,444.5	1,449.0	4.5	DOLOMITE; MODERATE YELLOWISH BROWN (10YR 5/4); MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; CELESTITE CRYSTALS IN VUGS, LAMINATIONS, PELLETS, FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	CELESTITE CRYSTALS IN VUGS, LAMINATIONS, FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4	CELESTITE		
POF-31	1,449.0	1,450.0	1.0	NOT RECOVERED										
POF-31	1,450.0	1,451.7	1.7	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION; ANHYDRITE CRYSTALS IN VUGS	DOLOMITE	30	PIN POINT - VUGS	GOOD	CELESTITE CRYSTALS IN VUGS		PALE YELLOWISH BROWN : 10YR 6/2	CELESTITE	5	
POF-31	1,451.7	1,453.0	1.3	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; MODERATE INDURATION	DOLOMITE	20	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-31	1,453.0	1,454.5	1.5	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,454.5	1,455.8	1.3	DOLOMITIC-LIMESTONE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; ORGANICS	DOLOMITIC-LIMESTONE	10	PIN POINT - VUGS	GOOD	ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,455.8	1,458.0	2.2	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION; ANHYDRITE CRYSTALS IN VUGS	DOLOMITE	30	PIN POINT - VUGS	GOOD	CELESTITE CRYSTALS IN VUGS		DARK YELLOWISH BROWN : 10YR 4/2	CELESTITE	5	
POF-31	1,458.0	1,459.0	1.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; HIGH PINPOINT AND MOLDIC POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,459.0	1,460.0	1.0	DOLOMITE; DARK YELLOWISH BROWN : 10YR 4/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	ORGANICS		DARK YELLOWISH BROWN : 10YR 4/2			
POF-31	1,460.0	1,461.1	1.1	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,461.1	1,462.0	0.9	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; POOR INDURATION; LIGNITE	DOLOMITE	10	PIN POINT - VUGS	POOR	LIGNITE		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,462.0	1,462.5	0.5	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,462.5	1,463.0	0.5	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; POOR INDURATION; LIGNITE	DOLOMITE	10	PIN POINT - VUGS	POOR	LIGNITE		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,463.0	1,464.0	1.0	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; ORGANICS	DOLOMITE	10	PIN POINT - VUGS	GOOD	ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-31	1,464.0	1,466.0	2.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; ORGANICS	DOLOMITE	10	PIN POINT - VUGS	GOOD	ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,466.0	1,467.8	1.8	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			VERY PALE ORANGE : 10YR 8/2			
POF-31	1,467.8	1,468.5	0.7	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-31	1,468.5	1,470.0	1.5	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; BIVALVE	DOLOMITE	20	PIN POINT - VUGS	GOOD	BIVALVE		PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,470.0	1,471.7	1.7	CALCEREOUS DOLOMITE; DARK YELLOWISH BROWN (10YR 4/2); MICROCRYSTALLINE; HIGH PINPOINT AND MOLDIC POROSITY; MODERATE INDURATION; LAMINATIONS	DOLOMITE	30	PIN POINT - VUGS	MODERATE	LAMINATIONS		DARK YELLOWISH BROWN : 10YR 4/2			
POF-31	1,471.7	1,475.8	4.1	CALCAREOUS DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; CELESTITE CRYSTALS IN VUGS, LAMINATIONS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	CELESTITE CRYSTALS IN VUGS, LAMINATIONS		PALE YELLOWISH BROWN : 10YR 6/2	CELESTITE MINERALS		
POF-31	1,475.8	1,478.0	2.2	DOLOMITE; DARK YELLOWISH BROWN (10YR 4/2); MICROCRYSTALLINE; HIGH PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; LAMINATIONS	DOLOMITE	30	PIN POINT - VUGS	GOOD	LAMINATIONS		DARK YELLOWISH BROWN : 10YR 4/2			

Well	Depth Min, ft bls	Depth Max, ft bls	Thickness, ft	Description	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-31	1,478.0	1,480.0	2.0	CALCAREOUS DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,480.0	1,485.2	5.2	CALCAREOUS DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; NO OBSERVABLE POROSITY; MODERATE INDURATION	DOLOMITE	0	NO OBSERVABLE	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,485.2	1,486.5	1.3	DOLOMITE; DARK YELLOWISH BROWN (10YR 4/2); MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			DARK YELLOWISH BROWN : 10YR 4/2			
POF-31	1,486.5	1,490.0	3.5	CALCAREOUS DOLOMITE; PALE YELLOWISH BROWN (10YR 6/2); MICROCRYSTALLINE; NO OBSERVABLE POROSITY; MODERATE INDURATION	DOLOMITE	0	NO OBSERVABLE	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,490.0	1,491.0	1.0	DOLOMITE; DARK YELLOWISH BROWN : 10YR 4/2; SUCROSIC; MODERATE PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			DARK YELLOWISH BROWN : 10YR 4/2			
POF-31	1,491.0	1,492.2	1.2	DOLOMITE; DARK YELLOWISH BROWN : 10YR 4/2; SUCROSIC; MODERATE PINPOINT, VUGGY, MOLDIC POROSITY; POOR INDURATION; BIVALVES	DOLOMITE	20	PIN POINT - VUGS	POOR	BIVALVES		DARK YELLOWISH BROWN : 10YR 4/2			
POF-31	1,492.2	1,493.0	0.8	DOLOMITE; DARK YELLOWISH BROWN : 10YR 4/2; SUCROSIC; MODERATE PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			DARK YELLOWISH BROWN : 10YR 4/2			
POF-31	1,493.0	1,493.8	0.8	LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; LOW INTERGRANULAR POROSITY; GOOD INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-31	1,493.8	1,500.0	6.2	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; GOOD INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	GOOD			VERY PALE ORANGE : 10YR 8/2			

Well	Depth Min, ft bls	Depth Max, ft bls	Description/Comments	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-32	1,500.0	1,500.5	NO RECOVERY										
POF-32	1,500.5	1,503.0	LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR ; MODERATE INDURATION; BIVALVES	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	BIVALVES		GRAYISH ORANGE : 10YR 7/4			
POF-32	1,503.0	1,504.0	LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; BIVALVES, SOME FRACTURES	LIMESTONE-PACKSTONE	20	INTERGRANULAR	MODERATE	BIVALVES, SOME FRACTURES		VERY PALE ORANGE : 10YR 8/2			
POF-32	1,504.0	1,504.6	LIMESTONE-PACKSTONE; MODERATE YELLOWISH BROWN : 10YR 5/4; MODERATE INTERGRANULAR AND PINPOINT POROSITY; GOOD INDURATION; BIVALVES, SOME FRACTURES, CALCITE GROWING ON FRACTURE SURFACE	LIMESTONE-PACKSTONE	20	INTERGRANULAR	GOOD	BIVALVES, SOME FRACTURES, CALCITE GROWING ON FRACTURE SURFACE		MODERATE YELLOWISH BROWN : 10YR 5/4	CALCITE		
POF-32	1,504.6	1,506.1	LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; BIVALVES	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	BIVALVES		VERY PALE ORANGE : 10YR 8/2			
POF-32	1,506.1	1,507.5	LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR AND VUGGY POROSITY; MODERATE INDURATION; CALCITE GROWING ON FRACTURE SURFACE AND IN VUGS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	CALCITE GROWING ON FRACTURE SURFACE AND IN VUGS		GRAYISH ORANGE : 10YR 7/4	CALCITE		
POF-32	1,507.5	1,508.1	LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; MODERATE INTERGRANULAR, MOLDIC, AND VUGGY POROSITY; MODERATE INDURATION; BIVALVES, CALCITE GROWING ON FRACTURE SURFACE AND IN VUGS	LIMESTONE-PACKSTONE	20	INTERGRANULAR	MODERATE	BIVALVES, CALCITE GROWING ON FRACTURE SURFACE AND IN VUGS		GRAYISH ORANGE : 10YR 7/4	CALCITE		
POF-32	1,508.1	1,510.0	CALCAREOUS DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; LOW PINPOINT AND MOLDIC POROSITY; MODERATE INDURATION; BIVALVES; ECHINOIDS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	BIVALVES	ECHINOIDS	GRAYISH ORANGE : 10YR 7/4			
POF-32	1,510.0	1,513.7	LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; ECHINOIDS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE		ECHINOIDS	VERY PALE ORANGE : 10YR 8/2			
POF-32	1,513.7	1,515.6	CALCAREOUS DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT, MOLDIC, AND VUGGY POROSITY; GOOD INDURATION; BIVALVES, CALICTE IN VUGS	DOLOMITE	20	PIN POINT - VUGS	GOOD	BIVALVES, CALICTE IN VUGS		MODERATE YELLOWISH BROWN : 10YR 5/4	CALCITE		
POF-32	1,515.6	1,518.3	LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; BIVALVES, SOME INTRACLASTS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	BIVALVES, SOME INTRACLASTS		GRAYISH ORANGE : 10YR 7/4			
POF-32	1,518.3	1,520.0	NO RECOVERY										
POF-32	1,520.0	1,521.5	CALCAREOUS DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,521.5	1,523.8	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,523.8	1,524.0	NO RECOVERY										
POF-32	1,524.0	1,525.7	CALCAREOUS DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,525.7	1,526.0	NO RECOVERY										
POF-32	1,526.0	1,527.5	CALCAREOUS DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; MODERATE INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	MODERATE	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,527.5	1,528.6	CALCAREOUS DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; MODERATE INDURATION	DOLOMITE	30	PIN POINT - VUGS	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,528.6	1,530.0	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; HIGH PINPOINT POROSITY; POOR INDURATION; FRACTURED, BIVALVES	DOLOMITE	30	PIN POINT - VUGS	POOR	FRACTURED, BIVALVES		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,530.0	1,531.3	DOLOMITE; DARK YELLOWISH BROWN : 10YR 4/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION; BIVALVES	DOLOMITE	30	PIN POINT - VUGS	GOOD	BIVALVES		DARK YELLOWISH BROWN : 10YR 4/2			
POF-32	1,531.3	1,532.2	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION; BIVALVES	DOLOMITE	30	PIN POINT - VUGS	GOOD	BIVALVES		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,532.2	1,532.6	CALCAREOUS DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,532.6	1,533.0	CALCAREOUS DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,533.0	1,534.0	CALCAREOUS DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,534.0	1,535.1	CALCAREOUS DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; POOR INDURATION	DOLOMITE	10	PIN POINT - VUGS	POOR			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,535.1	1,540.0	LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; LOW INTERGRANULAR POROSITY; POOR INDURATION; CALCITE VEIN AT 1538.6	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	CALCITE VEIN AT 1538.6		PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,540.0	1,541.3	LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,541.3	1,548.2	CLAYEY LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR			VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,548.2	1,550.0	CLAYEY LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4	CLAY		

Well	Depth Min, ft bls	Depth Max, ft bls	Description/Comments	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-32	1,550.0	1,554.0	CLAYEY LIMESTONE-PACKSTONE; DARK YELLOWISH ORANGE : 10YR 6/6; LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE			DARK YELLOWISH ORANGE : 10YR 6/6	CLAY		
POF-32	1,554.0	1,556.4	CLAYEY LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; SMALL CALCITE CRYSTALS, BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	SMALL CALCITE CRYSTALS, BIVALVE SHELL FRAGMENTS		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,556.4	1,557.0	CLAYEY LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; MODERATE INTERGRANULAR AND VUGGY POROSITY; MODERATE INDURATION; BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	20	INTERGRANULAR	MODERATE	BIVALVE SHELL FRAGMENTS		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,557.0	1,558.2	CLAYEY LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; BIVALVE AND GASTROPOD SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	BIVALVE AND GASTROPOD SHELL FRAGMENTS		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,558.2	1,560.0	CLAYEY LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; MODERATE INTERGRANULAR AND VUGGY POROSITY; MODERATE INDURATION; BIVALVE AND GASTROPOD SHELL FRAGMENTS	LIMESTONE-PACKSTONE	20	INTERGRANULAR	MODERATE	BIVALVE AND GASTROPOD SHELL FRAGMENTS		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,560.0	1,562.0	CLAYEY LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; MODERATE INTERGRANULAR AND VUGGY POROSITY; POOR INDURATION; BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-PACKSTONE	20	INTERGRANULAR	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,562.0	1,563.2	CLAYEY LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; POOR INDURATION; BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,563.2	1,564.5	CLAYEY LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; POOR INDURATION; BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,564.5	1,566.4	CLAYEY LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; POOR INDURATION; BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,566.4	1,567.6	CLAYEY LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; NO OBSERVABLE POROSITY; POOR INDURATION; BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-PACKSTONE	0	NO OBSERVABLE	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,567.6	1,570.0	CLAYEY LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; NO OBSERVABLE POROSITY; POOR INDURATION; BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,570.0	1,570.9	CLAYEY LIMESTONE-WACKESTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR POROSITY; POOR INDURATION; BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1,570.9	1,575.3	CLAYEY LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR POROSITY; POOR INDURATION; BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1,575.3	1,578.0	CLAYEY LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; POOR INDURATION; BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,578.0	1,580.0	CLAYEY LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; POOR INDURATION; BIVALVE SHELL FRAGMENTS, LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,580.0	1,581.0	CLAYEY LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR POROSITY; POOR INDURATION; BIVALVE SHELL FRAGMENTS, LIMONITE, PYRITE, QUARTZ SAND	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR	BIVALVE SHELL FRAGMENTS, LIMONITE, PYRITE, QUARTZ SAND		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1,581.0	1,589.1	CLAYEY LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; NO OBSERVABLE POROSITY; POOR INDURATION; BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	0	NO OBSERVABLE	POOR	BIVALVE SHELL FRAGMENTS		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1,589.1	1,590.0	CLAYEY LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR POROSITY; POOR INDURATION; BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	POOR	BIVALVE SHELL FRAGMENTS		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1,590.0	1,591.8	CLAYEY LIMESTONE-WACKESTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; BIVALVE AND GASTROPOD SHELL FRAGMENTS, LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	BIVALVE AND GASTROPOD SHELL FRAGMENTS, LIMONITE		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1,591.8	1,595.7	CLAYEY LIMESTONE-WACKESTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR AND MOLDIC POROSITY; POOR INDURATION; LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	LIMONITE		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1,595.7	1,598.5	CLAYEY LIMESTONE-WACKESTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR AND MOLDIC POROSITY; MODERATE INDURATION; SOME BIVALVE AND GASTROPOD SHELL FRAGMENTS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	SOME BIVALVE AND GASTROPOD SHELL FRAGMENTS		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1,598.5	1,598.9	CALCAREOUS DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	10	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,598.9	1,600.0	NO RECOVERY										
POF-32	1,600.0	1,602.9	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	10	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,602.9	1,605.3	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,605.3	1,606.0	CALCAREOUS DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-32	1,606.0	1,607.2	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,607.2	1,608.5	CALCAREOUS DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,608.5	1,610.0	NO RECOVERY										
POF-32	1,610.0	1,612.0	CALCAREOUS DOLOMITE; DARK YELLOWISH ORANGE : 10YR 6/6; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; LIMONITE	DOLOMITE	10	PIN POINT - VUGS	MODERATE			DARK YELLOWISH ORANGE : 10YR 6/6	LIMONITE		
POF-32	1,612.0	1,612.4	CALCAREOUS DOLOMITE; DARK YELLOWISH ORANGE : 10YR 6/6; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; POOR INDURATION	DOLOMITE	20	PIN POINT - VUGS	POOR			DARK YELLOWISH ORANGE : 10YR 6/6			
POF-32	1,612.4	1,613.0	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; MODERATE INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	MODERATE	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			

Well	Depth Min, ft bls	Depth Max, ft bls	Description/Comments	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-32	1,613.0	1,614.1	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,614.1	1,614.9	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,614.9	1,616.0	DOLOMITE; DARK YELLOWISH BROWN : 10YR 4/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			DARK YELLOWISH BROWN : 10YR 4/2			
POF-32	1,616.0	1,617.3	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,617.3	1,619.6	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	MODERATE	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,619.6	1,620.0	NO RECOVERY										
POF-32	1,620.0	1,622.2	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; FRACTURED; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	MODERATE	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,622.2	1,624.0	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; FRACTURED; LIMONITE	DOLOMITE	30	PIN POINT - VUGS	MODERATE	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,624.0	1,625.8	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; FRACTURED; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	MODERATE	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,625.8	1,626.3	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; FRACTURED; LIMONITE	DOLOMITE	10	PIN POINT - VUGS	MODERATE	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,626.3	1,629.0	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; LIMONITE	DOLOMITE	30	PIN POINT - VUGS	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,629.0	1,633.8	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; MODERATE INDURATION; SOME FRACTURES; LIMONITE	DOLOMITE	10	PIN POINT - VUGS	MODERATE	SOME FRACTURES		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,633.8	1,635.4	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; POOR INDURATION; FRACTURED; LIMONITE	DOLOMITE	10	PIN POINT - VUGS	POOR	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,635.4	1,637.6	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; LIMONITE	DOLOMITE	10	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,637.6	1,640.0	DOLOMITE; DARK YELLOWISH BROWN : 10YR 4/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; SOME FRACTURES; LIMONITE	DOLOMITE	10	PIN POINT - VUGS	GOOD	SOME FRACTURES		DARK YELLOWISH BROWN : 10YR 4/2	LIMONITE		
POF-32	1,640.0	1,643.8	LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; LIMONITE	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4	LIMONITE		
POF-32	1,643.8	1,650.0	NO RECOVERY										
POF-32	1,650.0	1,651.1	LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; LIMONITE	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4	LIMONITE		
POF-32	1,651.1	1,651.8	LIMESTONE-PACKSTONE; MODERATE YELLOWISH BROWN : 10YR 5/4; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; LIMONITE	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,651.8	1,654.6	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	10	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,654.6	1,656.5	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,656.5	1,659.5	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,659.5	1,660.0	LIMESTONE-PACKSTONE; PALE YELLOWISH BROWN : 10YR 6/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,660.0	1,661.3	LIMESTONE-WACKESTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4	LIMONITE		
POF-32	1,661.3	1,664.7	LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-32	1,664.7	1,666.4	DOLOMITE; DARK YELLOWISH BROWN : 10YR 4/2; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE			DARK YELLOWISH BROWN : 10YR 4/2			
POF-32	1,666.4	1,667.0	DOLOMITE; DARK YELLOWISH BROWN : 10YR 4/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			DARK YELLOWISH BROWN : 10YR 4/2			
POF-32	1,667.0	1,668.0	DOLOMITE; DARK YELLOWISH BROWN : 10YR 4/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION; LIMONITE	DOLOMITE	30	PIN POINT - VUGS	GOOD			DARK YELLOWISH BROWN : 10YR 4/2	LIMONITE		

Well	Depth Min, ft bls	Depth Max, ft bls	Description/Comments	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-32	1,668.0	1,668.3	DOLOMITE; DARK YELLOWISH BROWN : 10YR 4/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	GOOD			DARK YELLOWISH BROWN : 10YR 4/2	LIMONITE		
POF-32	1,668.3	1,669.8	LIMESTONE-WACKESTONE; GRAYISH ORANGE : 10YR 7/4; MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; ORGANICS, LAMINATIONS	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	ORGANICS, LAMINATIONS		GRAYISH ORANGE : 10YR 7/4	LIMONITE		
POF-32	1,669.8	1,670.0	NO RECOVERY										
POF-32	1,670.0	1,671.3	LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; BIVALVE SHELL FRAGMENTS, PYRITE	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	BIVALVE SHELL FRAGMENTS, PYRITE		VERY PALE ORANGE : 10YR 8/2	LIMONITE		
POF-32	1,671.3	1,672.0	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; BIVALVE SHELL FRAGMENTS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	BIVALVE SHELL FRAGMENTS		VERY PALE ORANGE : 10YR 8/2			
POF-32	1,672.0	1,678.4	LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; BIVALVE AND ECHINOID SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	BIVALVE AND ECHINOID SHELL FRAGMENTS		VERY PALE ORANGE : 10YR 8/2			
POF-32	1,678.4	1,680.0	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; FRACTURED	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-32	1,680.0	1,681.1	LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; MODERATE INTERGRANULAR POROSITY; MODERATE INDURATION; BIVALVE AND ECHINOID SHELL FRAGMENTS, PYRITE	LIMESTONE-PACKSTONE	20	INTERGRANULAR	MODERATE	BIVALVE AND ECHINOID SHELL FRAGMENTS, PYRITE		VERY PALE ORANGE : 10YR 8/2	LIMONITE		
POF-32	1,681.1	1,684.5	LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; BIVALVE AND ECHINOID SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	BIVALVE AND ECHINOID SHELL FRAGMENTS		VERY PALE ORANGE : 10YR 8/2	LIMONITE		
POF-32	1,684.5	1,688.0	LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; BIVALVE AND ECHINOID SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	BIVALVE AND ECHINOID SHELL FRAGMENTS		VERY PALE ORANGE : 10YR 8/2			
POF-32	1,688.0	1,690.0	LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,690.0	1,690.6	LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2	LIMONITE		
POF-32	1,690.6	1,692.3	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,692.3	1,694.6	LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,694.6	1,696.4	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,696.4	1,700.0	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,700.0	1,702.9	LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	BIVALVE SHELL FRAGMENTS		GRAYISH ORANGE : 10YR 7/4	LIMONITE		
POF-32	1,702.9	1,704.3	LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	BIVALVE SHELL FRAGMENTS		GRAYISH ORANGE : 10YR 7/4			
POF-32	1,704.3	1,706.0	LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	BIVALVE SHELL FRAGMENTS		VERY PALE ORANGE : 10YR 8/2			
POF-32	1,706.0	1,710.0	LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	BIVALVE SHELL FRAGMENTS		VERY PALE ORANGE : 10YR 8/2	LIMONITE		
POF-32	1,710.0	1,711.7	LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-32	1,711.7	1,715.1	LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	BIVALVE SHELL FRAGMENTS		GRAYISH ORANGE : 10YR 7/4			
POF-32	1,715.1	1,716.2	LIMESTONE-PACKSTONE; DARK YELLOWISH ORANGE : 10YR 6/6; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; BIVALVE SHELL FRAGMENTS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	BIVALVE SHELL FRAGMENTS		DARK YELLOWISH ORANGE : 10YR 6/6			
POF-32	1,716.2	1,718.4	DOLOMITE; DARK YELLOWISH ORANGE : 10YR 6/6; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; POOR INDURATION	DOLOMITE	20	PIN POINT - VUGS	POOR			DARK YELLOWISH ORANGE : 10YR 6/6			
POF-32	1,718.4	1,720.0	DOLOMITE; DARK YELLOWISH ORANGE : 10YR 6/6; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; MODERATE INDURATION; FRACTURED; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	MODERATE	FRACTURED		DARK YELLOWISH ORANGE : 10YR 6/6	LIMONITE		
POF-32	1,720.0	1,721.0	DOLOMITE; DARK YELLOWISH ORANGE : 10YR 6/6; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			DARK YELLOWISH ORANGE : 10YR 6/6			
POF-32	1,721.0	1,722.0	DOLOMITE; DARK YELLOWISH ORANGE : 10YR 6/6; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; FRACTURED	DOLOMITE	30	PIN POINT - VUGS	MODERATE	FRACTURED		DARK YELLOWISH ORANGE : 10YR 6/6			
POF-32	1,722.0	1,722.8	DOLOMITE; DARK YELLOWISH ORANGE : 10YR 6/6; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	30	PIN POINT - VUGS	GOOD	FRACTURED		DARK YELLOWISH ORANGE : 10YR 6/6			
POF-32	1,722.8	1,723.5	DOLOMITE; DARK YELLOWISH ORANGE : 10YR 6/6; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			DARK YELLOWISH ORANGE : 10YR 6/6			
POF-32	1,723.5	1,726.0	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,726.0	1,727.4	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; ORGANICS	DOLOMITE	10	PIN POINT - VUGS	GOOD	ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,727.4	1,728.5	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	30	PIN POINT - VUGS	GOOD	FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,728.5	1,730.3	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW VUGGY POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	10	VUGULAR	GOOD	FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,730.3	1,734.5	NO RECOVERY										
POF-32	1,734.5	1,736.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; POOR INDURATION; FRACTURED; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	POOR	FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE		

Well	Depth Min, ft bls	Depth Max, ft bls	Description/Comments	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-32	1,736.0	1,738.5	DOLOMITE; DARK YELLOWISH ORANGE : 10YR 6/6; MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		DARK YELLOWISH ORANGE : 10YR 6/6			
POF-32	1,738.5	1,740.0	DOLOMITE; DARK YELLOWISH ORANGE : 10YR 6/6; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; FRACTURED; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	MODERATE	FRACTURED		DARK YELLOWISH ORANGE : 10YR 6/6	LIMONITE		
POF-32	1,740.0	1,742.0	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; MODERATE INDURATION; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	MODERATE			GRAYISH ORANGE : 10YR 7/4	LIMONITE		
POF-32	1,742.0	1,743.2	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; LOW PINPOINT AND MOLDIC POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			GRAYISH ORANGE : 10YR 7/4			
POF-32	1,743.2	1,744.5	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	10	PIN POINT - VUGS	GOOD	FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,744.5	1,746.0	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; FRACTURED	DOLOMITE	30	PIN POINT - VUGS	MODERATE	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,746.0	1,746.9	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; FRACTURED	DOLOMITE	30	PIN POINT - VUGS	MODERATE	FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,746.9	1,748.3	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	30	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,748.3	1,750.0	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,750.0	1,752.2	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,752.2	1,754.1	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; LIMONITE	DOLOMITE	30	PIN POINT - VUGS	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,754.1	1,756.3	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION; LIMONITE	DOLOMITE	30	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,756.3	1,757.5	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT, VUGGY, AND MOLDIC POROSITY; GOOD INDURATION; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,757.5	1,759.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; HIGH PINPOINT, VUGGY, AND MOLDIC POROSITY; MODERATE INDURATION; LIMONITE	DOLOMITE	30	PIN POINT - VUGS	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE		
POF-32	1,759.0	1,760.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; POOR INDURATION; LIMONITE	DOLOMITE	30	PIN POINT - VUGS	POOR			PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE		
POF-32	1,760.0	1,762.1	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND MOLDIC POROSITY; GOOD INDURATION; FRACTURED; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE		
POF-32	1,762.1	1,763.0	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR AND VUGGY POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2	LIMONITE		
POF-32	1,763.0	1,766.2	LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR AND VUGGY POROSITY; MODERATE INDURATION; SOME ORGANICS	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE	SOME ORGANICS		VERY PALE ORANGE : 10YR 8/2			
POF-32	1,766.2	1,768.4	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR AND VUGGY POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,768.4	1,770.0	NO RECOVERY										
POF-32	1,770.0	1,772.1	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED, GLAUCONITE; LIMONITE	DOLOMITE	30	PIN POINT - VUGS	GOOD	FRACTURED, GLAUCONITE		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,772.1	1,776.0	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,776.0	1,780.0	NO RECOVERY										
POF-32	1,780.0	1,781.0	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED, GLAUCONITE; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED, GLAUCONITE		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,781.0	1,784.3	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED; LIMONITE	DOLOMITE	30	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,784.3	1,788.1	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED; LIMONITE	DOLOMITE	30	PIN POINT - VUGS	GOOD	FRACTURED		PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE		
POF-32	1,788.1	1,789.5	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,789.5	1,790.0	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,790.0	1,790.8	DOLOMITE; DARK YELLOWISH BROWN : 10YR 4/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED; PYRITE	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		DARK YELLOWISH BROWN : 10YR 4/2	PYRITE		
POF-32	1,790.8	1,793.2	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; FRACTURED	DOLOMITE	20	PIN POINT - VUGS	GOOD	FRACTURED		MODERATE YELLOWISH BROWN : 10YR 5/4			

Well	Depth Min, ft bls	Depth Max, ft bls	Description/Comments	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-32	1,793.2	1,794.7	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; HIGH PINPOINT, MOLDIC, AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	30	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,794.7	1,795.7	DOLOMITE; DARK YELLOWISH BROWN : 10YR 4/2; MICROCRYSTALLINE; MODERATE PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			DARK YELLOWISH BROWN : 10YR 4/2			
POF-32	1,795.7	1,797.9	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,797.9	1,799.1	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; HIGH PINPOINT AND VUGGY POROSITY; GOOD INDURATION; PYRITE	DOLOMITE	30	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2	PYRITE		
POF-32	1,799.1	1,800.0	NO RECOVERY										
POF-32	1,800.0	1,800.5	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; ORGANICS AND LAMINATIONS; LIMONITE	DOLOMITE	10	PIN POINT - VUGS	GOOD	ORGANICS AND LAMINATIONS		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,800.5	1,801.2	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION	DOLOMITE	20	PIN POINT - VUGS	GOOD			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,801.2	1,805.6	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; GOOD INDURATION; SOME FRACTURES; LIMONITE	DOLOMITE	10	PIN POINT - VUGS	GOOD	SOME FRACTURES		MODERATE YELLOWISH BROWN : 10YR 5/4	LIMONITE		
POF-32	1,805.6	1,810.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE		
POF-32	1,810.0	1,811.4	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,811.4	1,812.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; GOOD INDURATION; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE		
POF-32	1,812.0	1,813.1	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE		
POF-32	1,813.1	1,816.2	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,816.2	1,817.6	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY ; MODERATE INDURATION; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE		
POF-32	1,817.6	1,818.1	DOLOMITE; VERY PALE ORANGE : 10YR 8/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY ; MODERATE INDURATION; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	MODERATE			VERY PALE ORANGE : 10YR 8/2	LIMONITE		
POF-32	1,818.1	1,821.1	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY ; GOOD INDURATION; FRACTURED, PYRITE; LIMONITE	DOLOMITE	10	PIN POINT - VUGS	GOOD	FRACTURED, PYRITE		PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE		
POF-32	1,821.1	1,822.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY ; GOOD INDURATION; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE		
POF-32	1,822.0	1,823.1	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT ; GOOD INDURATION	DOLOMITE	10	PIN POINT - VUGS	GOOD			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,823.1	1,824.0	DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY ; GOOD INDURATION; GLAUCONITE; LIMONITE	DOLOMITE	20	PIN POINT - VUGS	GOOD	GLAUCONITE		GRAYISH ORANGE : 10YR 7/4	LIMONITE		
POF-32	1,824.0	1,825.7	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT ; GOOD INDURATION; WHITE QUARTZ INFILLING VUGS	DOLOMITE	10	PIN POINT - VUGS	GOOD	WHITE QUARTZ INFILLING VUGS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,825.7	1,826.0	NO RECOVERY										
POF-32	1,826.0	1,827.7	DOLOMITE; YELLOWISH GRAY (2) : 5Y 8/1; MICROCRYSTALLINE; LOW PINPOINT POROSITY; GOOD INDURATION; VUGS INFILLED WITH WHITE QUARTZ	DOLOMITE	10	PIN POINT - VUGS	GOOD	VUGS INFILLED WITH WHITE QUARTZ		YELLOWISH GRAY (2) : 5Y 8/1			
POF-32	1,827.7	1,828.4	DOLOMITE; YELLOWISH GRAY (2) : 5Y 8/1; MICROCRYSTALLINE; HIGH PINPOINT, MOLDIC, AND VUGGY POROSITY; GOOD INDURATION; FRACTURED; LIMONITE	DOLOMITE	30	PIN POINT - VUGS	GOOD	FRACTURED		YELLOWISH GRAY (2) : 5Y 8/1	LIMONITE		
POF-32	1,828.4	1,830.0	NO RECOVERY										
POF-32	1,830.0	1,834.7	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; VUGS INFILLED WITH WHITE QUARTZ, SOME HEALED FRACTURES; LIMONITE	DOLOMITE	10	PIN POINT - VUGS	MODERATE	VUGS INFILLED WITH WHITE QUARTZ, SOME HEALED FRACTURES		PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE		
POF-32	1,834.7	1,839.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; NO OBSERVEABLE POROSITY; MODERATE INDURATION; VUGS INFILLED WITH WHITE QUARTZ; LIMONITE	DOLOMITE	0	NO OBSERVABLE	MODERATE	VUGS INFILLED WITH WHITE QUARTZ		PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE		
POF-32	1,839.0	1,840.0	NO RECOVERY										
POF-32	1,840.0	1,841.8	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; NO OBSERVEABLE ; MODERATE INDURATION	DOLOMITE	0	NO OBSERVABLE	MODERATE			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,841.8	1,844.9	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; VUGS INFILLED WITH WHITE QUARTZ	DOLOMITE	10	PIN POINT - VUGS	MODERATE	VUGS INFILLED WITH WHITE QUARTZ		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,844.9	1,846.5	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; VUGS INFILLED WITH WHITE QUARTZ	DOLOMITE	20	PIN POINT - VUGS	MODERATE	VUGS INFILLED WITH WHITE QUARTZ		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,846.5	1,848.5	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT, MOLDIC, AND VUGGY POROSITY; MODERATE INDURATION; VUGS INFILLED WITH WHITE QUARTZ	DOLOMITE	10	PIN POINT - VUGS	MODERATE	VUGS INFILLED WITH WHITE QUARTZ		MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,848.5	1,850.0	CALCAREOUS DOLOMITE; GRAYISH ORANGE : 10YR 7/4; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY POROSITY; MODERATE INDURATION; FRACTURED	DOLOMITE	10	PIN POINT - VUGS	MODERATE	FRACTURED		GRAYISH ORANGE : 10YR 7/4			

Well	Depth Min, ft bls	Depth Max, ft bls	Description/Comments	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-32	1,850.0	1,851.6	CALCAREOUS DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; NO OBSERVEABLE POROSITY; MODERATE INDURATION; VUGS INFILLED WITH WHITE QUARTZ; ORGANICS	DOLOMITE	0	NO OBSERVABLE	MODERATE	VUGS INFILLED WITH WHITE QUARTZ		PALE YELLOWISH BROWN : 10YR 6/2	ORGANICS		
POF-32	1,851.6	1,856.4	CALCAREOUS DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW VUGGY POROSITY; MODERATE INDURATION; VUGS INFILLED WITH WHITE QUARTZ; ORGANICS	DOLOMITE	10	VUGULAR	MODERATE	VUGS INFILLED WITH WHITE QUARTZ		PALE YELLOWISH BROWN : 10YR 6/2	ORGANICS		
POF-32	1,856.4	1,859.2	CALCAREOUS DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; NO OBSERVEABLE ; MODERATE INDURATION; VUGS INFILLED WITH WHITE QUARTZ; ORGANICS	DOLOMITE	0	NO OBSERVABLE	MODERATE	VUGS INFILLED WITH WHITE QUARTZ		PALE YELLOWISH BROWN : 10YR 6/2	ORGANICS		
POF-32	1,859.2	1,860.0	CALCAREOUS DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; NO OBSERVEABLE ; MODERATE INDURATION; VUGS INFILLED WITH WHITE QUARTZ; ORGANICS	DOLOMITE	0	NO OBSERVABLE	MODERATE	VUGS INFILLED WITH WHITE QUARTZ		MODERATE YELLOWISH BROWN : 10YR 5/4	ORGANICS		
POF-32	1,860.0	1,863.0	LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; NO OBSERVEABLE ; MODERATE INDURATION; WHITE QUARTZ, LAMINATIONS; ORGANICS	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	MODERATE	WHITE QUARTZ, LAMINATIONS		PALE YELLOWISH BROWN : 10YR 6/2	ORGANICS		
POF-32	1,863.0	1,863.6	LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; MODERATE PINPOINT AND VUGGY ; MODERATE INDURATION; WHITE QUARTZ, LAMINATIONS; ORGANICS	LIMESTONE-WACKESTONE	20	NO OBSERVABLE	MODERATE	WHITE QUARTZ, LAMINATIONS		PALE YELLOWISH BROWN : 10YR 6/2	ORGANICS		
POF-32	1,863.6	1,864.3	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; MODERATE PINPOINT AND VUGGY ; MODERATE INDURATION; WHITE QUARTZ	DOLOMITE	20	PIN POINT - VUGS	MODERATE	WHITE QUARTZ		PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,864.3	1,867.2	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; NO OBSERVEABLE ; MODERATE INDURATION; WHITE QUARTZ, LAMINATIONS; ORGANICS	DOLOMITE	0	NO OBSERVABLE	MODERATE	WHITE QUARTZ, LAMINATIONS		PALE YELLOWISH BROWN : 10YR 6/2	ORGANICS		
POF-32	1,867.2	1,867.6	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY ; MODERATE INDURATION; LAMINATIONS, WHITE QUARTZ; ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	LAMINATIONS, WHITE QUARTZ		MODERATE YELLOWISH BROWN : 10YR 5/4	ORGANICS		
POF-32	1,867.6	1,868.3	DOLOMITE; MODERATE YELLOWISH BROWN : 10YR 5/4; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY ; MODERATE INDURATION; WHITE QUARTZ, LAMINATIONS; ORGANICS	DOLOMITE	10	PIN POINT - VUGS	MODERATE	WHITE QUARTZ, LAMINATIONS		MODERATE YELLOWISH BROWN : 10YR 5/4	ORGANICS		
POF-32	1,868.3	1,868.5	CLAY; MODERATE YELLOWISH BROWN : 10YR 5/4; ; LOW INTERGRANULAR ; UNCONSOLIDATED INDURATION	CLAY	10	INTERGRANULAR	NCONSOLIDATED			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,868.5	1,869.0	DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY ; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,869.0	1,869.8	CALCAREOUS DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; LOW PINPOINT AND VUGGY ; MODERATE INDURATION	DOLOMITE	10	PIN POINT - VUGS	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,869.8	1,870.0	NO RECOVERY										
POF-32	1,870.0	1,871.1	CALCAREOUS DOLOMITE; PALE YELLOWISH BROWN : 10YR 6/2; MICROCRYSTALLINE; NO OBSERVEABLE POROSITY; MODERATE INDURATION; LAMINATIONS	DOLOMITE	0	NO OBSERVABLE	MODERATE	LAMINATIONS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,871.1	1,872.4	LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; NO OBSERVEABLE POROSITY; MODERATE INDURATION; LAMINATIONS; FORAMINIFERA	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	MODERATE	LAMINATIONS	FORAMINIFERA	PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,872.4	1,872.7	CLAY; DARK YELLOWISH BROWN : 10YR 4/2; ; NO OBSERVEABLE POROSITY; UNCONSOLIDATED INDURATION	CLAY	0	NO OBSERVABLE	NCONSOLIDATED			DARK YELLOWISH BROWN : 10YR 4/2			
POF-32	1,872.7	1,873.9	LIMESTONE-WACKESTONE; MODERATE YELLOWISH BROWN : 10YR 5/4; NO OBSERVEABLE POROSITY; MODERATE INDURATION; LAMINATIONS; FORAMINIFERA	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	MODERATE	LAMINATIONS	FORAMINIFERA	MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,873.9	1,874.1	CLAY; MODERATE YELLOWISH BROWN : 10YR 5/4; ; NO OBSERVEABLE POROSITY; UNCONSOLIDATED INDURATION	CLAY	0	NO OBSERVABLE	NCONSOLIDATED			MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,874.1	1,874.5	LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; NO OBSERVEABLE POROSITY; MODERATE INDURATION; LAMINATIONS; FORAMINIFERA	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	MODERATE	LAMINATIONS	FORAMINIFERA	PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,874.5	1,874.9	CLAY; PALE YELLOWISH BROWN : 10YR 6/2; ; NO OBSERVEABLE POROSITY; UNCONSOLIDATED INDURATION	CLAY	0	NO OBSERVABLE	NCONSOLIDATED			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,874.9	1,875.6	LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; NO OBSERVEABLE POROSITY; POOR INDURATION; LAMINATIONS; FORAMINIFERA	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	POOR	LAMINATIONS	FORAMINIFERA	PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,875.6	1,876.1	LIMESTONE-WACKESTONE; MODERATE YELLOWISH BROWN : 10YR 5/4; LOW INETERGRANULAR POROSITY; MODERATE INDURATION; LAMINATIONS, WHITE QUARTZ; FORAMINIFERA	LIMESTONE-WACKESTONE	10	INTRAGRANULAR	MODERATE	LAMINATIONS, WHITE QUARTZ	FORAMINIFERA	MODERATE YELLOWISH BROWN : 10YR 5/4			
POF-32	1,876.1	1,879.2	LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; NO OBSERVEABLE POROSITY; POOR INDURATION; FORAMINIFERA	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	POOR		FORAMINIFERA	PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,879.2	1,880.0	LIMESTONE-MUDSTONE; PALE YELLOWISH BROWN : 10YR 6/2; NO OBSERVEABLE POROSITY; POOR INDURATION	LIMESTONE-MUDSTONE	0	NO OBSERVABLE	POOR			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,880.0	1,882.2	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; LIMONITE; FORAMINIFERA; PYRITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	LIMONITE	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2	PYRITE		
POF-32	1,882.2	1,883.7	LIMESTONE-WACKESTONE; OLIVE GRAY (2) : 5Y 4/1; NO OBSERVEABLE POROSITY; MODERATE INDURATION; LAMINATIONS; FORAMINIFERA; ORGANICS	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	MODERATE	LAMINATIONS	FORAMINIFERA	OLIVE GRAY (2) : 5Y 4/1	ORGANICS		
POF-32	1,883.7	1,887.7	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; NO OBSERVEABLE POROSITY; MODERATE INDURATION; WHITE QUARTZ; FORAMINIFERA	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	MODERATE	WHITE QUARTZ	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-32	1,887.7	1,888.1	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; WHITE QUARTZ; FORAMINIFERA	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	WHITE QUARTZ	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-32	1,888.1	1,890.0	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; NO OBSERVEABLE POROSITY; MODERATE INDURATION; FORAMINIFERA	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	MODERATE		FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2			
POF-32	1,890.0	1,893.3	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; NO OBSERVEABLE POROSITY; MODERATE INDURATION; LAMINATIONS, LIMONITE; FORAMINIFERA; ORGANICS	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	MODERATE	LAMINATIONS, LIMONITE	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2	ORGANICS		
POF-32	1,893.3	1,893.7	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; NO OBSERVEABLE POROSITY; MODERATE INDURATION; LARGE CHERT NODULE	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	MODERATE	LARGE CHERT NODULE		VERY PALE ORANGE : 10YR 8/2			

Well	Depth Min, ft bls	Depth Max, ft bls	Description/Comments	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-32	1,893.7	1,897.6	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; NO OBSERVEABLE POROSITY; MODERATE INDURATION; LAMINATIONS, WHITE QUARTZ; FORAMINIFERA; ORGANICS	LIMESTONE-WACKESTONE	0	NO OBSERVABLE	MODERATE	LAMINATIONS, WHITE QUARTZ	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2	ORGANICS		
POF-32	1,897.6	1,900.0	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; LAMINATIONS, WHITE QUARTZ; FORAMINIFERA; ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	LAMINATIONS, WHITE QUARTZ	FORAMINIFERA	VERY PALE ORANGE : 10YR 8/2	ORGANICS		
POF-32	1,900.0	1,902.3	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; LAMINATIONS; ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2	ORGANICS		
POF-32	1,902.3	1,904.2	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; WHITE QUARTZ	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	WHITE QUARTZ		VERY PALE ORANGE : 10YR 8/2			
POF-32	1,904.2	1,905.0	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,905.0	1,905.8	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; LAMINATIONS; ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2	ORGANICS		
POF-32	1,905.8	1,906.3	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,906.3	1,907.7	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; MODERATE INTERGRANULAR AND VUGGY POROSITY; POOR INDURATION; WHITE QUARTZ	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR	WHITE QUARTZ		VERY PALE ORANGE : 10YR 8/2			
POF-32	1,907.7	1,909.7	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; MODERATE INTERGRANULAR AND VUGGY POROSITY; MODERATE INDURATION; FRACTURED, WHITE QUARTZ, GLAUCONITE; LIMONITE	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	FRACTURED, WHITE QUARTZ, GLAUCONITE		VERY PALE ORANGE : 10YR 8/2	LIMONITE		
POF-32	1,909.7	1,910.0	NO RECOVERY										
POF-32	1,910.0	1,911.1	LIMESTONE-WACKESTONE; DARK YELLOWISH BROWN : 10YR 4/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION; INTRACLASTS; LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	INTRACLASTS		DARK YELLOWISH BROWN : 10YR 4/2	LIMONITE		
POF-32	1,911.1	1,912.2	LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,912.2	1,913.3	LIMESTONE-WACKESTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4			
POF-32	1,913.3	1,915.1	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR POROSITY; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,915.1	1,916.1	CLAYEY LIMESTONE-WACKESTONE; GRAYISH GREEN : 10GY 5/2; LOW INTERGRANULAR POROSITY; POOR INDURATION; GLAUCONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	GLAUCONITE		GRAYISH GREEN : 10GY 5/2	CLAY		
POF-32	1,916.1	1,918.2	CLAYEY LIMESTONE-WACKESTONE; YELLOWISH GRAY (2) : 5Y 8/1; LOW INTERGRANULAR ; POOR INDURATION; LAMINATIONS, ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	LAMINATIONS, ORGANICS		YELLOWISH GRAY (2) : 5Y 8/1	CLAY		
POF-32	1,918.2	1,918.9	LIMESTONE-MUDSTONE; YELLOWISH GRAY (2) : 5Y 8/1; LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	MODERATE			YELLOWISH GRAY (2) : 5Y 8/1			
POF-32	1,918.9	1,920.0	LIMESTONE-MUDSTONE; LIGHT OLIVE GRAY (2) : 5Y 6/1; LOW INTERGRANULAR ; MODERATE INDURATION; LAMINATIONS	LIMESTONE-MUDSTONE	10	INTERGRANULAR	MODERATE	LAMINATIONS		LIGHT OLIVE GRAY (2) : 5Y 6/1	ORGANICS		
POF-32	1,920.0	1,921.0	CLAYEY LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; MODERATE INTERGRANULAR ; MODERATE INDURATION; FRACTURED	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	FRACTURED		VERY PALE ORANGE : 10YR 8/2			
POF-32	1,921.0	1,922.8	CLAYEY LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; LOW INTERGRANULAR ; MODERATE INDURATION; LAMINATIONS, ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	LAMINATIONS, ORGANICS		PALE YELLOWISH BROWN : 10YR 6/2	CLAY		
POF-32	1,922.8	1,923.4	CLAYEY LIMESTONE-WACKESTONE; LIGHT OLIVE GRAY (2) : 5Y 6/1; MODERATE INTERGRANULAR AND VUGGY ; MODERATE INDURATION	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE			LIGHT OLIVE GRAY (2) : 5Y 6/1	CLAY		
POF-32	1,923.4	1,924.5	CLAYEY LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; MODERATE INTERGRANULAR AND VUGGY ; MODERATE INDURATION	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,924.5	1,925.7	CLAYEY LIMESTONE-WACKESTONE; LIGHT OLIVE GRAY (2) : 5Y 6/1; MODERATE INTERGRANULAR AND VUGGY ; MODERATE INDURATION	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE			LIGHT OLIVE GRAY (2) : 5Y 6/1			
POF-32	1,925.7	1,927.7	CLAYEY LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,927.7	1,929.0	CLAYEY LIMESTONE-MUDSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,929.0	1,930.0	CLAYEY LIMESTONE-MUDSTONE; LIGHT OLIVE GRAY (2) : 5Y 6/1; MODERATE INTERGRANULAR AND VUGGY ; MODERATE INDURATION	LIMESTONE-MUDSTONE	20	INTERGRANULAR	MODERATE			LIGHT OLIVE GRAY (2) : 5Y 6/1			
POF-32	1,930.0	1,931.4	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR ; POOR INDURATION; LIMONITE; PYRITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	LIMONITE		VERY PALE ORANGE : 10YR 8/2	PYRITE		
POF-32	1,931.4	1,932.0	LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,932.0	1,932.5	LIMESTONE-MUDSTONE; GRAY : N5; HIGH INTERGRANULAR AND VUGGY ; MODERATE INDURATION; ORGANICS	LIMESTONE-MUDSTONE	30	INTERGRANULAR	MODERATE			GRAY : N5	ORGANICS		
POF-32	1,932.5	1,933.3	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; MODERATE INTERGRANULAR AND VUGGY ; MODERATE INDURATION	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,933.3	1,934.2	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR ; MODERATE INDURATION; LAMINATIONS; ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	LAMINATIONS		VERY PALE ORANGE : 10YR 8/2	ORGANICS		
POF-32	1,934.2	1,936.1	LIMESTONE-WACKESTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR ; MODERATE INDURATION; FORAMINIFERA	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE		FORAMINIFERA	GRAYISH ORANGE : 10YR 7/4			
POF-32	1,936.1	1,938.0	LIMESTONE-WACKESTONE; LIGHT GRAY : N7; LOW INTERGRANULAR ; MODERATE INDURATION; INTERCLASTS; ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	INTERCLASTS		LIGHT GRAY : N7	ORGANICS		
POF-32	1,938.0	1,938.1	LIMESTONE-WACKESTONE; YELLOWISH GRAY (2) : 5Y 8/1; LOW INTERGRANULAR ; MODERATE INDURATION; LAMINATIONS; ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	LAMINATIONS		YELLOWISH GRAY (2) : 5Y 8/1	ORGANICS		
POF-32	1,938.1	1,938.8	LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; LOW INTERGRANULAR ; MODERATE INDURATION; INTERCLASTS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	INTERCLASTS		PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,938.8	1,939.1	LIMESTONE-WACKESTONE; LIGHT GRAY : N7; LOW INTERGRANULAR ; MODERATE INDURATION; INTERCLASTS; ORGANICS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	INTERCLASTS		LIGHT GRAY : N7	ORGANICS		

Well	Depth Min, ft bls	Depth Max, ft bls	Description/Comments	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-32	1,939.1	1,940.0	LIMESTONE-WACKESTONE; YELLOWISH GRAY (2) : 5Y 8/1; LOW INTERGRANULAR ; POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR			YELLOWISH GRAY (2) : 5Y 8/1			
POF-32	1,940.0	1,940.9	LIMESTONE-WACKESTONE; LIGHT OLIVE GRAY (2) : 5Y 6/1; LOW INTERGRANULAR ; MODERATE INDURATION; LAMINATIONS, PELLETS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	LAMINATIONS, PELLETS		LIGHT OLIVE GRAY (2) : 5Y 6/1			
POF-32	1,940.9	1,942.0	LIMESTONE-WACKESTONE; YELLOWISH GRAY (2) : 5Y 8/1; MODERATE INTERGRANULAR ; POOR INDURATION; FRACTURED	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR	FRACTURED		YELLOWISH GRAY (2) : 5Y 8/1			
POF-32	1,942.0	1,943.0	LIMESTONE-MUDSTONE; WHITE : N9; MODERATE INTERGRANULAR ; POOR INDURATION	LIMESTONE-MUDSTONE	20	INTERGRANULAR	POOR			WHITE : N9			
POF-32	1,943.0	1,945.2	LIMESTONE-MUDSTONE; WHITE : N9; LOW INTERGRANULAR ; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR			WHITE : N9			
POF-32	1,945.2	1,946.1	LIMESTONE-WACKESTONE; LIGHT OLIVE GRAY (2) : 5Y 6/1; MODERATE INTERGRANULAR ; MODERATE INDURATION; LAMINATIONS, PELLETS, FRACTURED	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	LAMINATIONS, PELLETS, FRACTURED		LIGHT OLIVE GRAY (2) : 5Y 6/1			
POF-32	1,946.1	1,950.0	LIMESTONE-MUDSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR ; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,950.0	1,953.8	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR ; POOR INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	LIMONITE, SOME FRACTURES		VERY PALE ORANGE : 10YR 8/2	PYRITE		
POF-32	1,953.8	1,957.6	LIMESTONE-MUDSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR ; POOR INDURATION; LIMONITE, SOME FRACTURES; PYRITE	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,957.6	1,958.9	LIMESTONE-MUDSTONE; LIGHT OLIVE GRAY (2) : 5Y 6/1; LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	MODERATE	FRACTURED		LIGHT OLIVE GRAY (2) : 5Y 6/1			
POF-32	1,958.9	1,960.0	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR ; POOR INDURATION; FRACTURED	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	FRACTURED		VERY PALE ORANGE : 10YR 8/2	LIMONITE		
POF-32	1,960.0	1,960.8	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR ; POOR INDURATION; FRACTURED; LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	INTRACLASTS		VERY PALE ORANGE : 10YR 8/2	LIMONITE		
POF-32	1,960.8	1,962.0	CLAYEY LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR ; POOR INDURATION; INTRACLASTS	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	INTRACLASTS		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,962.0	1,962.5	CLAYEY LIMESTONE-MUDSTONE; LIGHT OLIVE GRAY (2) : 5Y 6/1; LOW INTERGRANULAR ; MODERATE INDURATION; LAMINATIONS, INTRACLASTS; GLAUCONITE	LIMESTONE-MUDSTONE	10	INTERGRANULAR	MODERATE	LAMINATIONS, INTRACLASTS	GLAUCONITE	LIGHT OLIVE GRAY (2) : 5Y 6/1	CLAY		
POF-32	1,962.5	1,963.3	CLAYEY LIMESTONE-MUDSTONE; LIGHT OLIVE GRAY (2) : 5Y 6/1; MODERATE INTERGRANULAR AND VUGGY ; MODERATE INDURATION; INTRACLASTS; GLAUCONITE	LIMESTONE-MUDSTONE	20	INTERGRANULAR	MODERATE	INTRACLASTS	GLAUCONITE	LIGHT OLIVE GRAY (2) : 5Y 6/1	CLAY		
POF-32	1,963.3	1,964.0	CLAYEY LIMESTONE-MUDSTONE; LIGHT OLIVE GRAY (2) : 5Y 6/1; LOW INTERGRANULAR ; MODERATE INDURATION; FRACTURED; GLAUCONITE	LIMESTONE-MUDSTONE	10	INTERGRANULAR	MODERATE	FRACTURED	GLAUCONITE	LIGHT OLIVE GRAY (2) : 5Y 6/1	CLAY		
POF-32	1,964.0	1,965.7	LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; MODERATE INTERGRANULAR AND VUGGY ; MODERATE INDURATION; FRACTURED; CLAY	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,965.7	1,967.7	LIMESTONE-PACKSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,967.7	1,968.2	LIMESTONE-WACKESTONE; LIGHT OLIVE GRAY (2) : 5Y 6/1; LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	LAMINATIONS, INTRACLASTS		LIGHT OLIVE GRAY (2) : 5Y 6/1	GLAUCONITE		
POF-32	1,968.2	1,970.0	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; MODERATE INTERGRANULAR ; MODERATE INDURATION; LAMINATIONS, INTRACLASTS; GLAUCONITE	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,970.0	1,971.2	CLAYEY LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; LOW INTERGRANULAR ; MODERATE INDURATION; LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	LIMONITE		PALE YELLOWISH BROWN : 10YR 6/2	CLAY		
POF-32	1,971.2	1,972.4	CLAYEY LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; MODERATE INTERGRANULAR ; MODERATE INDURATION; GLAUCONITE, LIMONITE	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	GLAUCONITE, LIMONITE		PALE YELLOWISH BROWN : 10YR 6/2	CLAY		
POF-32	1,972.4	1,973.0	CLAYEY LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; LOW INTERGRANULAR ; MODERATE INDURATION; GLAUCONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	GLAUCONITE		PALE YELLOWISH BROWN : 10YR 6/2	CLAY		
POF-32	1,973.0	1,974.1	CLAYEY LIMESTONE-MUDSTONE; LIGHT OLIVE GRAY (2) : 5Y 6/1; LOW INTERGRANULAR ; POOR INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	POOR			LIGHT OLIVE GRAY (2) : 5Y 6/1	CLAY		
POF-32	1,974.1	1,975.6	CLAYEY LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR ; POOR INDURATION; GLAUCONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	POOR	GLAUCONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,975.6	1,976.0	CLAYEY LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR ; MODERATE INDURATION; GLAUCONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	GLAUCONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,976.0	1,976.9	CLAYEY LIMESTONE-MUDSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR ; GOOD INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	GOOD			VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,976.9	1,978.2	CLAYEY LIMESTONE-MUDSTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-MUDSTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,978.2	1,979.0	CLAYEY LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR AND VUGGY ; MODERATE INDURATION; GLAUCONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	GLAUCONITE		VERY PALE ORANGE : 10YR 8/2	CLAY		
POF-32	1,979.0	1,980.8	CLAYEY LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; LOW INTERGRANULAR ; MODERATE INDURATION; GLAUCONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	GLAUCONITE		PALE YELLOWISH BROWN : 10YR 6/2	CLAY		
POF-32	1,980.8	1,983.5	CLAYEY LIMESTONE-PACKSTONE; PALE YELLOWISH BROWN : 10YR 6/2; MODERATE INTERGRANULAR ; POOR INDURATION; LIMONITE	LIMESTONE-PACKSTONE	20	INTERGRANULAR	POOR	LIMONITE		PALE YELLOWISH BROWN : 10YR 6/2	CLAY		
POF-32	1,983.5	1,985.2	CLAYEY LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; MODERATE INTERGRANULAR ; POOR INDURATION	LIMESTONE-WACKESTONE	20	INTERGRANULAR	POOR			PALE YELLOWISH BROWN : 10YR 6/2	CLAY		
POF-32	1,985.2	1,986.1	LIMESTONE-WACKESTONE; PALE YELLOWISH BROWN : 10YR 6/2; LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2			
POF-32	1,986.1	1,987.8	CLAYEY LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; MODERATE INTERGRANULAR ; POOR INDURATION	LIMESTONE-PACKSTONE	20	INTERGRANULAR	POOR			GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1,987.8	1,988.2	LIMESTONE-WACKESTONE; GRAYISH ORANGE : 10YR 7/4; HIGH INTERGRANULAR AND VUGGY ; MODERATE INDURATION; GLAUCONITE	LIMESTONE-WACKESTONE	30	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4	GLAUCONITE		
POF-32	1,988.2	1,990.0	CLAYEY LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; MODERATE INTERGRANULAR ; POOR INDURATION	LIMESTONE-PACKSTONE	20	INTERGRANULAR	POOR			GRAYISH ORANGE : 10YR 7/4	CLAY		

Well	Depth Min, ft bls	Depth Max, ft bls	Description/Comments	Rock Type	Porosity, percent	Porosity Type1	Induration	Other Feature	Fossil type	Color1	Access Min Type1	Access Min Pct1	Porosity Percent Modifier
POF-32	1,990.0	1,990.9	LIMESTONE-WACKESTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR ; MODERATE INDURATION; LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4	LIMONITE		
POF-32	1,990.9	1,991.3	CLAYEY LIMESTONE-WACKESTONE; GRAYISH ORANGE : 10YR 7/4; MODERATE INTERGRANULAR AND VUGGY ; MODERATE INDURATION; LIMONITE	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	LIMONITE		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1,991.3	1,991.7	LIMESTONE-MUDSTONE; GRAY : N5; LOW INTERGRANULAR ; MODERATE INDURATION; LIMONITE	LIMESTONE-MUDSTONE	10	INTERGRANULAR	MODERATE			GRAY : N5	LIMONITE		
POF-32	1,991.7	1,992.4	LIMESTONE-WACKESTONE; VERY PALE ORANGE : 10YR 8/2; LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE			VERY PALE ORANGE : 10YR 8/2			
POF-32	1,992.4	1,992.9	LIMESTONE-MUDSTONE; PALE YELLOWISH BROWN : 10YR 6/2; LOW INTERGRANULAR ; MODERATE INDURATION; LIMONITE	LIMESTONE-MUDSTONE	10	INTERGRANULAR	MODERATE			PALE YELLOWISH BROWN : 10YR 6/2	LIMONITE		
POF-32	1,992.9	1,994.1	CLAYEY LIMESTONE-WACKESTONE; GRAYISH ORANGE : 10YR 7/4; MODERATE INTERGRANULAR ; MODERATE INDURATION; LIMONITE	LIMESTONE-WACKESTONE	20	INTERGRANULAR	MODERATE	LIMONITE		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1,994.1	1,994.6	LIMESTONE-WACKESTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR ; MODERATE INDURATION; LIMONITE	LIMESTONE-WACKESTONE	10	INTERGRANULAR	MODERATE	LIMONITE		GRAYISH ORANGE : 10YR 7/4			
POF-32	1,994.6	1,996.2	CLAYEY LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; MODERATE INTERGRANULAR AND VUGGY ; POOR INDURATION; LIMONITE	LIMESTONE-PACKSTONE	20	INTERGRANULAR	POOR	LIMONITE		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1,996.2	1,996.9	CLAYEY LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; HIGH INTERGRANULAR AND VUGGY ; POOR INDURATION; LIMONITE	LIMESTONE-PACKSTONE	30	INTERGRANULAR	POOR	LIMONITE		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1,996.9	1,997.5	CLAYEY LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; HIGH INTERGRANULAR AND VUGGY ; MODERATE INDURATION; LIMONITE	LIMESTONE-PACKSTONE	30	INTERGRANULAR	MODERATE	LIMONITE		GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1,997.5	1,998.4	CLAYEY LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; MODERATE INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-PACKSTONE	20	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4	CLAY		
POF-32	1,998.4	2,000.0	CLAYEY LIMESTONE-PACKSTONE; GRAYISH ORANGE : 10YR 7/4; LOW INTERGRANULAR ; MODERATE INDURATION	LIMESTONE-PACKSTONE	10	INTERGRANULAR	MODERATE			GRAYISH ORANGE : 10YR 7/4	CLAY		

APPENDIX G:
SAMPLE COLLECTION AND SEIVING METHODOLOGY AND RESULTS

SAMPLE COLLECTION AND SEIVING METHODOLOGY AND RESULTS

Standard Penetration Test Sampling Methodology

Prior to driving the standard penetration test (SPT) sampler at each sample depth, the borehole was cleaned out to prevent the collection of blow counts for unrepresentative loose, disturbed material at the bottom of the borehole. Following ASTM standard D1586/D1586M-18e1 (ASTM 2022) for SPT sampling, the SPT sampler was first attached to the bottom of a string of steel drill rods, and the rods were lowered to the bottom of the borehole. Next, a 140-pound hammer was affixed to an anvil attached to the top of the drill rods and dropped 30 inches using a cat head to drive the SPT sampler into the sediment. Each strike from the 140-pound hammer is a referred to as a "blow" and the number of blows required to drive the SPT sampler 6 inches is called the blow count. Per ASTM (2022), "the SPT 'N' value is the number of hammer blows required to drive the sampler over the depth interval of 0.5 to 1.5 ft [0.15 to 0.45 m] of a 1.5 ft [0.45 m] drive interval." For a 24-inch-long SPT sampler, there are four 6-inch-long intervals, each with its own total number of blows, referred to as N_1, N_2, N_3, and N_4, where N_1 is the number of blows used to drive the sampler the first 6 inches, and N_4 is the number of blows used to drive the sampler the bottom 6 inches of the sample interval. This ASTM standard is based on using an 18-inch long SPT sampler, so the N for a SPT sample is defined by ASTM (2022) as N_2+N_3. This is because the bottom-most foot of an 18-inch-long SPT sample is generally undisturbed by drilling operations and is representative of the *in situ*, undisturbed penetration resistance (relative density) of the sediments, whereas the first 6 inches of each driven samples are referred to as the "seating interval" and are considered disturbed. In practice, however, a 24-inch-long SPT sampler is often used to ensure obtaining sufficient material for laboratory testing, particularly in loose, unconsolidated material where material can easily be lost upon sample retrieval. Even though the bottom 18 inches of a 24-inch-long SPT sampler is likely undisturbed, for the purposes of this investigation, the ASTM methodology was followed, and the middle foot of each sample (N_2+N_3) was used to calculate the N-value for each SPT sample. This is the convention utilized in previous District reports. The first blow count (N_1) is generally considered to be "disturbed" by drilling and is not used for N-value calculations in either 18-inch-long SPT samplers or 24-inch-long SPT samplers. N-values positively correlate with the relative density of sands and clays. Overburden pressures and other correction factors were not accounted for in the calculations of N-values. Ideally, SPT samples are driven at 5-foot-depth intervals to assure minimal disturbance to the next sampled interval. At the Sumica site, SPT samples were driven continuously, which could possibly cause disturbance between samples.

Because these data were collected primarily for a general lithologic characterization and classification of the shallow surficial aquifer system (SAS) sediments and were not intended for use in foundation design, seismic evaluations, or other sensitive engineering design purposes, the continuous sampling used at the Sumica site is not a cause for concern. Each SPT sample was removed from the sampler, described, and placed in a labeled resealable bag for later sieve analyses and soil classification at the District warehouse.

Soil Sieving Methodology

In accordance with ASTM standard D6913/D6913M-17 (ASTM 2021) for mechanical sieve analyses, the middle 12 inches of each SPT soil sample was placed in a pan and weighed. The samples were then dried in an oven at approximately 370°C for 3 to 4 hours, then placed in a sieve shaker for 15 minutes for optimal particle separation through each sieve. Each soil sample passed through eight successively smaller sieves (#10 to #200 sieves), and particles smaller than the openings in the #200 sieve (0.075 millimeter openings) were captured in a pan at the bottom of the sieve stack. The contents of each sieve and pan were carefully transferred to a tared pan and weighed.

Soil Sieving Results for Surficial Aquifer System Sediments

For each tested SAS soil sample, the percentage of grains finer than each subsequent sieve (percent passing) was calculated and plotted on a cumulative frequency graph to create a grain size distribution graph using HydrogeoSieveXL (Devlin 2015), which is a freely available, peer-reviewed Microsoft Excel spreadsheet that calculates hydraulic conductivity (K) values from grain size distribution curves using 15 different methods. ASTM standard D2487-17e1 (ASTM 2020) for classification of soils was then used to classify and apply the appropriate Unified Soil Classification System (USCS) soil type using the grain size distribution data and the coefficients of uniformity (C_u) and curvature (C_c). **Table G-1** presents the soil sieving results and USCS soil types for each sample. For the complete HydrogeoSieveXL data sheets and grain size distribution curves, the *HydrogeoSieveXL Grain Size Analysis Report* is included at the end of this summary. All the sieved samples were coarse grained soils, with most of the samples falling into the poorly graded sand with clay (SP-SC) and poorly graded sand (SP) categories. Only one sample contained more than 20% fines (sample from 17 to 19 feet below land surface [ft bls]). This sample was classified as a clayey sand (SC). Due to sample acquisition issues, no data are available from the interval of 31 to 33 ft bls.

Hydraulic Conductivity Estimation for Surficial Aquifer System Sediments

The grain size distribution results were used to estimate hydraulic conductivities using HydrogeoSieveXL (Devlin 2015). During development of this Excel spreadsheet, HydrogeoSieveXL was found to calculate hydraulic conductivity values for the most part identically to those reported in the literature, using the published grain size distribution curves (Devlin 2015). This program is beneficial because it can provide a better indication of the range of hydraulic conductivities that might apply to a particular sample as well as illustrating the inherent uncertainties associated with the estimation of hydraulic conductivity from grain size analyses. The resultant hydraulic conductivities discussed below are meant to provide the reader with an approximate range of hydraulic conductivities for the SAS sediments at the site; however, a properly conducted aquifer performance test is the only way to obtain a truly representative hydraulic conductivity or transmissivity of an aquifer.

Hydraulic Conductivity Results for Surficial Aquifer System Sediments

Grain size distribution data obtained from sieving the SUMICAN-PW and POS-21 soil samples were entered into HydrogeoSieveXL for creation of grain size curves and generation of a range of possible hydraulic conductivities for each sample. **Table G-1** presents a summary of the soil sieving results and the resultant hydraulic conductivity estimate for each soil sample. Each hydraulic conductivity value presented in **Table G-1** is the arithmetic mean of all the hydraulic conductivity calculations that met the criteria inherent to each analytical method for each sample. As shown in **Table G-1**, the range of mean hydraulic conductivities of the tested SAS sediments ranged from 4 ft/day to 46 ft/day.

Table G-1. Soil types and mean hydraulic conductivities for surficial aquifer system sediments.

USCS Soil Type (ASTM 2020)	Sample Location	Depth Interval, ft bls	Uniformity Coefficient (C_u)	Curvature Coefficient (C_c)	% Fines (Passing through #200 sieve)	% Coarse (Retained on #200 sieve)	Arithmetic Mean Hydraulic Conductivity, ft/day
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	7-9	2.36	1.17	6.04	93.96	38
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	9-11	2.25	1.12	5.20	94.80	37
Poorly Graded Sand (SP)	POS-21	11-13	2.19	1.10	4.76	95.24	39
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	13-15	2.31	1.13	5.47	94.53	33
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	15-17	2.48	1.09	5.14	94.86	46
Clayey Sand (SC)	POS-21	17-19	6.45	1.42	20.05	79.95	4
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	19-21	2.69	1.26	8.60	91.40	23
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	21-23	2.46	1.26	8.82	91.18	23
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	23-25	2.14	1.11	6.84	93.16	29
Poorly Graded Sand (SP)	POS-21	25-27	1.57	0.98	4.25	95.75	43
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	27-29	2.04	1.13	8.18	91.82	26
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	29-31	2.14	1.10	7.15	92.85	29
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	31-33	No Data	No Data	No Data	No Data	No Data
Poorly Graded Sand (SP)	SUMICAN-PW	34-36	1.54	0.98	4.72	95.28	40
Poorly Graded Sand (SP)	SUMICAN-PW	39-41	1.44	1.00	3.50	96.50	40
Poorly Graded Sand (SP)	SUMICAN-PW	44-46	1.85	0.96	4.95	95.05	35
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	SUMICAN-PW	49-51	1.31	1.28	6.65	93.35	28
Poorly Graded Sand (SP)	SUMICAN-PW	54-56	3.31	0.93	2.26	97.74	43
Poorly Graded Sand (SP)	SUMICAN-PW	59-61	1.97	0.76	3.12	96.88	41

Table G-1. Continued.

USCS Soil Type (ASTM 2020)	Sample Location	Depth Interval, ft bls	Uniformity Coefficient (C_u)	Curvature Coefficient (C_c)	% Fines (Passing through #200 sieve)	% Coarse (Retained on #200 sieve)	Arithmetic Mean Hydraulic Conductivity, ft/day
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	SUMICAN-PW	64-66	1.58	1.15	6.46	93.54	30
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	SUMICAN-PW	69-71	1.6	1.16	6.06	93.94	30
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	SUMICAN-PW	74-76	1.73	1.14	8.39	91.61	23
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	SUMICAN-PW	79-81	2.32	1.14	11.77	88.23	14
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	SUMICAN-PW	83-85	1.93	1.06	11.15	88.85	17

C_c = curvature coefficient; C_u = uniformity coefficient; ft bls = feet below land surface; ft/day = feet per day; USCS = Unified Soil Classification System.

Standard Penetration Test Results

The classification system (ASTM 2022) for assigning a relative density descriptor to coarse grained, cohesionless soils and for assigning a consistency descriptor to fine grained, cohesive soils is presented in **Table G-2**. **Table G-3** presents the penetration resistance (N value) for each soil sample and the resultant relative densities of all the soil samples collected from SUMICAN-PW and POS-21 using the subdivisions shown in **Table G-2**. All but two of the samples were medium dense, except for one loose sample (from 9 to 11 ft bls) and one dense sample (from 29 to 31 ft bls). None of the samples were fine grained (i.e., silt or clay).

Table G-2. Relative density and consistency descriptors based on standard penetration test results.

Coarse Grained Soil		Fine Grained Soil	
N	Relative Density	N	Consistency
0-4	Very Loose	Below 2	Very Soft
4-10	Loose	2-4	Soft
10-30	Medium	4-8	Medium
30-50	Dense	8-15	Stiff
Over 50	Very Dense	15-30	Very Stiff
		Over 30	Hard

N = penetration resistance.

Table G-3. Relative densities of surficial aquifer system sediments.

USCS Soil Type (ASTM 2020)	Sample Location	Depth Interval, ft bls	SPT N Value (N_2+N_3)	Relative Density
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	7-9	15	Medium
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	9-11	45	Dense
Poorly Graded Sand (SP)	POS-21	11-13	13	Medium
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	13-15	30	Dense
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	15-17	20	Medium
Clayey Sand (SC)	POS-21	17-19	17	Medium
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	19-21	11	Medium
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	21-23	12	Medium
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	23-25	8	Loose
Poorly Graded Sand (SP)	POS-21	25-27	10	Medium
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	27-29	28	Medium
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	29-31	24	Medium
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	POS-21	31-33	No Data	No Data
Poorly Graded Sand (SP)	SUMICAN-PW	34-36	14	Medium
Poorly Graded Sand (SP)	SUMICAN-PW	39-41	16	Medium
Poorly Graded Sand (SP)	SUMICAN-PW	44-46	12	Medium
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	SUMICAN-PW	49-51	42	Dense
Poorly Graded Sand (SP)	SUMICAN-PW	54-56	9	Loose
Poorly Graded Sand (SP)	SUMICAN-PW	59-61	27	Medium
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	SUMICAN-PW	64-66	40	Dense
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	SUMICAN-PW	69-71	22	Medium
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	SUMICAN-PW	74-76	14	Medium
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	SUMICAN-PW	79-81	6	Loose
Poorly Graded Sand w/Clay (or silty clay) (SP-SC)	SUMICAN-PW	83-85	15	Medium

ft bls = feet below land surface; N = penetration resistance; SPT = standard penetration test; USCS = Unified Soil Classification System.

Literature Cited

ASTM. 2020. *Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)*. D2487-17e1. ASTM International, West Conshohocken, PA. Available online at https://www.astm.org/d2487-17e01.html.

ASTM. 2021. *Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis*. D6913/D6913M-17. ASTM International, West Conshohocken, PA. Available online at https://www.astm.org/d6913_d6913m-17.html.

ASTM. 2022. *Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils*. D1586/D1586M-18e1. ASTM International, West Conshohocken, PA. Available online at https://www.astm.org/d1586_d1586m-18e01.html.

Devlin, J.F. 2015. HydrogeoSieveXL: An Excel-based tool to estimate hydraulic conductivity from grainsize analysis. *Hydrogeology Journal* 23:837-844.

APPENDIX H:
WATER QUALITY FIELD PARAMETERS

Table H-1. Water quality field parameters.

Sample Depth (ft bls)	Packer Test #	Hydrostratigraphic Unit	Field Parameters		
			pH	Temperature (°C)	Specific Conductance (µS/cm)
320-350	2	UFA-upper (250-410 ft bls)	7.90	24.8	171
350-380	3		7.90	24.7	174
380-410	4		7.90	24.7	175
410-440	5	OCAPlpz (410-800 ft bls)	8.00	24.4	186
470-500	7		8.30	25.5	157
500-530[a]	8		8.20	26.5	156
530-560	9		8.10	25	164
560-590[a]	10		8.10	25.1	176
590-620	11		8.20	25.9	167
620-650	12		8.10	26.2	166
650-680	13		8.10	25.9	170
680-710	14		8.10	26.1	170
710-740	15		8.00	26.2	165
740-770	16		8.20	26.4	168
770-800[a]	17		8.10	26.5	159
800-830[a]	18	APPZ (800-1,113 ft bls)	8.10	26.5	174
830-860[a]	19		8.30	26.5	168
860-890[a]	20		8.20	26.8	160
890-920	21		8.00	26.7	162
920-950	22		8.20	26.8	161
960-990	23		8.00	26.8	172
990-1,020	24		8.30	27.4	160
1,020-1,050	25		8.20	27.1	158
1,050-1,080	26		8.30	27	164
1,080-1,110	27		8.30	27.1	170
1,110-1,140	28	MCU_I (1,113-1,410 ft bls)	8.00	26.9	183
1,140-1,170	29		8.00	27.3	240
1,170-1,200	30		7.80	27.2	354
1,200-1,230	31		7.90	27.2	305
1,230-1,260	32		7.90	27.4	334
1,260-1,290	33		8.00	27.8	379
1,290-1,320	34		7.80	27.4	416
1,320-1,350	35		7.90	27.1	402
1,350-1,380	36		8.00	27.7	433
1,380-1,410[a]	37		7.80	27.5	427

Table H-1. Continued.

Sample Depth (ft bls)	Packer Test #	Hydrostratigraphic Unit	Field Parameters		
			pH	Temperature (°C)	Specific Conductance (µS/cm)
1,410-1,440	38	LFA-upper (1,410-1,833 ft bls)	7.60	27.6	843
1,440-1,470[b,c]	39a		7.90	27.4	464
1,440-1,470[c]	39b		7.80	27.4	679
1,470-1,500[d]	40		7.90	27.6	717
1,500-1,530	41		7.90	27.4	848
1,530-1,560	42		8.00	27.8	906
1,560-1,590	43		7.80	27.9	1,022
1,590-1,620	44		8.00	28.4	1,124
1,650-1,680	46		8.00	27.3	1,108
1,710-1,740	48		7.90	28.4	1,147
1,740-1,770	49		7.80	28.7	1,097
1,780-1,810	50		7.80	28.8	1,138
1,810-1,840	51		8.00	28.8	1,161
1,960-2,000	56	GLAUClpu	7.80	28.5	1,151

°C = degrees Celsius; µS/cm = microsiemens per centimeter; APPZ = Avon Park permeable zone; ft bls = feet below land surface; GLAUClpu = low-permeability glauconitic marker unit; LFA-upper = upper-permeable zone of the Lower Floridan aquifer; MCU_I = middle confining unit I; OCAPlpz = Ocala–Avon Park low-permeability zone; UFA-upper = upper-permeable zone of the Upper Floridan aquifer.

[a] Potentially unreliable: Ion-balance error is above the threshold for acceptance.

[b] Unreliable: Included for comparison purposes.

[c] Two samples were collected from the test 39 interval. Sample 39a was collected after three borehole volumes had been purged. Due to an inversion in specific conductance between tests 38 and 39, a second sample (sample 39b) was collected after 25 borehole volumes had been pumped from the test interval.

[d] Potentially unreliable: Very low purge volume may have resulted from mixing of groundwater and drilling fluids.

APPENDIX I:
CHARGE BALANCE ERROR SUMMARY

Table I-1. Charge balance error summary.

Sample Depth (ft bls)	Packer Test #	Hydrostratigraphic Unit	Laboratory TDS (mg/L)	Charge Balance Error Summary		
				Sum of Anions (meq/L)	Sum of Cations (meq/L)	Charge Balance Error (%)
320-350	2	UFA-upper (250-410 ft bls)	96	1.75	1.92	4.73%
350-380	3		103	1.76	1.97	5.61%
380-410	4		99	1.81	2.21	9.95%
410-440	5	OCAPlpz (410-800 ft bls)	104	1.83	2.12	7.38%
470-500	7		96	1.67	1.70	0.98%
500-530[a]	8		108	1.71	2.17	12.06%
530-560	9		109	1.75	1.98	6.19%
560-590[a]	10		102	1.75	2.15	10.24%
590-620	11		105	1.67	1.77	3.02%
620-650	12		110	1.64	1.72	2.30%
650-680	13		104	1.70	1.77	2.05%
680-710	14		99	1.71	1.77	1.73%
710-740	15		99	1.65	1.77	3.52%
740-770	16		106	1.68	1.88	5.64%
770-800[a]	17		94	1.64	2.19	14.35%
800-830[a]	18	APPZ (800-1,113 ft bls)	100	1.79	3.00	25.12%
830-860[a]	19		97	1.74	2.19	11.58%
860-890[a]	20		108	1.66	2.57	21.61%
890-920	21		82	1.64	1.73	2.51%
920-950	22		88	1.62	1.70	2.44%
960-990	23		92	1.73	1.79	1.88%
990-1,020	24		84	1.57	1.79	6.48%
1,020-1,050	25		86	1.56	1.69	3.95%
1,050-1,080	26		98	1.63	1.75	3.66%
1,080-1,110	27		95	1.65	1.84	5.25%
1,110-1,140	28	MCU_I (1,113-1,410 ft bls)	104	1.80	1.94	3.60%
1,140-1,170	29		151	2.40	2.49	1.99%
1,170-1,200	30		247	3.58	3.78	2.74%
1,200-1,230	31		202	3.07	3.57	7.61%
1,230-1,260	32		231	3.36	3.50	1.97%
1,260-1,290	33		281	3.85	4.14	3.67%
1,290-1,320	34		292	4.22	4.48	2.96%
1,320-1,350	35		296	4.11	4.56	5.09%
1,350-1,380	36		304	4.24	4.57	3.70%
1,380-1,410[a]	37		308	4.21	5.25	10.95%

Table I-1. Continued.

Sample Depth (ft bls)	Packer Test #	Hydrostratigraphic Unit	Laboratory TDS (mg/L)	Charge Balance Error Summary		
				Sum of Anions (meq/L)	Sum of Cations (meq/L)	Charge Balance Error (%)
1,410-1,440	38	LFA-upper (1,410-1,833 ft bls)	626	8.78	9.40	3.43%
1,440-1,470[b,c]	39a		386	5.31	5.79	4.30%
1,440-1,470[c]	39b		498	6.81	7.31	3.54%
1,470-1,500[d]	40		534	7.54	7.93	2.49%
1,500-1,530	41		634	9.10	9.01	0.47%
1,530-1,560	42		662	9.81	10.61	3.92%
1,560-1,590	43		628	10.13	9.89	1.22%
1,590-1,620	44		628	10.28	10.54	1.24%
1,650-1,680	46		641	10.29	10.78	2.31%
1,710-1,740	48		663	10.26	10.72	2.22%
1,740-1,770	49		623	10.21	10.06	0.75%
1,780-1,810	50		650	10.58	10.72	0.66%
1,810-1,840	51		656	10.25	11.06	3.79%
1,960-2,000	56	GLAUClpu	647	10.23	10.77	2.57%

APPZ = Avon Park permeable zone; ft bls = feet below land surface; GLAUClpu = low-permeability glauconitic marker unit; LFA-upper = upper-permeable zone of the Lower Floridan aquifer; MCU_I = middle confining unit I; meq/L = milliequivalents per liter; mg/L = milligrams per liter; OCAPlpz = Ocala–Avon Park low-permeability zone; TDS = total dissolved solids; UFA-upper = upper-permeable zone of the Upper Floridan aquifer.

[a] Potentially unreliable: Ion-balance error is above the threshold for acceptance.

[b] Unreliable: Included for comparison purposes.

[c] Two samples were collected from the test 39 interval. Sample 39a was collected after three borehole volumes had been purged. Due to an inversion in specific conductance between tests 38 and 39, a second sample (sample 39b) was collected after 25 borehole volumes had been pumped from the test interval.

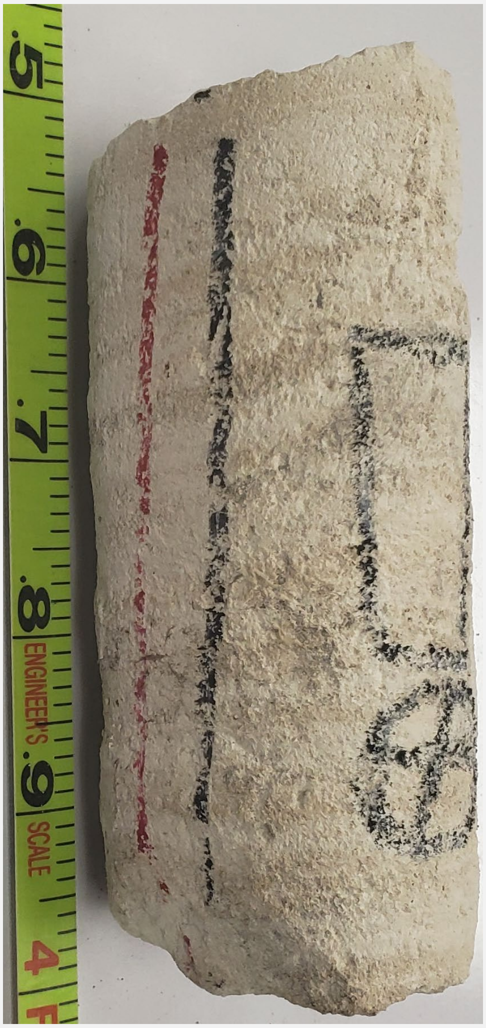
[d] Potentially unreliable: Very low purge volume may have resulted from mixing of groundwater and drilling fluids.

APPENDIX J:
GROUNDWATER ANALYTICAL RESULTS

Sample ID	Lab ID	Station	Packer Test #	Sample Upper Depth, ft bls	Sample Lower Depth, ft bls	Sample Collection Date and Time	Temperature, °C	Field pH, pH units	Laboratory pH	Specific Conductivity, µS/cm	TDS, mg/L	Chloride, mg/L	Bicarbonate, mg/L	Sulfate, mg/L	Sodium, mg/L	Magnesium, mg/L	Calcium, mg/L	Potassium, mg/L	Strontium, mg/L	Silica, mg/L	Hardness, mg/L	Alkalinity, mg/L	$\delta^{18}O$, per mille	$\delta^{2}H$, per mille
P115374-3	75215003	POF-31	2	320	350	6/3/20 10:50	24.8	7.90	8.11	171	96	5.0	92.66	4.3	3.6	6.3	23.8	0.9	1.56	--	85.4	76	-2.3	-11.5
P115374-4	75215004	POF-31	3	350	380	6/3/20 16:35	24.7	7.90	8.12	174	103	4.9	93.88	4.2	3.6	7.0	23.6	0.9	1.70	--	87.7	77	-2.2	-12.5
P115375-3	75216003	POF-31	4	380	410	6/4/20 11:50	24.7	7.90	8.15	175	99	5.0	96.32	4.4	3.6	7.0	28.3	1.0	1.70	--	99.7	79	-2.2	-12.6
P115376-3	75217003	POF-31	5	410	440	6/5/20 10:40	24.4	8.00	8.14	186	104	5.4	95.10	5.7	3.8	8.2	24.2	1.0	2.02	--	93.9	78	-2.3	-11.7
P115378-3	75219003	POF-31	7	470	500	6/10/20 8:50	25.5	8.30	8.08	157	96	4.5	87.78	4.9	3.0	7.6	17.6	0.9	1.85	--	75.0	72	-2.4	-11.9
P115378-4	75219004	POF-31	8	500	530	6/10/20 16:20	26.5	8.20	8.09	156	108	4.4	90.22	4.9	3.0	7.7	26.8	1.0	1.89	--	98.8	74	-2.4	-12
P115377-3	75218003	POF-31	9	530	560	6/11/20 14:35	25.0	8.10	8.07	164	109	4.8	92.66	4.4	3.4	7.1	23.6	0.9	1.81	--	88.2	76	-2.5	-12.5
P115379-3	75220003	POF-31	10	560	590	6/12/20 10:50	25.1	8.10	8.21	176	102	4.8	92.66	4.6	3.4	7.2	26.9	0.9	1.81	--	96.8	76	-2.3	-12.8
P115380-3	75221003	POF-31	11	590	620	6/15/20 16:50	25.9	8.20	8.21	167	105	4.9	86.56	5.2	3.2	7.8	18.3	0.8	2.31	--	77.8	71	-2.2	-10.6
P115381-3	75222003	POF-31	12	620	650	6/16/20 12:50	26.2	8.10	8.17	166	110	5.0	85.35	4.8	3.2	7.5	17.8	0.7	2.33	--	75.2	70	-2.1	-10.0
P115382-3	75223003	POF-31	13	650	680	6/17/20 9:00	25.9	8.10	8.19	170	104	5.3	87.78	5.5	3.4	7.1	19.2	0.7	2.83	--	77.3	72	-2.1	-9.8
P115382-4	75223004	POF-31	14	680	710	6/17/20 15:45	26.1	8.10	8.22	170	99	5.2	87.78	5.8	3.4	6.6	19.2	0.7	4.29	--	75.4	72	-2.2	-9.9
P115383-3	75224003	POF-31	15	710	740	6/18/20 12:40	26.2	8.00	8.26	165	99	4.9	85.35	5.6	3.2	6.4	20.0	0.8	3.87	--	76.6	70	-2.2	-10.1
P115384-3	75225003	POF-31	16	740	770	6/19/20 9:51	26.4	8.20	8.24	168	106	4.9	86.56	6.0	3.5	6.5	21.4	0.8	4.63	--	80.3	71	-2.3	-10.3
P115385-3	75226003	POF-31	17	770	800	6/22/20 15:10	26.5	8.10	8.20	159	94	4.4	89.00	2.7	3.0	6.4	28.9	0.8	2.90	--	98.6	73	-2.1	-10.3
P115386-3	75227003	POF-31	18	800	830	6/23/20 17:00	26.5	8.10	8.24	174	100	4.4	98.76	2.4	3.5	8.6	41.2	0.9	2.31	11.0	138.0	81	-2.3	-10.7
P115387-3	75228003	POF-31	19	830	860	6/24/20 15:25	26.5	8.30	8.35	168	97	4.4	96.32	1.6	3.1	8.1	26.4	0.8	2.17	--	99.2	79	-2.1	-10.4
P115388-3	75229003	POF-31	20	860	890	6/25/20 15:15	26.8	8.20	8.29	160	108	4.4	91.44	1.6	3.0	9.6	31.8	0.7	1.81	10.7	118.9	75	-2.0	-10.2
P115389-3	75230003	POF-31	21	890	920	6/29/20 16:40	26.7	8.00	8.34	162	82	4.4	90.22	1.8	2.9	6.8	19.6	0.7	1.82	--	77.1	74	-2.2	-10.2
P115390-3	75231003	POF-31	22	920	950	6/30/20 17:40	26.8	8.20	8.23	161	88	4.4	89.00	1.6	3.0	6.6	19.3	0.8	1.67	--	75.7	73	-2.1	-10.9
P115391-3	75232003	POF-31	23	960	990	7/17/20 9:15	26.8	8.00	8.40	172	92	4.3	96.32	1.2	3.3	7.4	19.8	0.8	1.25	--	79.8	79	-2.1	-10.2
P115392-3	75233003	POF-31	24	990	1,020	7/20/20 15:35	27.4	8.30	8.38	160	84	4.3	87.78	0.7	2.9	7.4	20.0	0.7	1.76	--	80.2	72	-1.9	-9.6
P115393-3	75234003	POF-31	25	1,020	1,050	7/21/20 13:40	27.1	8.20	8.25	158	86	4.4	85.35	1.8	2.9	6.7	19.4	0.6	1.15	--	76.1	70	-2.0	-9.7
P115394-3	75235003	POF-31	26	1,050	1,080	7/23/20 9:15	27.0	8.30	8.28	164	98	4.4	84.13	6.1	2.9	6.8	20.0	0.7	2.21	--	78.0	69	-2.3	-10.2
P115395-3	75236003	POF-31	27	1,080	1,110	7/24/20 9:25	27.1	8.30	8.30	170	95	4.4	85.35	6.2	3.0	7.6	20.1	0.7	2.48	--	81.4	70	-2.2	-9.9
P115396-3	75237003	POF-31	28	1,110	1,140	7/27/20 16:15	26.9	8.00	8.32	183	104	4.4	86.56	12.4	2.9	8.3	19.4	0.8	5.98	--	82.8	71	-2.2	-10.5
P115397-3	75238003	POF-31	29	1,140	1,170	7/28/20 14:20	27.3	8.00	8.20	240	151	4.6	85.35	41.6	3.1	10.3	22.9	0.9	14.99	--	99.7	70	-2.3	-11.0
P115398-3	75239003	POF-31	30	1,170	1,200	7/29/20 12:30	27.2	7.80	8.06	354	247	4.8	82.91	99.9	3.1	15.0	31.3	0.9	35.93	--	140.0	68	-2.3	-10.1
P115399-3	75240003	POF-31	31	1,200	1,230	7/30/20 9:40	27.2	7.90	8.13	305	202	4.8	85.35	73.6	3.2	14.9	31.9	0.9	25.82	--	141.2	70	-2.3	-9.6
P115399-4	75240004	POF-31	32	1,230	1,260	7/30/20 16:50	27.4	7.90	8.12	334	231	5.3	85.35	87.0	3.4	13.1	29.8	1.0	33.05	--	128.5	70	-2.2	-8.1
P115400-3	75241003	POF-31	33	1,260	1,290	8/3/20 14:15	27.8	8.00	8.10	379	281	5.5	86.56	109	3.6	15.9	36.7	1.1	35.47	--	157.2	71	-2.2	-11.5
P115401-3	75242003	POF-31	34	1,290	1,320	8/4/20 14:35	27.4	7.80	8.02	416	292	5.5	86.56	127	3.8	17.2	41.9	1.2	33.79	--	175.5	71	-2.1	-10.1
P115402-3	75243003	POF-31	35	1,320	1,350	8/5/20 15:45	27.1	7.90	7.97	402	296	5.4	85.35	123	3.8	17.6	42.4	1.2	34.65	--	178.6	70	-2.1	-10.5
P115403-3	75244003	POF-31	36	1,350	1,380	8/6/20 16:00	27.7	8.00	8.01	433	304	5.5	87.78	127	3.9	18.3	42.2	1.2	32.83	--	181.0	72	-2.1	-9.9
P118409-3	76671003	POF-31	37	1,380	1,410	8/10/20 18:00	27.5	7.80	8.06	427	308	5.3	91.44	123	4.2	21.8	49.4	1.2	33.71	--	213.1	75	-2.1	-10.5
P118410-3	76672003	POF-31	38	1,410	1,440	8/11/20 15:30	27.6	7.60	7.94	843	626	6.1	87.78	344	4.7	44.1	99.9	1.6	23.26	--	431.0	72	-1.9	-9.0
P118413-3	76675003	POF-31	39	1,440	1,470	8/13/20 6:30	27.4	7.80	8.06	679	498	5.6	86.56	251	4.2	33.5	76.5	1.4	22.11	--	329.0	71	-1.9	-6.3
P118412-3	76674003	POF-31	40	1,470	1,500	8/13/20 16:00	27.6	7.90	7.73	717	534	6.6	85.35	286	4.5	39.2	78.4	1.6	23.90	--	357.2	70	-2.0	-8.8
P121428-3	78025003	POF-32	41	1,500	1,530	12/11/20 11:00	27.4	7.90	7.76	848	634	13.7	87.78	349	7.6	45.4	88.3	1.8	21.16	--	407.4	72	-1.9	-5.6
P121429-3	78026003	POF-32	42	1,530	1,560	12/14/20 15:05	27.8	8.00	7.95	906	662	25.9	93.88	362	14.4	48.5	109.7	1.9	20.17	--	473.7	77	-1.8	-5.7
P121430-3	78027003	POF-32	43	1,560	1,590	12/15/20 13:45	27.9	7.80	7.89	1,022	628	123	96.32	244	65.5	37.4	69.7	3.3	17.15	--	328.2	79	-1.7	-6.0
P121431-3	78028003	POF-32	44	1,590	1,620	12/16/20 11:50	28.4	8.00	8.01	1,124	628	180	101.19	170	103.9	31.9	61.4	4.5	9.15	--	284.6	83	-1.6	-6.2
P121432-3	78029003	POF-32	46	1,650	1,680	12/18/20 9:50	27.3	8.00	8.07	1,108	641	177	106.07	171	101	33.5	66.5	4.5	8.43	--	304.1	87	-1.6	-5.8
P121433-3	78030003	POF-32	48	1,710	1,740	1/5/21 17:00	28.4	7.90	7.96	1,147	663	180	99.98	170	104.1	33.2	62.6	4.4	9.72	--	293.2	82	-1.6	-5.8
P121434-3	78031003	POF-32	49	1,740	1,770	1/6/21 15:00	28.7	7.80	7.96	1,097	623	179	99.98	169	96.6	31.5	58.9	4.2	9.26	--	276.8	82	-1.7	-5.8
P121435-3	78032003	POF-32	50	1,780	1,810	1/7/21 16:50	28.8	7.80	7.92	1,138	650	190	103.63	169	107.8	32.4	60.6	4.5	9.67	--	284.8	85	-1.7	-5.9
P121436-3	78033003	POF-32	51	1,810	1,840	1/11/21 12:30	28.8	8.00	8.04	1,161	656	191	103.63	152	112.4	33.2	61.8	5.0	9.85	--	291.2	85	-1.6	-6.0
P121437-3	78034003	POF-32	56	1,960	2,000	1/19/21 14:55	28.5	7.80	7.71	1,151	647	198	97.54	146	109.9	31.7	63.1	4.2	5.09	--	288.2	80	-1.7	-6.3

-- = Not detected

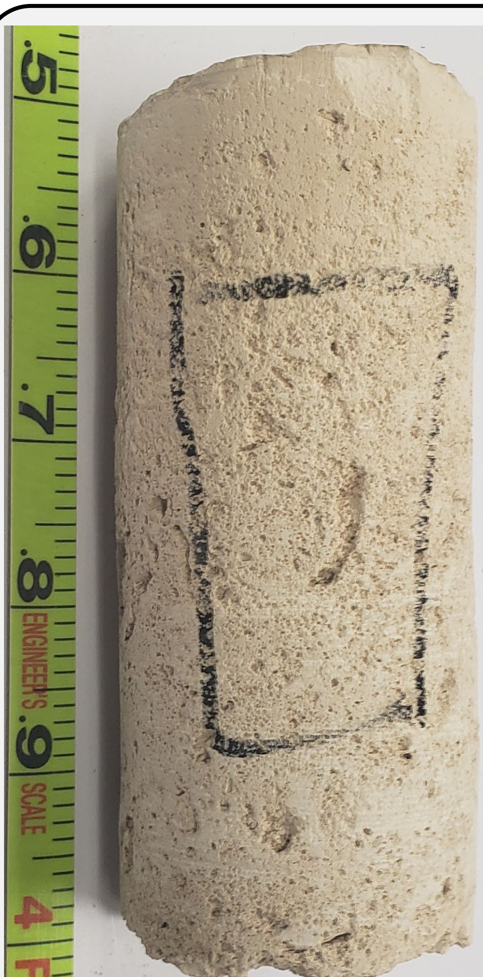
APPENDIX K:
CORE LABS SAMPLE PHOTOGRAPHS



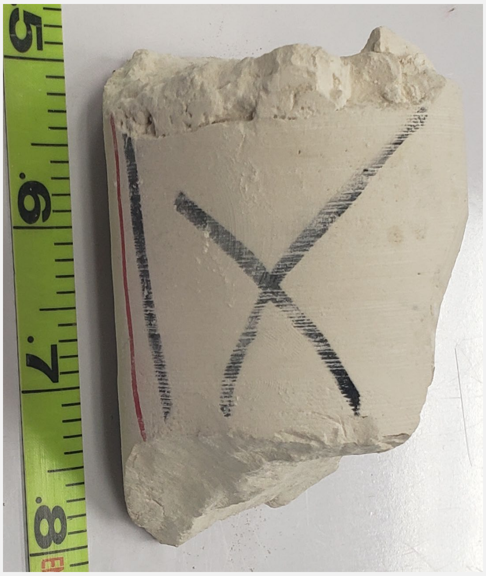
Depth [ft bls]: 642.2 – 642.7
Formation:
Lithology: Limestone –Wackestone
Hydro. Unit: OCAPlpz
Packer Test: #12 (620-650 ft bls)
k_h ~ 2.8 ft/d
Core Lab Result: k_h = 0.12 – 0.15 ft/d

Depth [ft bls]: 704.8-705.2 ft bls
Formation:
Lithology: Limestone –Wackestone
Hydro. Unit: OCAPlpz
Packer Test: #14 (680-710 ft bls)
k_h ~ 2.6 ft/d
Core Lab Result: k_h = 1.66 ft/d

Sample Depth [ft bls]:	1277.7 - 1278 ft bls
Formation:	
Lithology:	Dolostone
Hydro. Unit:	MCU
Packer Test:	#33 (1260-1290 ft bls)
	k_h ~ 0.96 ft/d
Core Lab Result:	k_h = 0.29 ft/d

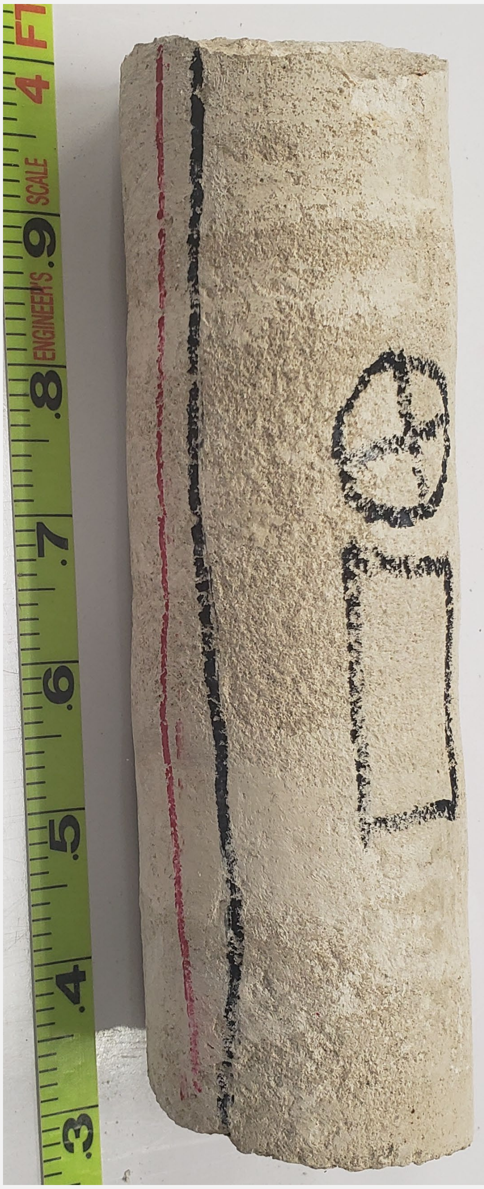


Sample Depth [ft bls]:	1291-1291.5 ft bls
Formation:	
Lithology:	Dolomitic-Limestone
Hydro. Unit:	MCU
Packer Test:	#34 (1290-1320 ft bls)
	k_h ~ 2.19 ft/d
Core Lab Result:	k_h = 0.21 ft/d



Sample Depth [ft bls]: 1310.8-1311.1 ft bls
Formation:
Lithology: Dolomitic-Limestone
Hydro. Unit: MCU
Packer Test: #34 (1290-1320 ft bls)
$k_h \sim$ 2.19 ft/d
Core Lab Result: k_h = 0.01 ft/d

Sample Depth [ft bls]: 1891.7-1892 ft bls
Formation:
Lithology: Limestone-Wackestone
Hydro. Unit: GLAUClpu
Packer Test: #53 (1870-1900 ft bls)
$k_h \sim$ 1.6 ft/d
Core Lab Result: k_h = 0.02 ft/d



Sample Depth [ft bls]: 1984-1984.6 ft bls
Formation:
Lithology: Limestone-Wackestone
Hydro. Unit: GLAUClpu
Packer Test: #56 (1960-2000 ft bls)
$k_h \sim$ 1.6 ft/d
Core Lab Result: k_h = 0.02 ft/d