2024 MECHANICAL INTEGRITY TESTING AND PRESSURE FALLOFF TESTING REPORT

REPUBLIC INDUSTRIAL & ENERGY SOLUTIONS, LLC

WELL NO. 2-12

API No. 21-163-M453
EPA Permit No. MI-163-1W-C0011
Michigan EGLE Permit No. M-453
Romulus, MI

September 2024

Houston, TX

Project No. 192128.0156

Prepared by Jeffry Tahtouh Reviewed by Jack Leary

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1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (U.S. EPA), requirements included in the Class I UIC permit number MI-163-1W-C011 granted to Republic Industrial and Energy Solutions, LLC (Republic) and with the State of Michigan Administrative Rule R299.2393 (MI Permit #M-453) the annual mechanical integrity testing was performed on Well No. 2-12 on August 6, 2024 to demonstrate the mechanical integrity of the casing, packer, and tubing.

Republic Industrial and Energy Solutions, LLC (Republic) retained WSP USA (WSP) to perform the annual mechanical integrity testing on Well No. 2-12 at Republic's facility in Romulus, MI. The mechanical integrity tests included a Radioactive Tracer Survey and an Annulus Pressure Test. All tests were conducted in accordance with United States Environmental Protection Agency (USEPA) 40 CFR 146.8 and 146.13(b)(3), (c)(2)(i), and (d). Approved testing procedures are included as Appendix A.

In addition to the mechanical integrity testing, a bottom hole pressure falloff test (Ambient Pressure Monitoring) was run in Well No. 2-12 to assist in evaluating the injection zone. A chronology of field activities is included as Appendix B. Wellhead and wellbore schematics of Well No. 2-12 are included as Figures 1 and 2, respectively.

2.0 REPORT OF FIELD OPERATIONS

All depths in this report, unless otherwise noted, are referenced to the Kelly Bushing (KB) elevation which is 13 feet above the ground level elevation for Well No. 2-12. A wellbore schematic of Well 2-12 is presented as Figure 2. A chronological report of field activities is presented as Appendix B.

Republic performed the annulus pressure test (APT) on August 6, 2024, to demonstrate that there is no significant leak in the tubing, casing or packer. JoAnne Mitock with Environmental Solutions AQ (support for USEPA Region 5) witnessed and passed the test. The annulus pressure test results are detailed in Section 3.0.

Field wireline operations began on August 6, 2024, when Michigan Wireline spotted and rigged up on the well with Casing Collar Locator (CCL) and Radioactive Tracer tools. A radioactive tracer survey (RTS) was run on August 6, 2024. A pre-survey base log and 5-minute statistical checks were ran with no injection. Injection was initiated at 43 gallons (gpm), then a slug of radioactive material was released at 3100 feet. A dissipated slug was located at approximately 4069 feet with Chase Pass No. 4. A slug of radioactive material was ejected at 3750 feet, and the lower gamma ray detector was run downhole and positioned at 3960 feet to observe the slug passing by and monitor for any upward migration. The time-drive survey was conducted for approximately 30 minutes at 43 gpm and 395 psi injection pressure. To conclude the RTS, the well was shut-in and the post-survey log was run. The radioactive tracer survey results are detailed in Section 4.0.

On August 6, 2024, Impact Completions spotted and rigged up slickline with memory-type bottom-hole pressure gauges. The memory gauges were run downhole and set at 3975 feet (top gauge at 3973 feet). Injection was initiated at 1830 hours. Republic began to discontinue injection of plant effluent into Well 2-12 at 0628 hours on August 7, 2024. The pressure falloff was monitored for approximately 24.2 hours and was concluded on August 8, 2024. While pulling the gauges out of the well, static pressure gradient stops were made at 3000 feet, 2000 feet, 1000 feet, and at the surface. Well 1-12 was shut-in throughout the build-up and falloff period. The falloff test and bottom hole static pressure gradient results are detailed in Sections 5.0 and 6.0, respectively.

3.0 ANNULUS PRESSURE TEST

An Annulus Pressure Test (APT) was conducted on Well #2-12 on Monday, August 6, 2024, with JoAnne Mitock with Environmental Solutions AQ (support for USEPA Region 5) witnessed and passed the test. Between 08:09 AM and 08:13 AM, the annulus pressure was increased from 587 psig to 1106 psig. The official APT was started at 08:20 AM at a pressure of 1103 psig. One hour later at 09:20 AM, the annulus pressure had declined to 1091 psig which was a decrease of 11 psi (-1.05%) and within the ±3%/hour allowed by the EPA Region 5.

A plot of the APT is provided as Figure 3, and a tabulate of the APT data is provided as Appendix C. A calibration certificate for the digital pressure gauge is included in Appendix D. Signed copy of the Standard Annular Pressure Test Form is provided as Appendix E.

4.0 RADIOACTIVE TRACER SURVEY

A Radioactive Tracer Survey was run in Well #2-12 on August 6, 2024. The survey was conducted using the facility's pump and fresh water. After correlating the log with the top of the packer set at 3930 feet, the tool tagged bottom at 4267 feet.

A Base Pass was made from 4267 feet to 3000 feet, and 5-minute statistical checks were made at 3800 feet and 3855 feet. While injecting into the well at 43 gal/min, a 4-second slug of radioactive material (Iodine-131) was released at 3100 feet. Four Chase Passes were made through the radioactive slug as it traveled down the tubing and dissipated into the Injection Interval, below the 7-inch protection casing set at 4075 feet, dissipating at approximately 4069 feet. A summary of the Chase Passes with flow rate is provided as Table 1. No radioactive material was detected exiting the well above the Injection Interval, demonstrating the external mechanical integrity of the well.

The injection rate was kept at 43 gal/min, and a 4-second slug of radioactive material was released at 3750 feet. The upper and lower gamma ray detectors were then positioned at 3,951 feet and 3,960 feet, respectively. At 11:22:28 the slug passed by the upper gamma ray detector, and 22 seconds later at 11:22:50, the slug passed by the lower gamma ray detector. Approximately 45 seconds after the radioactive slug passed by each gamma ray detector, the level of radiation returned to background levels on both gamma ray detectors and remained at background levels for the duration of the time-drive survey. The time-drive survey was terminated at 11:55:54 which was 33 minutes after the radioactive slug passed by the lower gamma ray detector. No vertical migration was detected during the time-drive survey, demonstrating the base of the 7-inch protection casing cement had mechanical integrity.

Injection was ceased. A final gamma ray pass was made from 4267 feet to 3000 feet following the time-drive survey. Above approximately 4090 feet, the final pass repeated the base pass with the upper and lower gamma ray detectors. Below 4100 feet, both gamma ray detectors averaged approximately 25 counts/sec higher on the final pass, indicating residual tracer material in the borehole. Some of this small increase may have been due to residual radioactive material in the borehole getting dispersed with movement of the tool.

A copy of the Radioactive Tracer Survey is included as Exhibit 1. Appendix F provides a completed EPA Radioactive Tracer Survey Form with background information of the Well #2-12 survey. A letter of interpretation is presented as Appendix G.

5.0 PRESSURE FALLOFF ANALYSIS

Pressure falloff testing was conducted on Well 2-12 from August 6, 2024, through August 8, 2024. A Badger Low Temp, Serial No. 91933 pressure gauge was utilized during the testing. The gauge calibration certificates are presented in Appendix D and show the gauges have been calibrated as specified by the gauge manufacturer.

Injection Period

The rate data used in the analysis of the falloff pressure data was the injection period on August 6, 2024, through shut-in. Well 2-12 had been shut in on August 6, 2024, after the completion of the radioactive tracer survey. Injection resumed on August 6, 2024 at 1830 hours, then continued for approximately 12 hours. General well and reservoir information is presented in Table 2. Information pertinent to the injection period is presented in Table 3.

Falloff Period

Well 2-12 was shut in at 0628 hours on August 8, 2024 and remained shut-in for approximately 24.2 hours while the bottom-hole pressure and temperature were recorded. Appendix H lists the pressure and temperature data recorded during the test. Table 4 contains information pertinent to the falloff period of the test.

Analysis of Falloff Test

The pressure data obtained during the falloff test were analyzed utilizing the commercially available pressure transient analysis software program PanSystem©. The PanSystem© output for the analysis of this test is presented in Appendix I. Impact Completion's pressure test report is presented as Appendix J. A completed EPA Pressure Falloff Test Form is provided in Appendix K.

Figure 4 shows the pressure response recorded by the bottom-hole pressure tool from the time the tool was in place through the 24-hour shut-in period. Figure 5 is a Cartesian plot of the pressure data recorded during the falloff period. The superposition time function was used to account for all rate changes during the injection buildup period of the testing.

Figure 6 is a log-log diagnostic plot of the falloff data, showing change in pressure and pressure derivative versus elapsed shut-in time. Radial flow begins to appear at an elapsed time following shut-in of 2.963 hours and continues until an elapsed time following shut-in of 5.586 hours. The radial flow regime is indicated on Figure 7.

The reservoir permeability was determined from the radial flow region of the superposition Horner plot (Figure 7). The radial flow regime begins at a superposition Horner time of 5.385 and continues until 3.296. Figure 8 shows an expanded view of the superposition Horner plot. The slope of the radial flow period was determined to be 32.378 psi/cycle.

An estimate of mobility-thickness, kh/μ, for the reservoir was determined from the following equation:

$$\frac{kh}{\mu} = 162.6 * \frac{qB}{m}$$

Where,

kh/μ	=	formation mobility-thickness, millidarcy-feet/centipoise
q	=	rate prior to shut-in, bpd
B	=	formation volume factor, reservoir volume/surface volume
m	=	slope radial flow period, psi/cycle

With the following values, the mobility-thickness was found to be 7,093 md-ft/cp:

q	=	1412.49 barrels/day (41.20 gallons/minute)
m	=	32.378 psi/cycle
B	=	1.0 reservoir barrel/surface barrel

$$\frac{kh}{\mu} = 162.6\ \frac{(1412.49)(1.0)}{32.378}$$

$$= 7{,}093 \text{ md-ft/cp}$$

The permeability-thickness, kh, was determined to be 5,674 md-ft by multiplying the mobility-thickness, kh/μ, by the viscosity of the formation fluid viscosity, $\mu_{formation}$, of 0.80 centipoise:

$$kh = \left(\frac{kh}{\mu}\right)\mu_{waste}$$

$$= (7093)\ (0.80)$$

$$= 5{,}674 \text{ md-ft}$$

The average reservoir permeability using the total thickness of 133 feet was determined to be 42.67 md:

$$k = \frac{(kh)}{h}$$

$$= \frac{5{,}674}{133}$$

$$= 42.67 \text{ md}$$

To determine whether the pressure transient was indeed beyond the waste front, the travel time for the pressure transient to pass beyond the waste front was calculated. The distance to the waste front is determined from the following equation:

$$r_{waste} = \left(\frac{0.13368\ V}{\pi h \phi}\right)^{1/2}$$

Where:

r_{waste}	=	radius to waste front, feet
V	=	total volume injected into the injection interval, gallons
h	=	formation thickness, feet
ϕ	=	formation porosity, fraction
0.13368	=	constant

The time necessary for a pressure transient to travel this distance is calculated from the following equation:

$$t_{waste} = 948\frac{\phi\ \mu_{waste}\ c_t\ r^2{}_{waste}}{k}$$

Where:

t_{waste}	=	time for pressure transient to reach waste front, hours
ϕ	=	formation porosity, fraction
μ_{waste}	=	viscosity of the waste at reservoir conditions, centipoise
r_{waste}	=	radius to waste front, feet
c_t	=	total compressibility of the formation and fluid, psi
k	=	formation permeability, millidarcies
948	=	constant

Combining the previous two equations results in:

$$t_{waste} = 126.73\frac{\mathrm{V}\ \mu_{waste}\ c_t}{\pi k h}$$

The waste viscosity is 0.80 centipoise at reservoir conditions, while viscosity of brine in the reservoir is 1.34 centipoise. A cumulative volume of approximately 133,021,837 gallons of waste has been injected the injection interval (from both Well 1-12 & 2-12) since injection began. The formation has a porosity of 0.11 and a total compressibility of 6.20 x 10^{-6} psi^{-1}. The time necessary for a pressure transient to traverse the distance from the wellbore to the leading edge of the waste front, would then be 4.69 hours:

$$t = 126.73\frac{(133{,}021{,}837)(0.80)(6.20\ x\ 10^{-6})}{(\pi)(42.67)(133)}$$
$$= 4.69\ hours$$

Since the radial flow period occurred from 2.963 to 5.586 hours elapsed time following shut-in, the use of the injected waste viscosity for calculating permeability during the radial flow period was valid.

The skin factor was determined from the following equation:

$$s = 1.151 \left[\frac{P_{wf} - P_{1hr}}{m} - \log\left(\frac{k}{\phi \, \mu \, c_t \, r_w^{\,2}} \right) + 3.23 \right]$$

Where,

s	=	formation skin damage at open perforations, dimensionless
1.151	=	constant
p_{wf}	=	flowing pressure immediately prior to shut-in, psia
p_{1hr}	=	pressure determined by extrapolating the radial flow semi-log line to a Δt of one hour, psi
m	=	slope of the radial flow semi-log line, psi/cycle
k	=	permeability of the formation, md
ϕ	=	porosity of the injection interval, fraction
μ	=	viscosity of the fluid the pressure transient is traveling through, centipoise
c_t	=	total compressibility of the formation plus fluid, psi^{-1}
r_w	=	radius of the wellbore, feet
3.23	=	constant

The final flowing pressure was 2174.62 psia. The pressure determined by extrapolating the radial flow semi-log line to a Δt of one hour, p_{1hr}, was 1918.26 psia. The porosity of the injection interval, ϕ, is 0.11 and the total compressibility, c_t, is 6.2 x 10^{-6} psi^{-1}. The wellbore radius, r_w, is 0.3645 feet. Using these values in addition to the previously determined parameters, m and k, results in a skin of 2.74:

$$s = 1.151 \left[\frac{2174.62 - 1918.26}{32.378} - \log\left(\frac{42.67}{(0.11)(0.80)(6.2 \, x \, 10^{-6})(0.3645)^2} \right) + 3.23 \right]$$

$$= 2.74$$

The change in pressure, Δp_{skin}, in the wellbore associated with the skin factor was determined to be 77.0 psi using the slope of the straight-line portion of the radial flow plot, the calculated skin factor, and the following equation:

Δp_{skin} = 0.869 ms

Where:

0.869	=	constant
m	=	slope from superposition plot of the well test, psi/cycle
s	=	skin factor calculated from the well test

Δp_{skin} = 0.869 (32.378) (2.74)

Δp_{skin} = 77.0 psi

The flow efficiency (E) was determined from the following equation:

$$E = \frac{p_{wf} - p^* - \Delta p_{skin}}{p_{wf} - p^*}$$

Where:

E = flow efficiency, fraction
p_{wf} = flowing pressure prior to shutting in the well for the falloff, 2174.62 psia
p^* = pressure extrapolated to an infinite shut-in time from the straight-line portion of the radial flow plot, 1880.27 psia
Δp_{skin} = pressure change due to skin damage, 77.0 psi

Substituting these values, the flow efficiency was calculated to be 0.738:

$$E = \frac{2174.62 - 1880.27 - (77.0)}{2174.62 - 1880.27}$$

$$= 0.738$$

Table 5 presents a summary of calculated test data determined from the analysis.

Table 6 presents a summary of the results determined from the analysis.

6.0 BOTTOM-HOLE PRESSURE MEASUREMENT AND STATIC GRADIENT SURVEY

On August 8, 2024, a static gradient survey was performed while pulling the pressure gauges out of the well. Gradient stops were made at 3000 feet, 2000 feet, 1000 feet 500 feet, and at the surface. The bottom-hole pressure and temperature, after approximately 24 hours of shut-in at 3975 feet, were 1883.97 psia (1883.97 psia = 1869.27 psig + 14.7 psi) and 74.42 °F, respectively. The data printout for the static gradient survey is presented as Appendix L. A tabulation of the survey results is provided as Table 6. The data are depicted graphically in Figure 9.

7.0 CONCLUSIONS

In conclusion, Republic Well No. 2-12 has mechanical integrity in accordance with 40 CFR 146.08 a (1) and in accordance with U.S. EPA Permit Number MI-168-1W-C011, and in accordance with the State of Michigan administrative rule R299.2393 (Michigan Permit Number #M-453) by demonstrating that:

- There is no significant leak in the casing, tubing or packer, as evidenced by an annulus pressure test conducted on August 6, 2024.
- The cement at the top of the injection interval has integrity and all injected fluids exited the injection tubing below the packer and moved out into the injection zone as demonstrated by the radioactive tracer log dated August 6, 2024.

With the submittal of this report, the ambient pressure monitoring and mechanical integrity testing conducted on Well 2-12 satisfies the United States Environmental Protection agency requirements which are included in the Class I UIC well permit number MI-163-1W-C0011

TABLES

TABLE 1

RADIOACTIVE TRACER SURVEY CHASE PASS SUMMARY

Chase Pass	Time Logged	Peak Slug Depth (ft KB)	Distance Traveled (ft)	Time Between Slugs (min)	Volume Between Slugs (gal)	Flow Rate (gpm)
1	10:41:34	3154.50				
2	10:44:36	3363.00	208.5	3.03	130.29	43
3	10:54:13	3962.50	599.50	9.62	413.66	43
4	11:13:35	4068.50	106.00	19.37	832.91	43

TABLE 2
WELL 2-12 2024 PFO GENERAL TEST INFORMATION

PARAMETER	VALUE	SOURCE/JUSTIFICATION
Dates of test	August 6-8, 2024	
Time since reservoir pressure was last stabilized	8/6, 2-12 inactive after RTS and while spotting BHP gauges for PFOT	Republic plant records
Shut-in time prior to test	6.5 hours	Republic plant records
Stabilized pressure and temperature prior to test	N/A	
Cumulative injection into completed interval (gallons)	#1-12 .....68,023,576 #2-12 .....64,998,261 *Total: 133,021,837*	Republic plant records
Wellbore Radius (inches)	4.375	Figures 1 and 2
Completed Intervals (feet KB)	3,975 – 4,550	Figures 1 and 2
Type of Completion	Open-Hole	Figures 1 and 2
Depth to Fill (feet KB)	4,267	Radioactive Tracer Survey conducted
Interval Thickness (feet)	133	No-Migration Petition Revision, Section VI (September 2002)
Average historical waste fluid viscosity	0.80	Estimated from Waste Stream Characteristics (30K TDS)
Formation fluid viscosity (cp)	1.34	No-Migration Petition Revision, Section VI (September 2002)
Porosity	11%	No-Migration Petition Revision, Section VI (September 2002)
Total Compressibility (psi^{-1})	6.20×10^{-6}	No-Migration Petition Revision, Section VI (September 2002)
Formation volume factor	1	Assumed since the dominant fluid is water
Initial formation bottom-hole pressures	1,779.5 psia @ 3,950’ KB MD / 3,856’ KB TVD	No-Migration Petition Revision, Section VI (September 2002)
Initial formation bottom-hole temperature	86.4 ˚F @ 3,950’ KB MD / 3,856’ KB TVD	No-Migration Petition Revision, Section VI (September 2002)

TABLE 3
WELL 2-12 2024 PFO INJECTION PERIOD

PARAMETER	VALUE	SOURCE/JUSTIFICATION
Time of injection period (hours)	11.98 hours	Republic Plant Records
Type of test fluid	Plant Effluent	
Final Injection rate (gpm)	41.20	Republic Plant Records
Pumps used for test	Facility Pump	
Distance from shut-in valve to wellhead	20 feet	Measured
Injection fluid viscosity (cp)	0.95	Estimated (based on Fresh Water @ 73 ˚F)
Injection fluid density (gm/cc)	1.00	Measured
Method and time viscosity tested	Not measured	
Final injection pressure	2,174.62 psia	Attachment 1
Gauge temperature at shut-in	68.53 ˚F	Attachment 1
Gauge type	Cal-Scan	Appendix D
Gauge model	Badger Low Temp, SN 91933	Appendix D
Gauge sensitivity	Accuracy: (0.024% FS) Resolution: (0.0003% FS)	Appendix D
Gauge depth (feet KB)	3,975	Appendix B & J
Manufacturer's recommend gauge calibration frequency	Annual	Appendix D

TABLE 4
WELL 2-12 2024 PFO FALL-OFF PERIOD

PARAMETER	VALUE
Total shut-in time	24.22 hours
Final shut-in pressure	1,883.98 psia
Final shut-in temperature	74.43 ˚F

TABLE 5
WELL 2-12 2024 PFO CALCULATED TEST DATA

CALCULATED PARAMETER	VALUE
Time to Waste Front (hours)	4.69
Time of Radial Flow Regime (hours)	2.963 – 5.586
Time to End of Wellbore Storage (hours)	0.0052
Radial Flow (Horner) Time at End of Wellbore Storage	2,693
Slope of Straight-Line Portion of Radial Flow Plot (psi/cycle)	32.378
Injection Reservoir Transmissibility (md-ft/cp)	7,093
Permeability (md)	42.67
Skin Factor (dimensionless)	2.74
Pressure Loss @ 41.2 gpm Due to Skin Damage (psi)	77.0
Flow Efficiency (fraction)	0.7384

TABLE 6
WELL 2-12 2024 PFO
SUMMARY OF PANSYSTEM FALL-OFF ANALYSIS

SOURCE	PARAMETER	2-12 VALUE	UNITS
Log-Log and Derivative Information	Total Shut-in Time	24.22	hours
	Derivative Smoothing Factor	0.070	
	Radial Flow Period (elapsed)	2.963 – 5.586	hours
Information from Superposition Plot	Slope of Semi-Log Straight Line	32.378	psi/cycle
	Pressure at Infinite Shut-in Time	1880.27	psia
	Pressure at 1-hour from Shut-in (Extrapolation of Semi-Log Straight Line)	1918.26	psia
Semi-Log Analysis	Mobility Thickness	7,091	md-ft/cp
	Permeability Thickness	5,673	md-ft
	Permeability	42.7	md
	Formation Skin Damage	2.77	

TABLE 7

STATIC PRESSURE GRADIENT SURVEY

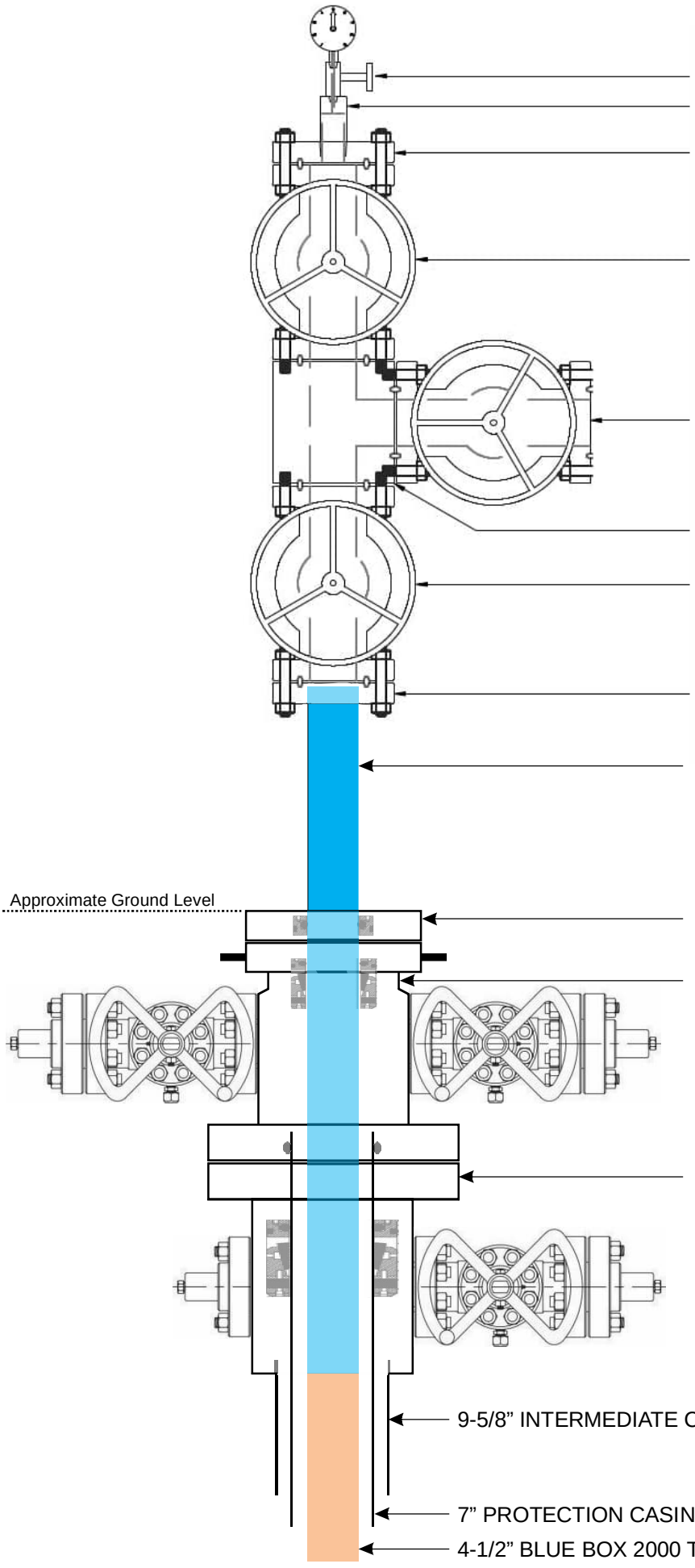
WELL No. 2-12

August 8, 2024

Memory Gauge Serial No. 91933			
Depth (feet)	Pressure (psig)	Pressure Gradient (psi/ft)	Temperature (ºF)
0	148.98	-	65.05
1000	575.84	0.427	59.27
2000	1009.86	0.434	63.37
3000	1444.99	0.435	74.35
3975	1869.27	0.435	74.42

FIGURES

FIGURE 1



WSP USA, Inc.
16200 Park Row Ste. 200
Houston, TX 77084
(281) 589-5900

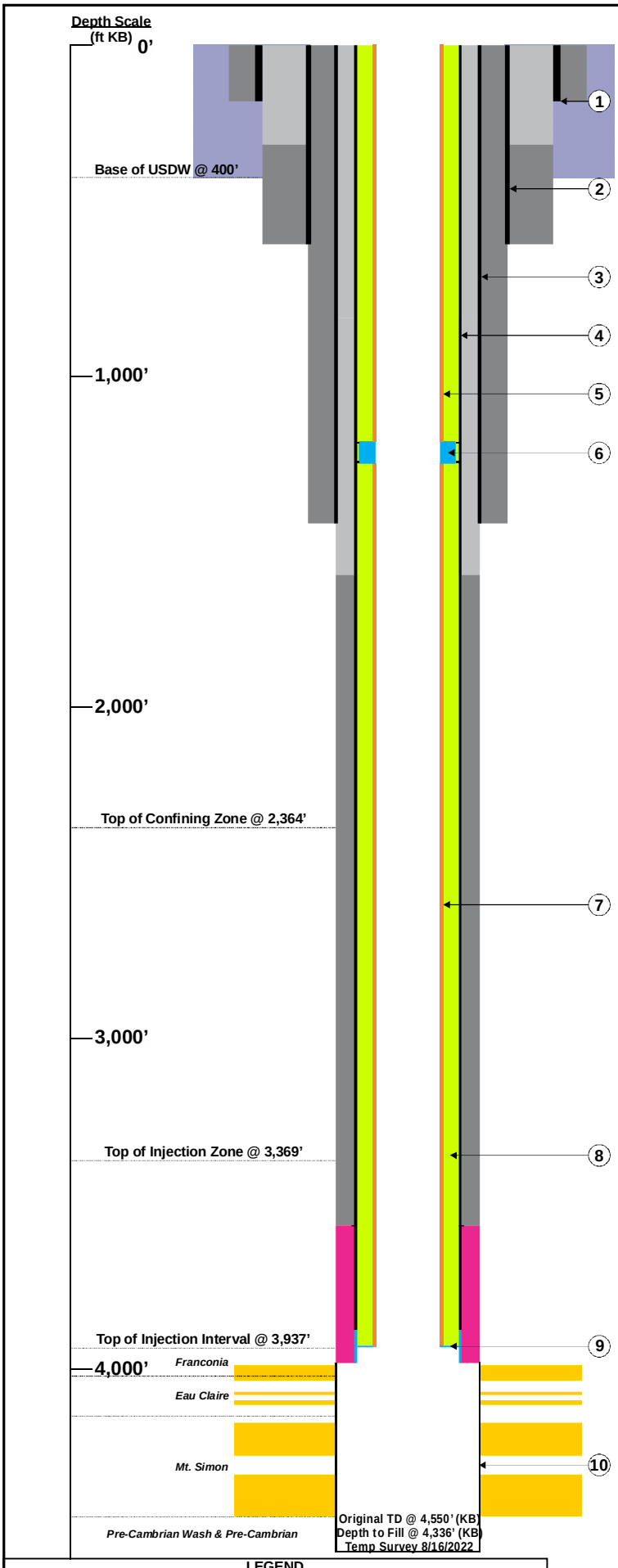
FIGURE 4.1-4

REPUBLIC INDUSTRIAL AND ENERGY SOLUTIONS LLC
ROMULUS, MICHIGAN

BELOW GROUND DETAILS
EDS WELL #2-12

DATE 11/17/2023	CHECKED BY JHL	JOB NO. 192128AF
DRAWN BY WDD	APPROVED BY SLK	DWG NO.

FIGURE 2



BELOW GROUND DETAILS

1. Conductor Casing: 16", 60 lb/ft set in a 20" borehole at 169'. Cemented with 300 sacks of Class A cement containing 3% $CaCl_2$ with 75% returns.
2. Surface Casing: 13-3/8", 48 lb/ft, H-40, ST&C set in a 17-1/2" borehole at 602'. Cemented with 350 sacks of 65/35 Pozalin with 3% $CaCl_2$ followed by 200 sacks of Class A tail cement with 3% $CaCl_2$. Top-out with 50 sacks of Class A cement with 3% $CaCl_2$.
3. Intermediate Casing: 9-5/8", 36 lb/ft set in a 12-1/4" borehole at 1,444'. Cemented with 725 sacks of Class A with 3% $CaCl_2$. 33 bbl of cement circulated to the surface.
4. Protection Casing: 7", 26 lb/ft, K-55, LT&C set in an 8-3/4" borehole to 3,982' and 7", 1/4" wall, Hastelloy C-276, STL set in 8-3/4" borehole from 3,882' to 3,979.4' with 7" float collar and float shoe set from 3,979.4' to 3,982. Top 10' of Hastelloy coated with Teflon for galvanic corrosion inhibition. Cement diverter tool set in 7" casing from 3,565.5.' to 3,568'.
   Stage I (3,568' to 3,982'):
   686 gallons (16.3 bbl) of 12.5 lb/gal EPSEAL epoxy cement.
   Stage II (Surface to 3,568'):
   310 sacks of 50/50 of Poz followed by 340 sacks of 50/50 Poz with microbond followed by 450 sacks of Standard cement with microbond. 44 bbl circulated to surface.
5. Upper Injection Tubing: 4-1/2", Blue Box 2000, fiberglass tubing to top of straddle packer at 1,196.82':
   a) 7.5', 4-1/2" Hastelloy C-276 landing joint top positioned 1-1/2' above ground level with 0.9' of stretch. Landing Joint base = 19' KB;
   b) 1 Pup Joints (7.5'), 4-1/2", Blue Box FRP;
   c) 4-1/2", Blue Box FRP tubing (40 joints x 29.2355'/joint = 1,169.42'
   d) Anchor Seal Assembly, 4.75" x 3.75", Hastelloy C-276, 1.64' long set in Model 12 Injection Packer PBR from 1,196.82' to 1,198.46'.
6. Straddle Packer: Model 12, Hastelloy C-276 wetted parts set from 1,196.82' to 1,265.50'. Upper Element at 1,201.60' and Lower Element at 1,262.64'.
7. Lower Injection Tubing: 4-1/2", Blue Box 2000, fiberglass tubing set from 1,265.5' to 3,931' with 2.25' of stretch as follows:
   a) 4-1/2", Blue Box FRP tubing (91 joints x 29.2665'/joint = 2,663.25')
   b) Anchor Seal Assembly, 4.75" x 3.75", Hastelloy C-276, 1.64' long set in Model 12 Injection Packer PBR from 3,931.0' to 3,932.64'.
8. Annulus Fluid: 66 bbl (2,772 gallons) of 10 lb/gal brine water containing a corrosion inhibitor, a bactericide and an oxygen scavenger.
9. Injection Packer: Model 12, Hastelloy C-276 wetted parts set from 3,931' to 3,936.1'.
10. Open Hole Completion: 8-3/4" borehole from 3,982' to 4,550'.

LEGEND

- USDW	- Fiberglass	- Standard Cement
- Receptive Interval	- Carbon Steel	- Lightweight Cement
- Annulus Fluid	- Hastelloy C-276	- Epoxy Cement

Vertical Scale: 1" = 300'

WSP USA, Inc.
16200 Park Row Ste. 200
Houston, TX 77084
(281) 589-5900

FIGURE 4.1-3

REPUBLIC INDUSTRIAL AND ENERGY SOLUTIONS LLC
ROMULUS, MICHIGAN

BELOW GROUND DETAILS
EDS WELL #2-12

DATE 11/17/2023	CHECKED BY JHL	JOB NO. 192128AF	
DRAWN BY WDD	APPROVED BY SLK	DWG NO.	

Annulus Pressure Test
Well 2-12
August 6, 2024

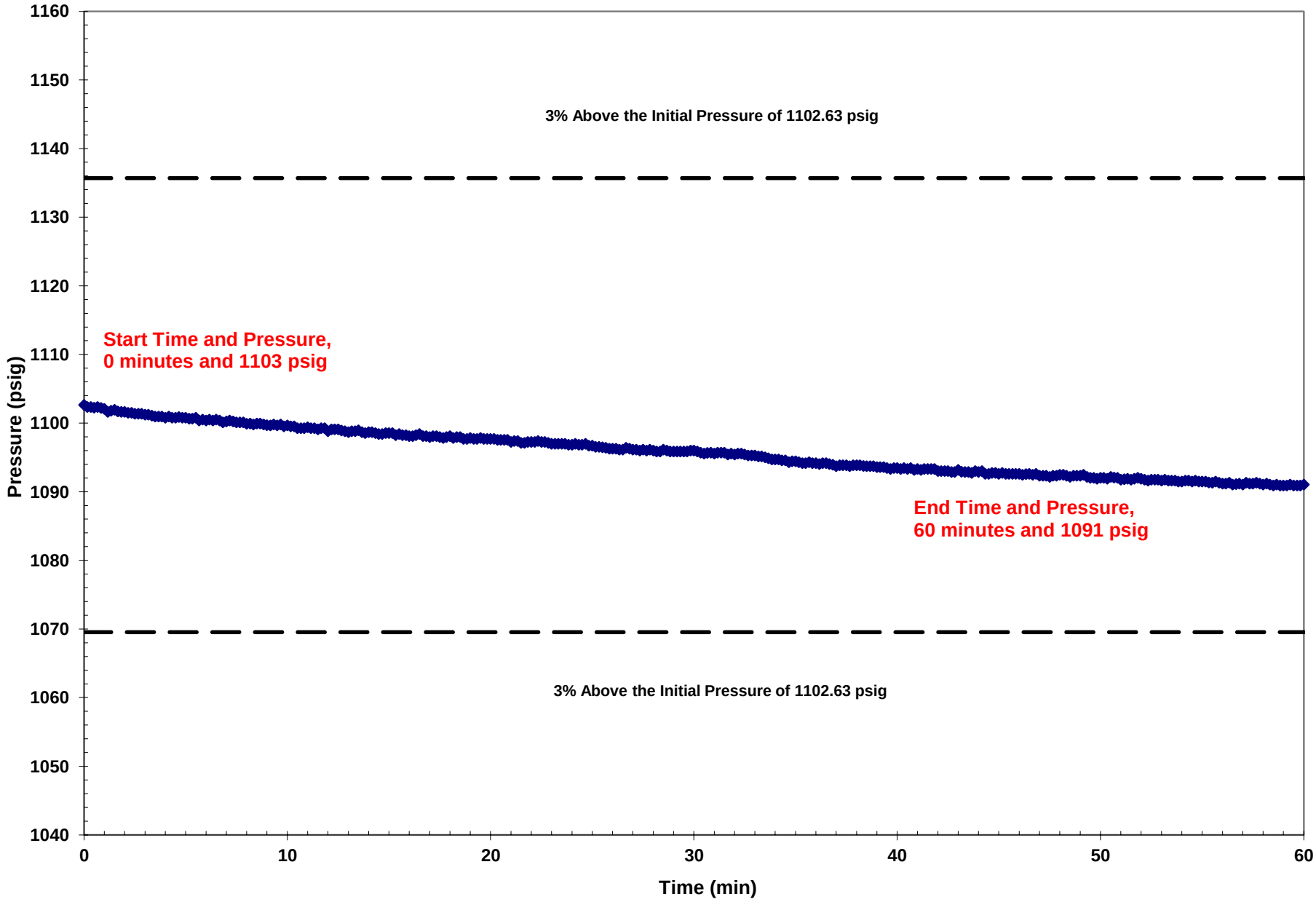


FIGURE 3

Figure 4: Well 2-12 2024 PFO Test Overview Plot

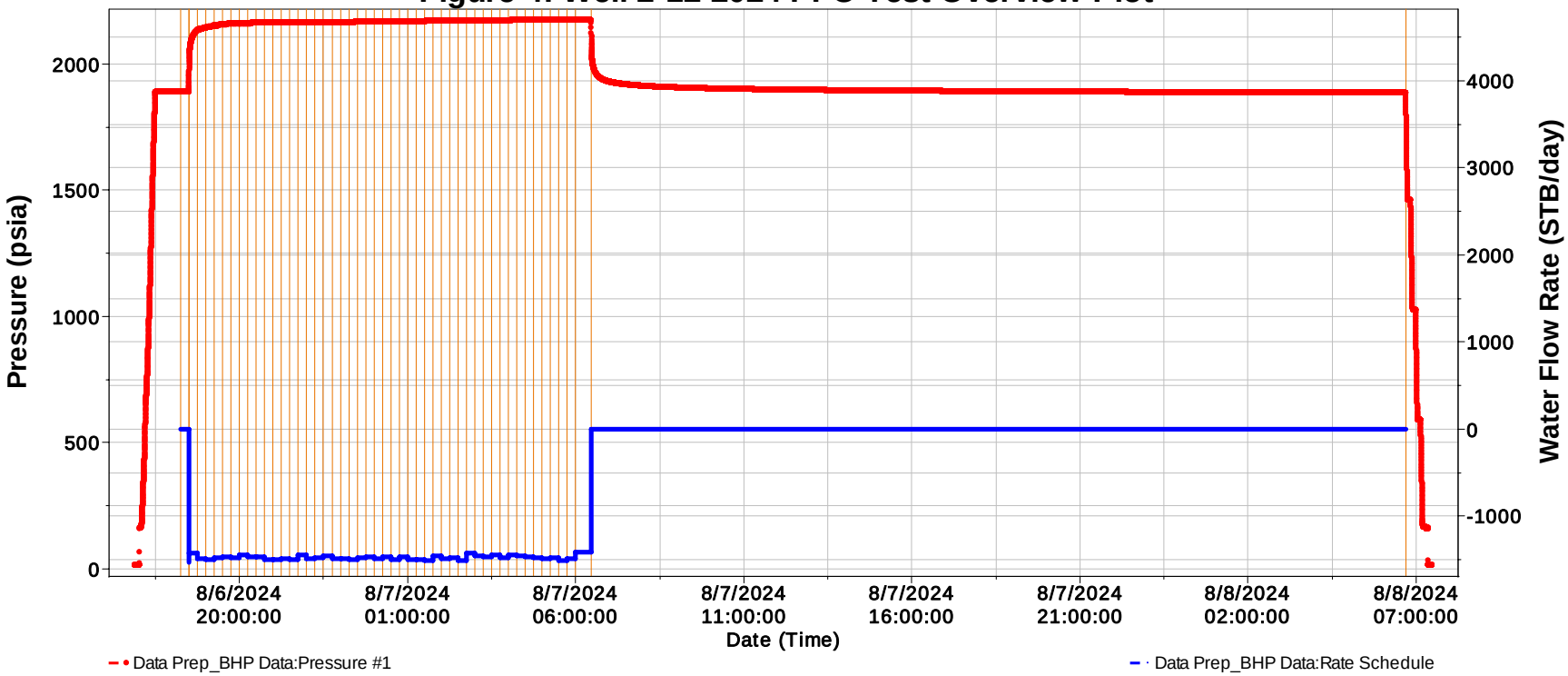


Figure 5: Well 2-12 2024 PFO Cartesian Plot

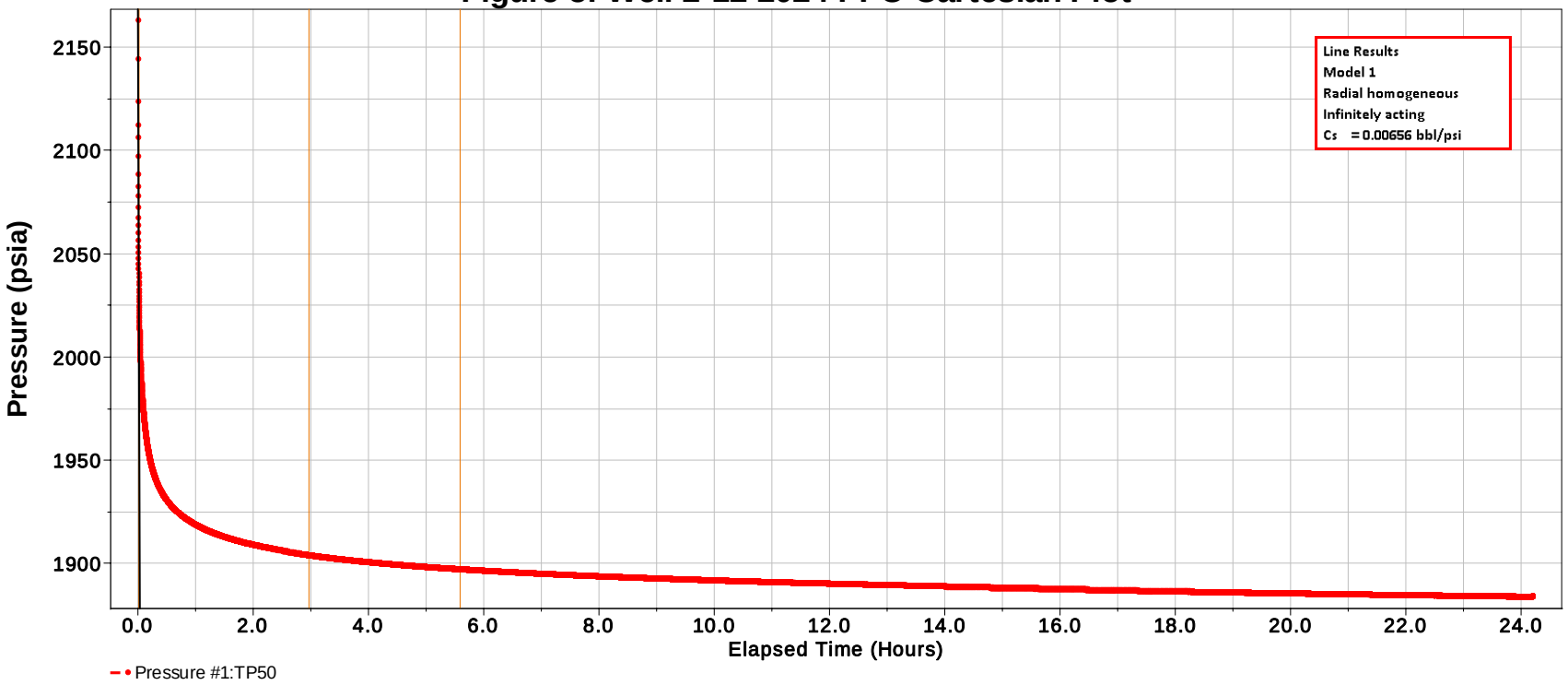


Figure 6: Well 2-12 2024 PFO Log-Log Plot

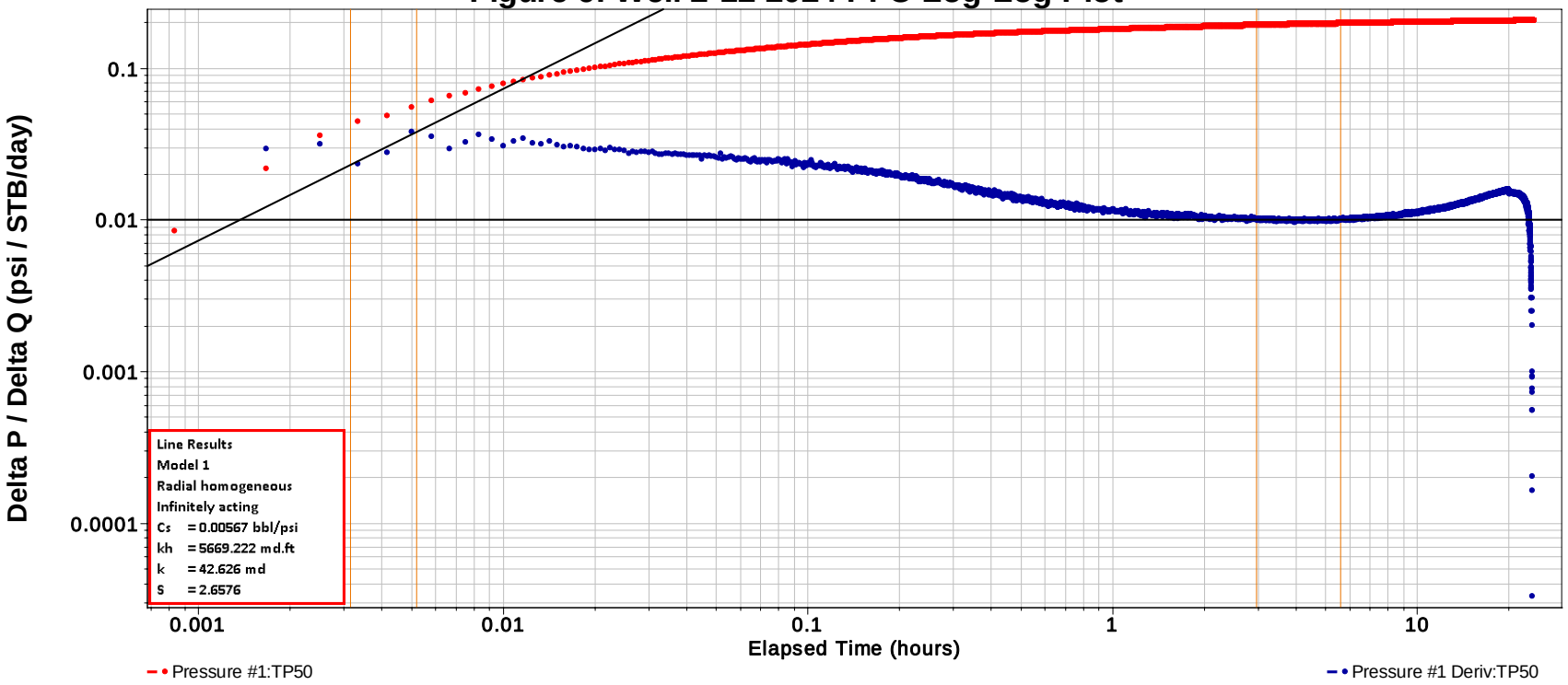


Figure 7: Well 2-12 2024 PFO Radial Flow Plot

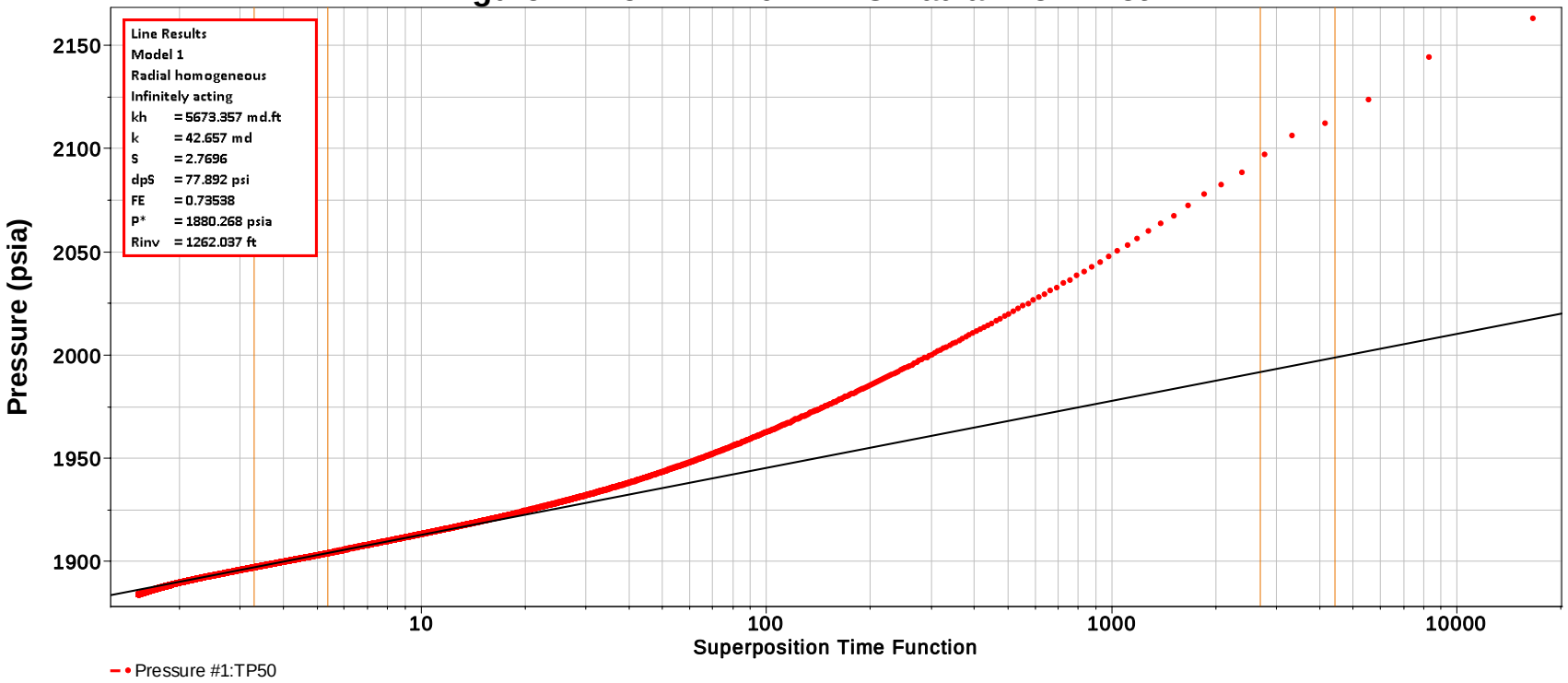
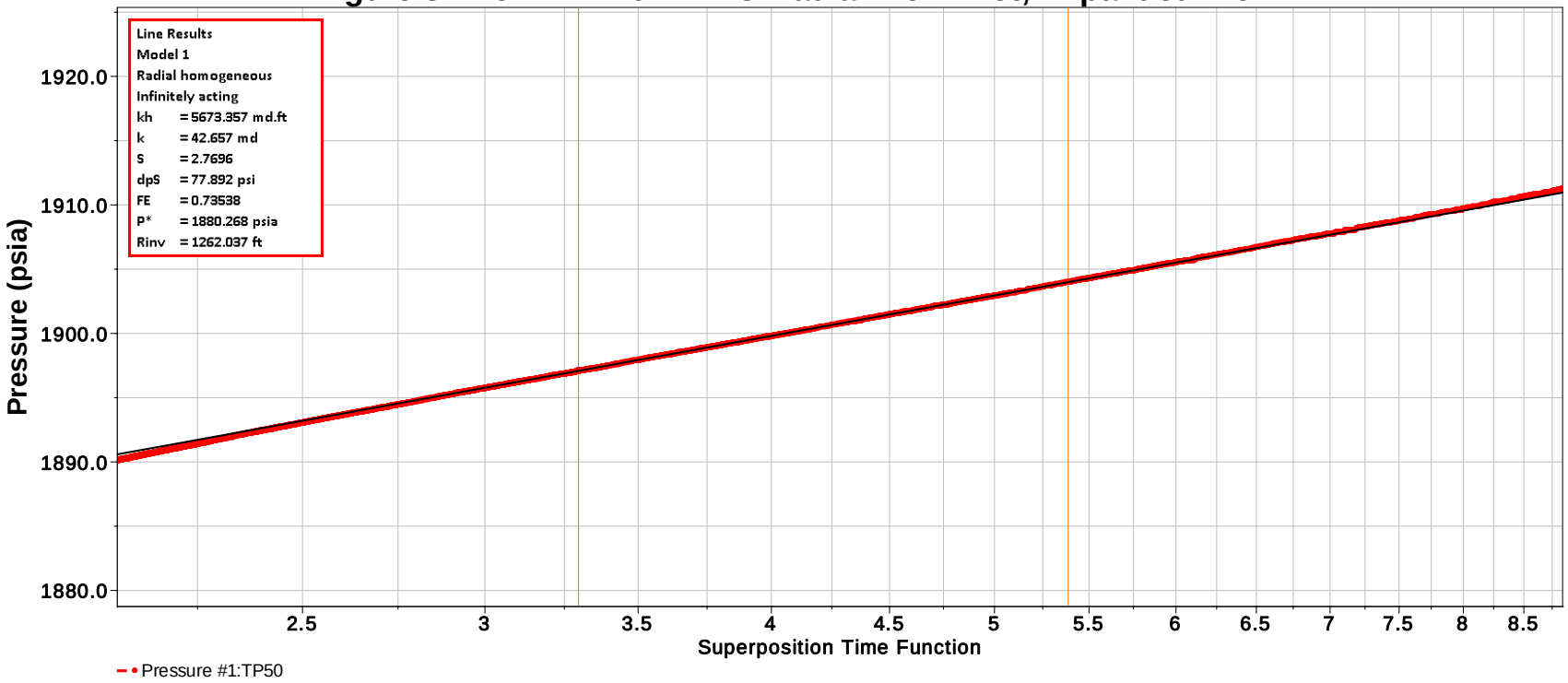


Figure 8: Well 2-12 2024 PFO Radial Flow Plot, Expanded View



STATIC PRESSURE GRADIENT SURVEY
WELL No. 2-12
August 8, 2024

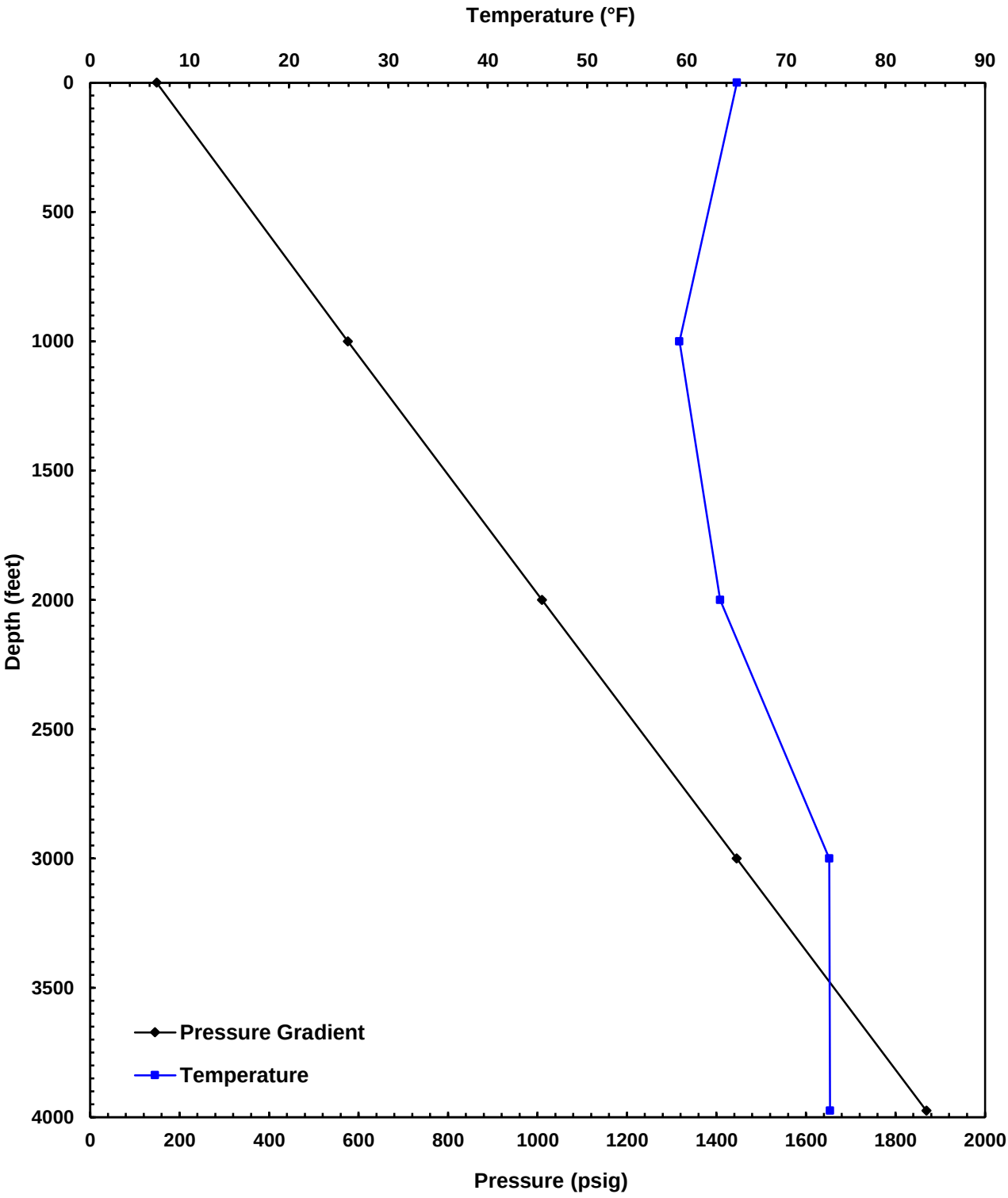


FIGURE 9

APPENDICES

APPENDIX A

REGULATORY CORRESPONDENCE

Mackinnon, James

From: R5UICWellTesting <R5UICWellTesting@epa.gov>
Sent: Tuesday, July 30, 2024 11:33 AM
To: Mackinnon, James
Cc: Greenhagen, Andrew (he/him/his); Quinlan, Kaelyn (she/they); R5UICWellTesting
Subject: RE: Annual MIT Republic Services Romulus MI
Attachments: FOT.pdf; RTS.pdf

Mr. Mackinnon,

EPA has reviewed the procedures you proposed on July 5, 2024, for radioactive tracer surveys and fall off tests in Republic Services in Romulus, Michigan on Well Nos. 1-12 (EPA UIC Permit #MI-163-1W-C010) and 2-12 (EPA UIC Permit #MI-163-1W-C011). Your proposed procedures are hereby approved unless you receive additional email correspondence in the next three business days from Andrew Greenhagen approving the procedures with conditions or disapproving the procedures.

A blank test information sheet is attached to this email – please complete and return it for each test when you submit your report. Please note all the items listed under "Remember" at the bottom of the information sheet. These items will help ensure that all the information we require for interpretation of the test will be included in your submission. Please remember to submit the digital data by email when you submit your report. If a test does not provide definitive information concerning the conditions which it is designed to ascertain, or approved procedures are not followed, you will be required to rerun the test.

It is our practice that testing be witnessed by our contract field inspector to the extent possible. If you have not already done so, please contact Felicia Chase at chase.felicia@epa.gov to schedule the witnessing of these tests. Unwitnessed tests are only acceptable if it is impossible for the field inspector to be present.

If you have any questions or if you find during a test that you are unable to follow the approved procedures, please contact Kaelyn Quinlan at (312) 886-7188 or quinlan.kaelyn@epa.gov.

Please note: We have established an additional email address of R5UICWellTesting@epa.gov. You may now send all correspondence relating to well test witness scheduling, procedure approvals, and electronic report/data submissions to this inbox. At this time, EPA still requires a copy of the test report via paper with appropriate signature for the permanent file.

R5UICWellTesting@epa.gov
Water Division, Permits Branch, UIC Section
U.S. Environmental Protection Agency - Region 5
77 West Jackson Boulevard, WP-16J
Chicago, Illinois 60604

From: Mackinnon, James <JMackinnon@republicservices.com>
Sent: Monday, July 29, 2024 4:05 PM
To: R5UICWellTesting <R5UICWellTesting@epa.gov>

Cc: Greenhagen, Andrew (he/him/his) <Greenhagen.Andrew@epa.gov>; Quinlan, Kaelyn (she/they) <Quinlan.Kaelyn@epa.gov>
Subject: RE: Annual MIT Republic Services Romulus MI

> **Caution:** This email originated from outside EPA, please exercise additional caution when deciding whether to open attachments or click on provided links.

Hello,

Please find the procedure attached. We will be completing an annulus pressure test, a tracer survey, and pressure fall off test.

James Mackinnon, CHMM
Engineering Leadership Trainee Industrial Wells
e JMackinnon@republicservices.com
o
c 734-406-5712

From: R5UICWellTesting <R5UICWellTesting@epa.gov>
Sent: Friday, July 26, 2024 8:58 AM
To: Mackinnon, James <JMackinnon@republicservices.com>
Cc: R5UICWellTesting <R5UICWellTesting@epa.gov>; Greenhagen, Andrew (he/him/his) <Greenhagen.Andrew@epa.gov>; Quinlan, Kaelyn (she/they) <Quinlan.Kaelyn@epa.gov>
Subject: RE: Annual MIT Republic Services Romulus MI

Good afternoon James,

Thank you for reaching out. Please specify the related testing that will be conducted with the Annual Pressure Falloff Test on August 6, 2024. In addition, no procedures were attached in the previous email notification sent on July 5, 2024. Can you please confirm that any testing proposed will be conducted according to the previous procedures provided on July 10, 2023? However, if there is any deviation from the prior procedures, please provide in detail.

Best,

R5UICWellTesting@epa.gov
Water Division, Permits Branch, UIC Section
U.S. Environmental Protection Agency - Region 5
77 West Jackson Boulevard, WP-16J
Chicago, Illinois 60604

From: Mackinnon, James <JMackinnon@republicservices.com>
Sent: Friday, July 5, 2024 4:01 PM
To: Greenhagen, Andrew (he/him/his) <Greenhagen.Andrew@epa.gov>; Chase, Felicia <chase.felicia@epa.gov>; Frost,

John <JFrost@republicservices.com>; Rodriquez, Tom <TRodriquez@republicservices.com>; Odrowski, Brendan <BOdrowski@republicservices.com>; Mcbride, Andrew <AMcbride2@republicservices.com>
Cc: Scott, Sylwia <SScott@republicservices.com>
Subject: Annual MIT Republic Services Romulus MI

Mr. Greenhagen,

My name is James Mackinnon and I am an engineer on site at Republic Services in Romulus, Michigan. It is our intention to conduct our Annual Pressure Falloff Test and related testing beginning August 6th, 2024, for wells 1-12 and 2-12.

Please let us know if you have any questions

James Mackinnon, CHMM
Engineering Leadership Trainee Industrial Wells
e JMackinnon@republicservices.com
o
c 734-406-5712

INTRODUCTION

The following procedures comply with the requirements of EPA, Region 5 for annual mechanical integrity tests on a Class I hazardous waste disposal well.

The following are the objectives of the 2024 Annual Mechanical Integrity Tests:

- Conduct a 1-Hour Annulus Pressure Test at a pressure of approximately 1,100 psi.
- Run a Radioactive Tracer Survey.
- Return well to normal service.
- Prepare a Mechanical Integrity Test Report and submit to the UIC groups of EPA, Region 5 and Michigan EGLE.

A. ANNULUS PRESSURE TEST PROCEDURE

1. Notify the EPA, Region 5 and the Michigan EGLE at least 48 hours prior to initiating the annual mechanical integrity tests on Well 1-12.
2. Shut-in Well 1-12 at least 36 hours prior to conducting an Annulus Pressure Test (APT).
3. Record the last date of injection into Well 1-12.
4. Install a certified digital pressure gauge to the annulus and have a Calibration Certificate available on site that demonstrates the pressure gauge was calibrated within the past 12 months.
5. Pressurize the annulus to approximately 1,100 psi.
6. Allow the annulus pressure to stabilize. If necessary, depressurize and bleed line to gauge to remove any trapped air and repressurize.
7. Isolate the annulus pressure on the well from the Well Annulus Monitoring System by closing the necessary valves.
8. Record the Initial Annulus Pressure to begin the 1-hour APT.
9. Continue recording the annulus pressure at 10-minute intervals for at least 60 minutes or as instructed by the regulatory agency inspector witnessing the test. A successful APT will not fluctuate more than 3% of the initial test pressure during the 1-hour test period.
10. Release the pressure from the annulus by bleeding the excess annulus fluid into the Well Annulus Monitoring System storage tank and note the change in the tank level. If requested, perform annual alarm testing.
11. Provide the regulatory agency inspector with a copy of the data recorded during the APT and the pressure gauge calibration certificate.

B. RADIOACTIVE TRACER SURVEY PROCEDURE

1. Republic will use its pump and fresh water to conduct the RAT Survey.
2. Well to be shut-in, run in the well with a dual gamma ray detector tool that has a collar locator and an ejector tool filled with $Iodine_{131}$ radioactive material positioned above the gamma ray detectors.
3. After correlating the log with previous logs run in the well, tag bottom and run a pre-survey base gamma ray log from the total depth reached to approximately 3,000 feet.
4. Run 5-minute statistical checks in the time drive logging mode at 3,955 feet and 3,802 feet.
5. Start injection into the well at approximately 42 gpm (1 bpm). This will provide a fluid velocity of 65 ft/min in the tubing and a maximum velocity of approximately 12 ft/min in the open hole completion interval.
6. Release a slug of radioactive material at 3,100 feet while continuing to inject into the well at 1 bpm.
7. Drop the tool string down and record a log through the radioactive slug as it travels downhole. Make at least two logging passes through the moving slug before it reaches the injection packer at 4,036 feet. (At an injection rate of 1 bpm, slug will take approximately 15 minutes to reach the packer after ejection.)
8. Continue logging the movement of the slug as it enters the open hole completion at a reduced velocity (maximum velocity = approximately 12 fpm at 1 bpm). Make additional logging passes through the slug until it has dissipated into the injection interval.
9. Pull the logging tool up to approximately 3,750 feet while continuing to inject at 1 bpm. Release a slug of $Iodine_{131}$ at 3,750 feet. Drop the tool downhole and position the bottom detector at approximately 4,050 feet and begin recording a time drive survey. (Slug will be traveling at approximately 65 ft/min and will take about 4.6 minutes to reach tool from the time it was ejected.)
10. Record a time drive survey for at least 30 minutes while continuing to inject at approximately 1 bpm.
11. Following the time drive survey, cease injection, tag bottom with the tool and run a post-survey base gamma ray log from the total depth reached to 3,000 feet.
12. Pull out of the hole with the tool and rig down and move out the wireline unit, pump truck and associated equipment.
13. Return the well to normal operation.
14. Prepare a Mechanical Integrity Report and submit to the UIC groups of the EPA, Region 5 and the Michigan EGLE.

ATTACHMENTS

- Figure 1: Wellhead Sketch
- Figure 2: Below Ground Details

PREPARED BY Jeffry Tahtouh 07-05-2024

wsp	**2024** ANNUAL RESERVOIR PRESSURE MONITORING (INJECTION – FALLOFF) TEST PROCEDURE	Project No. 192128.0156
	Republic Services Romulus, MI Facility Well 1-12; API No. 21-163-M452	Date 07/05/24
		Page 1 of 1

INTRODUCTION

The following procedure complies with the requirements of EPA, Region 5 for an annual reservoir pressure monitoring (injection – falloff) test of a Class I hazardous waste disposal well.

The following are the objectives of the 2024 Annual Reservoir Pressure Monitoring (Injection – Falloff) Test:

- Initiate injection into Well 1-12 at a constant rate. Terminate injection into Well 2-12 prior to the injection test into Well 1-12.
- Position dual memory gauges in Well 1-12 with the bottom gauge located at 4,080 feet KB.
- Inject fresh water into Well 1-12 at a constant rate for approximately 12 hours.
- Terminate injection into Well 1-12 no sooner than 1 hour after positioning bottomhole gauges in well and record the pressure falloff for approximately 24 hours.
- Return well 1-12 to normal service.
- Prepare a Reservoir Pressure Monitoring (Injection – Falloff) Test Report and submit to the UIC groups of EPA, Region 5 and Michigan EGLE. Include the raw pressure data with the report and the pressure gauge calibration certificate.

RESERVOIR PRESSURE MONITORING (INJECTION – FALLOFF) TEST PROCEDURE

1. Rig up slickline unit with mast and lubricator. Run in the hole with calibrated tandem pressure gauges and position the bottom gague at 4,080 feet KB. Record the bottomhole shut-in pressure for approximately 1 hour.
2. With Well 2-12 shut-in, initiate injection into Well 1-12 at a constant rate (±5%) using fresh water and the facility pump. Record the injection data during the test.
3. After approximately 12 hours of constant injection with a constant fluid density, terminate injection and shut-in the wing-valve near the well.
4. Record the pressure falloff data for approximately 24 hours.
5. Remove the pressure gauges from the well taking 5-minute gradient stops at 1,000-foot intervals. Download the pressure and temperature data at the surface.
6. Rig down and move out the slickline unit.
7. Analyze the data using PanSystem software and prepare a final report and submit to the UIC groups of EPA, Region 5 and Michigan EGLE. Include the raw pressure data with the report and the calibration certificate for the pressure gauges.

ATTACHMENTS

Figure 1: Wellhead Sketch

Figure 2: Below Ground Details

PREPARED BY Jeffry Tahtouh 07-05-2024

Revision No. 0

INTRODUCTION

The following procedures comply with the requirements of EPA, Region 5 for annual mechanical integrity tests on a Class I hazardous waste disposal well.

The following are the objectives of the 2024 Annual Mechanical Integrity Tests:

- Conduct a 1-Hour Annulus Pressure Test at a pressure of approximately 1,100 psi.
- Run a Radioactive Tracer Survey.
- Return well to normal service.
- Prepare a Mechanical Integrity Test Report and submit to the UIC groups of EPA, Region 5 and Michigan EGLE.

A. ANNULUS PRESSURE TEST PROCEDURE

1. Notify the EPA, Region 5 and the Michigan EGLE at least 48 hours prior to initiating the annual mechanical integrity tests on Well 2-12.
2. Shut-in Well 2-12 at least 36 hours prior to conducting an Annulus Pressure Test (APT).
3. Record the last date of injection into Well 2-12.
4. Install a certified digital pressure gauge to the annulus and have a Calibration Certificate available on site that demonstrates the pressure gauge was calibrated within the past 12 months.
5. Pressurize the annulus to approximately 1,100 psi.
6. Allow the annulus pressure to stabilize. If necessary, depressurize and bleed line to gauge to remove any trapped air and repressurize.
7. Isolate the annulus pressure on the well from the Well Annulus Monitoring System by closing the necessary valves.
8. Record the Initial Annulus Pressure to begin the 1-hour APT.
9. Continue recording the annulus pressure at 10-minute intervals for at least 60 minutes or as instructed by the regulatory agency inspector witnessing the test. A successful APT will not fluctuate more than 3% of the initial test pressure during the 1-hour test period.
10. Release the pressure from the annulus by bleeding the excess annulus fluid into the Well Annulus Monitoring System storage tank and note the change in the tank level. If requested, perform annual alarm testing.
11. Provide the regulatory agency inspector with a copy of the data recorded during the APT and the pressure gauge calibration certificate.

B. RADIOACTIVE TRACER SURVEY PROCEDURE

1. Republic will use its pump and fresh water to conduct the RAT Survey.
2. Well to be shut-in, run in the well with a dual gamma ray detector tool that has a collar locator and an ejector tool filled with $Iodine_{131}$ radioactive material positioned above the gamma ray detectors.
3. After correlating the log with previous logs run in the well, tag bottom and run a pre-survey base gamma ray log from the total depth reached to approximately 3,000 feet.
4. Run 5-minute statistical checks in the time drive logging mode at 3,855 feet and 3,800 feet.
5. Start injection into the well at approximately 42 gpm (1 bpm). This will provide a fluid velocity of 65 ft/min in the tubing and a maximum velocity of approximately 12 ft/min in the open hole completion interval.
6. Release a slug of radioactive material at 3,100 feet while continuing to inject into the well at 1 bpm.
7. Drop the tool string down and record a log through the radioactive slug as it travels downhole. Make at least two logging passes through the moving slug before it reaches the injection packer at 3,930 feet. (At an injection rate of 1 bpm, slug will take approximately 15 minutes to reach the packer after ejection.)
8. Continue logging the movement of the slug as it enters the open hole completion at a reduced velocity (maximum velocity = approximately 12 fpm at 1 bpm). Make additional logging passes through the slug until it has dissipated into the injection interval.
9. Pull the logging tool up to approximately 3,750 feet while continuing to inject at 1 bpm. Release a slug of $Iodine_{131}$ at 3,750 feet. Drop the tool downhole and position the bottom detector at approximately 3,960 feet and begin recording a time drive survey. (Slug will be traveling at approximately 65 ft/min and will take about 4.6 minutes to reach tool from the time it was ejected.)
10. Record a time drive survey for at least 30 minutes while continuing to inject at approximately 1 bpm.
11. Following the time drive survey, cease injection, tag bottom with the tool and run a post-survey base gamma ray log from the total depth reached to 3,000 feet.
12. Pull out of the hole with the tool and rig down and move out the wireline unit, pump truck and associated equipment.
13. Return the well to normal operation.
14. Prepare a Mechanical Integrity Report and submit to the UIC groups of the EPA, Region 5 and the Michigan EGLE.

ATTACHMENTS

- Figure 3: Wellhead Sketch
- Figure 4: Below Ground Details

PREPARED BY Jeffry Tahtouh 07-05-2024

wsp	2024 ANNUAL RESERVOIR PRESSURE MONITORING (INJECTION – FALLOFF) TEST PROCEDURE	Project No. 192128.0156
	Republic Services Romulus, MI Facility Well 2-12; API No. 21-163-M453	Date 07/05/24
		Page 1 of 1

INTRODUCTION

The following procedure complies with the requirements of EPA, Region 5 for an annual reservoir pressure monitoring (injection – falloff) test of a Class I hazardous waste disposal well.

The following are the objectives of the 2024 Annual Reservoir Pressure Monitoring (Injection – Falloff) Test:

- Initiate injection into Well 2-12 at a constant rate. Terminate injection into Well 1-12 prior to the injection test into Well 2-12.
- Position dual memory gauges in Well 2-12 with the bottom gauge located at 3,975 feet KB.
- Inject fresh water into Well 2-12 at a constant rate for approximately 12 hours.
- Terminate injection into Well 2-12 no sooner than 1 hour after positioning bottomhole gauges in well and record the pressure falloff for approximately 24 hours.
- Return well 2-12 to normal service.
- Prepare a Reservoir Pressure Monitoring (Injection – Falloff) Test Report and submit to the UIC groups of EPA, Region 5 and Michigan EGLE. Include the raw pressure data with the report and the pressure gauge calibration certificate.

RESERVOIR PRESSURE MONITORING (INJECTION – FALLOFF) TEST PROCEDURE

1. Rig up slickline unit with mast and lubricator. Run in the hole with calibrated tandem pressure gauges and position the bottom gague at 3,975 feet KB. Record the bottomhole shut-in pressure for approximately 1 hour.
2. With Well 1-12 shut-in, initiate injection into Well 2-12 at a constant rate (±5%) using fresh water and the facility pump. Record the injection data during the test.
3. After approximately 12 hours of constant injection with a constant fluid density, terminate injection and shut-in the wing-valve near the well.
4. Record the pressure falloff data for approximately 24 hours.
5. Remove the pressure gauges from the well taking 5-minute gradient stops at 1,000-foot intervals. Download the pressure and temperature data at the surface.
6. Rig down and move out the slickline unit.
7. Analyze the data using PanSystem software and prepare a final report and submit to the UIC groups of EPA, Region 5 and Michigan EGLE. Include the raw pressure data with the report and the calibration certificate for the pressure gauges.

ATTACHMENTS

Figure 3: Wellhead Sketch

Figure 4: Below Ground Details

PREPARED BY Jeffry Tahtouh 07-05-2024

Revision No. 0

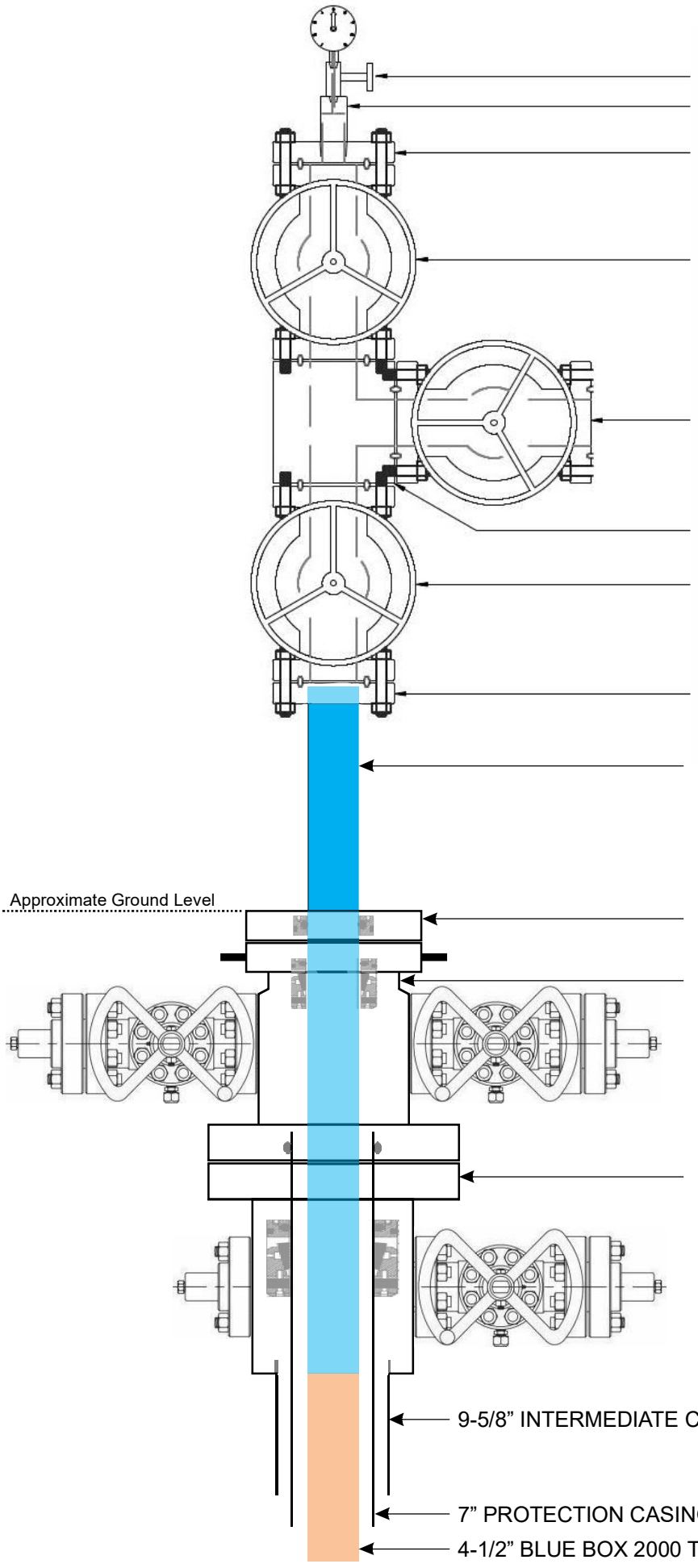


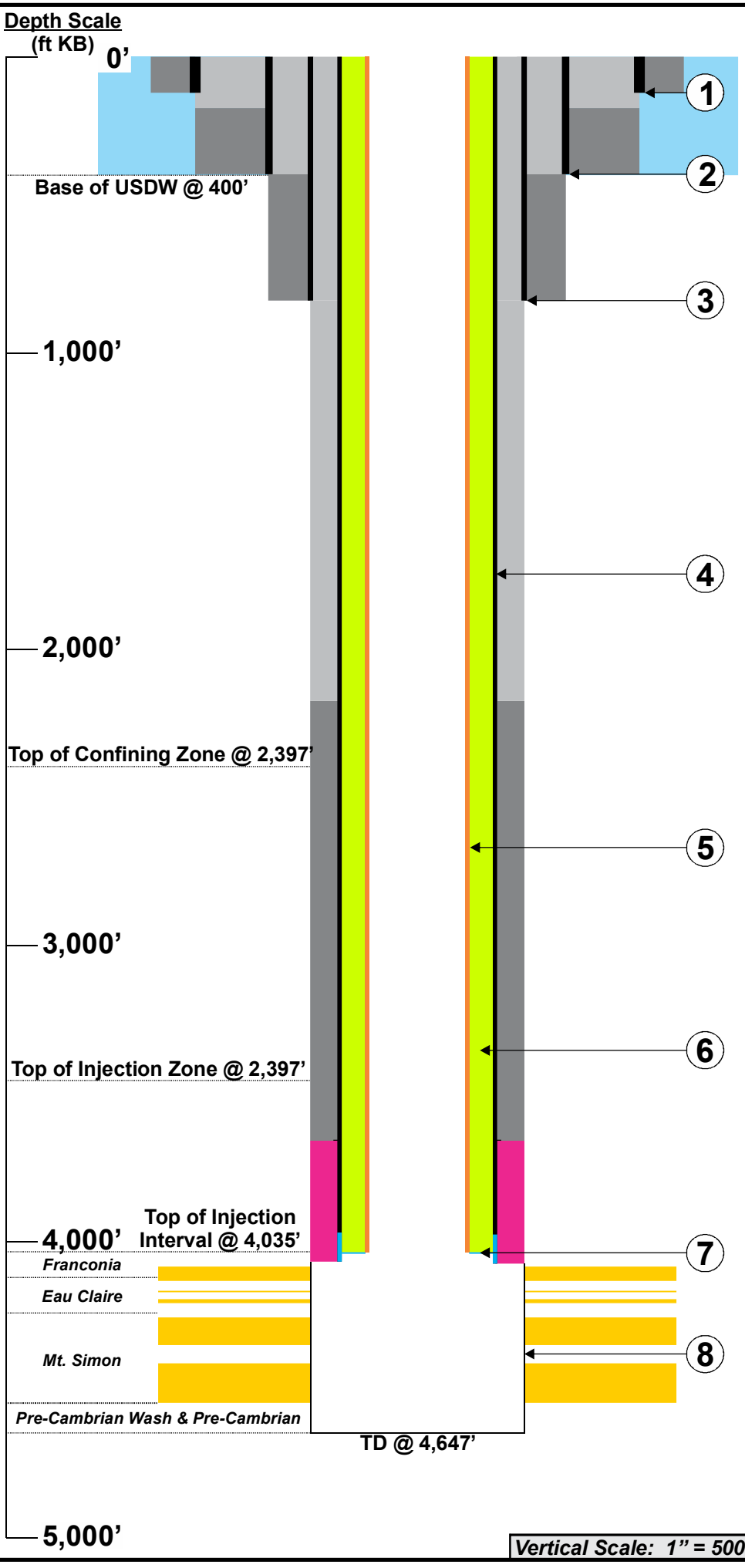
FIGURE 1

REPUBLIC INDUSTRIAL AND ENERGY SOLUTIONS, LLC

ROMULUS, MICHIGAN

WELLHEAD SKETCH
WELL #1-12

DATE 04/30/20	CHECKED BY	JOB NO. 192128A
DRAWN BY SLK	APPROVED BY	DWG NO.



BELOW GROUND DETAILS

1. Conductor Casing: 20", H-40 set in a 24" borehole at 119'. Cemented with 200 sacks of Class A cement containing 3% $CaCl_2$ with 75% returns. Top 50' of annulus cemented with 50 sacks of Class A.
2. Surface Casing: 13-3/8", H-40 set in a 17-1/2" borehole at 405'. Cemented with 75 sacks of Lite lead cement with 3% $CaCl_2$ followed by 150 sacks of Class A tail cement with 3% $CaCl_2$. Top of annulus cemented with 175 sacks of Class A cement with 3% $CaCl_2$.
3. Intermediate Casing: 9-5/8", 36 lb/ft set in a 12-1/4" borehole at 824'. Cemented with 150 sacks of Lite lead with 3% $CaCl_2$ followed by 200 sacks of Class A tail with 3% $CaCl_2$. Approximately 10 bbl of cement circulated to the surface.
4. Protection Casing: 7", 26 lb/ft, K-55, LT&C set in an 8-3/4" borehole to 3,977' and 7", 1/4" wall, Hastelloy C-276, STL set in 8-3/4" borehole from 3,977' to 4,075' with 7" float collar and float shoe set from 4,075' to 4,080. Cement diverter tool set in 7" casing from 3,657' to 3,660'.
   Stage I (3,660' to 4,080'):
   686 gallons (16.3 bbl) of EPSEAL epoxy cement.
   Stage II (Surface to 3,660'):
   500 sacks of 50/50 Standard Pozmiz lead cement with 2% gel, 0.4% HALAD 344 and 3% salt followed by 450 sacks of Standard Class A tail cement containing 3% HALAD 322, 0.4% HALAD 344, 8.2% Microbond, and 2.14% salt.
5. Injection Tubing: 4-1/2", Blue Box 2000, fiberglass tubing to top of packer at 4,036' (4.78', 4-1/2" Hastelloy C-276 landing joint top positioned 1-1/2' above ground level with 4' of stretch. Landing Joint base = 16.28' KB:
   a) 3 Pup Joints (3.64' + 1.72' + 3.60' = 8.96'), 4-1/2", Blue Box FRP;
   b) 4-1/2", Blue Box FRP tubing (137 joints x 29.249'/joint = 4,007.08'
   c) Anchor Seal Assembly, 4.75" x 3.75", Hastelloy C-276, 1.64' long set in Model 12 Injection Packer PBR from 4,036.32' to 4,037.96'.
6. Annulus Fluid: 68.5 bbl (2,877 gallons) of 10 lb/gal brine water containing a corrosion inhibitor, a bactericide and an oxygen scavenger.
7. Injection Packer: Model 12, Hastelloy C-276 wetted parts set from 4,036.3' to 4,041.4'. Polished test bore = 3.50" at packer base.
8. Open Hole Completion: 8-3/4" borehole from 4,080' to 4,645' (TVD = 4,535' @ 4,645' MD).

Bottom-hole location: 211' south and 754' west of surface location (782.97, South 74° 21' 58.35" West)

WSP USA INC.
8212 Kelwood Ave.
Baton Rouge LA 70806
Tel: (225) 753-2561
Fax: (225) 925-2530

FIGURE 2

REPUBLIC INDUSTRIAL AND ENERGY SOLUTIONS, LLC

ROMULUS, MICHIGAN

WELL #1-12
BELOW GROUND SCHEMATIC

DATE 04/30/20	CHECKED BY		JOB NO. 1921128A
DRAWN BY SLK	APPROVED BY		DWG NO.

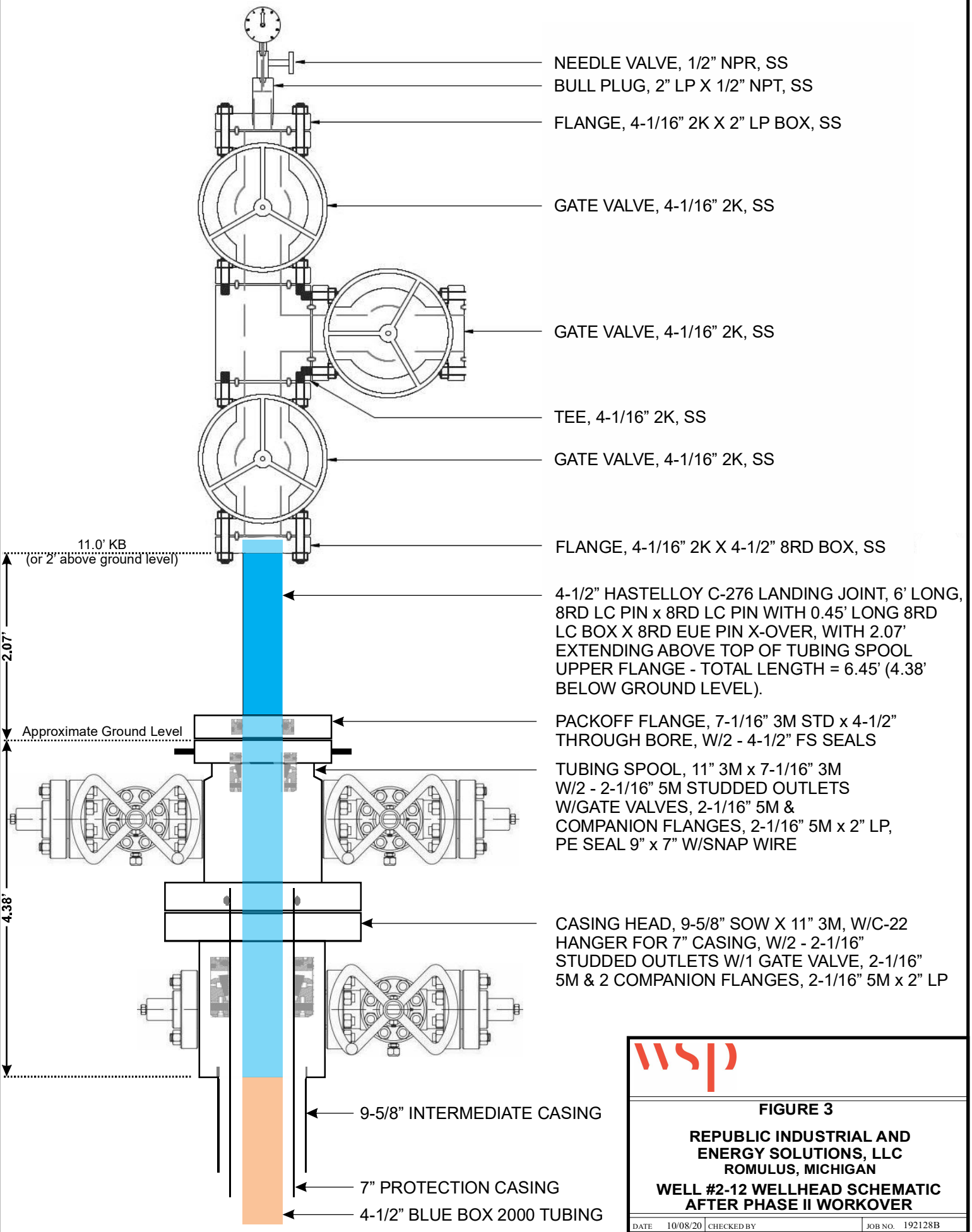
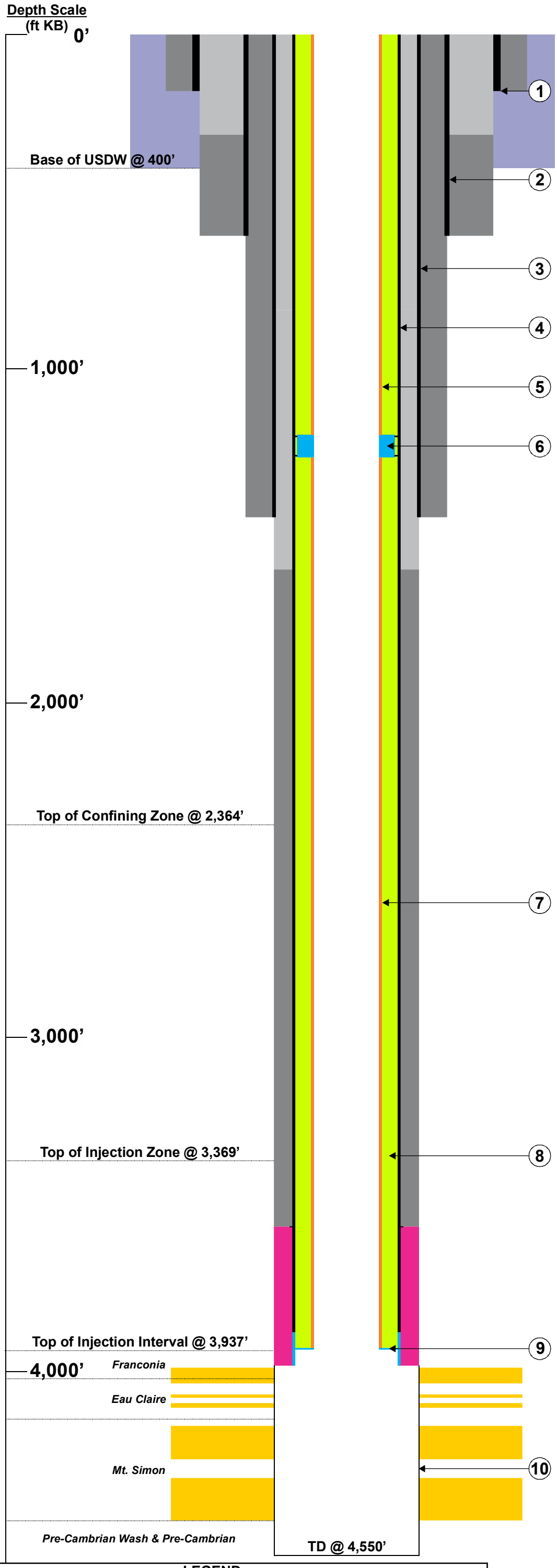


FIGURE 3

REPUBLIC INDUSTRIAL AND ENERGY SOLUTIONS, LLC
ROMULUS, MICHIGAN

WELL #2-12 WELLHEAD SCHEMATIC AFTER PHASE II WORKOVER

DATE 10/08/20	CHECKED BY	JOB NO. 192128B
DRAWN BY SLK	APPROVED BY	DWG NO.



BELOW GROUND DETAILS

1. Conductor Casing: 16”, 60 lb/ft set in a 20” borehole at 169’. Cemented with 300 sacks of Class A cement containing 3% $CaCl_2$ with 75% returns.
2. Surface Casing: 13-3/8”, 48 lb/ft, H-40, ST&C set in a 17-1/2” borehole at 602’. Cemented with 350 sacks of 65/35 Pozalin with 3% $CaCl_2$ followed by 200 sacks of Class A tail cement with 3% $CaCl_2$. Top-out with 50 sacks of Class A cement with 3% $CaCl_2$.
3. Intermediate Casing: 9-5/8”, 36 lb/ft set in a 12-1/4” borehole at 1,444’. Cemented with 725 sacks of Class A with 3% $CaCl_2$. 33 bbl of cement circulated to the surface.
4. Protection Casing: 7”, 26 lb/ft, K-55, LT&C set in an 8-3/4” borehole to 3,882’ and 7”, 1/4” wall, Hastelloy C-276, STL set in 8-3/4” borehole from 3,882’ to 3,979.4’ with 7” float collar and float shoe set from 3,979.4’ to 3,982. Top 10’ of Hastelloy coated with Teflon for galvanic corrosion inhibition. Cement diverter tool set in 7” casing from 3,565.5.’ to 3,568’.
   Stage I (3,568’ to 3,982’):
   686 gallons (16.3 bbl) of 12.5 lb/gal EPSEAL epoxy cement.
   Stage II (Surface to 3,568’):
   310 sacks of 50/50 of Poz followed by 340 sacks of 50/50 Poz with microbond followed by 450 sacks of Standard cement with microbond. 44 bbl circulated to surface.
5. Upper Injection Tubing: 4-1/2”, Blue Box 2000, fiberglass tubing to top of straddle packer at 1,199’:
   a) 6’, 4-1/2” Hastelloy C-276 landing joint top positioned ~2’ above ground level with 1’ of stretch. (Landing Joint base = 15.38’ KB);
   b) 2 Pup Joints (5.71’ + 9.73’), 4-1/2”, Blue Box FRP from 15’ to 31’;
   c) 4-1/2”, Blue Box FRP tubing (40 joints) from 31’ to 1,199’;
   d) Anchor Seal Assembly, 4.75” x 3.75”, Hastelloy C-276, 1.64’ long set in Model 12 Injection Packer PBR from 1,199’ to 1,200.5’.
6. Straddle Packer: Model 12, Hastelloy C-276 wetted parts set from 1,199’ to 1,268’. Upper Element at 1,204’ and Lower Element at 1,265’.
7. Lower Injection Tubing: 4-1/2”, Blue Box 2000, fiberglass tubing set from 1,268’ to 3,930’ with 2’ of stretch as follows:
   a) 4-1/2”, Blue Box FRP tubing (91 joints) from 1,268’ to 3,930’.
   b) Anchor Seal Assembly, 4.75” x 3.75”, Hastelloy C-276, 1.64’ long set in Model 12 Injection Packer PBR from 3,930.0’ to 3,931.5’.
8. Annulus Fluid: 66 bbl (2,772 gallons) of 9.7 lb/gal brine water containing a corrosion inhibitor, a bactericide and an oxygen scavenger.
9. Injection Packer: Model 12, Hastelloy C-276 wetted parts set from 3,930’ to 3,935’.
10. Open Hole Completion: 8-3/4” borehole from 3,975’ to 4,550’.

LEGEND

- USDW
- Receptive Interval
- Annulus Fluid
- Fiberglass
- Carbon Steel
- Hastelloy C-276
- Standard Cement
- Lightweight Cement
- Epoxy Cement

Vertical Scale: 1” = 300’

WSP USA INC.
8212 Kelwood Ave.
Baton Rouge LA 70806
Tel: (225) 753-2561
Fax: (225) 925-2530

FIGURE 4

REPUBLIC INDUSTRIAL AND ENERGY SOLUTIONS, LLC

ROMULUS, MICHIGAN

WELL #2-12 BELOW GROUND DETAILS AFTER PHASE II WORKOVER

DATE 10/08/20	CHECKED BY	JOB NO. 192128B
DRAWN BY SLK	APPROVED BY	DWG NO.

APPENDIX B

CHRONOLOGY OF FIELD ACTIVITIES

16200 Park Row., Suite 200
Houston, Texas 77084
(281) 589-5900

FIELD ACTIVITY REPORT

Company:	**Republic Industrial and Energy Solutions**	Project No:	**192128.0156**
Well:	**EDS 1-12 and EDS 2-12**	Date:	**8/6/2024**
City	**Romulus**	FAR Report No.:	**1**
County/Parrish:	**Wayne County**	WSP Rep.:	**Jeffry Tahtouh**
State:	**MI**		
Work Performed:	__ New Well __Workover _X_ Wireline Consulting __ Other		

Breakdown of Operations

From	To	Hrs	
6:30	6:45	0.25	Arrive on location, held safety meeting, discussed job, and got the notice to proceed
6:45	8:00	1.25	Rig-up Wireline unit on Well 2-12 for Radioactive Tracer Tool (RAT) AP = 600 psi IP = 11 psi Rate= 0 gpm
8:00	8:45	0.75	Run in hole with RAT
8:45			Tagged TD @ 4267' NOTE: Tagged 29' higher compared to last year due to fill
8:00	9:30		JoAnne Mitock with Environmental Solutions AQ (USEPA Region 5 contractor) arrived on site and witnessed the annulus pressure testing on 1-12 and 2-12
8:15	9:15		Ran APT on 1-12. Start Pressure: 1097.8 psig End Pressure: 1085.8 psig Good Test!
8:15	9:15		Ran APT on 2-12. Start Pressure: 1102 psig End Pressure: 1091 psig Good Test!
8:45	12:30	3.75	**Perform Radioactive Tracer Survey on Well 2-12**
8:52	9:18		Run Pre base log (4267'- 3000'). Rate= 0 gpm, AP= 1094 psi IP= 11 psi.
9:26	9:39		Run 5 min stat checks at 3800' and 3855'
9:39	10:30		Waited on APT tests to finish prior to injecting.
10:30	11:15		Initiate Injection at 43 gpm Run chase-down sequence 4 sec slug released at 3100', Rate=43 gpm, AP= 722 psi IP= 310 psi. Four passes.
11:15	11:33		Maintain Injection at 43 gpm Run time-drive survey 30 minute time drive, Eject 4 sec slug at 3750', Run downhole to 3960' and start time drive when slug passed 3960' (11:23) Rate=43 gpm, AP= 733 psi IP= 395 psi.
11:33	11:59		Cease Injection
11:59	12:25		Run Post base log (4267'- 3000'). Rate= 0 gpm, AP= 660 psi IP= 200 psi.
12:30	13:30	1.00	Pull out of the hole. Rig down. **Move to Well 1-12**
13:30	14:00	0.50	Rig-up Wireline unit on Well 1-12 for Radioactive Tracer Tool (RAT) AP = 600 psi IP = 0 psi Rate= 0 gpm
14:00	14:30	0.50	Run in hole with RAT
14:30			Tagged TD @ 4460' NOTE: Tagged 26' higher compared to last year due to fill
14:30	17:45	3.25	**Perform Radioactive Tracer Survey on Well 1-12**
14:36	15:00		Run Pre base log (4460'- 3000'). Rate= 0 gpm, AP= 600 psi IP= 0 psi.
15:08	15:20		Run 5 min stat checks at 3802' and 3955'
15:20	16:31		Initiate Injection at 44 gpm Run chase-down sequence 4 sec slug released at 3100', Rate=44 gpm, AP= 716 psi IP= 375 psi. Four passes.
16:31	17:06		Maintain Injection at 44 gpm Run time-drive survey 30 minute time drive, Eject 4 sec slug at 3750', Run downhole to 4050' and start time drive when slug passed 4050' (16:36) Rate=44 gpm, AP= 725 psi IP= 375 psi.
17:06	17:15		Cease Injection
17:15	17:40		Run Post base log (4460'- 3000'). Rate= 0 gpm, AP= 638 psi IP= 181 psi.
17:45	19:00	1.25	Pull out of the hole. Rig down and move out Michigan Wireline.
			Perform Pressure Build-up for the PFO on Well 2-12
16:15	16:30		Impact's slickline arrived on location, held safety meeting, discussed job, and got the notice to proceed.
16:30	17:00		Rig up with Impact's slickline unit on Well 2-12
17:00	17:30		Ran Slickline unit with bottom hole pressure/temperature gauges downhole at Well 2-12 AP = 623 psi IP = 148 psi Rate= 0 gpm
17:30	18:30		Set gauges @ 3962' GL (3975' KB), let stabilize prior to injection
18:30			Initiate Injection. Well 2-12 pressure buildup phase at a constant rate of 43 gpm
18:30	19:00		Secure wells and leave location
19:00			AP = 719 psi IP = 403 psi Rate= 44 gpm
Total		**12.50**	

Safety Topics

Working in Republic Romulus facility, working at heights, pinch points, radioactive material, heavy lifting

16200 Park Row., Suite 200
Houston, Texas 77084
(281) 589-5900

FIELD ACTIVITY REPORT

Company:	**Republic Industrial and Energy Solutions**	Project No:	**192128.0156**
Well:	**EDS 1-12 and EDS 2-12**	Date:	**8/7/2024**
City	**Romulus**	FAR Report No.:	**2**
County/Parrish:	**Wayne County**	WSP Rep.:	**Jeffry Tahtouh**
State:	**MI**		
Work Performed:	__ New Well __Workover _X_ Wireline Consulting __ Other		

Breakdown of Operations

From	To	Hrs	
6:25			Prior to shut-in @ 6:24 AP = 759 psi IP = 437 psi Rate= 43 gpm Well 2-12 pressure falloff phase Shut-in well and close wing valve @ 6:25 AP = 640 psi IP = 180 psi Rate= 0 gpm
11:00	11:30	0.50	Arrived on site, discussed with J. Frost the next steps for the job. Data Reading at 11:35 AP = 624 psi IP = 160 psi Rate= 0 gpm
Total		**0.50**	

Safety Topics

Working in Republic Romulus facility, working at heights, pinch points, chemical exposure, heavy lifting

16200 Park Row., Suite 200
Houston, Texas 77084
(281) 589-5900

FIELD ACTIVITY REPORT

Company:	**Republic Industrial and Energy Solutions**	Project No:	**192128.0156**
Well:	**EDS 1-12 and EDS 2-12**	Date:	**8/8/2024**
City	**Romulus**	FAR Report No.:	**3**
County/Parrish:	**Wayne County**	WSP Rep.:	**Jeffry Tahtouh**
State:	**MI**		
Work Performed:	__ New Well __Workover _X_ Wireline Consulting __ Other		

Breakdown of Operations

From	To	Hrs	
6:30	6:45	0.25	Arrive on location, held JSA, and obtained permit
6:45			End PFO Test @ 6:40 for **Well 2-12** IP = 145 psi AP = 601 psi Rate = 0 GPM
6:45	7:15	0.50	Run Static Gradient Survey
6:46	6:51		5-min Stop @ 3000'
6:55	7:00		5-min Stop @ 2000'
7:04	7:09		5-min Stop @ 1000'
7:13	7:18		5-min gradient stop @ Surface
7:15	7:45	0.50	Rig down from **Well 2-12.** Download data from the bottom hole pressure gauges. Move to 1-12 to run gauges downhole for pressure falloff.
7:45	8:45	1.00	Rig up on **Well 1-12** Ran Slickline unit with bottom hole pressure/temperature gauges downhole at Well 1-12 Rate= 0 gpm AP = 587 psi IP = 133 psi
8:45	9:15	0.50	Set gauges @ 4067' GL (4080' KB), let stabilize prior to injection
9:15	20:15	11.00	Well 1-12 pressure buildup phase at a constant rate of 43 gpm
9:10			Initiate Injection on **Well 1-12** for the pressure buildup Rate= 40 gpm, AP= 652 psi IP= 279 psi
9:30			Rate= 43 gpm, AP= 683 psi IP= 361 psi
20:17	20:18		Prior to shut-in @ 20:17 AP = 741 psi IP = 392 psi Rate= 43 gpm Well 1-12 pressure falloff phase Shut-in well and close wing valve @ 20:18 Total Volume Injected = 28,566 gal
20:15	20:30	0.25	18:25 AP = 646 psi IP = 173 psi Rate= 0 gpm Secure well and leave location
Total		**14.00**	

Safety Topics

Working in Republic Romulus facility, ppe, pinch points, and fall protection

16200 Park Row., Suite 200
Houston, Texas 77084
(281) 589-5900

FIELD ACTIVITY REPORT

Company:	**Republic Industrial and Energy Solutions**	Project No:	**192128.0156**
Well:	**EDS 1-12 and EDS 2-12**	Date:	**8/9/2024**
City	**Romulus**	FAR Report No.:	**4**
County/Parrish:	**Wayne County**	WSP Rep.:	**Jeffry Tahtouh**
State:	**MI**		
Work Performed:	__ New Well __Workover _X_ Wireline Consulting __ Other		

Breakdown of Operations

From	To	Hrs	
15:45	16:00	0.25	Arrive on location, held JSA, and got the notice to proceed
16:00	17:00	1.00	End PFO Test @ 16:00 for **Well 1-12** IP = 139 psi AP = 585 psi Rate = 0 GPM Run Static Gradient Survey
16:12	16:17		5-min Stop @ 4000'
16:22	16:27		5-min Stop @ 3000'
16:30	16:35		5-min Stop @ 2000'
16:39	16:44		5-min Stop @ 1000'
16:48	16:53		5-min gradient stop @ Surface (in lubricator)
17:00	17:30	0.50	Rig down from **Well 1-12.** Download data from the bottom hole pressure gauges.
8:30			Secure well and leave location
Total		**1.75**	

Safety Topics

Working in Republic Romulus facility, ppe, pinch points, and fall protection

APPENDIX C

ANNULUS PRESSURE TEST DATA

APPENDIX C
WELL 2-12 ANNULUS PRESSURE DATA
August 6, 2024

Time	Time (min)	Pressure (psig)	
08:20:00	0.00	1102.63	START
08:20:30	0.50	1102.24	
08:21:00	1.00	1102.07	
08:21:30	1.50	1101.93	
08:22:00	2.00	1101.64	
08:22:30	2.50	1101.36	
08:23:00	3.00	1101.22	
08:23:30	3.50	1100.94	
08:24:00	4.00	1100.79	
08:24:30	4.50	1100.79	
08:25:00	5.00	1100.79	
08:25:30	5.50	1100.79	
08:26:00	6.00	1100.37	
08:26:30	6.50	1100.51	
08:27:00	7.00	1100.23	
08:27:30	7.50	1100.09	
08:28:00	8.00	1099.89	
08:28:30	8.50	1099.95	
08:29:00	9.00	1099.69	
08:29:30	9.50	1099.66	
08:30:00	10.00	1099.66	
08:30:30	10.50	1099.24	
08:31:00	11.00	1099.38	
08:31:30	11.50	1099.10	
08:32:00	12.00	1098.82	
08:32:30	12.50	1099.10	
08:33:00	13.00	1098.67	
08:33:30	13.50	1098.96	
08:34:00	14.00	1098.67	
08:34:30	14.50	1098.42	
08:35:00	15.00	1098.53	
08:35:30	15.50	1098.39	

Time	Time (min)	Pressure (psig)	
08:36:00	16.00	1098.11	
08:36:30	16.50	1098.39	
08:37:00	17.00	1097.97	
08:37:30	17.50	1097.97	
08:38:00	18.00	1098.11	
08:38:30	18.50	1097.97	
08:39:00	19.00	1097.83	
08:39:30	19.50	1097.83	
08:40:00	20.00	1097.69	
08:40:30	20.50	1097.54	
08:41:00	21.00	1097.26	
08:41:30	21.50	1097.12	
08:42:00	22.00	1097.26	
08:42:30	22.50	1097.26	
08:43:00	23.00	1096.98	
08:43:30	23.50	1096.98	
08:44:00	24.00	1096.84	
08:44:30	24.50	1096.84	
08:45:00	25.00	1096.70	
08:45:30	25.50	1096.48	
08:46:00	26.00	1096.27	
08:46:30	26.50	1096.13	
08:47:00	27.00	1096.13	
08:47:30	27.50	1096.13	
08:48:00	28.00	1095.99	
08:48:30	28.50	1096.13	
08:49:00	29.00	1095.85	
08:49:30	29.50	1095.85	
08:50:00	30.00	1095.99	
08:50:30	30.50	1095.57	
08:51:00	31.00	1095.57	
08:51:30	31.50	1095.71	

APPENDIX C, Continued
WELL 2-12 ANNULUS PRESSURE DATA
August 6, 2024

Time	Time (min)	Pressure (psig)	
08:52:00	32.00	1095.42	
08:52:30	32.50	1095.42	
08:53:00	33.00	1095.28	
08:53:30	33.50	1095.00	
08:54:00	34.00	1094.72	
08:54:30	34.50	1094.58	
08:55:00	35.00	1094.43	
08:55:30	35.50	1094.15	
08:56:00	36.00	1094.15	
08:56:30	36.50	1094.15	
08:57:00	37.00	1093.73	
08:57:30	37.50	1093.87	
08:58:00	38.00	1093.87	
08:58:30	38.50	1093.73	
08:59:00	39.00	1093.59	
08:59:30	39.50	1093.45	
09:00:00	40.00	1093.45	
09:00:30	40.50	1093.30	
09:01:00	41.00	1093.30	
09:01:30	41.50	1093.30	
09:02:00	42.00	1093.02	
09:02:30	42.50	1093.02	
09:03:00	43.00	1093.16	
09:03:30	43.50	1092.88	
09:04:00	44.00	1092.88	
09:04:30	44.50	1092.60	
09:05:00	45.00	1092.60	
09:05:30	45.50	1092.60	
09:06:00	46.00	1092.60	

Time	Time (min)	Pressure (psig)	
09:06:30	46.50	1092.60	
09:07:00	47.00	1092.31	
09:07:30	47.50	1092.17	
09:08:00	48.00	1092.46	
09:08:30	48.50	1092.17	
09:09:00	49.00	1092.31	
09:09:30	49.50	1092.03	
09:10:00	50.00	1092.03	
09:10:30	50.50	1092.17	
09:11:00	51.00	1091.75	
09:11:30	51.50	1091.75	
09:12:00	52.00	1091.89	
09:12:30	52.50	1091.75	
09:13:00	53.00	1091.61	
09:13:30	53.50	1091.61	
09:14:00	54.00	1091.47	
09:14:30	54.50	1091.47	
09:15:00	55.00	1091.47	
09:15:30	55.50	1091.33	
09:16:00	56.00	1091.18	
09:16:30	56.50	1091.04	
09:17:00	57.00	1091.04	
09:17:30	57.50	1091.18	
09:18:00	58.00	1091.04	
09:18:30	58.50	1090.90	
09:19:00	59.00	1090.90	
09:19:30	59.50	1090.90	
09:20:00	60.00	1091.04	END

APPENDIX D

CALIBRATION CERTIFICATES

August 6, 2024

John Frost
Republic Services

Re: Testing Performed at Republic Services
Job No. REPS248117-1

Dear John:

Please find enclosed (9) nine calibration forms for the COMPANY location dated July 29th, 2024. If you have any questions, please feel free to call our office at 734-424-1200.

Sincerely,

Brian Davis

Brian Davis
Project Manager

BD/sc

Team UIS
2290 Bishop Circle East
Dexter, MI 48130
Phone: (734) 424-1200 - Fax: (734) 424-0031
teamuis.com

Table of Contents
Job #REPS248117-1

Customer Republic Services
User Republic Services
Plant 28470 Citrin Drive

CALIBRATION CERTIFICATE

UIS SCADA
2290 Bishop Circle E.
Dexter, MI 48130
734-424-1200

CUSTOMER	**Republic Services**	CERTIFICATE #	**REPS248117-1, 1 of 9**
ADDRESS	**28470 Citrin Drive; Romulus MI US 48174**	JOB #	**REPS248117-1**
USER	**Republic Services; 28470 Citrin Drive; Romulus MI US 48174**	PAGE	**1 of 9**
OWNER REPRESENTATIVE	**John Frost**	TELEPHONE	**734-946-1000**

Service Date: 7/29/2024 Temp: 77 °F Humidity: 87 %RH

Equip Location: Plant Sub/Parent: Well 1 Position/Child: Annulus Pressure Primary

NAMEPLATE

Item Tested	Pressure Transmitter Primary		
Manufacturer	Yokogawa	Model Number	EJA530E
Serial Number	91V719511	Tag Number	?
Operating Range	0-7200 PSI	Procedure/Method	Fluke 754:75x_umeng0000 rev Jul 2011

As Found - Within Spec As Left - Within Spec

INPUT psig OUTPUT psig/mA

Line	%	Applied	As Found	OOT	As Left	OOT	Lo Spec	Hi Spec
1	0	0	1/4.01	☐	0/4.00	☐	-2	2
2	4.9	350	350/4.78	☐	350/4.78	☐	348	352
3	9.7	700	701/5.55	☐	700/5.55	☐	698	602
4	14.6	1050	1049/6.33	☐	1049/6.33	☐	1048	1052
5	19.4	1400	1400/7.11	☐	1400/7.11	☐	1398	1402
6				☐		☐		

Communicator: Hart-OEM Specific **Totalizer As Found** NA **Totalizer As Left** NA Gal

#	Manufacturer	Model	Serial / ID Number	Calibration Date	Calibration Due
1	Fluke	700RG31 10Kpsi	SHOP-2526	3/12/2024	3/31/2025
2	Fluke	754	KM-753	6/14/2024	6/30/2025
3	Extech	RH300(ambient)	KM-1052	6/8/2021	6/30/2026
4	Fluke	754	JB-1479	9/26/2023	9/30/2024

Comments:
Verified computer display.
switched with datalogger due to transmitter dropping out during operation serial 5613698

Deficiencies:
NOTE: when Primary transmitter disconnected - computer display went to zero

CALIBRATION CERTIFICATE

UIS SCADA
2290 Bishop Circle E.
Dexter, MI 48130
734-424-1200

CUSTOMER	**Republic Services**	CERTIFICATE #	**REPS248117-1, 2 of 9**
ADDRESS	**28470 Citrin Drive; Romulus MI US 48174**	JOB #	**REPS248117-1**
USER	**Republic Services; 28470 Citrin Drive; Romulus MI US 48174**	PAGE	**2 of 9**
OWNER REPRESENTATIVE	**John Frost**	TELEPHONE	**734-946-1000**

Service Date: 7/29/2024 Temp: 77 °F Humidity: 87 %RH

Equip Location: Plant Sub/Parent: Well 1 Position/Child: Annulus Pressure SEC

NAMEPLATE

Item Tested	Pressure Transmitter Secondary		
Manufacturer	Yokogawa	Model Number	EJA530E
Serial Number	91V926594	Tag Number	PIT3838
Operating Range	cal 0-1400 psig HART	Procedure/Method	Fluke 754:75x_umeng0000 rev Jul 2011

As Found - Within Spec As Left - Within Spec

INPUT psig OUTPUT psig/mA

Line	%	Applied	As Found	OOT	As Left	OOT	Lo Spec	Hi Spec
1	0	0	0/4.00	☐	0/4.00	☐	-2	2
2	4.9	350	350/4.78	☐	350/4.78	☐	348	352
3	9.7	700	701/5.56	☐	701/5.56	☐	698	602
4	14.6	1050	1051/6.34	☐	1051/6.34	☐	1048	1052
5	19.4	1400	1400/7.11	☐	1400/7.11	☐	1398	1402
6		Hart Address	1	☐	1	☐		
7				☐		☐		

Communicator: Hart-OEM Specific **Totalizer As Found** NA **Totalizer As Left** NA Gal

#	Manufacturer	Model	Serial / ID Number	Calibration Date	Calibration Due
1	Fluke	700RG31 10Kpsi	SHOP-2526	3/12/2024	3/31/2025
2	Fluke	754	KM-753	6/14/2024	6/30/2025
3	Extech	RH300(ambient)	KM-1052	6/8/2021	6/30/2026
4	Fluke	754	JB-1479	9/26/2023	9/30/2024

Comments:
Hart Address 1
switched with datalogger due to transmitter dropping out during operation serial 5613698

Deficiencies:

CALIBRATION CERTIFICATE

UIS SCADA
2290 Bishop Circle E.
Dexter, MI 48130
734-424-1200

CUSTOMER	**Republic Services**	CERTIFICATE #	**REPS248117-1, 3 of 9**
ADDRESS	**28470 Citrin Drive; Romulus MI US 48174**	JOB #	**REPS248117-1**
USER	**Republic Services; 28470 Citrin Drive; Romulus MI US 48174**	PAGE	**3 of 9**
OWNER REPRESENTATIVE	**John Frost**	TELEPHONE	**734-946-1000**

Service Date: 7/29/2024 Temp: 80 °F Humidity: 87 %RH

Equip Location: Plant Sub/Parent: Well 1 Position/Child: Well 1 Flow

NAMEPLATE

Item Tested	Clamp-on Flowmeter		
Manufacturer	Keyence	Model Number	FD-R80
Serial Number	#G38220528	Tag Number	NA
Operating Range	0-400 GPM	Procedure/Method	Fluke 754:75x_umeng0000 rev Jul 2011

		INPUT Diag	OUTPUT Diag			
Line	%	Applied	As Found	OOT	As Left	OOT
1	test	0	3	☐	0	☐
2	test	57	61	☐	57	☐
3	Test	0	0	☐	0	☐
4	8/1/1/24	51	54	☐	54	☐
5				☐		☐

Communicator: **Totalizer As Found** NA **Totalizer As Left** 19757592 Gal

#	Manufacturer	Model	Serial / ID Number	Calibration Date	Calibration Due
1	Grey Line	TTFM	SHOP-2573	8/25/2023	8/31/2026
2	Grey Line	TTFM	SHOP-2518	5/18/2023	5/31/2026
3	Extech	RH300(Ambient)	RC-1773	1/11/2021	1/11/2026
4	Extech	RH300(ambient)	KM-1052	6/8/2021	6/30/2026

Comments:

Deficiencies:

Date of Issue: 8/6/2024 **Tech 1:** **K. Mitchell** **Tech 2:** **R. Coon** ISO-81523D-ISO Cert 2015; Rev Oct 2022

CALIBRATION CERTIFICATE

UIS SCADA
2290 Bishop Circle E.
Dexter, MI 48130
734-424-1200

CUSTOMER	**Republic Services**	CERTIFICATE #	**REPS248117-1, 4 of 9**
ADDRESS	**28470 Citrin Drive; Romulus MI US 48174**	JOB #	**REPS248117-1**
USER	**Republic Services; 28470 Citrin Drive; Romulus MI US 48174**	PAGE	**4 of 9**
OWNER REPRESENTATIVE	**John Frost**	TELEPHONE	**734-946-1000**

Service Date: 7/29/2024 Temp: 84 °F Humidity: 72 %RH

Equip Location: Plant Sub/Parent: Well 1 Position/Child: Well Pressure Primary

NAMEPLATE

Item Tested	Pressure Transmitter Primary		
Manufacturer	Yokogawa	Model Number	EJA530E
Serial Number	91V926590-938	Tag Number	PIT3938
Operating Range	cal 0-1000 psig (Meter Span 0-7200 psi)	Procedure/Method	Fluke 754:75x_umeng0000 rev Jul 2011

As Found - Within Spec As Left - Within Spec

INPUT psig OUTPUT mA/ PSIG

Line	%	Applied	As Found	OOT	As Left	OOT	Lo Spec	Hi Spec
1	0	0	4.00	☐	4.00	☐	-2	2
2	3.5	250	4.56	☐	4.56	☐	248	252
3	6.9	500	5.11	☐	5.11	☐	498	502
4	10.4	750	5.67	☐	5.67	☐	748	752
5	13.9	1000	6.22	☐	6.22	☐	998	1002
6				☐		☐		

Communicator: HART **Totalizer As Found** NA **Totalizer As Left** NA Gal

#	Manufacturer	Model	Serial / ID Number	Calibration Date	Calibration Due
1	Fluke	754	JB-1479	9/26/2023	9/30/2024
2	Fluke	700RG31 10Kpsi	SHOP-2526	3/12/2024	3/31/2025
3	Fluke	754	KM-753	6/14/2024	6/30/2025
4	Extech	RH300(ambient)	KM-1052	6/8/2021	6/30/2026

Comments:
Verified to computer display

Deficiencies:

Date of Issue: 8/6/2024 **Tech 1:** **J. Busha** **Tech 2:** **NA** ISO-81523D-ISO Cert 2015; Rev Oct 2022

CALIBRATION CERTIFICATE

UIS SCADA
2290 Bishop Circle E.
Dexter, MI 48130
734-424-1200

CUSTOMER	**Republic Services**	CERTIFICATE #	**REPS248117-1, 5 of 9**
ADDRESS	**28470 Citrin Drive; Romulus MI US 48174**	JOB #	**REPS248117-1**
USER	**Republic Services; 28470 Citrin Drive; Romulus MI US 48174**	PAGE	**5 of 9**
OWNER REPRESENTATIVE	**John Frost**	TELEPHONE	**734-946-1000**

Service Date: 7/29/2024 Temp: 83 °F Humidity: 51 %RH

Equip Location: Plant Sub/Parent: Well 1 Position/Child: Well Pressure Secondary

NAMEPLATE

Item Tested	Pressure Transmitter Secondary to Logger (Cloud)		
Manufacturer	Yokogawa	Model Number	EJA53
Serial Number	91V926616-932	Tag Number	PIT3938
Operating Range	cal 0-1000 psig	Procedure/Method	Fluke 754:75x_umeng0000 rev Jul 2011

INPUT psig OUTPUT psig

Line	%	Applied	As Found	OOT	As Left	OOT	Lo Spec	Hi Spec
1		0	see Deficiencies	☐	0	☐	-2	2
2		250	see Deficiencies	☐	250	☐	248	252
3		500	see Deficiencies	☐	500	☐	498	502
4		750	see Deficiencies	☐	750	☐	748	752
5		1000	see Deficiencies	☐	1000	☐	998	1002
6				☐		☐		

Communicator: HART **Totalizer As Found** NA **Totalizer As Left** NA Gal

#	Manufacturer	Model	Serial / ID Number	Calibration Date	Calibration Due
1	Fluke	700RG31 10Kpsi	SHOP-2526	3/12/2024	3/31/2025
2	Fluke	754	SHOP-1273	5/7/2024	5/31/2025
3	Extech	RH300(Ambient)	RC-1773	1/11/2021	1/11/2026

Comments:
Unit had no power and unit would also not power up. Customer gave me used spare. Unitdid calibrate but adjustment screw on side of unit is frozen. Cal was done with 754 as well as programming. Did not know HART address but tried 3 and it was it. Tested to the cloud with Brandon in Texas. No one here had access to the cloud. RC2024

Deficiencies:
No loop power to transmitter

CALIBRATION CERTIFICATE

UIS SCADA
2290 Bishop Circle E.
Dexter, MI 48130
734-424-1200

CUSTOMER	**Republic Services**	CERTIFICATE #	**REPS248117-1, 6 of 9**
ADDRESS	**28470 Citrin Drive; Romulus MI US 48174**	JOB #	**REPS248117-1**
USER	**Republic Services; 28470 Citrin Drive; Romulus MI US 48174**	PAGE	**6 of 9**
OWNER REPRESENTATIVE	**John Frost**	TELEPHONE	**734-946-1000**

Service Date: 7/29/2024 Temp: 83 °F Humidity: 51 %RH

Equip Location: Plant Sub/Parent: Well 2 Position/Child: Annulus Pressure Primary

NAMEPLATE

Item Tested	Pressure Transmitter Primary		
Manufacturer	Yokogaw	Model Number	EJA530E-JDS7N-012EL/FU1/D1/JH05
Serial Number	91V927606	Tag Number	PIT3938
Operating Range	cal 0-1000 psig	Procedure/Method	Fluke 754:75x_umeng0000 rev Jul 2011

As Found - Within Spec As Left - Within Spec

INPUT psig OUTPUT psi/mA

Line	%	Applied	As Found	OOT	As Left	OOT	Lo Spec	Hi Spec
1		0	1/3.99	☐	3.99	☐	-2	+2
2		250	249/4.55	☐	4.55	☐	248	252
3		500	5.10	☐	5.10	☐	498	502
4		750	5.66	☐	5.66	☐	748	752
5		1000	6.22	☐	6.22	☐	998	1002
6		Hart Address	4	☐	4	☐		
7				☐		☐		

Communicator: Hart-OEM Specific **Totalizer As Found** NA **Totalizer As Left** NA Gal

#	Manufacturer	Model	Serial / ID Number	Calibration Date	Calibration Due
1	Extech	RH300(ambient)	KM-1052	6/8/2021	6/30/2026
2	Fluke	700RG31 10Kpsi	SHOP-2526	3/12/2024	3/31/2025

Comments:
no mA output; unit comm with Hart to PLC

Deficiencies:

Date of Issue: 8/6/2024 **Tech 1:** **J. Busha** **Tech 2:** **NA** ISO-81523D-ISO Cert 2015; Rev Oct 2022

CALIBRATION CERTIFICATE

UIS SCADA
2290 Bishop Circle E.
Dexter, MI 48130
734-424-1200

CUSTOMER	**Republic Services**	CERTIFICATE #	**REPS248117-1, 7 of 9**
ADDRESS	**28470 Citrin Drive; Romulus MI US 48174**	JOB #	**REPS248117-1**
USER	**Republic Services; 28470 Citrin Drive; Romulus MI US 48174**	PAGE	**7 of 9**
OWNER REPRESENTATIVE	**John Frost**	TELEPHONE	**734-946-1000**

Service Date: 7/29/2024 Temp: 80 °F Humidity: 55 %RH

Equip Location: Plant Sub/Parent: Well 2 Position/Child: Well 2 Flow

NAMEPLATE

Item Tested	Clamp-on Flowmeter		
Manufacturer	Keyence	Model Number	FD-R80
Serial Number	G3822052?	Tag Number	FIT3832
Operating Range	0-400 GPM	Procedure/Method	Fluke 754:75x_umeng0000 rev Jul 2011

INPUT GPM OUTPUT GPM

Line	%	Applied	As Found	OOT	As Left	OOT
1	test	0	0	☐	0	☐
2	test	69-72	71-73	☐	71-73	☐
3				☐		☐

Communicator: **Totalizer As Found** NA **Totalizer As Left** 2296201 Gal

#	Manufacturer	Model	Serial / ID Number	Calibration Date	Calibration Due
1	Grey Line	TTFM	SHOP-2518	5/18/2023	5/31/2026
2	Extech	RH300(ambient)	KM-1052	6/8/2021	6/30/2026

Comments:

Deficiencies:

Date of Issue: 8/6/2024 **Tech 1:** **K. Mitchell** **Tech 2:** **NA** ISO-81523D-ISO Cert 2015; Rev Oct 2022

CALIBRATION CERTIFICATE

UIS SCADA
2290 Bishop Circle E.
Dexter, MI 48130
734-424-1200

CUSTOMER **Republic Services** CERTIFICATE # **REPS248117-1, 8 of 9**

ADDRESS **28470 Citrin Drive; Romulus MI US 48174** JOB # **REPS248117-1**

USER **Republic Services; 28470 Citrin Drive; Romulus MI US 48174** PAGE **8 of 9**

OWNER REPRESENTATIVE **John Frost** TELEPHONE **734-946-1000**

Service Date: 7/29/2024 Temp: 83 °F Humidity: 52 %RH

Equip Location: Plant Sub/Parent: Well 2 Position/Child: Well 2 Pressure Primary

NAMEPLATE

Item Tested	Pressure Transmitter Primary		
Manufacturer	Yokogaw	Model Number	EJA530E-JDS7N-012EL/FU1/D1/JH05
Serial Number	91W312670	Tag Number	PIT3935
Operating Range	0-7200 PSI	Procedure/Method	Fluke 754:75x_umeng0000 rev Jul 2011

INPUT psig OUTPUT mA

Line	%	Applied	As Found	OOT	As Left	OOT	Lo Spec	Hi Spec
1	0	0	1/3.99	☐	0/4.00	☐	-2	+2
2	3.5	250	248/4.55	☐	250/4.55	☐	248	252
3	6.9	500	498/5.10	☐	500/5.11	☐	498	502
4	10.4	750	748/5.65	☐	750/5.66	☐	748	752
5	13.9	1000	998/6.21	☐	1000/6.22	☐	998	1002
6		Hart Address	5	☐	5	☐		
7				☐		☐		

Communicator: **Totalizer As Found** NA **Totalizer As Left** NA Gal

#	Manufacturer	Model	Serial / ID Number	Calibration Date	Calibration Due
1	Fluke	700RG31 10Kpsi	SHOP-2526	3/12/2024	3/31/2025
2	Fluke	754	KM-753	6/14/2024	6/30/2025
3	Fluke	754	JB-1479	9/26/2023	9/30/2024
4	Extech	RH300(ambient)	KM-1052	6/8/2021	6/30/2026

Comments:

Deficiencies:
mA found in tolerance. Display is not correct but doesn't impact anything to their SCADA.

CALIBRATION CERTIFICATE

UIS SCADA
2290 Bishop Circle E.
Dexter, MI 48130
734-424-1200

CUSTOMER	**Republic Services**	CERTIFICATE #	**REPS248117-1, 9 of 9**
ADDRESS	**28470 Citrin Drive; Romulus MI US 48174**	JOB #	**REPS248117-1**
USER	**Republic Services; 28470 Citrin Drive; Romulus MI US 48174**	PAGE	**9 of 9**
OWNER REPRESENTATIVE	**John Frost**	TELEPHONE	**734-946-1000**

Service Date: 7/29/2024 Temp: 84 °F Humidity: 79 %RH

Equip Location: Plant Sub/Parent: Well 2 Position/Child: Well 2 Pressure Secondary

NAMEPLATE

Item Tested	Pressure Transmitter Secondary (to recorder)		
Manufacturer	Yokogawa	Model Number	EJA530E-JDS7N-012EL/FU1/D1/JH05
Serial Number	91W405865	Tag Number	PIT
Operating Range	0-7200 PSI	Procedure/Method	Fluke 754:75x_umeng0000 rev Jul 2011

As Found - Within Spec As Left - Within Spec

INPUT psig OUTPUT psig

Line	%	Applied	As Found	OOT	As Left	OOT	Lo Spec	Hi Spec
1	0	0	2	☐	0	☐	-2	+2
2	3.5	250	248	☐	250	☐	248	252
3	6.9	500	498	☐	500	☐	498	502
4	10.4	750	748	☐	750	☐	748	752
5	13.9	1000	998	☐	1000	☐	998	1002
6		Hart Address	1	☐	1	☐		
7				☐		☐		

Communicator: Hart-OEM Specific **Totalizer As Found** NA **Totalizer As Left** NA Gal

#	Manufacturer	Model	Serial / ID Number	Calibration Date	Calibration Due
1	Fluke	700RG31 10Kpsi	SHOP-2526	3/12/2024	3/31/2025
2	Fluke	754	KM-753	6/14/2024	6/30/2025
3	Fluke	754	JB-1479	9/26/2023	9/30/2024
4	Extech	RH300(ambient)	KM-1052	6/8/2021	6/30/2026

Comments:
no mA output; unit comm with Hart to PLC

Deficiencies:

Date of Issue: 8/6/2024 **Tech 1:** **J. Busha** **Tech 2:** **NA** ISO-81523D-ISO Cert 2015; Rev Oct 2022

Comment Summary
Job #REPS248117-1

Customer Republic Services
User Republic Services

Plant: 28470 Citrin Drive
Substation: Well 1
Position: Annulus Pressure Primary
Equipment: ISO-81235D1-ISO CERT 2015
Page: 1
Date: 7/29/2024

Comments: Verified computer display.
switched with datalogger due to transmitter dropping out during operation serial 5613698

Plant: 28470 Citrin Drive
Substation: Well 1
Position: Annulus Pressure SEC
Equipment: ISO-81235D1-ISO CERT 2015
Page: 2
Date: 7/29/2024

Comments: Hart Address 1
switched with datalogger due to transmitter dropping out during operation serial 5613698

Plant: 28470 Citrin Drive
Substation: Well 1
Position: Well Pressure Primary
Equipment: ISO-81235D1-ISO CERT 2015
Page: 4
Date: 7/29/2024

Comments: Verified to computer display

Plant: 28470 Citrin Drive
Substation: Well 2
Position: Annulus Pressure Primary
Equipment: ISO-81235D1-ISO CERT 2015 (4)
Page: 6
Date: 7/29/2024

Comments: no mA output; unit comm with Hart to PLC

Plant: 28470 Citrin Drive
Substation: Well 2
Position: Well 2 Pressure Secondary
Equipment: ISO-81235D1-ISO CERT 2015 (6)
Page: 9
Date: 7/29/2024

Comments: no mA output; unit comm with Hart to PLC

Deficiency Summary
Job #REPS248117-1

Customer Republic Services

User Republic Services

Plant: 28470 Citrin Drive | Page: 1
Substation: Well 1 | Date: 7/29/2024
Position: Annulus Pressure Primary
Equipment: ISO-81235D1-ISO CERT 2015

Deficiencies: NOTE: when Primary transmitter disconnected - computer display went to zero

Plant: 28470 Citrin Drive | Page: 5
Substation: Well 1 | Date: 7/29/2024
Position: Well Pressure Secondary
Equipment: ISO-81235D1-ISO CERT 2015

Deficiencies: No loop power to transmitter

Plant: 28470 Citrin Drive | Page: 8
Substation: Well 2 | Date: 7/29/2024
Position: Well 2 Pressure Primary
Equipment: ISO-81235D1-ISO CERT 2015 (5)

Deficiencies: mA found in tolerance. Display is not correct but doesn't impact anything to their SCADA.

Signature:

Email: brian.davis@teamuis.com

REPS248117-1

Final Audit Report 2024-08-07

Created:	2024-08-06
By:	Sally Crane (sally.crane@teamuis.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAPmoQ_vl9SwoFnYGYMIodmQDv4Pd1TKz9

"REPS248117-1" History

Document created by Sally Crane (sally.crane@teamuis.com)
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2024-08-06 - 1:15:29 PM GMT

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2024-08-06 - 1:17:48 PM GMT

Document e-signed by Brian Davis (brian.davis@teamuis.com)
Signature Date: 2024-08-07 - 11:01:21 AM GMT - Time Source: server

Agreement completed.
2024-08-07 - 11:01:21 AM GMT

August 8, 2024

Andrew McBride
Republic Services

Re: Calibration Performed at 28470 Citrin Drive
Job No. REPS248117-2

Dear Andrew:

Please find enclosed (1) one calibration form for the 28470 Citrin Drive location dated July 29, 2024. If you have any questions, please feel free to call our office at 734-424-1200.

Sincerely,

Ken Wesley

Ken Wesley (Aug 8, 2024 11:41 EDT)

Ken Wesley
Project Manager

KW/gb

Team UIS
2290 Bishop Circle East
Dexter, MI 48130
Phone: (734) 424-1200 - Fax: (734) 424-0031
teamuis.com

Table of Contents
Job #REPS248117-2

Customer Republic Services
User Republic Services
Plant 28470 Citrin Drive

CALIBRATION CERTIFICATE

UIS SCADA
2290 Bishop Circle E.
Dexter, MI 48130
734-424-1200

CUSTOMER	**Republic Services**	CERTIFICATE #	**REPS248117-2, 1 of 1**
ADDRESS	**28470 Citrin Drive; Romulus MI US 48174**	JOB #	**REPS248117-2**
USER	**Republic Services; 28470 Citrin Drive; Romulus MI US 48174**	PAGE	**1 of 1**
OWNER REPRESENTATIVE	**John Frost**	TELEPHONE	**734-946-1000**

Service Date: 7/29/2024 Temp: 85 °F Humidity: 59 %RH

Equip Location: Plant Sub/Parent: Well 2 Position/Child: Annulus Pressure SEC

NAMEPLATE

Item Tested	Pressure Transmitter		
Manufacturer	Yokogawa	Model Number	EJA530E-JDS7N-012EL/FU1/D1/JH05
Serial Number	91V926611	Tag Number	PIT
Operating Range	cal 0-1000 psig	Procedure/Method	Fluke 754:75x_umeng0000 rev Jul 2011

As Found - Within Spec As Left - Within Spec

INPUT psig OUTPUT psig

Line	%	Applied	As Found	OOT	As Left	OOT	Lo Spec	Hi Spec
1		0	1	☐	1	☐	-2	+2
2		250	250	☐	250	☐	248	252
3		500	500	☐	500	☐	498	502
4		750	750	☐	750	☐	748	752
5		1000	1000	☐	1000	☐	998	1002
6		Hart Address	2	☐	2	☐		
7				☐		☐		

Communicator: Hart-OEM Specific **Totalizer As Found** NA **Totalizer As Left** NA Gal

#	Manufacturer	Model	Serial / ID Number	Calibration Date	Calibration Due
1	Fluke	700RG31 10Kpsi	SHOP-2526	3/12/2024	3/31/2025
2	Extech	RH300(ambient)	KM-1052	6/8/2021	6/30/2026

Comments:
no mA output; unit comm with Hart

Deficiencies:

Date of Issue: 8/8/2024 **Tech 1:** **J. Busha** **Tech 2:** **NA** ISO-81523D-ISO Cert 2015; Rev Oct 2022

Comment Summary
Job #REPS248117-2

Customer Republic Services

User Republic Services

Plant: 28470 Citrin Drive

Substation: Well 2

Position: Annulus Pressure SEC

Equipment: ISO-81235D1-ISO CERT 2015 (5)

Page: 1

Date: 7/29/2024

Comments: no mA output; unit comm with Hart

REPS248117-2

Final Audit Report 2024-08-08

Created:	2024-08-08
By:	Gina Benn (gina.benn@teamuis.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAHPUXNoU8sijB78NY_beEQBCeT1jmZflT

"REPS248117-2" History

Document created by Gina Benn (gina.benn@teamuis.com)
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Document e-signed by Ken Wesley (ken.wesley@teamuis.com)
Signature Date: 2024-08-08 - 3:41:57 PM GMT - Time Source: server

Agreement completed.
2024-08-08 - 3:41:57 PM GMT

Cal-scan Services Ltd.
4188-93 Street
Edmonton, Alberta, Canada
T6E 5P5
Phone: (780) 944-1377 Fax: (780) 944 - 1406

Calibration Certificate

Model :	Badger Low Temp	**Range :**	10,000.00 psi
Serial Number :	91932	**Last Cal. Date :**	04-October-2023

Specifications

Calibration Pressure Range:		0.00	10,000.00	psi
Calibration Temperature Range:		0.00	150.00	°C
Pressure:	Accuracy	±	2.4000 psi (0.024 %FS)	
	Resolution	±	0.0300 psi (0.0003 %FS)	
Temperature:	Accuracy	±	0.40 °C	
	Resolution	±	0.001 °C	

Calibration Summary

Pressure: Accuracy (maximum error)	0.74	psi
Temperature: Accuracy (maximum error)	0.17	°C

Traceability Statement

All working standards are traceable to national or internationally recognized standards.

Calibrated with Cal-Scan DWG # 6

Calibrated by:

Ferris Victoria

Cal-scan Services Ltd.
4188-93 Street
Edmonton, Alberta, Canada
T6E 5P5
Phone: (780) 944-1377 Fax: (780) 944 - 1406

Calibration Certificate

Model :	Badger Low Temp	**Range :**	10,000.00 psi
Serial Number :	91933	**Last Cal. Date :**	04-October-2023

Specifications

Calibration Pressure Range:		0.00	10,000.00	psi
Calibration Temperature Range:		0.00	150.00	°C
Pressure:	Accuracy	±	2.4000 psi (0.024 %FS)	
	Resolution	±	0.0300 psi (0.0003 %FS)	
Temperature:	Accuracy	±	0.40 °C	
	Resolution	±	0.001 °C	

Calibration Summary

Pressure: Accuracy (maximum error)	1.86	psi
Temperature: Accuracy (maximum error)	0.17	°C

Traceability Statement

All working standards are traceable to national or internationally recognized standards.

Calibrated with Cal-Scan DWG # 6

Calibrated by:

Ferris Victoria

APPENDIX E

EPA STANDARD ANNULAR PRESSURE TEST FORM

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF INSPECTION

EPA Regional Office USEPA Region V WU-16J Chicago, IL 60604	Environmental Solutions AQ P.O. Box 6052 Oxford, OH 45056	Firm to be inspected Republic Industrial & Energy Solutions, Inc.
Date 8/6/24 Time 9:50 AM	Notice of inspection is hereby given according to Section 1445 (b) of the Safe Drinking Water Act (42 U.S.C §300f et seg.).	

Reason For Inspection MIT (SAPT) Part I. Well EDS -1-12
Well EDS 2-12

For the purpose of inspecting records, files, papers, processes, controls and facilities, and obtaining samples to determine whether the person subject to an applicable underground injection control program has acted or is acting in compliance with the Safe Drinking Water Act and any applicable permit or rule.

Section 1445 (b) of the SDWA(42 U.S.C §300j-4(b) is quoted on the reverse of this form

Receipt of this Notice of Inspection is hereby acknowledged.

Firm Representative	Date	Inspector
John Foos	8/6/24	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STANDARD ANNULAR PRESSURE TEST

Operator	Republic Industrial & Energy Solutions, Inc	State Permit Number	00453
Address	28470 Citrin Dr	EPA Permit Number	MI-163-1W-C011
	Romulus, MI 48174	Date of Test	8/6/24
Well Name & Number	Well EDS-2-12	Well Type	1W

Quarter	Quarter	Quarter	Section	Township	Range	Township Name	County	State
SW	NW	SE	12	3S	9E	Georgetown	Wayne	MI

GPS file number	Latitude	Longitude	Elevation
	42.243714	-83.316904	

Company Representative	John Frost	Field Inspector	JoAnne Hitock

GAUGE CERTIFICATION

Type Pressure Gauge Yokogawa } 3 inch face 7000 psi full scale 1 psi increments
New Gauge? Yes ☐ No ☐ If no, date of calibration _____ Calibration certification submitted? Yes ☐ No ☐

TEST RESULTS

Time	8:20	8:30	8:40	8:50	9:00	9:10	9:20
Annulus	1102	1098	1097	1095	1093	1091	1091
Tubing	NA- open to atmosphere						

WELL STATUS

5 Year	☐	TD#_____
2 Year TA	☐	TD#_____
Rework after failure	☐	TD#_____
New Permit	☐	TD#_____
Enforcement Action	☐	TD#_____
Annual Class 1	☑	TD#_____

WELL CONFIGURATION

Casing Size	7"
Tubing Size	4½"
Packer Type	Model 12 Hastelloy
Packer set @	3930'
Fluid Return (gal)	* NA-pressure tank

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x .03 33.0 psi
Test Pressure change 11 psi

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

COMMENT:
Well shut in 11:00 PM 8/5/24. Wireline running. *Bled annulus to 615 psi post test, 8 gallons returned to pressure tank

Signature of Company Representative	Date
John Frost	8.6.24
Signature of UIC Field Inspector	Date
John Frost	8/6/24

APPENDIX F

EPA RADIOACTIVE TRACER SURVEY FORM

BACKGROUND INFORMATION FOR REVIEW OF RADIOACTIVE TRACER SURVEYS FOR CEMENT INTEGRITY

Facility Name Republic Industrial and Energy Solutions, LLC			Operator Republic Industrial and Energy Solutions, LLC		
Well Name #2-12			USEPA Permit Numbe MI-163-1W-C0011	Witness Jeffry Tahtouh	
State Michigan	Test Date August 6,2024		Logging Company Michigan Wireline	Depth Reference: Kelly Bushing ✔ Ground Level ☐	
Well and Operational Information					
Long StringCsg Material K-55, LT&C	Long String Casing OD, ins 7.0	Casing weight, #/ft 26	Casing ID, ins. 6.276	Long String Casing Length, ft 3982	
Tubing Material Blue Box 2000	Tubing OD, ins 4.5	Tubing weight, #/ft 4	Tubing ID, ins. 3.98	Tubing Length, ft 3930	
Tail Pipe Material N/A	Tail Pipe OD, ins N/A	Tail Pipe, weight#/ft. N/A	Tail Pipe ID, ins. N/A	Tail Pipe Length, ft N/A	Tail Pipe Depth N/A
	OpenHole diameter, in 8.75	TD, ft 4550	PBTD, ft 4550	Top of Open Interval, ft 3975	
Packer Model	Packer Type Delta-P Model 12	Top of Packer, ft 3930	Bottom of Packer, ft 3935		
Geological Information					
Lowermost USDW Name Sylvania		Fms in Confining Zone Utica Shale and Trenton Limestone		Fms in Injection Zone Franconia, Eau Claire, Mt. Simon	
Base of USDW, ft 400		Depth to top of Confinement Zone 2364		Injection Zone Top, ft 3369	
TOOL INFORMATION					
Ejector, ft above BDET 6.13	TDET, ft above BDET 8.73	MDET, ft above BDET			
CALIBRATION INFORMATION					
Depth BDET, ft 3800	Depth TDET, ft 3791.7	BDET CPSPI 1.56	Lithology (Warm/Cool) Cool	Maximum Reading, LD 4.5 CPS	Minimum Reading, LD 0 CPS
Depth BDET, ft 3855	Depth TDET, ft 3846.3	BDET CPSPI 8.92	Lithology (Warm/Cool) Warm	Maximum Reading, LD 15.7 CPS	Minimum Reading, LD 2.8 CPS
FIRST SLUG TRACKING SEQUENCE					
Flow Rate, gpm 43 gpm	Velocity in tubing, fps 1.1	Depth of deflection on 1st pass, ft 3154.5	Deflection on 1st pass, LD 413.5 CPS	Deflection/Backgroun 184 CPS	Passes Through Slug 4
Slug Split? yes or no NO	Depth of Split, ft N/A	Moved up, yes or no No	Minimum Slug Depth, ft 3100	Distance above shoe, ft 882	Maximum Slug Depth, ft 4069
FIRST STATIONARY TEST					
Depth of BDET, ft 3960	Depth of TDET, ft 3951.3	BDET to open interval, ft 25	Time at station, mins 36	Injection Rate, gpm 43	Log Divisions per Minute 12
Depth at Injection, ft 3750		BDET above end of tubing or casing, ft 25	Reached BDET up, LD	Reach UDET up, LD	Velocity Up, ft/min
2nd Setting Depth, ft	Time of reset	Slug already passed BDET?	Reached BDET up, LD	Slug arrival time	
3rd Setting Depth	Time of reset	Slug already passed BDET?	Reached BDET up, LD	Slug arrival time	
4th setting depth, ft	Time of reset	Slug already passed BDET?	Reached BDET up, LD	Slug arrival time	Upper Limit of Movement, ft

REMEMBER

1. Please fill in the above cells.
2. Inject at highest practicable rate during the stationary test to maximize pressure difference that is the driving force for upward movement of fluid (if it occurs), but at low enough velocity during slug tracking so the slug can be followed effectively.
3. Leave the scaling at the same level for all phases. 40 counts per second per inch is usually effective. We need to be able to see evidence of variation due to lithology.
4. Use big slugs. The height of the deflection caused by the slug should be at least 50 times the difference of the high and low levels measured during logging the initial log.
5. If you record times of arrival, that should be the arrival of the leading edge.
6. The purpose is to determine the shallowest depth at which tracer material leaves the well.
7. When slug tracking, logging through the slug while the last part of the slug is leaving the deeper of the tailpipe or casing is the best way to identify a split. If there is a split, always follow the upper portion to determine the limit of its upward movement.
8. When running the stationary test, set the tool with the bottom detector five feet above the end of the deeper of the tail pipe or casing. If the slug reaches it, move it up in steps to find the shallowest extent of movement.
9. The stationary test must be run long enough to be able to detect upward motion of 2 ft/min.
10. Superimpose the traces of the initial and final base logs.
11. Please submit both the merged and unmerged slug chase records.
12. The test report must explain any anomalies in the results.
13. Please submit the digital logging data on a CD.
14. Submit an up-to-date well schematic.

APPENDIX G

RADIOACTIVE TRACER SURVEY LETTER OF INTERPRATION

michigan wireline services
4854 E. RIVER ROAD • P.O. BOX 782 • MT. PLEASANT, MI 48804-0782
(989) 772-5075

08/13/2024
Republic Services
Romulus Storage
Well #2-12

A Base log was run from 4267’ to 3000’ to establish a base gamma ray for the well pre-ejection of RA material. Two statistical 5-minute time drives were also run to establish the tools functionality. These were done at 3800’ and 3855’.

The logging tool was then brought back up to 3100’ and the water was pumped into the hole at 43 GPM. Once the proper depth and rate were established 4 seconds of RA material (Iodine 131) was ejected into the well. The tool was quickly lowered below the moving RA material and logged back up to the original ejection point of 3100’. Several other passes down though the RA material and back up to the last catch were made to establish flow in the proper direction into the injection zone.

Once the RA count dropped below 50 cps the tool was brought back up to 3750’ and rate maintained at 43 GPM. 4 seconds of RA material was ejected at 3750’ then the tool was moved to 3960’ and a time drive log was started. Once the RA material passed both detectors a timer was started to establish a 30-minute window to watch for RA material moving up hole past the packer.

Finally, after 30 minutes the tool was returned to the deepest achievable depth of 4267’ and a final base log was run to 3000’ this final pass and the base pass are plotted together to establish that no RA material moved up hole past the packer at any point during testing.

No RA material migration upward from the packer was noted during any of the testing.

Thanks
Brian Wright

APPENDIX H

RAW PRESSURE AND TEMPERATURE DATA (ABRIDGED)

APPENDIX H
Pressure/Time Data Recorded During the Pressure Transient Test

Start Time: 08/06/24 18:26
Location: Romulus, MI
Recorder Serial No: 91933
Calibration Date: OCT 4/23
Pressure Range: 10005.0 psig

Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F
08/06/24	18:26:00	1873.686	74.387	08/06/24	19:40:00	2142.428	67.372	08/06/24	20:54:00	2147.282	68.148
08/06/24	18:27:00	1873.719	74.390	08/06/24	19:41:00	2142.566	67.426	08/06/24	20:55:00	2147.316	68.151
08/06/24	18:28:00	1873.692	74.395	08/06/24	19:42:00	2142.698	67.471	08/06/24	20:56:00	2147.345	68.154
08/06/24	18:29:00	1873.684	74.396	08/06/24	19:43:00	2142.822	67.505	08/06/24	20:57:00	2147.381	68.157
08/06/24	18:30:00	1884.213	74.395	08/06/24	19:44:00	2142.948	67.541	08/06/24	20:58:00	2147.406	68.159
08/06/24	18:31:00	1991.848	74.340	08/06/24	19:45:00	2143.044	67.566	08/06/24	20:59:00	2147.451	68.160
08/06/24	18:32:00	2035.961	74.577	08/06/24	19:46:00	2143.181	67.588	08/06/24	21:00:00	2147.486	68.169
08/06/24	18:33:00	2057.172	75.637	08/06/24	19:47:00	2143.311	67.614	08/06/24	21:01:00	2147.526	68.170
08/06/24	18:34:00	2070.375	76.651	08/06/24	19:48:00	2143.407	67.632	08/06/24	21:02:00	2147.594	68.180
08/06/24	18:35:00	2079.945	77.277	08/06/24	19:49:00	2143.511	67.643	08/06/24	21:03:00	2147.655	68.183
08/06/24	18:36:00	2087.398	77.543	08/06/24	19:50:00	2143.576	67.656	08/06/24	21:04:00	2147.679	68.184
08/06/24	18:37:00	2093.338	77.567	08/06/24	19:51:00	2143.680	67.673	08/06/24	21:05:00	2147.735	68.187
08/06/24	18:38:00	2098.165	77.489	08/06/24	19:52:00	2143.759	67.688	08/06/24	21:06:00	2147.803	68.196
08/06/24	18:39:00	2102.273	77.343	08/06/24	19:53:00	2143.873	67.697	08/06/24	21:07:00	2147.799	68.193
08/06/24	18:40:00	2105.658	77.116	08/06/24	19:54:00	2143.927	67.705	08/06/24	21:08:00	2147.784	68.195
08/06/24	18:41:00	2108.690	76.818	08/06/24	19:55:00	2143.996	67.717	08/06/24	21:09:00	2147.830	68.200
08/06/24	18:42:00	2111.243	76.517	08/06/24	19:56:00	2144.088	67.726	08/06/24	21:10:00	2147.855	68.202
08/06/24	18:43:00	2113.450	76.227	08/06/24	19:57:00	2144.118	67.735	08/06/24	21:11:00	2147.876	68.199
08/06/24	18:44:00	2115.646	75.955	08/06/24	19:58:00	2144.147	67.741	08/06/24	21:12:00	2147.926	68.209
08/06/24	18:45:00	2117.630	75.668	08/06/24	19:59:00	2144.219	67.752	08/06/24	21:13:00	2147.938	68.211
08/06/24	18:46:00	2119.458	75.357	08/06/24	20:00:00	2144.274	67.765	08/06/24	21:14:00	2147.943	68.217
08/06/24	18:47:00	2121.032	74.990	08/06/24	20:01:00	2144.331	67.768	08/06/24	21:15:00	2147.933	68.218
08/06/24	18:48:00	2122.514	74.540	08/06/24	20:02:00	2144.442	67.772	08/06/24	21:16:00	2147.948	68.215
08/06/24	18:49:00	2123.785	74.034	08/06/24	20:03:00	2144.507	67.781	08/06/24	21:17:00	2147.988	68.222
08/06/24	18:50:00	2122.883	73.495	08/06/24	20:04:00	2144.566	67.787	08/06/24	21:18:00	2148.006	68.225
08/06/24	18:51:00	2122.847	72.967	08/06/24	20:05:00	2144.630	67.793	08/06/24	21:19:00	2148.056	68.232
08/06/24	18:52:00	2123.630	72.470	08/06/24	20:06:00	2144.703	67.805	08/06/24	21:20:00	2148.069	68.231
08/06/24	18:53:00	2124.502	72.030	08/06/24	20:07:00	2144.758	67.811	08/06/24	21:21:00	2148.092	68.231
08/06/24	18:54:00	2125.220	71.610	08/06/24	20:08:00	2144.868	67.821	08/06/24	21:22:00	2148.090	68.235
08/06/24	18:55:00	2125.962	71.207	08/06/24	20:09:00	2144.961	67.832	08/06/24	21:23:00	2148.118	68.239
08/06/24	18:56:00	2126.650	70.782	08/06/24	20:10:00	2145.070	67.839	08/06/24	21:24:00	2148.091	68.235
08/06/24	18:57:00	2127.429	70.386	08/06/24	20:11:00	2145.156	67.851	08/06/24	21:25:00	2148.120	68.238
08/06/24	18:58:00	2128.023	69.985	08/06/24	20:12:00	2145.241	67.862	08/06/24	21:26:00	2148.125	68.242
08/06/24	18:59:00	2128.526	69.597	08/06/24	20:13:00	2145.359	67.878	08/06/24	21:27:00	2148.133	68.243
08/06/24	19:00:00	2129.168	69.259	08/06/24	20:14:00	2145.432	67.888	08/06/24	21:28:00	2148.154	68.245
08/06/24	19:01:00	2129.634	68.971	08/06/24	20:15:00	2145.475	67.896	08/06/24	21:29:00	2148.178	68.250
08/06/24	19:02:00	2130.250	68.729	08/06/24	20:16:00	2145.561	67.911	08/06/24	21:30:00	2148.180	68.251
08/06/24	19:03:00	2130.840	68.530	08/06/24	20:17:00	2145.630	67.921	08/06/24	21:31:00	2148.223	68.255
08/06/24	19:04:00	2131.203	68.351	08/06/24	20:18:00	2145.743	67.934	08/06/24	21:32:00	2148.208	68.254
08/06/24	19:05:00	2131.792	68.174	08/06/24	20:19:00	2145.813	67.944	08/06/24	21:33:00	2148.227	68.257
08/06/24	19:06:00	2132.217	68.007	08/06/24	20:20:00	2145.895	67.955	08/06/24	21:34:00	2148.252	68.260
08/06/24	19:07:00	2132.776	67.865	08/06/24	20:21:00	2145.949	67.962	08/06/24	21:35:00	2148.271	68.263
08/06/24	19:08:00	2133.121	67.738	08/06/24	20:22:00	2145.992	67.972	08/06/24	21:36:00	2148.297	68.265
08/06/24	19:09:00	2133.559	67.626	08/06/24	20:23:00	2146.046	67.979	08/06/24	21:37:00	2148.295	68.264
08/06/24	19:10:00	2133.970	67.509	08/06/24	20:24:00	2146.118	67.992	08/06/24	21:38:00	2148.321	68.264
08/06/24	19:11:00	2134.350	67.387	08/06/24	20:25:00	2146.170	67.999	08/06/24	21:39:00	2148.351	68.272
08/06/24	19:12:00	2134.698	67.255	08/06/24	20:26:00	2146.199	68.004	08/06/24	21:40:00	2148.350	68.271
08/06/24	19:13:00	2135.156	67.120	08/06/24	20:27:00	2146.235	68.010	08/06/24	21:41:00	2148.346	68.270
08/06/24	19:14:00	2135.375	66.984	08/06/24	20:28:00	2146.286	68.015	08/06/24	21:42:00	2148.371	68.275
08/06/24	19:15:00	2135.829	66.852	08/06/24	20:29:00	2146.348	68.029	08/06/24	21:43:00	2148.389	68.274
08/06/24	19:16:00	2136.137	66.726	08/06/24	20:30:00	2146.394	68.035	08/06/24	21:44:00	2148.424	68.281
08/06/24	19:17:00	2136.496	66.615	08/06/24	20:31:00	2146.435	68.042	08/06/24	21:45:00	2148.418	68.277
08/06/24	19:18:00	2136.791	66.517	08/06/24	20:32:00	2146.461	68.042	08/06/24	21:46:00	2148.448	68.284
08/06/24	19:19:00	2137.087	66.418	08/06/24	20:33:00	2146.507	68.049	08/06/24	21:47:00	2148.462	68.283
08/06/24	19:20:00	2137.421	66.323	08/06/24	20:34:00	2146.541	68.058	08/06/24	21:48:00	2148.474	68.284
08/06/24	19:21:00	2137.758	66.227	08/06/24	20:35:00	2146.596	68.065	08/06/24	21:49:00	2148.449	68.278
08/06/24	19:22:00	2138.024	66.137	08/06/24	20:36:00	2146.630	68.068	08/06/24	21:50:00	2148.505	68.290
08/06/24	19:23:00	2138.355	66.053	08/06/24	20:37:00	2146.679	68.074	08/06/24	21:51:00	2148.500	68.288
08/06/24	19:24:00	2138.586	65.966	08/06/24	20:38:00	2146.723	68.075	08/06/24	21:52:00	2148.537	68.290
08/06/24	19:25:00	2138.860	65.893	08/06/24	20:39:00	2146.770	68.085	08/06/24	21:53:00	2148.545	68.291
08/06/24	19:26:00	2139.204	65.840	08/06/24	20:40:00	2146.786	68.085	08/06/24	21:54:00	2148.571	68.294
08/06/24	19:27:00	2139.532	65.803	08/06/24	20:41:00	2146.799	68.086	08/06/24	21:55:00	2148.563	68.289
08/06/24	19:28:00	2139.777	65.782	08/06/24	20:42:00	2146.869	68.100	08/06/24	21:56:00	2148.570	68.296
08/06/24	19:29:00	2140.042	65.797	08/06/24	20:43:00	2146.909	68.101	08/06/24	21:57:00	2148.583	68.297
08/06/24	19:30:00	2140.429	65.873	08/06/24	20:44:00	2146.936	68.103	08/06/24	21:58:00	2148.593	68.295
08/06/24	19:31:00	2140.845	66.017	08/06/24	20:45:00	2146.979	68.108	08/06/24	21:59:00	2148.650	68.300
08/06/24	19:32:00	2141.217	66.215	08/06/24	20:46:00	2147.005	68.109	08/06/24	22:00:00	2148.627	68.298
08/06/24	19:33:00	2141.474	66.447	08/06/24	20:47:00	2147.023	68.114	08/06/24	22:01:00	2148.652	68.301
08/06/24	19:34:00	2141.598	66.658	08/06/24	20:48:00	2147.062	68.119	08/06/24	22:02:00	2148.648	68.306
08/06/24	19:35:00	2141.800	66.844	08/06/24	20:49:00	2147.090	68.128	08/06/24	22:03:00	2148.673	68.309
08/06/24	19:36:00	2141.929	66.999	08/06/24	20:50:00	2147.135	68.137	08/06/24	22:04:00	2148.698	68.310
08/06/24	19:37:00	2142.089	67.128	08/06/24	20:51:00	2147.140	68.135	08/06/24	22:05:00	2148.673	68.309
08/06/24	19:38:00	2142.195	67.227	08/06/24	20:52:00	2147.207	68.142	08/06/24	22:06:00	2148.690	68.310
08/06/24	19:39:00	2142.312	67.306	08/06/24	20:53:00	2147.214	68.140	08/06/24	22:07:00	2148.725	68.311

APPENDIX H, Continued
Pressure/Time Data Recorded During the Pressure Transient Test

Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F
08/06/24	22:08:00	2148.733	68.314	08/06/24	23:29:00	2149.715	68.424	08/07/24	00:50:00	2151.923	68.519
08/06/24	22:09:00	2148.746	68.315	08/06/24	23:30:00	2149.736	68.422	08/07/24	00:51:00	2151.942	68.522
08/06/24	22:10:00	2148.762	68.321	08/06/24	23:31:00	2149.775	68.431	08/07/24	00:52:00	2151.960	68.517
08/06/24	22:11:00	2148.759	68.317	08/06/24	23:32:00	2149.812	68.434	08/07/24	00:53:00	2151.984	68.524
08/06/24	22:12:00	2148.771	68.320	08/06/24	23:33:00	2149.836	68.436	08/07/24	00:54:00	2152.005	68.519
08/06/24	22:13:00	2148.781	68.320	08/06/24	23:34:00	2149.844	68.428	08/07/24	00:55:00	2152.033	68.520
08/06/24	22:14:00	2148.796	68.323	08/06/24	23:35:00	2149.890	68.438	08/07/24	00:56:00	2152.069	68.523
08/06/24	22:15:00	2148.790	68.319	08/06/24	23:36:00	2149.900	68.435	08/07/24	00:57:00	2152.108	68.524
08/06/24	22:16:00	2148.806	68.321	08/06/24	23:37:00	2149.924	68.439	08/07/24	00:58:00	2152.122	68.523
08/06/24	22:17:00	2148.825	68.326	08/06/24	23:38:00	2149.969	68.437	08/07/24	00:59:00	2152.177	68.522
08/06/24	22:18:00	2148.827	68.323	08/06/24	23:39:00	2149.994	68.439	08/07/24	01:00:00	2152.231	68.530
08/06/24	22:19:00	2148.834	68.326	08/06/24	23:40:00	2150.000	68.437	08/07/24	01:01:00	2152.252	68.524
08/06/24	22:20:00	2148.868	68.333	08/06/24	23:41:00	2150.040	68.444	08/07/24	01:02:00	2152.302	68.524
08/06/24	22:21:00	2148.849	68.328	08/06/24	23:42:00	2150.063	68.438	08/07/24	01:03:00	2152.323	68.522
08/06/24	22:22:00	2148.838	68.329	08/06/24	23:43:00	2150.058	68.441	08/07/24	01:04:00	2152.376	68.528
08/06/24	22:23:00	2148.847	68.327	08/06/24	23:44:00	2150.112	68.445	08/07/24	01:05:00	2152.403	68.526
08/06/24	22:24:00	2148.855	68.324	08/06/24	23:45:00	2150.137	68.448	08/07/24	01:06:00	2152.430	68.522
08/06/24	22:25:00	2148.913	68.336	08/06/24	23:46:00	2150.177	68.451	08/07/24	01:07:00	2152.468	68.524
08/06/24	22:26:00	2148.923	68.337	08/06/24	23:47:00	2150.198	68.451	08/07/24	01:08:00	2152.505	68.522
08/06/24	22:27:00	2148.956	68.335	08/06/24	23:48:00	2150.233	68.452	08/07/24	01:09:00	2152.597	68.528
08/06/24	22:28:00	2148.952	68.336	08/06/24	23:49:00	2150.256	68.459	08/07/24	01:10:00	2152.597	68.526
08/06/24	22:29:00	2148.962	68.334	08/06/24	23:50:00	2150.233	68.448	08/07/24	01:11:00	2152.610	68.527
08/06/24	22:30:00	2148.974	68.339	08/06/24	23:51:00	2150.279	68.453	08/07/24	01:12:00	2152.653	68.523
08/06/24	22:31:00	2148.986	68.341	08/06/24	23:52:00	2150.310	68.453	08/07/24	01:13:00	2152.680	68.523
08/06/24	22:32:00	2148.977	68.338	08/06/24	23:53:00	2150.328	68.454	08/07/24	01:14:00	2152.690	68.529
08/06/24	22:33:00	2148.986	68.337	08/06/24	23:54:00	2150.391	68.461	08/07/24	01:15:00	2152.755	68.529
08/06/24	22:34:00	2149.017	68.347	08/06/24	23:55:00	2150.367	68.456	08/07/24	01:16:00	2152.782	68.527
08/06/24	22:35:00	2149.024	68.343	08/06/24	23:56:00	2150.430	68.460	08/07/24	01:17:00	2152.811	68.528
08/06/24	22:36:00	2149.016	68.342	08/06/24	23:57:00	2150.456	68.466	08/07/24	01:18:00	2152.846	68.527
08/06/24	22:37:00	2149.028	68.345	08/06/24	23:58:00	2150.452	68.462	08/07/24	01:19:00	2152.902	68.532
08/06/24	22:38:00	2149.060	68.349	08/06/24	23:59:00	2150.499	68.468	08/07/24	01:20:00	2152.931	68.527
08/06/24	22:39:00	2149.031	68.346	08/07/24	00:00:00	2150.539	68.473	08/07/24	01:21:00	2152.979	68.533
08/06/24	22:40:00	2149.053	68.350	08/07/24	00:01:00	2150.549	68.469	08/07/24	01:22:00	2152.984	68.531
08/06/24	22:41:00	2149.040	68.349	08/07/24	00:02:00	2150.583	68.472	08/07/24	01:23:00	2153.003	68.534
08/06/24	22:42:00	2149.034	68.353	08/07/24	00:03:00	2150.627	68.476	08/07/24	01:24:00	2153.047	68.532
08/06/24	22:43:00	2149.016	68.350	08/07/24	00:04:00	2150.638	68.470	08/07/24	01:25:00	2153.080	68.533
08/06/24	22:44:00	2149.022	68.353	08/07/24	00:05:00	2150.694	68.477	08/07/24	01:26:00	2153.140	68.535
08/06/24	22:45:00	2149.023	68.355	08/07/24	00:06:00	2150.724	68.480	08/07/24	01:27:00	2153.167	68.531
08/06/24	22:46:00	2149.036	68.356	08/07/24	00:07:00	2150.758	68.479	08/07/24	01:28:00	2153.219	68.536
08/06/24	22:47:00	2149.035	68.360	08/07/24	00:08:00	2150.763	68.481	08/07/24	01:29:00	2153.253	68.531
08/06/24	22:48:00	2149.040	68.362	08/07/24	00:09:00	2150.780	68.485	08/07/24	01:30:00	2153.287	68.536
08/06/24	22:49:00	2149.042	68.360	08/07/24	00:10:00	2150.828	68.485	08/07/24	01:31:00	2153.305	68.539
08/06/24	22:50:00	2149.051	68.362	08/07/24	00:11:00	2150.841	68.486	08/07/24	01:32:00	2153.348	68.534
08/06/24	22:51:00	2149.091	68.367	08/07/24	00:12:00	2150.889	68.488	08/07/24	01:33:00	2153.388	68.538
08/06/24	22:52:00	2149.076	68.363	08/07/24	00:13:00	2150.927	68.493	08/07/24	01:34:00	2153.411	68.532
08/06/24	22:53:00	2149.091	68.369	08/07/24	00:14:00	2150.941	68.485	08/07/24	01:35:00	2153.452	68.538
08/06/24	22:54:00	2149.088	68.370	08/07/24	00:15:00	2150.973	68.489	08/07/24	01:36:00	2153.449	68.536
08/06/24	22:55:00	2149.086	68.370	08/07/24	00:16:00	2151.003	68.495	08/07/24	01:37:00	2153.399	68.535
08/06/24	22:56:00	2149.131	68.376	08/07/24	00:17:00	2151.021	68.491	08/07/24	01:38:00	2153.384	68.536
08/06/24	22:57:00	2149.135	68.376	08/07/24	00:18:00	2151.020	68.491	08/07/24	01:39:00	2153.411	68.542
08/06/24	22:58:00	2149.128	68.371	08/07/24	00:19:00	2151.006	68.494	08/07/24	01:40:00	2153.437	68.538
08/06/24	22:59:00	2149.145	68.374	08/07/24	00:20:00	2151.004	68.495	08/07/24	01:41:00	2153.451	68.539
08/06/24	23:00:00	2149.165	68.371	08/07/24	00:21:00	2151.067	68.495	08/07/24	01:42:00	2153.455	68.537
08/06/24	23:01:00	2149.195	68.378	08/07/24	00:22:00	2151.108	68.496	08/07/24	01:43:00	2153.489	68.535
08/06/24	23:02:00	2149.188	68.373	08/07/24	00:23:00	2151.155	68.500	08/07/24	01:44:00	2153.493	68.534
08/06/24	23:03:00	2149.251	68.383	08/07/24	00:24:00	2151.172	68.500	08/07/24	01:45:00	2153.533	68.536
08/06/24	23:04:00	2149.261	68.383	08/07/24	00:25:00	2151.200	68.501	08/07/24	01:46:00	2153.554	68.538
08/06/24	23:05:00	2149.291	68.388	08/07/24	00:26:00	2151.220	68.500	08/07/24	01:47:00	2153.604	68.540
08/06/24	23:06:00	2149.277	68.383	08/07/24	00:27:00	2151.272	68.506	08/07/24	01:48:00	2153.624	68.535
08/06/24	23:07:00	2149.279	68.388	08/07/24	00:28:00	2151.288	68.501	08/07/24	01:49:00	2153.635	68.538
08/06/24	23:08:00	2149.300	68.388	08/07/24	00:29:00	2151.328	68.506	08/07/24	01:50:00	2153.687	68.541
08/06/24	23:09:00	2149.313	68.385	08/07/24	00:30:00	2151.365	68.506	08/07/24	01:51:00	2153.694	68.538
08/06/24	23:10:00	2149.331	68.394	08/07/24	00:31:00	2151.394	68.509	08/07/24	01:52:00	2153.738	68.538
08/06/24	23:11:00	2149.345	68.397	08/07/24	00:32:00	2151.437	68.511	08/07/24	01:53:00	2153.776	68.540
08/06/24	23:12:00	2149.314	68.391	08/07/24	00:33:00	2151.433	68.512	08/07/24	01:54:00	2153.776	68.538
08/06/24	23:13:00	2149.314	68.398	08/07/24	00:34:00	2151.461	68.514	08/07/24	01:55:00	2153.825	68.534
08/06/24	23:14:00	2149.344	68.397	08/07/24	00:35:00	2151.485	68.513	08/07/24	01:56:00	2153.850	68.542
08/06/24	23:15:00	2149.378	68.397	08/07/24	00:36:00	2151.501	68.509	08/07/24	01:57:00	2153.899	68.542
08/06/24	23:16:00	2149.438	68.404	08/07/24	00:37:00	2151.519	68.510	08/07/24	01:58:00	2153.896	68.543
08/06/24	23:17:00	2149.451	68.401	08/07/24	00:38:00	2151.539	68.507	08/07/24	01:59:00	2153.909	68.538
08/06/24	23:18:00	2149.472	68.407	08/07/24	00:39:00	2151.578	68.512	08/07/24	02:00:00	2153.934	68.539
08/06/24	23:19:00	2149.493	68.404	08/07/24	00:40:00	2151.590	68.512	08/07/24	02:01:00	2153.958	68.540
08/06/24	23:20:00	2149.522	68.407	08/07/24	00:41:00	2151.642	68.514	08/07/24	02:02:00	2153.988	68.541
08/06/24	23:21:00	2149.518	68.410	08/07/24	00:42:00	2151.644	68.508	08/07/24	02:03:00	2153.989	68.538
08/06/24	23:22:00	2149.542	68.409	08/07/24	00:43:00	2151.681	68.514	08/07/24	02:04:00	2154.023	68.544
08/06/24	23:23:00	2149.580	68.413	08/07/24	00:44:00	2151.721	68.513	08/07/24	02:05:00	2154.041	68.541
08/06/24	23:24:00	2149.626	68.423	08/07/24	00:45:00	2151.747	68.517	08/07/24	02:06:00	2154.103	68.544
08/06/24	23:25:00	2149.625	68.414	08/07/24	00:46:00	2151.791	68.513	08/07/24	02:07:00	2154.148	68.545
08/06/24	23:26:00	2149.644	68.421	08/07/24	00:47:00	2151.840	68.518	08/07/24	02:08:00	2154.159	68.549
08/06/24	23:27:00	2149.658	68.420	08/07/24	00:48:00	2151.861	68.517	08/07/24	02:09:00	2154.184	68.542
08/06/24	23:28:00	2149.691	68.419	08/07/24	00:49:00	2151.888	68.518	08/07/24	02:10:00	2154.222	68.545

Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F
08/07/24	02:11:00	2154.228	68.547	08/07/24	03:32:00	2156.249	68.552	08/07/24	04:53:00	2158.183	68.543
08/07/24	02:12:00	2154.254	68.547	08/07/24	03:33:00	2156.278	68.554	08/07/24	04:54:00	2158.215	68.547
08/07/24	02:13:00	2154.289	68.546	08/07/24	03:34:00	2156.307	68.550	08/07/24	04:55:00	2158.273	68.545
08/07/24	02:14:00	2154.325	68.551	08/07/24	03:35:00	2156.306	68.552	08/07/24	04:56:00	2158.286	68.544
08/07/24	02:15:00	2154.323	68.542	08/07/24	03:36:00	2156.333	68.554	08/07/24	04:57:00	2158.330	68.546
08/07/24	02:16:00	2154.353	68.541	08/07/24	03:37:00	2156.310	68.545	08/07/24	04:58:00	2158.350	68.550
08/07/24	02:17:00	2154.402	68.546	08/07/24	03:38:00	2156.395	68.553	08/07/24	04:59:00	2158.351	68.546
08/07/24	02:18:00	2154.420	68.549	08/07/24	03:39:00	2156.412	68.547	08/07/24	05:00:00	2158.366	68.546
08/07/24	02:19:00	2154.448	68.551	08/07/24	03:40:00	2156.451	68.552	08/07/24	05:01:00	2158.398	68.544
08/07/24	02:20:00	2154.466	68.550	08/07/24	03:41:00	2156.501	68.550	08/07/24	05:02:00	2158.412	68.544
08/07/24	02:21:00	2154.470	68.545	08/07/24	03:42:00	2156.525	68.554	08/07/24	05:03:00	2158.433	68.544
08/07/24	02:22:00	2154.514	68.548	08/07/24	03:43:00	2156.534	68.551	08/07/24	05:04:00	2158.424	68.543
08/07/24	02:23:00	2154.543	68.547	08/07/24	03:44:00	2156.570	68.548	08/07/24	05:05:00	2158.453	68.542
08/07/24	02:24:00	2154.563	68.548	08/07/24	03:45:00	2156.563	68.547	08/07/24	05:06:00	2158.490	68.548
08/07/24	02:25:00	2154.579	68.550	08/07/24	03:46:00	2156.562	68.545	08/07/24	05:07:00	2158.485	68.546
08/07/24	02:26:00	2154.609	68.545	08/07/24	03:47:00	2156.583	68.549	08/07/24	05:08:00	2158.490	68.548
08/07/24	02:27:00	2154.646	68.549	08/07/24	03:48:00	2156.586	68.550	08/07/24	05:09:00	2158.513	68.544
08/07/24	02:28:00	2154.673	68.549	08/07/24	03:49:00	2156.639	68.554	08/07/24	05:10:00	2158.524	68.547
08/07/24	02:29:00	2154.710	68.547	08/07/24	03:50:00	2156.631	68.551	08/07/24	05:11:00	2158.542	68.545
08/07/24	02:30:00	2154.722	68.547	08/07/24	03:51:00	2156.696	68.553	08/07/24	05:12:00	2158.530	68.540
08/07/24	02:31:00	2154.767	68.550	08/07/24	03:52:00	2156.738	68.555	08/07/24	05:13:00	2158.531	68.539
08/07/24	02:32:00	2154.799	68.546	08/07/24	03:53:00	2156.752	68.548	08/07/24	05:14:00	2158.541	68.540
08/07/24	02:33:00	2154.820	68.552	08/07/24	03:54:00	2156.738	68.544	08/07/24	05:15:00	2158.589	68.540
08/07/24	02:34:00	2154.827	68.548	08/07/24	03:55:00	2156.785	68.550	08/07/24	05:16:00	2158.591	68.548
08/07/24	02:35:00	2154.870	68.546	08/07/24	03:56:00	2156.821	68.550	08/07/24	05:17:00	2158.597	68.546
08/07/24	02:36:00	2154.918	68.546	08/07/24	03:57:00	2156.839	68.546	08/07/24	05:18:00	2158.612	68.543
08/07/24	02:37:00	2154.941	68.547	08/07/24	03:58:00	2156.848	68.548	08/07/24	05:19:00	2158.626	68.538
08/07/24	02:38:00	2154.971	68.548	08/07/24	03:59:00	2156.882	68.549	08/07/24	05:20:00	2158.631	68.540
08/07/24	02:39:00	2154.993	68.548	08/07/24	04:00:00	2156.919	68.550	08/07/24	05:21:00	2158.629	68.541
08/07/24	02:40:00	2155.006	68.549	08/07/24	04:01:00	2156.938	68.551	08/07/24	05:22:00	2158.646	68.539
08/07/24	02:41:00	2155.043	68.551	08/07/24	04:02:00	2156.976	68.552	08/07/24	05:23:00	2158.681	68.539
08/07/24	02:42:00	2155.050	68.554	08/07/24	04:03:00	2156.991	68.551	08/07/24	05:24:00	2158.693	68.541
08/07/24	02:43:00	2155.068	68.550	08/07/24	04:04:00	2156.992	68.547	08/07/24	05:25:00	2158.683	68.535
08/07/24	02:44:00	2155.103	68.549	08/07/24	04:05:00	2157.038	68.551	08/07/24	05:26:00	2158.712	68.536
08/07/24	02:45:00	2155.143	68.556	08/07/24	04:06:00	2157.051	68.552	08/07/24	05:27:00	2158.763	68.543
08/07/24	02:46:00	2155.162	68.551	08/07/24	04:07:00	2157.084	68.550	08/07/24	05:28:00	2158.778	68.541
08/07/24	02:47:00	2155.185	68.554	08/07/24	04:08:00	2157.103	68.547	08/07/24	05:29:00	2158.790	68.539
08/07/24	02:48:00	2155.179	68.552	08/07/24	04:09:00	2157.146	68.551	08/07/24	05:30:00	2158.794	68.537
08/07/24	02:49:00	2155.186	68.548	08/07/24	04:10:00	2157.146	68.549	08/07/24	05:31:00	2158.819	68.538
08/07/24	02:50:00	2155.235	68.553	08/07/24	04:11:00	2157.194	68.553	08/07/24	05:32:00	2158.820	68.541
08/07/24	02:51:00	2155.258	68.551	08/07/24	04:12:00	2157.198	68.548	08/07/24	05:33:00	2158.852	68.538
08/07/24	02:52:00	2155.280	68.551	08/07/24	04:13:00	2157.228	68.551	08/07/24	05:34:00	2158.882	68.540
08/07/24	02:53:00	2155.283	68.548	08/07/24	04:14:00	2157.260	68.553	08/07/24	05:35:00	2158.920	68.540
08/07/24	02:54:00	2155.327	68.553	08/07/24	04:15:00	2157.253	68.545	08/07/24	05:36:00	2158.930	68.539
08/07/24	02:55:00	2155.337	68.551	08/07/24	04:16:00	2157.278	68.554	08/07/24	05:37:00	2158.920	68.536
08/07/24	02:56:00	2155.349	68.549	08/07/24	04:17:00	2157.301	68.549	08/07/24	05:38:00	2158.949	68.539
08/07/24	02:57:00	2155.372	68.552	08/07/24	04:18:00	2157.307	68.549	08/07/24	05:39:00	2158.974	68.536
08/07/24	02:58:00	2155.403	68.553	08/07/24	04:19:00	2157.339	68.551	08/07/24	05:40:00	2159.001	68.532
08/07/24	02:59:00	2155.407	68.549	08/07/24	04:20:00	2157.374	68.548	08/07/24	05:41:00	2159.023	68.536
08/07/24	03:00:00	2155.424	68.551	08/07/24	04:21:00	2157.397	68.548	08/07/24	05:42:00	2159.052	68.533
08/07/24	03:01:00	2155.431	68.550	08/07/24	04:22:00	2157.405	68.547	08/07/24	05:43:00	2159.054	68.533
08/07/24	03:02:00	2155.477	68.549	08/07/24	04:23:00	2157.433	68.550	08/07/24	05:44:00	2159.085	68.533
08/07/24	03:03:00	2155.507	68.548	08/07/24	04:24:00	2157.463	68.551	08/07/24	05:45:00	2159.123	68.538
08/07/24	03:04:00	2155.563	68.557	08/07/24	04:25:00	2157.478	68.555	08/07/24	05:46:00	2159.152	68.538
08/07/24	03:05:00	2155.563	68.549	08/07/24	04:26:00	2157.498	68.548	08/07/24	05:47:00	2159.149	68.533
08/07/24	03:06:00	2155.604	68.554	08/07/24	04:27:00	2157.479	68.549	08/07/24	05:48:00	2159.182	68.535
08/07/24	03:07:00	2155.622	68.555	08/07/24	04:28:00	2157.532	68.553	08/07/24	05:49:00	2159.215	68.538
08/07/24	03:08:00	2155.650	68.551	08/07/24	04:29:00	2157.544	68.549	08/07/24	05:50:00	2159.223	68.530
08/07/24	03:09:00	2155.665	68.549	08/07/24	04:30:00	2157.575	68.553	08/07/24	05:51:00	2159.227	68.532
08/07/24	03:10:00	2155.707	68.555	08/07/24	04:31:00	2157.596	68.549	08/07/24	05:52:00	2159.256	68.533
08/07/24	03:11:00	2155.720	68.547	08/07/24	04:32:00	2157.632	68.554	08/07/24	05:53:00	2159.288	68.535
08/07/24	03:12:00	2155.758	68.551	08/07/24	04:33:00	2157.611	68.542	08/07/24	05:54:00	2159.303	68.533
08/07/24	03:13:00	2155.784	68.549	08/07/24	04:34:00	2157.664	68.548	08/07/24	05:55:00	2159.313	68.536
08/07/24	03:14:00	2155.791	68.545	08/07/24	04:35:00	2157.686	68.550	08/07/24	05:56:00	2159.313	68.536
08/07/24	03:15:00	2155.802	68.552	08/07/24	04:36:00	2157.716	68.549	08/07/24	05:57:00	2159.299	68.533
08/07/24	03:16:00	2155.833	68.552	08/07/24	04:37:00	2157.712	68.544	08/07/24	05:58:00	2159.337	68.537
08/07/24	03:17:00	2155.846	68.552	08/07/24	04:38:00	2157.749	68.545	08/07/24	05:59:00	2159.366	68.536
08/07/24	03:18:00	2155.854	68.547	08/07/24	04:39:00	2157.784	68.551	08/07/24	06:00:00	2159.362	68.532
08/07/24	03:19:00	2155.906	68.549	08/07/24	04:40:00	2157.797	68.548	08/07/24	06:01:00	2159.375	68.533
08/07/24	03:20:00	2155.920	68.550	08/07/24	04:41:00	2157.819	68.554	08/07/24	06:02:00	2159.401	68.535
08/07/24	03:21:00	2155.956	68.551	08/07/24	04:42:00	2157.842	68.544	08/07/24	06:03:00	2159.428	68.535
08/07/24	03:22:00	2155.976	68.549	08/07/24	04:43:00	2157.865	68.549	08/07/24	06:04:00	2159.435	68.540
08/07/24	03:23:00	2155.996	68.552	08/07/24	04:44:00	2157.866	68.541	08/07/24	06:05:00	2159.438	68.528
08/07/24	03:24:00	2156.030	68.551	08/07/24	04:45:00	2157.897	68.547	08/07/24	06:06:00	2159.501	68.536
08/07/24	03:25:00	2156.058	68.554	08/07/24	04:46:00	2157.931	68.543	08/07/24	06:07:00	2159.501	68.532
08/07/24	03:26:00	2156.093	68.552	08/07/24	04:47:00	2157.936	68.543	08/07/24	06:08:00	2159.519	68.527
08/07/24	03:27:00	2156.108	68.552	08/07/24	04:48:00	2157.979	68.547	08/07/24	06:09:00	2159.567	68.531
08/07/24	03:28:00	2156.113	68.550	08/07/24	04:49:00	2158.026	68.551	08/07/24	06:10:00	2159.578	68.533
08/07/24	03:29:00	2156.173	68.556	08/07/24	04:50:00	2158.056	68.548	08/07/24	06:11:00	2159.582	68.530
08/07/24	03:30:00	2156.205	68.554	08/07/24	04:51:00	2158.100	68.548	08/07/24	06:12:00	2159.612	68.534
08/07/24	03:31:00	2156.197	68.549	08/07/24	04:52:00	2158.158	68.548	08/07/24	06:13:00	2159.576	68.530

APPENDIX H, Continued
Pressure/Time Data Recorded During the Pressure Transient Test

Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F
08/07/24	06:14:00	2159.613	68.530	08/07/24	07:35:00	1902.392	70.029	08/07/24	08:56:00	1891.532	71.171
08/07/24	06:15:00	2159.618	68.534	08/07/24	07:36:00	1902.172	70.044	08/07/24	08:57:00	1891.445	71.180
08/07/24	06:16:00	2159.613	68.532	08/07/24	07:37:00	1901.953	70.058	08/07/24	08:58:00	1891.361	71.191
08/07/24	06:17:00	2159.634	68.532	08/07/24	07:38:00	1901.734	70.080	08/07/24	08:59:00	1891.274	71.202
08/07/24	06:18:00	2159.670	68.531	08/07/24	07:39:00	1901.477	70.095	08/07/24	09:00:00	1891.220	71.219
08/07/24	06:19:00	2159.710	68.532	08/07/24	07:40:00	1901.267	70.116	08/07/24	09:01:00	1891.083	71.222
08/07/24	06:20:00	2159.698	68.526	08/07/24	07:41:00	1901.129	70.129	08/07/24	09:02:00	1890.989	71.235
08/07/24	06:21:00	2159.715	68.524	08/07/24	07:42:00	1900.963	70.148	08/07/24	09:03:00	1890.929	71.247
08/07/24	06:22:00	2159.744	68.531	08/07/24	07:43:00	1900.698	70.159	08/07/24	09:04:00	1890.857	71.258
08/07/24	06:23:00	2159.757	68.530	08/07/24	07:44:00	1900.560	70.179	08/07/24	09:05:00	1890.775	71.269
08/07/24	06:24:00	2159.771	68.529	08/07/24	07:45:00	1900.328	70.192	08/07/24	09:06:00	1890.701	71.277
08/07/24	06:25:00	2159.812	68.530	08/07/24	07:46:00	1900.101	70.209	08/07/24	09:07:00	1890.652	71.294
08/07/24	06:26:00	2159.857	68.533	08/07/24	07:47:00	1899.939	70.228	08/07/24	09:08:00	1890.566	71.303
08/07/24	06:27:00	2159.866	68.530	08/07/24	07:48:00	1899.803	70.246	08/07/24	09:09:00	1890.487	71.309
08/07/24	06:28:00	2159.898	68.528	08/07/24	07:49:00	1899.590	70.268	08/07/24	09:10:00	1890.394	71.330
08/07/24	06:29:00	2057.572	68.524	08/07/24	07:50:00	1899.417	70.281	08/07/24	09:11:00	1890.334	71.336
08/07/24	06:30:00	2008.829	68.533	08/07/24	07:51:00	1899.258	70.299	08/07/24	09:12:00	1890.265	71.356
08/07/24	06:31:00	1988.982	68.566	08/07/24	07:52:00	1899.042	70.315	08/07/24	09:13:00	1890.164	71.361
08/07/24	06:32:00	1976.616	68.593	08/07/24	07:53:00	1898.900	70.329	08/07/24	09:14:00	1890.117	71.367
08/07/24	06:33:00	1967.946	68.626	08/07/24	07:54:00	1898.749	70.343	08/07/24	09:15:00	1890.057	71.381
08/07/24	06:34:00	1960.865	68.659	08/07/24	07:55:00	1898.597	70.361	08/07/24	09:16:00	1889.964	71.392
08/07/24	06:35:00	1955.442	68.702	08/07/24	07:56:00	1898.454	70.371	08/07/24	09:17:00	1889.894	71.399
08/07/24	06:36:00	1950.922	68.734	08/07/24	07:57:00	1898.200	70.385	08/07/24	09:18:00	1889.821	71.407
08/07/24	06:37:00	1947.115	68.759	08/07/24	07:58:00	1898.115	70.402	08/07/24	09:19:00	1889.745	71.416
08/07/24	06:38:00	1943.670	68.790	08/07/24	07:59:00	1897.991	70.421	08/07/24	09:20:00	1889.689	71.430
08/07/24	06:39:00	1940.911	68.817	08/07/24	08:00:00	1897.823	70.437	08/07/24	09:21:00	1889.597	71.437
08/07/24	06:40:00	1938.297	68.848	08/07/24	08:01:00	1897.647	70.447	08/07/24	09:22:00	1889.543	71.451
08/07/24	06:41:00	1935.961	68.868	08/07/24	08:02:00	1897.482	70.462	08/07/24	09:23:00	1889.483	71.463
08/07/24	06:42:00	1933.904	68.882	08/07/24	08:03:00	1897.340	70.468	08/07/24	09:24:00	1889.415	71.466
08/07/24	06:43:00	1932.122	68.915	08/07/24	08:04:00	1897.190	70.492	08/07/24	09:25:00	1889.335	71.480
08/07/24	06:44:00	1930.332	68.944	08/07/24	08:05:00	1897.053	70.501	08/07/24	09:26:00	1889.273	71.491
08/07/24	06:45:00	1928.775	68.979	08/07/24	08:06:00	1896.868	70.512	08/07/24	09:27:00	1889.216	71.497
08/07/24	06:46:00	1927.354	69.006	08/07/24	08:07:00	1896.763	70.527	08/07/24	09:28:00	1889.141	71.509
08/07/24	06:47:00	1926.030	69.023	08/07/24	08:08:00	1896.671	70.546	08/07/24	09:29:00	1889.069	71.520
08/07/24	06:48:00	1924.874	69.048	08/07/24	08:09:00	1896.540	70.564	08/07/24	09:30:00	1889.021	71.532
08/07/24	06:49:00	1923.661	69.067	08/07/24	08:10:00	1896.413	70.577	08/07/24	09:31:00	1888.965	71.541
08/07/24	06:50:00	1922.668	69.100	08/07/24	08:11:00	1896.249	70.597	08/07/24	09:32:00	1888.881	71.547
08/07/24	06:51:00	1921.668	69.118	08/07/24	08:12:00	1896.101	70.612	08/07/24	09:33:00	1888.802	71.555
08/07/24	06:52:00	1920.717	69.141	08/07/24	08:13:00	1896.005	70.625	08/07/24	09:34:00	1888.767	71.568
08/07/24	06:53:00	1919.720	69.168	08/07/24	08:14:00	1895.868	70.642	08/07/24	09:35:00	1888.711	71.579
08/07/24	06:54:00	1919.020	69.207	08/07/24	08:15:00	1895.718	70.652	08/07/24	09:36:00	1888.629	71.590
08/07/24	06:55:00	1918.189	69.231	08/07/24	08:16:00	1895.591	70.677	08/07/24	09:37:00	1888.565	71.593
08/07/24	06:56:00	1917.505	69.253	08/07/24	08:17:00	1895.504	70.684	08/07/24	09:38:00	1888.463	71.602
08/07/24	06:57:00	1916.778	69.283	08/07/24	08:18:00	1895.323	70.697	08/07/24	09:39:00	1888.461	71.620
08/07/24	06:58:00	1916.138	69.301	08/07/24	08:19:00	1895.187	70.710	08/07/24	09:40:00	1888.343	71.618
08/07/24	06:59:00	1915.520	69.318	08/07/24	08:20:00	1895.101	70.722	08/07/24	09:41:00	1888.309	71.634
08/07/24	07:00:00	1914.887	69.339	08/07/24	08:21:00	1894.993	70.738	08/07/24	09:42:00	1888.248	71.643
08/07/24	07:01:00	1914.313	69.370	08/07/24	08:22:00	1894.824	70.752	08/07/24	09:43:00	1888.196	71.651
08/07/24	07:02:00	1913.744	69.382	08/07/24	08:23:00	1894.762	70.767	08/07/24	09:44:00	1888.142	71.661
08/07/24	07:03:00	1913.138	69.394	08/07/24	08:24:00	1894.628	70.786	08/07/24	09:45:00	1888.087	71.670
08/07/24	07:04:00	1912.631	69.419	08/07/24	08:25:00	1894.561	70.797	08/07/24	09:46:00	1888.033	71.682
08/07/24	07:05:00	1912.182	69.444	08/07/24	08:26:00	1894.452	70.808	08/07/24	09:47:00	1887.971	71.685
08/07/24	07:06:00	1911.704	69.463	08/07/24	08:27:00	1894.318	70.816	08/07/24	09:48:00	1887.911	71.697
08/07/24	07:07:00	1911.271	69.494	08/07/24	08:28:00	1894.165	70.822	08/07/24	09:49:00	1887.847	71.706
08/07/24	07:08:00	1910.763	69.512	08/07/24	08:29:00	1894.090	70.841	08/07/24	09:50:00	1887.798	71.718
08/07/24	07:09:00	1910.311	69.535	08/07/24	08:30:00	1893.956	70.848	08/07/24	09:51:00	1887.737	71.720
08/07/24	07:10:00	1909.940	69.554	08/07/24	08:31:00	1893.891	70.867	08/07/24	09:52:00	1887.690	71.733
08/07/24	07:11:00	1909.599	69.583	08/07/24	08:32:00	1893.785	70.878	08/07/24	09:53:00	1887.641	71.744
08/07/24	07:12:00	1909.078	69.607	08/07/24	08:33:00	1893.698	70.891	08/07/24	09:54:00	1887.556	71.752
08/07/24	07:13:00	1908.692	69.624	08/07/24	08:34:00	1893.578	70.900	08/07/24	09:55:00	1887.490	71.758
08/07/24	07:14:00	1908.346	69.641	08/07/24	08:35:00	1893.503	70.917	08/07/24	09:56:00	1887.455	71.764
08/07/24	07:15:00	1907.977	69.659	08/07/24	08:36:00	1893.345	70.930	08/07/24	09:57:00	1887.421	71.773
08/07/24	07:16:00	1907.625	69.674	08/07/24	08:37:00	1893.297	70.945	08/07/24	09:58:00	1887.351	71.787
08/07/24	07:17:00	1907.303	69.700	08/07/24	08:38:00	1893.160	70.956	08/07/24	09:59:00	1887.297	71.795
08/07/24	07:18:00	1906.961	69.722	08/07/24	08:39:00	1893.030	70.965	08/07/24	10:00:00	1887.233	71.800
08/07/24	07:19:00	1906.687	69.739	08/07/24	08:40:00	1892.975	70.981	08/07/24	10:01:00	1887.187	71.815
08/07/24	07:20:00	1906.381	69.760	08/07/24	08:41:00	1892.851	70.993	08/07/24	10:02:00	1887.138	71.822
08/07/24	07:21:00	1906.053	69.784	08/07/24	08:42:00	1892.785	70.999	08/07/24	10:03:00	1887.094	71.831
08/07/24	07:22:00	1905.827	69.807	08/07/24	08:43:00	1892.685	71.017	08/07/24	10:04:00	1887.014	71.839
08/07/24	07:23:00	1905.443	69.825	08/07/24	08:44:00	1892.612	71.030	08/07/24	10:05:00	1886.979	71.849
08/07/24	07:24:00	1905.134	69.836	08/07/24	08:45:00	1892.470	71.041	08/07/24	10:06:00	1886.945	71.856
08/07/24	07:25:00	1904.863	69.847	08/07/24	08:46:00	1892.417	71.055	08/07/24	10:07:00	1886.842	71.863
08/07/24	07:26:00	1904.614	69.877	08/07/24	08:47:00	1892.327	71.068	08/07/24	10:08:00	1886.837	71.877
08/07/24	07:27:00	1904.366	69.897	08/07/24	08:48:00	1892.251	71.079	08/07/24	10:09:00	1886.788	71.882
08/07/24	07:28:00	1904.080	69.911	08/07/24	08:49:00	1892.148	71.093	08/07/24	10:10:00	1886.729	71.887
08/07/24	07:29:00	1903.791	69.928	08/07/24	08:50:00	1892.059	71.104	08/07/24	10:11:00	1886.676	71.899
08/07/24	07:30:00	1903.598	69.942	08/07/24	08:51:00	1891.950	71.113	08/07/24	10:12:00	1886.615	71.906
08/07/24	07:31:00	1903.370	69.956	08/07/24	08:52:00	1891.863	71.124	08/07/24	10:13:00	1886.583	71.913
08/07/24	07:32:00	1903.067	69.971	08/07/24	08:53:00	1891.781	71.136	08/07/24	10:14:00	1886.530	71.923
08/07/24	07:33:00	1902.865	69.989	08/07/24	08:54:00	1891.689	71.147	08/07/24	10:15:00	1886.474	71.929
08/07/24	07:34:00	1902.670	70.012	08/07/24	08:55:00	1891.624	71.162	08/07/24	10:16:00	1886.434	71.937

Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F
08/07/24	10:17:00	1886.390	71.942	08/07/24	11:38:00	1883.166	72.508	08/07/24	12:59:00	1880.815	72.918
08/07/24	10:18:00	1886.295	71.957	08/07/24	11:39:00	1883.122	72.511	08/07/24	13:00:00	1880.790	72.919
08/07/24	10:19:00	1886.285	71.960	08/07/24	11:40:00	1883.093	72.514	08/07/24	13:01:00	1880.787	72.928
08/07/24	10:20:00	1886.216	71.970	08/07/24	11:41:00	1883.055	72.519	08/07/24	13:02:00	1880.765	72.932
08/07/24	10:21:00	1886.192	71.978	08/07/24	11:42:00	1883.007	72.526	08/07/24	13:03:00	1880.722	72.935
08/07/24	10:22:00	1886.139	71.986	08/07/24	11:43:00	1882.999	72.537	08/07/24	13:04:00	1880.712	72.938
08/07/24	10:23:00	1886.096	71.991	08/07/24	11:44:00	1882.951	72.540	08/07/24	13:05:00	1880.683	72.944
08/07/24	10:24:00	1886.052	72.002	08/07/24	11:45:00	1882.919	72.545	08/07/24	13:06:00	1880.658	72.950
08/07/24	10:25:00	1885.999	72.007	08/07/24	11:46:00	1882.909	72.550	08/07/24	13:07:00	1880.634	72.953
08/07/24	10:26:00	1885.949	72.016	08/07/24	11:47:00	1882.858	72.556	08/07/24	13:08:00	1880.624	72.958
08/07/24	10:27:00	1885.927	72.028	08/07/24	11:48:00	1882.829	72.565	08/07/24	13:09:00	1880.604	72.964
08/07/24	10:28:00	1885.859	72.034	08/07/24	11:49:00	1882.791	72.572	08/07/24	13:10:00	1880.568	72.969
08/07/24	10:29:00	1885.803	72.040	08/07/24	11:50:00	1882.752	72.571	08/07/24	13:11:00	1880.524	72.969
08/07/24	10:30:00	1885.782	72.052	08/07/24	11:51:00	1882.726	72.581	08/07/24	13:12:00	1880.500	72.968
08/07/24	10:31:00	1885.733	72.057	08/07/24	11:52:00	1882.708	72.588	08/07/24	13:13:00	1880.500	72.980
08/07/24	10:32:00	1885.687	72.065	08/07/24	11:53:00	1882.665	72.590	08/07/24	13:14:00	1880.458	72.985
08/07/24	10:33:00	1885.623	72.070	08/07/24	11:54:00	1882.624	72.596	08/07/24	13:15:00	1880.433	72.986
08/07/24	10:34:00	1885.593	72.081	08/07/24	11:55:00	1882.591	72.600	08/07/24	13:16:00	1880.417	72.994
08/07/24	10:35:00	1885.551	72.088	08/07/24	11:56:00	1882.555	72.606	08/07/24	13:17:00	1880.403	72.994
08/07/24	10:36:00	1885.515	72.096	08/07/24	11:57:00	1882.563	72.617	08/07/24	13:18:00	1880.374	73.001
08/07/24	10:37:00	1885.449	72.096	08/07/24	11:58:00	1882.513	72.616	08/07/24	13:19:00	1880.347	73.005
08/07/24	10:38:00	1885.405	72.105	08/07/24	11:59:00	1882.487	72.621	08/07/24	13:20:00	1880.317	73.004
08/07/24	10:39:00	1885.381	72.118	08/07/24	12:00:00	1882.461	72.626	08/07/24	13:21:00	1880.298	73.015
08/07/24	10:40:00	1885.319	72.122	08/07/24	12:01:00	1882.428	72.636	08/07/24	13:22:00	1880.272	73.013
08/07/24	10:41:00	1885.297	72.131	08/07/24	12:02:00	1882.413	72.641	08/07/24	13:23:00	1880.234	73.020
08/07/24	10:42:00	1885.243	72.138	08/07/24	12:03:00	1882.384	72.647	08/07/24	13:24:00	1880.227	73.019
08/07/24	10:43:00	1885.199	72.145	08/07/24	12:04:00	1882.344	72.646	08/07/24	13:25:00	1880.208	73.025
08/07/24	10:44:00	1885.171	72.154	08/07/24	12:05:00	1882.290	72.654	08/07/24	13:26:00	1880.169	73.029
08/07/24	10:45:00	1885.125	72.160	08/07/24	12:06:00	1882.254	72.657	08/07/24	13:27:00	1880.157	73.036
08/07/24	10:46:00	1885.082	72.170	08/07/24	12:07:00	1882.228	72.664	08/07/24	13:28:00	1880.136	73.039
08/07/24	10:47:00	1885.024	72.170	08/07/24	12:08:00	1882.208	72.672	08/07/24	13:29:00	1880.124	73.048
08/07/24	10:48:00	1885.031	72.185	08/07/24	12:09:00	1882.165	72.674	08/07/24	13:30:00	1880.085	73.047
08/07/24	10:49:00	1884.966	72.192	08/07/24	12:10:00	1882.140	72.680	08/07/24	13:31:00	1880.077	73.053
08/07/24	10:50:00	1884.921	72.194	08/07/24	12:11:00	1882.129	72.690	08/07/24	13:32:00	1880.050	73.056
08/07/24	10:51:00	1884.880	72.204	08/07/24	12:12:00	1882.114	72.693	08/07/24	13:33:00	1879.998	73.052
08/07/24	10:52:00	1884.847	72.214	08/07/24	12:13:00	1882.055	72.695	08/07/24	13:34:00	1879.999	73.059
08/07/24	10:53:00	1884.786	72.218	08/07/24	12:14:00	1882.037	72.704	08/07/24	13:35:00	1879.988	73.069
08/07/24	10:54:00	1884.747	72.229	08/07/24	12:15:00	1882.024	72.710	08/07/24	13:36:00	1879.927	73.063
08/07/24	10:55:00	1884.701	72.230	08/07/24	12:16:00	1882.000	72.714	08/07/24	13:37:00	1879.937	73.077
08/07/24	10:56:00	1884.693	72.246	08/07/24	12:17:00	1881.956	72.716	08/07/24	13:38:00	1879.914	73.079
08/07/24	10:57:00	1884.623	72.243	08/07/24	12:18:00	1881.932	72.727	08/07/24	13:39:00	1879.893	73.082
08/07/24	10:58:00	1884.569	72.246	08/07/24	12:19:00	1881.890	72.730	08/07/24	13:40:00	1879.860	73.087
08/07/24	10:59:00	1884.544	72.256	08/07/24	12:20:00	1881.867	72.734	08/07/24	13:41:00	1879.841	73.093
08/07/24	11:00:00	1884.522	72.268	08/07/24	12:21:00	1881.847	72.739	08/07/24	13:42:00	1879.829	73.092
08/07/24	11:01:00	1884.472	72.270	08/07/24	12:22:00	1881.814	72.746	08/07/24	13:43:00	1879.800	73.096
08/07/24	11:02:00	1884.451	72.284	08/07/24	12:23:00	1881.764	72.746	08/07/24	13:44:00	1879.769	73.096
08/07/24	11:03:00	1884.385	72.286	08/07/24	12:24:00	1881.773	72.757	08/07/24	13:45:00	1879.762	73.105
08/07/24	11:04:00	1884.366	72.290	08/07/24	12:25:00	1881.721	72.758	08/07/24	13:46:00	1879.740	73.107
08/07/24	11:05:00	1884.338	72.303	08/07/24	12:26:00	1881.693	72.760	08/07/24	13:47:00	1879.735	73.115
08/07/24	11:06:00	1884.271	72.305	08/07/24	12:27:00	1881.668	72.768	08/07/24	13:48:00	1879.698	73.115
08/07/24	11:07:00	1884.241	72.311	08/07/24	12:28:00	1881.634	72.767	08/07/24	13:49:00	1879.695	73.121
08/07/24	11:08:00	1884.196	72.319	08/07/24	12:29:00	1881.594	72.771	08/07/24	13:50:00	1879.665	73.125
08/07/24	11:09:00	1884.157	72.326	08/07/24	12:30:00	1881.600	72.785	08/07/24	13:51:00	1879.608	73.126
08/07/24	11:10:00	1884.103	72.328	08/07/24	12:31:00	1881.560	72.789	08/07/24	13:52:00	1879.587	73.128
08/07/24	11:11:00	1884.094	72.341	08/07/24	12:32:00	1881.525	72.790	08/07/24	13:53:00	1879.587	73.135
08/07/24	11:12:00	1884.056	72.341	08/07/24	12:33:00	1881.494	72.796	08/07/24	13:54:00	1879.551	73.136
08/07/24	11:13:00	1884.020	72.351	08/07/24	12:34:00	1881.482	72.798	08/07/24	13:55:00	1879.525	73.142
08/07/24	11:14:00	1883.979	72.362	08/07/24	12:35:00	1881.455	72.807	08/07/24	13:56:00	1879.536	73.146
08/07/24	11:15:00	1883.948	72.365	08/07/24	12:36:00	1881.419	72.811	08/07/24	13:57:00	1879.508	73.146
08/07/24	11:16:00	1883.913	72.373	08/07/24	12:37:00	1881.412	72.817	08/07/24	13:58:00	1879.480	73.155
08/07/24	11:17:00	1883.881	72.376	08/07/24	12:38:00	1881.405	72.826	08/07/24	13:59:00	1879.461	73.154
08/07/24	11:18:00	1883.845	72.382	08/07/24	12:39:00	1881.364	72.829	08/07/24	14:00:00	1879.443	73.160
08/07/24	11:19:00	1883.808	72.389	08/07/24	12:40:00	1881.310	72.832	08/07/24	14:01:00	1879.410	73.165
08/07/24	11:20:00	1883.785	72.400	08/07/24	12:41:00	1881.293	72.836	08/07/24	14:02:00	1879.378	73.165
08/07/24	11:21:00	1883.734	72.399	08/07/24	12:42:00	1881.268	72.837	08/07/24	14:03:00	1879.371	73.172
08/07/24	11:22:00	1883.694	72.408	08/07/24	12:43:00	1881.226	72.842	08/07/24	14:04:00	1879.345	73.177
08/07/24	11:23:00	1883.638	72.414	08/07/24	12:44:00	1881.233	72.855	08/07/24	14:05:00	1879.325	73.177
08/07/24	11:24:00	1883.620	72.423	08/07/24	12:45:00	1881.186	72.855	08/07/24	14:06:00	1879.307	73.179
08/07/24	11:25:00	1883.594	72.423	08/07/24	12:46:00	1881.165	72.858	08/07/24	14:07:00	1879.264	73.181
08/07/24	11:26:00	1883.550	72.435	08/07/24	12:47:00	1881.141	72.862	08/07/24	14:08:00	1879.286	73.191
08/07/24	11:27:00	1883.513	72.437	08/07/24	12:48:00	1881.088	72.867	08/07/24	14:09:00	1879.260	73.192
08/07/24	11:28:00	1883.510	72.453	08/07/24	12:49:00	1881.090	72.871	08/07/24	14:10:00	1879.219	73.197
08/07/24	11:29:00	1883.435	72.451	08/07/24	12:50:00	1881.062	72.877	08/07/24	14:11:00	1879.204	73.195
08/07/24	11:30:00	1883.419	72.455	08/07/24	12:51:00	1881.048	72.881	08/07/24	14:12:00	1879.210	73.205
08/07/24	11:31:00	1883.398	72.463	08/07/24	12:52:00	1881.003	72.889	08/07/24	14:13:00	1879.182	73.210
08/07/24	11:32:00	1883.350	72.468	08/07/24	12:53:00	1880.977	72.890	08/07/24	14:14:00	1879.162	73.210
08/07/24	11:33:00	1883.321	72.472	08/07/24	12:54:00	1880.966	72.897	08/07/24	14:15:00	1879.142	73.214
08/07/24	11:34:00	1883.286	72.478	08/07/24	12:55:00	1880.923	72.897	08/07/24	14:16:00	1879.113	73.217
08/07/24	11:35:00	1883.251	72.486	08/07/24	12:56:00	1880.931	72.908	08/07/24	14:17:00	1879.081	73.220
08/07/24	11:36:00	1883.209	72.494	08/07/24	12:57:00	1880.880	72.909	08/07/24	14:18:00	1879.073	73.224
08/07/24	11:37:00	1883.187	72.501	08/07/24	12:58:00	1880.846	72.913	08/07/24	14:19:00	1879.060	73.223

APPENDIX H, Continued
Pressure/Time Data Recorded During the Pressure Transient Test

Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F
08/07/24	14:20:00	1879.019	73.228	08/07/24	15:41:00	1877.562	73.471	08/07/24	17:02:00	1876.311	73.662
08/07/24	14:21:00	1879.012	73.232	08/07/24	15:42:00	1877.564	73.479	08/07/24	17:03:00	1876.330	73.668
08/07/24	14:22:00	1878.996	73.237	08/07/24	15:43:00	1877.550	73.480	08/07/24	17:04:00	1876.310	73.669
08/07/24	14:23:00	1878.984	73.242	08/07/24	15:44:00	1877.546	73.484	08/07/24	17:05:00	1876.305	73.676
08/07/24	14:24:00	1878.962	73.246	08/07/24	15:45:00	1877.504	73.481	08/07/24	17:06:00	1876.291	73.672
08/07/24	14:25:00	1878.948	73.252	08/07/24	15:46:00	1877.489	73.482	08/07/24	17:07:00	1876.271	73.678
08/07/24	14:26:00	1878.926	73.249	08/07/24	15:47:00	1877.498	73.491	08/07/24	17:08:00	1876.247	73.672
08/07/24	14:27:00	1878.901	73.258	08/07/24	15:48:00	1877.464	73.490	08/07/24	17:09:00	1876.243	73.682
08/07/24	14:28:00	1878.873	73.260	08/07/24	15:49:00	1877.439	73.493	08/07/24	17:10:00	1876.256	73.686
08/07/24	14:29:00	1878.845	73.254	08/07/24	15:50:00	1877.429	73.496	08/07/24	17:11:00	1876.215	73.687
08/07/24	14:30:00	1878.844	73.266	08/07/24	15:51:00	1877.424	73.501	08/07/24	17:12:00	1876.186	73.684
08/07/24	14:31:00	1878.810	73.265	08/07/24	15:52:00	1877.383	73.502	08/07/24	17:13:00	1876.197	73.688
08/07/24	14:32:00	1878.795	73.271	08/07/24	15:53:00	1877.369	73.503	08/07/24	17:14:00	1876.190	73.690
08/07/24	14:33:00	1878.771	73.267	08/07/24	15:54:00	1877.344	73.506	08/07/24	17:15:00	1876.150	73.691
08/07/24	14:34:00	1878.780	73.276	08/07/24	15:55:00	1877.361	73.509	08/07/24	17:16:00	1876.136	73.692
08/07/24	14:35:00	1878.740	73.277	08/07/24	15:56:00	1877.344	73.514	08/07/24	17:17:00	1876.111	73.691
08/07/24	14:36:00	1878.722	73.283	08/07/24	15:57:00	1877.318	73.514	08/07/24	17:18:00	1876.140	73.701
08/07/24	14:37:00	1878.716	73.286	08/07/24	15:58:00	1877.293	73.520	08/07/24	17:19:00	1876.122	73.703
08/07/24	14:38:00	1878.679	73.286	08/07/24	15:59:00	1877.312	73.526	08/07/24	17:20:00	1876.088	73.700
08/07/24	14:39:00	1878.671	73.290	08/07/24	16:00:00	1877.276	73.527	08/07/24	17:21:00	1876.075	73.711
08/07/24	14:40:00	1878.658	73.294	08/07/24	16:01:00	1877.239	73.520	08/07/24	17:22:00	1876.090	73.706
08/07/24	14:41:00	1878.632	73.296	08/07/24	16:02:00	1877.243	73.534	08/07/24	17:23:00	1876.059	73.708
08/07/24	14:42:00	1878.604	73.301	08/07/24	16:03:00	1877.224	73.535	08/07/24	17:24:00	1876.043	73.711
08/07/24	14:43:00	1878.613	73.309	08/07/24	16:04:00	1877.212	73.534	08/07/24	17:25:00	1876.033	73.712
08/07/24	14:44:00	1878.562	73.309	08/07/24	16:05:00	1877.188	73.528	08/07/24	17:26:00	1876.012	73.714
08/07/24	14:45:00	1878.545	73.310	08/07/24	16:06:00	1877.191	73.537	08/07/24	17:27:00	1876.006	73.716
08/07/24	14:46:00	1878.527	73.317	08/07/24	16:07:00	1877.151	73.541	08/07/24	17:28:00	1876.006	73.723
08/07/24	14:47:00	1878.523	73.322	08/07/24	16:08:00	1877.136	73.536	08/07/24	17:29:00	1875.971	73.720
08/07/24	14:48:00	1878.498	73.316	08/07/24	16:09:00	1877.122	73.540	08/07/24	17:30:00	1875.964	73.726
08/07/24	14:49:00	1878.493	73.324	08/07/24	16:10:00	1877.112	73.550	08/07/24	17:31:00	1875.951	73.726
08/07/24	14:50:00	1878.447	73.327	08/07/24	16:11:00	1877.090	73.550	08/07/24	17:32:00	1875.957	73.733
08/07/24	14:51:00	1878.435	73.331	08/07/24	16:12:00	1877.089	73.552	08/07/24	17:33:00	1875.904	73.726
08/07/24	14:52:00	1878.412	73.331	08/07/24	16:13:00	1877.080	73.555	08/07/24	17:34:00	1875.891	73.728
08/07/24	14:53:00	1878.398	73.336	08/07/24	16:14:00	1877.061	73.558	08/07/24	17:35:00	1875.902	73.733
08/07/24	14:54:00	1878.400	73.342	08/07/24	16:15:00	1877.040	73.561	08/07/24	17:36:00	1875.890	73.737
08/07/24	14:55:00	1878.377	73.344	08/07/24	16:16:00	1877.029	73.563	08/07/24	17:37:00	1875.861	73.731
08/07/24	14:56:00	1878.362	73.349	08/07/24	16:17:00	1877.011	73.563	08/07/24	17:38:00	1875.871	73.740
08/07/24	14:57:00	1878.327	73.353	08/07/24	16:18:00	1877.006	73.568	08/07/24	17:39:00	1875.843	73.745
08/07/24	14:58:00	1878.321	73.350	08/07/24	16:19:00	1876.994	73.569	08/07/24	17:40:00	1875.838	73.743
08/07/24	14:59:00	1878.300	73.358	08/07/24	16:20:00	1876.958	73.570	08/07/24	17:41:00	1875.809	73.739
08/07/24	15:00:00	1878.280	73.356	08/07/24	16:21:00	1876.955	73.576	08/07/24	17:42:00	1875.808	73.743
08/07/24	15:01:00	1878.251	73.360	08/07/24	16:22:00	1876.934	73.576	08/07/24	17:43:00	1875.799	73.751
08/07/24	15:02:00	1878.256	73.365	08/07/24	16:23:00	1876.913	73.579	08/07/24	17:44:00	1875.787	73.754
08/07/24	15:03:00	1878.238	73.369	08/07/24	16:24:00	1876.887	73.580	08/07/24	17:45:00	1875.781	73.756
08/07/24	15:04:00	1878.192	73.369	08/07/24	16:25:00	1876.866	73.580	08/07/24	17:46:00	1875.766	73.754
08/07/24	15:05:00	1878.174	73.374	08/07/24	16:26:00	1876.880	73.591	08/07/24	17:47:00	1875.739	73.756
08/07/24	15:06:00	1878.150	73.375	08/07/24	16:27:00	1876.853	73.586	08/07/24	17:48:00	1875.720	73.753
08/07/24	15:07:00	1878.160	73.377	08/07/24	16:28:00	1876.834	73.590	08/07/24	17:49:00	1875.711	73.758
08/07/24	15:08:00	1878.124	73.380	08/07/24	16:29:00	1876.811	73.591	08/07/24	17:50:00	1875.697	73.762
08/07/24	15:09:00	1878.110	73.383	08/07/24	16:30:00	1876.787	73.593	08/07/24	17:51:00	1875.678	73.760
08/07/24	15:10:00	1878.084	73.386	08/07/24	16:31:00	1876.817	73.601	08/07/24	17:52:00	1875.675	73.761
08/07/24	15:11:00	1878.062	73.391	08/07/24	16:32:00	1876.810	73.603	08/07/24	17:53:00	1875.666	73.767
08/07/24	15:12:00	1878.044	73.395	08/07/24	16:33:00	1876.758	73.601	08/07/24	17:54:00	1875.672	73.769
08/07/24	15:13:00	1878.035	73.393	08/07/24	16:34:00	1876.733	73.605	08/07/24	17:55:00	1875.642	73.768
08/07/24	15:14:00	1878.010	73.399	08/07/24	16:35:00	1876.741	73.606	08/07/24	17:56:00	1875.629	73.770
08/07/24	15:15:00	1878.008	73.401	08/07/24	16:36:00	1876.697	73.610	08/07/24	17:57:00	1875.612	73.774
08/07/24	15:16:00	1877.994	73.402	08/07/24	16:37:00	1876.693	73.609	08/07/24	17:58:00	1875.611	73.779
08/07/24	15:17:00	1877.978	73.411	08/07/24	16:38:00	1876.706	73.614	08/07/24	17:59:00	1875.593	73.780
08/07/24	15:18:00	1877.952	73.407	08/07/24	16:39:00	1876.670	73.615	08/07/24	18:00:00	1875.560	73.780
08/07/24	15:19:00	1877.948	73.412	08/07/24	16:40:00	1876.629	73.616	08/07/24	18:01:00	1875.546	73.781
08/07/24	15:20:00	1877.942	73.419	08/07/24	16:41:00	1876.629	73.621	08/07/24	18:02:00	1875.540	73.776
08/07/24	15:21:00	1877.913	73.419	08/07/24	16:42:00	1876.606	73.620	08/07/24	18:03:00	1875.550	73.785
08/07/24	15:22:00	1877.892	73.421	08/07/24	16:43:00	1876.604	73.622	08/07/24	18:04:00	1875.509	73.784
08/07/24	15:23:00	1877.865	73.424	08/07/24	16:44:00	1876.586	73.628	08/07/24	18:05:00	1875.492	73.786
08/07/24	15:24:00	1877.862	73.427	08/07/24	16:45:00	1876.575	73.628	08/07/24	18:06:00	1875.503	73.790
08/07/24	15:25:00	1877.830	73.434	08/07/24	16:46:00	1876.559	73.631	08/07/24	18:07:00	1875.510	73.796
08/07/24	15:26:00	1877.835	73.434	08/07/24	16:47:00	1876.562	73.632	08/07/24	18:08:00	1875.470	73.793
08/07/24	15:27:00	1877.803	73.430	08/07/24	16:48:00	1876.532	73.636	08/07/24	18:09:00	1875.464	73.797
08/07/24	15:28:00	1877.784	73.435	08/07/24	16:49:00	1876.525	73.637	08/07/24	18:10:00	1875.459	73.800
08/07/24	15:29:00	1877.771	73.442	08/07/24	16:50:00	1876.502	73.639	08/07/24	18:11:00	1875.453	73.800
08/07/24	15:30:00	1877.744	73.442	08/07/24	16:51:00	1876.495	73.645	08/07/24	18:12:00	1875.427	73.803
08/07/24	15:31:00	1877.740	73.450	08/07/24	16:52:00	1876.476	73.647	08/07/24	18:13:00	1875.416	73.800
08/07/24	15:32:00	1877.706	73.449	08/07/24	16:53:00	1876.458	73.646	08/07/24	18:14:00	1875.405	73.802
08/07/24	15:33:00	1877.700	73.451	08/07/24	16:54:00	1876.447	73.646	08/07/24	18:15:00	1875.392	73.806
08/07/24	15:34:00	1877.677	73.455	08/07/24	16:55:00	1876.429	73.650	08/07/24	18:16:00	1875.365	73.806
08/07/24	15:35:00	1877.676	73.455	08/07/24	16:56:00	1876.415	73.653	08/07/24	18:17:00	1875.362	73.810
08/07/24	15:36:00	1877.680	73.466	08/07/24	16:57:00	1876.402	73.655	08/07/24	18:18:00	1875.328	73.811
08/07/24	15:37:00	1877.651	73.465	08/07/24	16:58:00	1876.407	73.657	08/07/24	18:19:00	1875.333	73.811
08/07/24	15:38:00	1877.620	73.468	08/07/24	16:59:00	1876.382	73.662	08/07/24	18:20:00	1875.310	73.815
08/07/24	15:39:00	1877.596	73.467	08/07/24	17:00:00	1876.360	73.660	08/07/24	18:21:00	1875.319	73.817
08/07/24	15:40:00	1877.577	73.469	08/07/24	17:01:00	1876.326	73.659	08/07/24	18:22:00	1875.302	73.814

Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F
08/07/24	18:23:00	1875.285	73.814	08/07/24	19:44:00	1874.353	73.950	08/07/24	21:05:00	1873.538	74.047
08/07/24	18:24:00	1875.304	73.827	08/07/24	19:45:00	1874.334	73.946	08/07/24	21:06:00	1873.511	74.047
08/07/24	18:25:00	1875.278	73.823	08/07/24	19:46:00	1874.344	73.946	08/07/24	21:07:00	1873.485	74.045
08/07/24	18:26:00	1875.255	73.824	08/07/24	19:47:00	1874.329	73.947	08/07/24	21:08:00	1873.471	74.048
08/07/24	18:27:00	1875.228	73.827	08/07/24	19:48:00	1874.311	73.953	08/07/24	21:09:00	1873.478	74.046
08/07/24	18:28:00	1875.222	73.829	08/07/24	19:49:00	1874.293	73.945	08/07/24	21:10:00	1873.482	74.050
08/07/24	18:29:00	1875.241	73.830	08/07/24	19:50:00	1874.289	73.948	08/07/24	21:11:00	1873.484	74.054
08/07/24	18:30:00	1875.202	73.832	08/07/24	19:51:00	1874.296	73.958	08/07/24	21:12:00	1873.465	74.050
08/07/24	18:31:00	1875.194	73.833	08/07/24	19:52:00	1874.271	73.954	08/07/24	21:13:00	1873.436	74.054
08/07/24	18:32:00	1875.180	73.837	08/07/24	19:53:00	1874.247	73.953	08/07/24	21:14:00	1873.446	74.056
08/07/24	18:33:00	1875.168	73.836	08/07/24	19:54:00	1874.237	73.953	08/07/24	21:15:00	1873.432	74.057
08/07/24	18:34:00	1875.149	73.837	08/07/24	19:55:00	1874.238	73.961	08/07/24	21:16:00	1873.403	74.056
08/07/24	18:35:00	1875.133	73.840	08/07/24	19:56:00	1874.216	73.961	08/07/24	21:17:00	1873.401	74.060
08/07/24	18:36:00	1875.140	73.843	08/07/24	19:57:00	1874.220	73.965	08/07/24	21:18:00	1873.390	74.063
08/07/24	18:37:00	1875.121	73.842	08/07/24	19:58:00	1874.207	73.962	08/07/24	21:19:00	1873.397	74.063
08/07/24	18:38:00	1875.099	73.844	08/07/24	19:59:00	1874.204	73.963	08/07/24	21:20:00	1873.383	74.062
08/07/24	18:39:00	1875.089	73.844	08/07/24	20:00:00	1874.191	73.964	08/07/24	21:21:00	1873.360	74.064
08/07/24	18:40:00	1875.070	73.841	08/07/24	20:01:00	1874.166	73.963	08/07/24	21:22:00	1873.351	74.062
08/07/24	18:41:00	1875.064	73.848	08/07/24	20:02:00	1874.172	73.973	08/07/24	21:23:00	1873.334	74.064
08/07/24	18:42:00	1875.085	73.852	08/07/24	20:03:00	1874.150	73.968	08/07/24	21:24:00	1873.312	74.064
08/07/24	18:43:00	1875.054	73.853	08/07/24	20:04:00	1874.129	73.970	08/07/24	21:25:00	1873.316	74.066
08/07/24	18:44:00	1875.058	73.857	08/07/24	20:05:00	1874.135	73.975	08/07/24	21:26:00	1873.327	74.068
08/07/24	18:45:00	1875.039	73.858	08/07/24	20:06:00	1874.098	73.971	08/07/24	21:27:00	1873.291	74.067
08/07/24	18:46:00	1875.023	73.861	08/07/24	20:07:00	1874.102	73.975	08/07/24	21:28:00	1873.280	74.074
08/07/24	18:47:00	1874.987	73.859	08/07/24	20:08:00	1874.067	73.974	08/07/24	21:29:00	1873.294	74.073
08/07/24	18:48:00	1874.982	73.859	08/07/24	20:09:00	1874.096	73.980	08/07/24	21:30:00	1873.287	74.072
08/07/24	18:49:00	1874.960	73.859	08/07/24	20:10:00	1874.066	73.976	08/07/24	21:31:00	1873.254	74.069
08/07/24	18:50:00	1874.974	73.865	08/07/24	20:11:00	1874.062	73.981	08/07/24	21:32:00	1873.248	74.076
08/07/24	18:51:00	1874.926	73.863	08/07/24	20:12:00	1874.056	73.981	08/07/24	21:33:00	1873.237	74.081
08/07/24	18:52:00	1874.936	73.865	08/07/24	20:13:00	1874.042	73.985	08/07/24	21:34:00	1873.247	74.083
08/07/24	18:53:00	1874.916	73.868	08/07/24	20:14:00	1874.027	73.983	08/07/24	21:35:00	1873.224	74.075
08/07/24	18:54:00	1874.904	73.868	08/07/24	20:15:00	1874.039	73.986	08/07/24	21:36:00	1873.221	74.079
08/07/24	18:55:00	1874.901	73.869	08/07/24	20:16:00	1874.019	73.984	08/07/24	21:37:00	1873.234	74.077
08/07/24	18:56:00	1874.894	73.875	08/07/24	20:17:00	1874.008	73.989	08/07/24	21:38:00	1873.197	74.080
08/07/24	18:57:00	1874.857	73.878	08/07/24	20:18:00	1873.979	73.985	08/07/24	21:39:00	1873.213	74.090
08/07/24	18:58:00	1874.852	73.871	08/07/24	20:19:00	1873.976	73.987	08/07/24	21:40:00	1873.196	74.087
08/07/24	18:59:00	1874.861	73.878	08/07/24	20:20:00	1873.969	73.991	08/07/24	21:41:00	1873.171	74.085
08/07/24	19:00:00	1874.834	73.880	08/07/24	20:21:00	1873.960	73.989	08/07/24	21:42:00	1873.155	74.085
08/07/24	19:01:00	1874.840	73.880	08/07/24	20:22:00	1873.939	73.997	08/07/24	21:43:00	1873.155	74.090
08/07/24	19:02:00	1874.787	73.876	08/07/24	20:23:00	1873.954	73.998	08/07/24	21:44:00	1873.151	74.091
08/07/24	19:03:00	1874.810	73.881	08/07/24	20:24:00	1873.938	73.996	08/07/24	21:45:00	1873.135	74.088
08/07/24	19:04:00	1874.793	73.881	08/07/24	20:25:00	1873.921	73.996	08/07/24	21:46:00	1873.119	74.084
08/07/24	19:05:00	1874.802	73.890	08/07/24	20:26:00	1873.927	74.001	08/07/24	21:47:00	1873.114	74.091
08/07/24	19:06:00	1874.754	73.888	08/07/24	20:27:00	1873.900	74.006	08/07/24	21:48:00	1873.112	74.093
08/07/24	19:07:00	1874.763	73.889	08/07/24	20:28:00	1873.892	73.997	08/07/24	21:49:00	1873.094	74.092
08/07/24	19:08:00	1874.770	73.890	08/07/24	20:29:00	1873.872	74.003	08/07/24	21:50:00	1873.066	74.089
08/07/24	19:09:00	1874.735	73.891	08/07/24	20:30:00	1873.853	74.001	08/07/24	21:51:00	1873.095	74.092
08/07/24	19:10:00	1874.735	73.896	08/07/24	20:31:00	1873.857	74.008	08/07/24	21:52:00	1873.089	74.099
08/07/24	19:11:00	1874.706	73.895	08/07/24	20:32:00	1873.841	74.003	08/07/24	21:53:00	1873.056	74.094
08/07/24	19:12:00	1874.720	73.897	08/07/24	20:33:00	1873.846	74.011	08/07/24	21:54:00	1873.067	74.099
08/07/24	19:13:00	1874.721	73.904	08/07/24	20:34:00	1873.807	74.008	08/07/24	21:55:00	1873.044	74.099
08/07/24	19:14:00	1874.705	73.902	08/07/24	20:35:00	1873.820	74.011	08/07/24	21:56:00	1873.009	74.100
08/07/24	19:15:00	1874.676	73.903	08/07/24	20:36:00	1873.792	74.008	08/07/24	21:57:00	1873.016	74.098
08/07/24	19:16:00	1874.671	73.909	08/07/24	20:37:00	1873.797	74.010	08/07/24	21:58:00	1872.987	74.099
08/07/24	19:17:00	1874.638	73.901	08/07/24	20:38:00	1873.774	74.014	08/07/24	21:59:00	1873.004	74.105
08/07/24	19:18:00	1874.642	73.905	08/07/24	20:39:00	1873.766	74.011	08/07/24	22:00:00	1872.973	74.098
08/07/24	19:19:00	1874.640	73.909	08/07/24	20:40:00	1873.769	74.017	08/07/24	22:01:00	1872.999	74.103
08/07/24	19:20:00	1874.634	73.909	08/07/24	20:41:00	1873.756	74.018	08/07/24	22:02:00	1872.974	74.106
08/07/24	19:21:00	1874.618	73.911	08/07/24	20:42:00	1873.742	74.015	08/07/24	22:03:00	1872.948	74.106
08/07/24	19:22:00	1874.618	73.916	08/07/24	20:43:00	1873.743	74.020	08/07/24	22:04:00	1872.960	74.104
08/07/24	19:23:00	1874.585	73.913	08/07/24	20:44:00	1873.726	74.024	08/07/24	22:05:00	1872.955	74.110
08/07/24	19:24:00	1874.578	73.915	08/07/24	20:45:00	1873.710	74.020	08/07/24	22:06:00	1872.935	74.106
08/07/24	19:25:00	1874.565	73.914	08/07/24	20:46:00	1873.706	74.023	08/07/24	22:07:00	1872.950	74.115
08/07/24	19:26:00	1874.547	73.921	08/07/24	20:47:00	1873.693	74.019	08/07/24	22:08:00	1872.928	74.114
08/07/24	19:27:00	1874.521	73.916	08/07/24	20:48:00	1873.696	74.023	08/07/24	22:09:00	1872.920	74.115
08/07/24	19:28:00	1874.497	73.915	08/07/24	20:49:00	1873.707	74.028	08/07/24	22:10:00	1872.887	74.115
08/07/24	19:29:00	1874.520	73.918	08/07/24	20:50:00	1873.665	74.026	08/07/24	22:11:00	1872.892	74.117
08/07/24	19:30:00	1874.519	73.925	08/07/24	20:51:00	1873.662	74.030	08/07/24	22:12:00	1872.874	74.112
08/07/24	19:31:00	1874.490	73.924	08/07/24	20:52:00	1873.637	74.026	08/07/24	22:13:00	1872.871	74.115
08/07/24	19:32:00	1874.496	73.932	08/07/24	20:53:00	1873.650	74.031	08/07/24	22:14:00	1872.861	74.118
08/07/24	19:33:00	1874.501	73.931	08/07/24	20:54:00	1873.615	74.028	08/07/24	22:15:00	1872.849	74.120
08/07/24	19:34:00	1874.459	73.932	08/07/24	20:55:00	1873.620	74.033	08/07/24	22:16:00	1872.832	74.117
08/07/24	19:35:00	1874.452	73.931	08/07/24	20:56:00	1873.603	74.034	08/07/24	22:17:00	1872.837	74.120
08/07/24	19:36:00	1874.445	73.936	08/07/24	20:57:00	1873.589	74.036	08/07/24	22:18:00	1872.816	74.125
08/07/24	19:37:00	1874.427	73.930	08/07/24	20:58:00	1873.577	74.033	08/07/24	22:19:00	1872.818	74.121
08/07/24	19:38:00	1874.416	73.932	08/07/24	20:59:00	1873.559	74.034	08/07/24	22:20:00	1872.812	74.125
08/07/24	19:39:00	1874.411	73.939	08/07/24	21:00:00	1873.576	74.039	08/07/24	22:21:00	1872.784	74.122
08/07/24	19:40:00	1874.424	73.940	08/07/24	21:01:00	1873.543	74.039	08/07/24	22:22:00	1872.771	74.122
08/07/24	19:41:00	1874.402	73.943	08/07/24	21:02:00	1873.561	74.040	08/07/24	22:23:00	1872.783	74.127
08/07/24	19:42:00	1874.392	73.939	08/07/24	21:03:00	1873.542	74.041	08/07/24	22:24:00	1872.760	74.126
08/07/24	19:43:00	1874.369	73.945	08/07/24	21:04:00	1873.536	74.043	08/07/24	22:25:00	1872.762	74.129

APPENDIX H, Continued
Pressure/Time Data Recorded During the Pressure Transient Test

Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F
08/07/24	22:26:00	1872.770	74.133	08/07/24	23:47:00	1872.060	74.200	08/08/24	01:08:00	1871.401	74.255
08/07/24	22:27:00	1872.736	74.123	08/07/24	23:48:00	1872.044	74.198	08/08/24	01:09:00	1871.389	74.262
08/07/24	22:28:00	1872.731	74.135	08/07/24	23:49:00	1872.035	74.196	08/08/24	01:10:00	1871.385	74.265
08/07/24	22:29:00	1872.728	74.129	08/07/24	23:50:00	1872.020	74.201	08/08/24	01:11:00	1871.374	74.260
08/07/24	22:30:00	1872.703	74.125	08/07/24	23:51:00	1872.002	74.203	08/08/24	01:12:00	1871.361	74.262
08/07/24	22:31:00	1872.709	74.135	08/07/24	23:52:00	1871.994	74.202	08/08/24	01:13:00	1871.346	74.262
08/07/24	22:32:00	1872.679	74.131	08/07/24	23:53:00	1871.988	74.201	08/08/24	01:14:00	1871.335	74.260
08/07/24	22:33:00	1872.677	74.135	08/07/24	23:54:00	1872.004	74.204	08/08/24	01:15:00	1871.340	74.264
08/07/24	22:34:00	1872.694	74.140	08/07/24	23:55:00	1872.001	74.207	08/08/24	01:16:00	1871.326	74.263
08/07/24	22:35:00	1872.675	74.139	08/07/24	23:56:00	1871.992	74.208	08/08/24	01:17:00	1871.318	74.262
08/07/24	22:36:00	1872.693	74.145	08/07/24	23:57:00	1871.986	74.210	08/08/24	01:18:00	1871.303	74.265
08/07/24	22:37:00	1872.675	74.139	08/07/24	23:58:00	1871.955	74.206	08/08/24	01:19:00	1871.290	74.261
08/07/24	22:38:00	1872.644	74.140	08/07/24	23:59:00	1871.933	74.206	08/08/24	01:20:00	1871.300	74.266
08/07/24	22:39:00	1872.631	74.141	08/08/24	00:00:00	1871.930	74.209	08/08/24	01:21:00	1871.268	74.263
08/07/24	22:40:00	1872.623	74.142	08/08/24	00:01:00	1871.916	74.205	08/08/24	01:22:00	1871.281	74.274
08/07/24	22:41:00	1872.612	74.140	08/08/24	00:02:00	1871.923	74.211	08/08/24	01:23:00	1871.276	74.272
08/07/24	22:42:00	1872.612	74.142	08/08/24	00:03:00	1871.928	74.213	08/08/24	01:24:00	1871.267	74.268
08/07/24	22:43:00	1872.602	74.142	08/08/24	00:04:00	1871.914	74.212	08/08/24	01:25:00	1871.269	74.271
08/07/24	22:44:00	1872.586	74.143	08/08/24	00:05:00	1871.906	74.213	08/08/24	01:26:00	1871.229	74.266
08/07/24	22:45:00	1872.565	74.143	08/08/24	00:06:00	1871.901	74.216	08/08/24	01:27:00	1871.235	74.271
08/07/24	22:46:00	1872.564	74.147	08/08/24	00:07:00	1871.889	74.218	08/08/24	01:28:00	1871.202	74.268
08/07/24	22:47:00	1872.560	74.150	08/08/24	00:08:00	1871.872	74.210	08/08/24	01:29:00	1871.196	74.268
08/07/24	22:48:00	1872.558	74.150	08/08/24	00:09:00	1871.865	74.219	08/08/24	01:30:00	1871.203	74.273
08/07/24	22:49:00	1872.546	74.146	08/08/24	00:10:00	1871.851	74.217	08/08/24	01:31:00	1871.198	74.276
08/07/24	22:50:00	1872.554	74.150	08/08/24	00:11:00	1871.844	74.214	08/08/24	01:32:00	1871.172	74.271
08/07/24	22:51:00	1872.530	74.152	08/08/24	00:12:00	1871.845	74.219	08/08/24	01:33:00	1871.202	74.273
08/07/24	22:52:00	1872.528	74.151	08/08/24	00:13:00	1871.823	74.217	08/08/24	01:34:00	1871.195	74.269
08/07/24	22:53:00	1872.501	74.153	08/08/24	00:14:00	1871.814	74.220	08/08/24	01:35:00	1871.172	74.271
08/07/24	22:54:00	1872.523	74.155	08/08/24	00:15:00	1871.814	74.218	08/08/24	01:36:00	1871.180	74.282
08/07/24	22:55:00	1872.506	74.158	08/08/24	00:16:00	1871.817	74.221	08/08/24	01:37:00	1871.165	74.276
08/07/24	22:56:00	1872.475	74.151	08/08/24	00:17:00	1871.800	74.219	08/08/24	01:38:00	1871.163	74.275
08/07/24	22:57:00	1872.474	74.155	08/08/24	00:18:00	1871.784	74.221	08/08/24	01:39:00	1871.149	74.276
08/07/24	22:58:00	1872.490	74.160	08/08/24	00:19:00	1871.778	74.223	08/08/24	01:40:00	1871.140	74.281
08/07/24	22:59:00	1872.456	74.157	08/08/24	00:20:00	1871.782	74.225	08/08/24	01:41:00	1871.109	74.277
08/07/24	23:00:00	1872.449	74.159	08/08/24	00:21:00	1871.790	74.226	08/08/24	01:42:00	1871.113	74.276
08/07/24	23:01:00	1872.422	74.156	08/08/24	00:22:00	1871.767	74.221	08/08/24	01:43:00	1871.100	74.278
08/07/24	23:02:00	1872.428	74.164	08/08/24	00:23:00	1871.763	74.231	08/08/24	01:44:00	1871.117	74.283
08/07/24	23:03:00	1872.417	74.166	08/08/24	00:24:00	1871.747	74.226	08/08/24	01:45:00	1871.111	74.283
08/07/24	23:04:00	1872.409	74.163	08/08/24	00:25:00	1871.740	74.226	08/08/24	01:46:00	1871.121	74.285
08/07/24	23:05:00	1872.422	74.163	08/08/24	00:26:00	1871.721	74.230	08/08/24	01:47:00	1871.109	74.284
08/07/24	23:06:00	1872.393	74.163	08/08/24	00:27:00	1871.706	74.228	08/08/24	01:48:00	1871.094	74.283
08/07/24	23:07:00	1872.388	74.168	08/08/24	00:28:00	1871.715	74.231	08/08/24	01:49:00	1871.081	74.286
08/07/24	23:08:00	1872.370	74.164	08/08/24	00:29:00	1871.705	74.227	08/08/24	01:50:00	1871.079	74.285
08/07/24	23:09:00	1872.381	74.167	08/08/24	00:30:00	1871.687	74.226	08/08/24	01:51:00	1871.064	74.288
08/07/24	23:10:00	1872.385	74.166	08/08/24	00:31:00	1871.681	74.233	08/08/24	01:52:00	1871.042	74.286
08/07/24	23:11:00	1872.350	74.170	08/08/24	00:32:00	1871.665	74.231	08/08/24	01:53:00	1871.045	74.284
08/07/24	23:12:00	1872.336	74.171	08/08/24	00:33:00	1871.680	74.235	08/08/24	01:54:00	1871.061	74.289
08/07/24	23:13:00	1872.331	74.171	08/08/24	00:34:00	1871.670	74.235	08/08/24	01:55:00	1871.036	74.290
08/07/24	23:14:00	1872.335	74.170	08/08/24	00:35:00	1871.680	74.235	08/08/24	01:56:00	1871.023	74.292
08/07/24	23:15:00	1872.336	74.171	08/08/24	00:36:00	1871.646	74.232	08/08/24	01:57:00	1871.013	74.292
08/07/24	23:16:00	1872.307	74.175	08/08/24	00:37:00	1871.659	74.235	08/08/24	01:58:00	1871.004	74.288
08/07/24	23:17:00	1872.304	74.173	08/08/24	00:38:00	1871.640	74.237	08/08/24	01:59:00	1871.003	74.295
08/07/24	23:18:00	1872.322	74.184	08/08/24	00:39:00	1871.618	74.239	08/08/24	02:00:00	1871.004	74.293
08/07/24	23:19:00	1872.259	74.173	08/08/24	00:40:00	1871.586	74.237	08/08/24	02:01:00	1870.991	74.294
08/07/24	23:20:00	1872.279	74.182	08/08/24	00:41:00	1871.597	74.239	08/08/24	02:02:00	1870.976	74.295
08/07/24	23:21:00	1872.261	74.181	08/08/24	00:42:00	1871.580	74.239	08/08/24	02:03:00	1870.969	74.292
08/07/24	23:22:00	1872.246	74.176	08/08/24	00:43:00	1871.578	74.238	08/08/24	02:04:00	1870.956	74.293
08/07/24	23:23:00	1872.255	74.178	08/08/24	00:44:00	1871.577	74.240	08/08/24	02:05:00	1870.954	74.297
08/07/24	23:24:00	1872.255	74.183	08/08/24	00:45:00	1871.563	74.245	08/08/24	02:06:00	1870.928	74.291
08/07/24	23:25:00	1872.231	74.180	08/08/24	00:46:00	1871.553	74.241	08/08/24	02:07:00	1870.940	74.293
08/07/24	23:26:00	1872.218	74.178	08/08/24	00:47:00	1871.560	74.242	08/08/24	02:08:00	1870.948	74.300
08/07/24	23:27:00	1872.244	74.190	08/08/24	00:48:00	1871.543	74.244	08/08/24	02:09:00	1870.933	74.300
08/07/24	23:28:00	1872.223	74.185	08/08/24	00:49:00	1871.543	74.244	08/08/24	02:10:00	1870.909	74.299
08/07/24	23:29:00	1872.214	74.189	08/08/24	00:50:00	1871.522	74.246	08/08/24	02:11:00	1870.911	74.304
08/07/24	23:30:00	1872.197	74.184	08/08/24	00:51:00	1871.520	74.246	08/08/24	02:12:00	1870.917	74.300
08/07/24	23:31:00	1872.204	74.187	08/08/24	00:52:00	1871.524	74.245	08/08/24	02:13:00	1870.886	74.293
08/07/24	23:32:00	1872.177	74.184	08/08/24	00:53:00	1871.498	74.245	08/08/24	02:14:00	1870.918	74.305
08/07/24	23:33:00	1872.150	74.184	08/08/24	00:54:00	1871.493	74.246	08/08/24	02:15:00	1870.883	74.304
08/07/24	23:34:00	1872.173	74.192	08/08/24	00:55:00	1871.501	74.252	08/08/24	02:16:00	1870.858	74.305
08/07/24	23:35:00	1872.148	74.186	08/08/24	00:56:00	1871.472	74.244	08/08/24	02:17:00	1870.864	74.300
08/07/24	23:36:00	1872.136	74.190	08/08/24	00:57:00	1871.481	74.252	08/08/24	02:18:00	1870.853	74.303
08/07/24	23:37:00	1872.137	74.193	08/08/24	00:58:00	1871.469	74.254	08/08/24	02:19:00	1870.839	74.304
08/07/24	23:38:00	1872.123	74.189	08/08/24	00:59:00	1871.445	74.251	08/08/24	02:20:00	1870.845	74.307
08/07/24	23:39:00	1872.101	74.187	08/08/24	01:00:00	1871.437	74.252	08/08/24	02:21:00	1870.819	74.302
08/07/24	23:40:00	1872.116	74.198	08/08/24	01:01:00	1871.451	74.253	08/08/24	02:22:00	1870.828	74.303
08/07/24	23:41:00	1872.111	74.198	08/08/24	01:02:00	1871.418	74.251	08/08/24	02:23:00	1870.813	74.299
08/07/24	23:42:00	1872.101	74.196	08/08/24	01:03:00	1871.440	74.261	08/08/24	02:24:00	1870.809	74.305
08/07/24	23:43:00	1872.098	74.195	08/08/24	01:04:00	1871.416	74.250	08/08/24	02:25:00	1870.803	74.305
08/07/24	23:44:00	1872.086	74.199	08/08/24	01:05:00	1871.410	74.252	08/08/24	02:26:00	1870.799	74.305
08/07/24	23:45:00	1872.066	74.198	08/08/24	01:06:00	1871.417	74.255	08/08/24	02:27:00	1870.789	74.303
08/07/24	23:46:00	1872.058	74.201	08/08/24	01:07:00	1871.406	74.260	08/08/24	02:28:00	1870.782	74.310

Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F
08/08/24	02:29:00	1870.763	74.308	08/08/24	03:50:00	1870.210	74.354	08/08/24	05:11:00	1869.698	74.395
08/08/24	02:30:00	1870.756	74.305	08/08/24	03:51:00	1870.219	74.353	08/08/24	05:12:00	1869.670	74.387
08/08/24	02:31:00	1870.749	74.309	08/08/24	03:52:00	1870.203	74.355	08/08/24	05:13:00	1869.679	74.392
08/08/24	02:32:00	1870.737	74.306	08/08/24	03:53:00	1870.166	74.351	08/08/24	05:14:00	1869.670	74.392
08/08/24	02:33:00	1870.730	74.308	08/08/24	03:54:00	1870.177	74.353	08/08/24	05:15:00	1869.630	74.389
08/08/24	02:34:00	1870.739	74.310	08/08/24	03:55:00	1870.161	74.348	08/08/24	05:16:00	1869.663	74.399
08/08/24	02:35:00	1870.719	74.308	08/08/24	03:56:00	1870.186	74.357	08/08/24	05:17:00	1869.657	74.396
08/08/24	02:36:00	1870.743	74.316	08/08/24	03:57:00	1870.151	74.358	08/08/24	05:18:00	1869.630	74.391
08/08/24	02:37:00	1870.721	74.314	08/08/24	03:58:00	1870.164	74.362	08/08/24	05:19:00	1869.660	74.395
08/08/24	02:38:00	1870.722	74.316	08/08/24	03:59:00	1870.147	74.354	08/08/24	05:20:00	1869.626	74.397
08/08/24	02:39:00	1870.717	74.319	08/08/24	04:00:00	1870.152	74.359	08/08/24	05:21:00	1869.632	74.400
08/08/24	02:40:00	1870.681	74.313	08/08/24	04:01:00	1870.144	74.358	08/08/24	05:22:00	1869.613	74.398
08/08/24	02:41:00	1870.702	74.317	08/08/24	04:02:00	1870.141	74.362	08/08/24	05:23:00	1869.596	74.395
08/08/24	02:42:00	1870.687	74.315	08/08/24	04:03:00	1870.124	74.356	08/08/24	05:24:00	1869.596	74.393
08/08/24	02:43:00	1870.690	74.322	08/08/24	04:04:00	1870.115	74.354	08/08/24	05:25:00	1869.617	74.400
08/08/24	02:44:00	1870.662	74.316	08/08/24	04:05:00	1870.107	74.358	08/08/24	05:26:00	1869.573	74.395
08/08/24	02:45:00	1870.659	74.317	08/08/24	04:06:00	1870.106	74.363	08/08/24	05:27:00	1869.587	74.401
08/08/24	02:46:00	1870.646	74.321	08/08/24	04:07:00	1870.106	74.365	08/08/24	05:28:00	1869.558	74.393
08/08/24	02:47:00	1870.638	74.318	08/08/24	04:08:00	1870.090	74.363	08/08/24	05:29:00	1869.578	74.400
08/08/24	02:48:00	1870.663	74.322	08/08/24	04:09:00	1870.073	74.362	08/08/24	05:30:00	1869.556	74.397
08/08/24	02:49:00	1870.640	74.319	08/08/24	04:10:00	1870.049	74.357	08/08/24	05:31:00	1869.552	74.400
08/08/24	02:50:00	1870.594	74.313	08/08/24	04:11:00	1870.056	74.357	08/08/24	05:32:00	1869.552	74.398
08/08/24	02:51:00	1870.613	74.323	08/08/24	04:12:00	1870.068	74.367	08/08/24	05:33:00	1869.557	74.400
08/08/24	02:52:00	1870.611	74.320	08/08/24	04:13:00	1870.034	74.362	08/08/24	05:34:00	1869.537	74.401
08/08/24	02:53:00	1870.589	74.325	08/08/24	04:14:00	1870.047	74.363	08/08/24	05:35:00	1869.536	74.405
08/08/24	02:54:00	1870.605	74.325	08/08/24	04:15:00	1870.057	74.367	08/08/24	05:36:00	1869.553	74.403
08/08/24	02:55:00	1870.590	74.323	08/08/24	04:16:00	1870.026	74.365	08/08/24	05:37:00	1869.529	74.402
08/08/24	02:56:00	1870.596	74.325	08/08/24	04:17:00	1870.025	74.365	08/08/24	05:38:00	1869.519	74.402
08/08/24	02:57:00	1870.596	74.325	08/08/24	04:18:00	1870.020	74.365	08/08/24	05:39:00	1869.513	74.402
08/08/24	02:58:00	1870.569	74.323	08/08/24	04:19:00	1870.029	74.364	08/08/24	05:40:00	1869.502	74.404
08/08/24	02:59:00	1870.560	74.326	08/08/24	04:20:00	1870.025	74.372	08/08/24	05:41:00	1869.511	74.406
08/08/24	03:00:00	1870.545	74.324	08/08/24	04:21:00	1870.014	74.365	08/08/24	05:42:00	1869.493	74.403
08/08/24	03:01:00	1870.528	74.324	08/08/24	04:22:00	1869.995	74.369	08/08/24	05:43:00	1869.501	74.406
08/08/24	03:02:00	1870.554	74.331	08/08/24	04:23:00	1870.000	74.371	08/08/24	05:44:00	1869.465	74.402
08/08/24	03:03:00	1870.541	74.328	08/08/24	04:24:00	1869.986	74.372	08/08/24	05:45:00	1869.479	74.404
08/08/24	03:04:00	1870.537	74.331	08/08/24	04:25:00	1869.976	74.375	08/08/24	05:46:00	1869.471	74.403
08/08/24	03:05:00	1870.506	74.329	08/08/24	04:26:00	1869.960	74.370	08/08/24	05:47:00	1869.484	74.411
08/08/24	03:06:00	1870.489	74.323	08/08/24	04:27:00	1869.965	74.372	08/08/24	05:48:00	1869.444	74.405
08/08/24	03:07:00	1870.500	74.331	08/08/24	04:28:00	1869.954	74.370	08/08/24	05:49:00	1869.444	74.410
08/08/24	03:08:00	1870.484	74.329	08/08/24	04:29:00	1869.959	74.372	08/08/24	05:50:00	1869.448	74.407
08/08/24	03:09:00	1870.489	74.326	08/08/24	04:30:00	1869.951	74.373	08/08/24	05:51:00	1869.442	74.407
08/08/24	03:10:00	1870.482	74.333	08/08/24	04:31:00	1869.944	74.375	08/08/24	05:52:00	1869.436	74.411
08/08/24	03:11:00	1870.470	74.335	08/08/24	04:32:00	1869.928	74.370	08/08/24	05:53:00	1869.432	74.412
08/08/24	03:12:00	1870.464	74.334	08/08/24	04:33:00	1869.911	74.372	08/08/24	05:54:00	1869.428	74.410
08/08/24	03:13:00	1870.478	74.338	08/08/24	04:34:00	1869.916	74.374	08/08/24	05:55:00	1869.412	74.413
08/08/24	03:14:00	1870.459	74.332	08/08/24	04:35:00	1869.884	74.372	08/08/24	05:56:00	1869.415	74.409
08/08/24	03:15:00	1870.455	74.337	08/08/24	04:36:00	1869.905	74.374	08/08/24	05:57:00	1869.410	74.414
08/08/24	03:16:00	1870.422	74.330	08/08/24	04:37:00	1869.917	74.382	08/08/24	05:58:00	1869.404	74.409
08/08/24	03:17:00	1870.440	74.336	08/08/24	04:38:00	1869.871	74.374	08/08/24	05:59:00	1869.407	74.413
08/08/24	03:18:00	1870.438	74.337	08/08/24	04:39:00	1869.890	74.379	08/08/24	06:00:00	1869.369	74.405
08/08/24	03:19:00	1870.408	74.336	08/08/24	04:40:00	1869.873	74.372	08/08/24	06:01:00	1869.394	74.414
08/08/24	03:20:00	1870.414	74.333	08/08/24	04:41:00	1869.887	74.378	08/08/24	06:02:00	1869.378	74.414
08/08/24	03:21:00	1870.387	74.336	08/08/24	04:42:00	1869.870	74.378	08/08/24	06:03:00	1869.371	74.413
08/08/24	03:22:00	1870.395	74.337	08/08/24	04:43:00	1869.862	74.377	08/08/24	06:04:00	1869.365	74.416
08/08/24	03:23:00	1870.394	74.339	08/08/24	04:44:00	1869.830	74.372	08/08/24	06:05:00	1869.339	74.414
08/08/24	03:24:00	1870.409	74.348	08/08/24	04:45:00	1869.875	74.385	08/08/24	06:06:00	1869.336	74.415
08/08/24	03:25:00	1870.369	74.340	08/08/24	04:46:00	1869.837	74.380	08/08/24	06:07:00	1869.324	74.414
08/08/24	03:26:00	1870.366	74.339	08/08/24	04:47:00	1869.848	74.380	08/08/24	06:08:00	1869.333	74.418
08/08/24	03:27:00	1870.353	74.338	08/08/24	04:48:00	1869.834	74.379	08/08/24	06:09:00	1869.347	74.415
08/08/24	03:28:00	1870.366	74.346	08/08/24	04:49:00	1869.809	74.375	08/08/24	06:10:00	1869.320	74.412
08/08/24	03:29:00	1870.347	74.342	08/08/24	04:50:00	1869.814	74.380	08/08/24	06:11:00	1869.324	74.417
08/08/24	03:30:00	1870.347	74.345	08/08/24	04:51:00	1869.803	74.377	08/08/24	06:12:00	1869.317	74.416
08/08/24	03:31:00	1870.327	74.338	08/08/24	04:52:00	1869.805	74.380	08/08/24	06:13:00	1869.315	74.420
08/08/24	03:32:00	1870.328	74.343	08/08/24	04:53:00	1869.787	74.382	08/08/24	06:14:00	1869.307	74.426
08/08/24	03:33:00	1870.333	74.343	08/08/24	04:54:00	1869.804	74.385	08/08/24	06:15:00	1869.281	74.419
08/08/24	03:34:00	1870.344	74.350	08/08/24	04:55:00	1869.792	74.384	08/08/24	06:16:00	1869.292	74.422
08/08/24	03:35:00	1870.310	74.345	08/08/24	04:56:00	1869.783	74.382	08/08/24	06:17:00	1869.277	74.417
08/08/24	03:36:00	1870.308	74.344	08/08/24	04:57:00	1869.778	74.385	08/08/24	06:18:00	1869.275	74.419
08/08/24	03:37:00	1870.292	74.342	08/08/24	04:58:00	1869.782	74.392	08/08/24	06:19:00	1869.287	74.417
08/08/24	03:38:00	1870.275	74.346	08/08/24	04:59:00	1869.745	74.385	08/08/24	06:20:00	1869.285	74.416
08/08/24	03:39:00	1870.289	74.348	08/08/24	05:00:00	1869.745	74.385	08/08/24	06:21:00	1869.274	74.421
08/08/24	03:40:00	1870.276	74.347	08/08/24	05:01:00	1869.757	74.390	08/08/24	06:22:00	1869.267	74.425
08/08/24	03:41:00	1870.260	74.347	08/08/24	05:02:00	1869.737	74.391	08/08/24	06:23:00	1869.256	74.420
08/08/24	03:42:00	1870.259	74.346	08/08/24	05:03:00	1869.750	74.390	08/08/24	06:24:00	1869.262	74.427
08/08/24	03:43:00	1870.252	74.346	08/08/24	05:04:00	1869.725	74.388	08/08/24	06:25:00	1869.249	74.424
08/08/24	03:44:00	1870.258	74.351	08/08/24	05:05:00	1869.733	74.389	08/08/24	06:26:00	1869.222	74.424
08/08/24	03:45:00	1870.234	74.350	08/08/24	05:06:00	1869.725	74.388	08/08/24	06:27:00	1869.225	74.426
08/08/24	03:46:00	1870.239	74.349	08/08/24	05:07:00	1869.719	74.388	08/08/24	06:28:00	1869.209	74.425
08/08/24	03:47:00	1870.230	74.351	08/08/24	05:08:00	1869.691	74.387	08/08/24	06:29:00	1869.233	74.424
08/08/24	03:48:00	1870.218	74.350	08/08/24	05:09:00	1869.701	74.389	08/08/24	06:30:00	1869.204	74.426
08/08/24	03:49:00	1870.226	74.356	08/08/24	05:10:00	1869.696	74.394	08/08/24	06:31:00	1869.197	74.425

APPENDIX H, Continued
Pressure/Time Data Recorded During the Pressure Transient Test

Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F	Date	Time	Pressure psig	Temp °F
08/08/24	06:32:00	1869.184	74.426								
08/08/24	06:33:00	1869.166	74.423								
08/08/24	06:34:00	1869.191	74.427								
08/08/24	06:35:00	1869.193	74.428								
08/08/24	06:36:00	1869.169	74.425								
08/08/24	06:37:00	1869.167	74.426								
08/08/24	06:38:00	1869.176	74.428								
08/08/24	06:39:00	1869.150	74.423								
08/08/24	06:40:00	1869.249	74.429								

APPENDIX I

PANSYSTEM© ANALYSIS OF FALLOFF TEST

Well Test Analysis Report

File: Romulus #2-12 PFOT Analysis.panx

Date: 29-August-2024

Report Details :

Company	Republic Industrial & Energy Solutions, LLC
Location	Romulus Facility
Well	2-12
Test	Reservoir Pressure Falloff
Date	August 6-8, 2024
Injection Interval	3975 - 4550 ft RKB
Interval Completion	Open-Hole
Gauge Type	Badger Low Temp
Gauge Serial Number	91933
Gauge Depth	3975 ft RKB
WSP Analyst	JL
WSP Project Number	192128.0156

Table of Contents

Input Data

Reservoir Configuration

Fluid type	Water
Well orientation	Vertical/Slant
Number of wells	1
Number of layers	1

Layer Parameters

Parameter	Layer 1
Formation thickness (ft)	133
Average formation porosity	0.11
Water saturation	0
Gas saturation	0
Formation compressibility (psi-1)	0.0000e+000
Total system compressibility (psi-1)	6.2000e-006
Layer pressure (psia)	0
Temperature (deg F)	0

Well Parameters

Parameter	Well 1
Well radius (ft)	0.3645
Distance from observation to active well (ft)	0
Wellbore storage coefficient (bbl/psi)	0
Storage Amplitude (psi)	0
Storage Time Constant (hr)	0
Second Wellbore Storage (bbl/psi)	0
Time Change for Second Storage (hr)	0
Well offset - x direction (ft)	0
Well offset - y direction (ft)	0

Fluid Parameters

Parameter	Layer 1
Oil gravity (API)	0
Gas gravity (sp grav)	0
Gas-oil ratio (produced) (scf/STB)	0
Water cut	0
Water salinity (ppm)	0
Check Pressure (psia)	0
Check Temperature (deg F)	0
Gas-oil ratio (solution) (scf/STB)	0
Bubble-point pressure (psia)	0
Oil density (lb/ft3)	0
Oil viscosity (cp)	0
Oil formation volume factor (RB/STB)	0
Gas density (lb/ft3)	0
Gas viscosity (cp)	0
Gas formation volume factor (ft3/scf)	0
Water density (lb/ft3)	0
Water viscosity (cp)	0.8
Water formation volume factor (RB/STB)	1
Oil compressibility (psi-1)	0.0000e+000
Initial Gas compressibility (psi-1)	0.0000e+000
Water compressibility (psi-1)	0.0000e+000

Correlations

Correlation Parameters	Layer 1
Cf Correlation	Hall Correlation
Young's modulus (E) (psi)	0
Poisson's Ratio (v)	0

Layer Boundaries

Boundary Parameter	Layer 1
Boundary Type	Infinitely acting

Rate Change Data

DateTime (hh:mm:ss)	Pressure (psia)	Rate (STB/day)
8/6/2024 6:15:00 PM	0	0
8/6/2024 6:29:59 PM	0	0
8/6/2024 6:30:00 PM	0	-1534.59
8/6/2024 6:45:00 PM	0	-1425.7
8/6/2024 7:00:00 PM	0	-1490.56
8/6/2024 7:15:00 PM	0	-1492.91
8/6/2024 7:30:00 PM	0	-1472.95
8/6/2024 7:45:00 PM	0	-1462.97
8/6/2024 8:00:00 PM	0	-1479.41
8/6/2024 8:15:00 PM	0	-1449.18
8/6/2024 8:30:00 PM	0	-1467.96
8/6/2024 8:45:00 PM	0	-1465.61
8/6/2024 9:00:00 PM	0	-1503.18
8/6/2024 9:15:00 PM	0	-1493.21
8/6/2024 9:30:00 PM	0	-1487.04
8/6/2024 9:45:00 PM	0	-1503.18
8/6/2024 10:00:00 PM	0	-1449.47
8/6/2024 10:15:00 PM	0	-1490.86
8/6/2024 10:30:00 PM	0	-1473.25
8/6/2024 10:45:00 PM	0	-1459.16
8/6/2024 11:00:00 PM	0	-1490.56
8/6/2024 11:15:00 PM	0	-1486.75
8/6/2024 11:30:00 PM	0	-1492.91
8/6/2024 11:45:00 PM	0	-1472.95
8/7/2024 12:00:00 AM	0	-1462.97
8/7/2024 12:15:00 AM	0	-1482.93
8/7/2024 12:30:00 AM	0	-1469.43
8/7/2024 12:45:00 AM	0	-1493.21
8/7/2024 1:00:00 AM	0	-1462.97
8/7/2024 1:15:00 AM	0	-1500.54
8/7/2024 1:30:00 AM	0	-1493.21
8/7/2024 1:45:00 AM	0	-1507
8/7/2024 2:00:00 AM	0	-1459.45
8/7/2024 2:15:00 AM	0	-1487.04
8/7/2024 2:30:00 AM	0	-1477.06
8/7/2024 2:45:00 AM	0	-1503.48
8/7/2024 3:00:00 AM	0	-1422.17
8/7/2024 3:15:00 AM	0	-1459.74
8/7/2024 3:30:00 AM	0	-1465.91
8/7/2024 3:45:00 AM	0	-1445.95

DateTime (hh:mm:ss)	Pressure (psia)	Rate (STB/day)
8/7/2024 4:00:00 AM	0	-1477.35
8/7/2024 4:15:00 AM	0	-1442.43
8/7/2024 4:30:00 AM	0	-1456.22
8/7/2024 4:45:00 AM	0	-1463.85
8/7/2024 5:00:00 AM	0	-1480
8/7/2024 5:15:00 AM	0	-1483.81
8/7/2024 5:30:00 AM	0	-1474.42
8/7/2024 5:45:00 AM	0	-1503.77
8/7/2024 6:00:00 AM	0	-1491.44
8/7/2024 6:28:30 AM	2174.622	-1412.49
8/8/2024 6:41:57 AM	1883.981	0

Model Data

Layer 1 Model Data

Model Parameter	Model Data
Model Name	Model 1
Model Type	Radial homogeneous
Permeability (md)	0
Skin factor	0

Analysis

Model - Layer 1 : Model 1

Model Detail

Model Parameter	Model Data
Model Name	Model 1
Model Type	Radial homogeneous
Layer	Layer 1
WellBore Storage Model	Classic Wellbore Storage

Figure 4: Well 2-12 2024 PFO Test Overview Plot

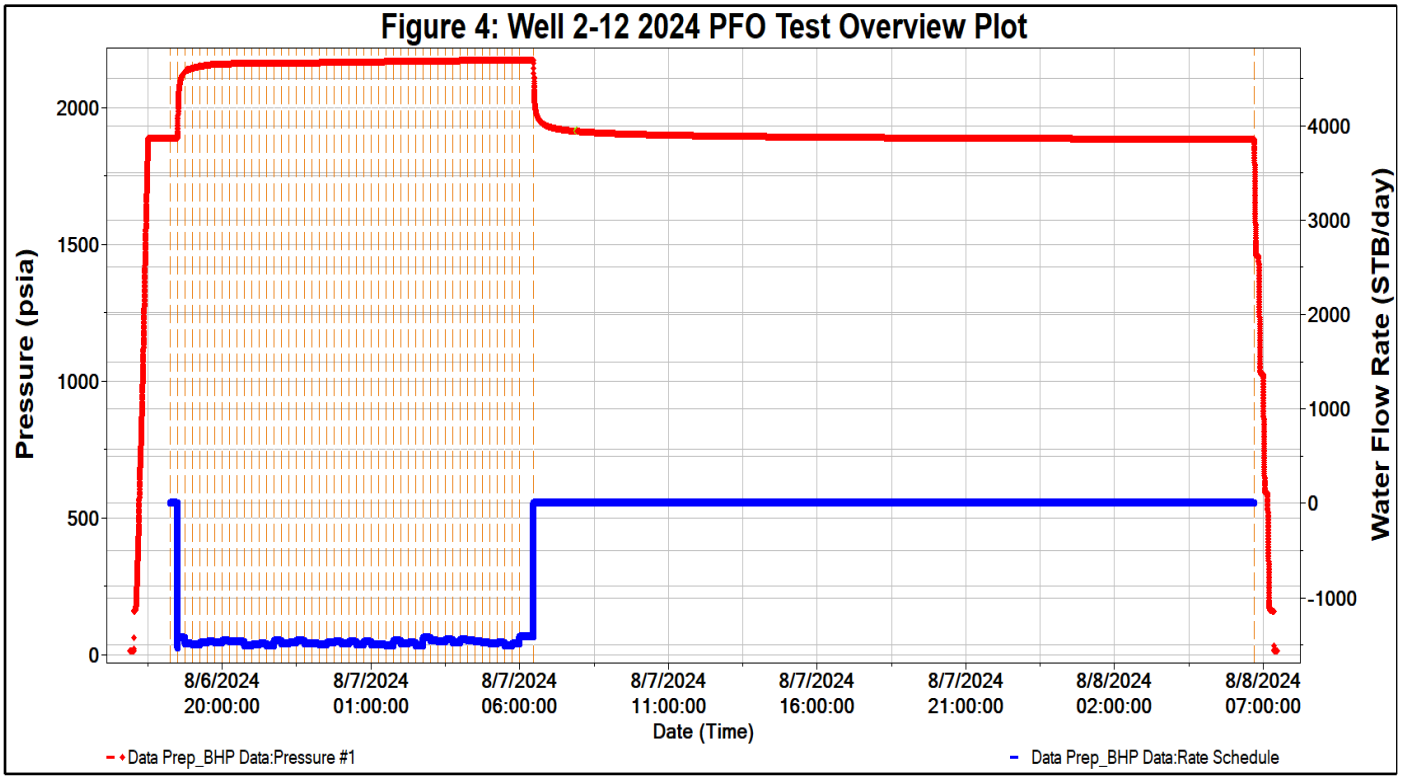


Figure 4: Well 2-12 2024 PFO Test Overview Plot

Figure 6: Well 2-12 2024 PFO Log-Log Plot:TP50

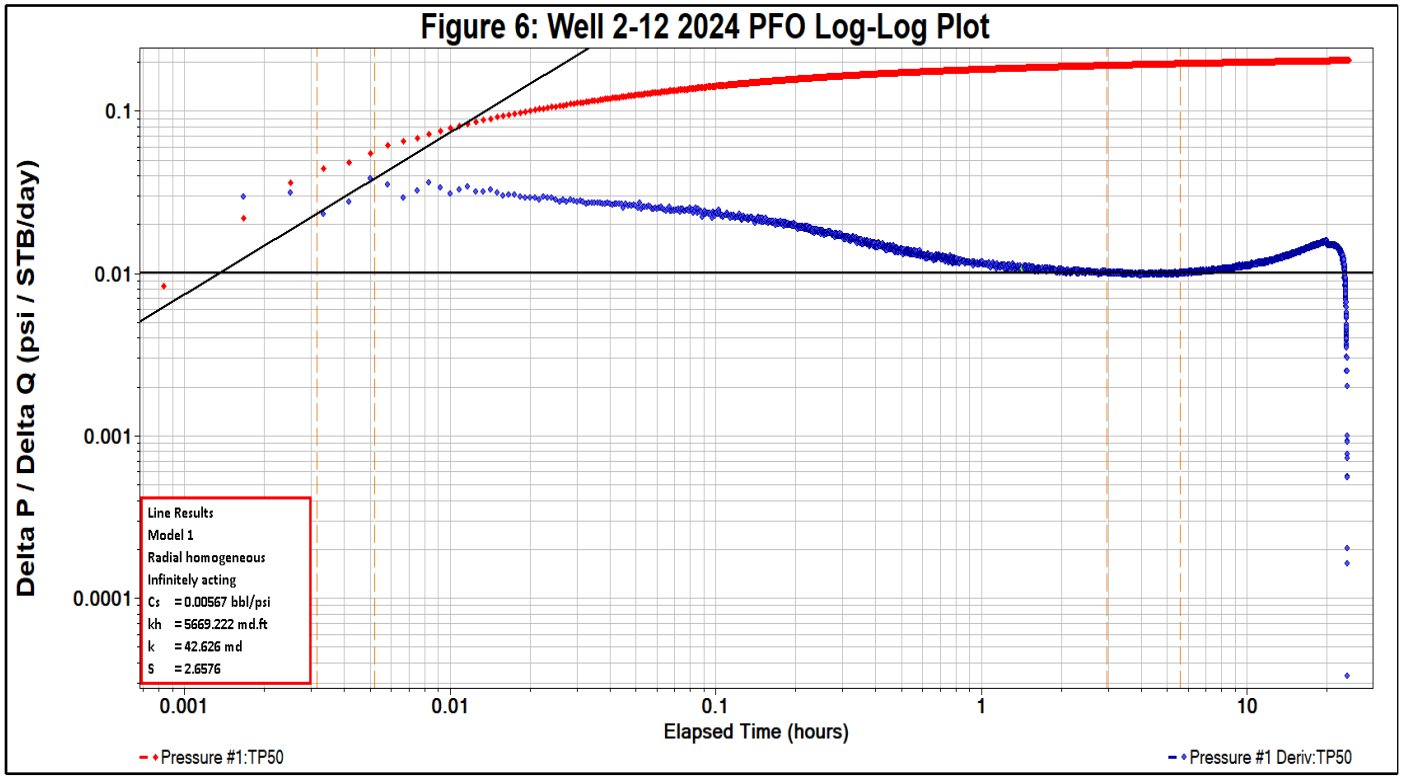


Figure 6: Well 2-12 2024 PFO Log-Log Plot

Line Results

Line Result Parameter	Value
Wellbore storage coefficient (bbl/psi)	0.00567226
Permeability (md)	42.6257
Permeability-thickness (md.ft)	5669.22
Skin factor	2.65757

Line Details

Details	Value
Line type	Wellbore storage
Slope	1
Intercept	7.346
Coefficient of Determination	Not Used

Details	Value
Line type	Radial flow
Slope	0
Intercept	0.01
Coefficient of Determination	Not Used

Figure 7: Well 2-12 2024 PFO Radial Flow Plot:TP50

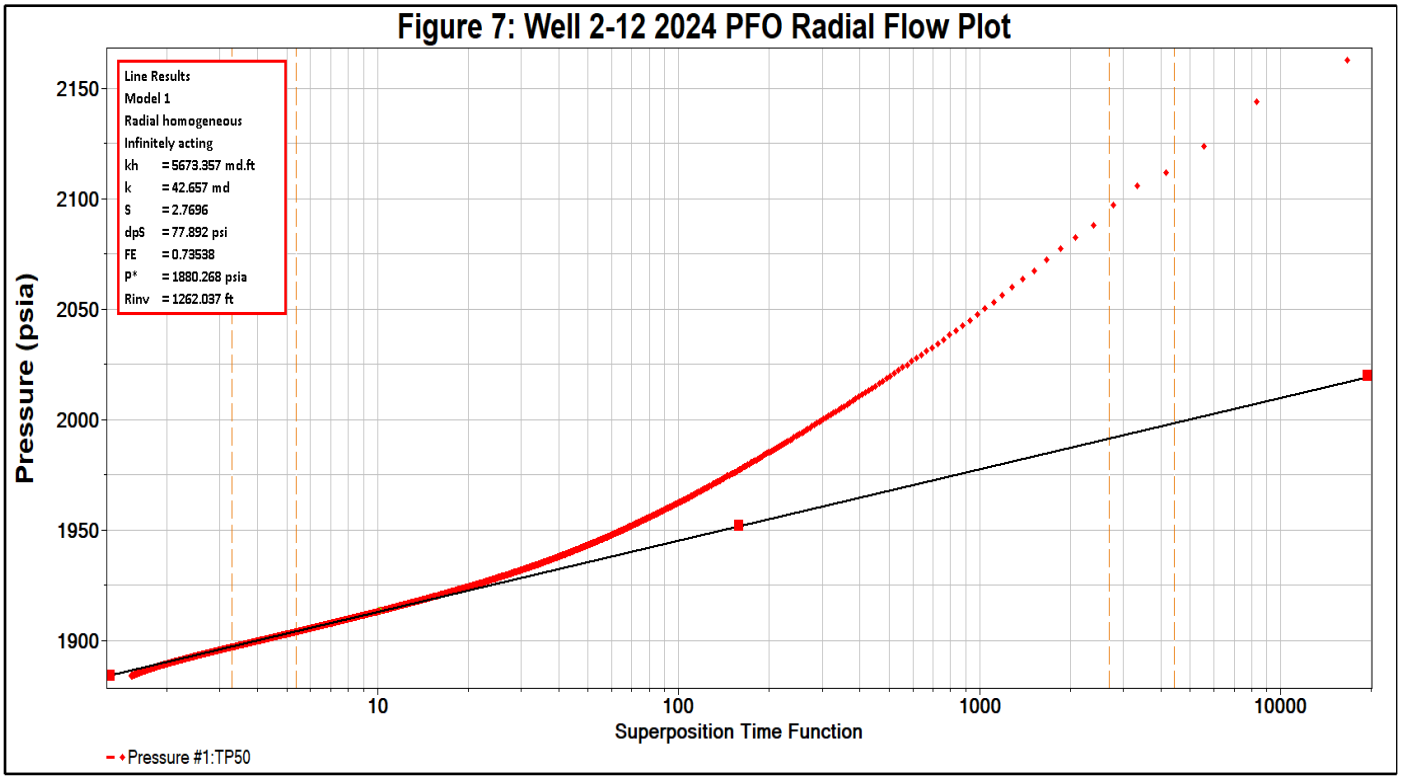


Figure 7: Well 2-12 2024 PFO Radial Flow Plot

Line Results

Line Result Parameter	Value
Permeability (md)	42.6568
Permeability-thickness (md.ft)	5673.36
Extrapolated pressure (psia)	1880.268
Radius of investigation (ft)	1262.04
Flow efficiency	0.735381
dP skin (constant rate) (psi)	77.8916
Skin factor	2.76963

Line Details

Details	Value
Line type	Radial flow
Slope	32.378
Intercept	1880.268
Coefficient of Determination	1
Extrapolated pressure (psia)	1880.268
Pressure at dt = 1 hour (psia)	1918.261

Figure 5: Well 2-12 2024 PFO Cartesian Plot:TP50

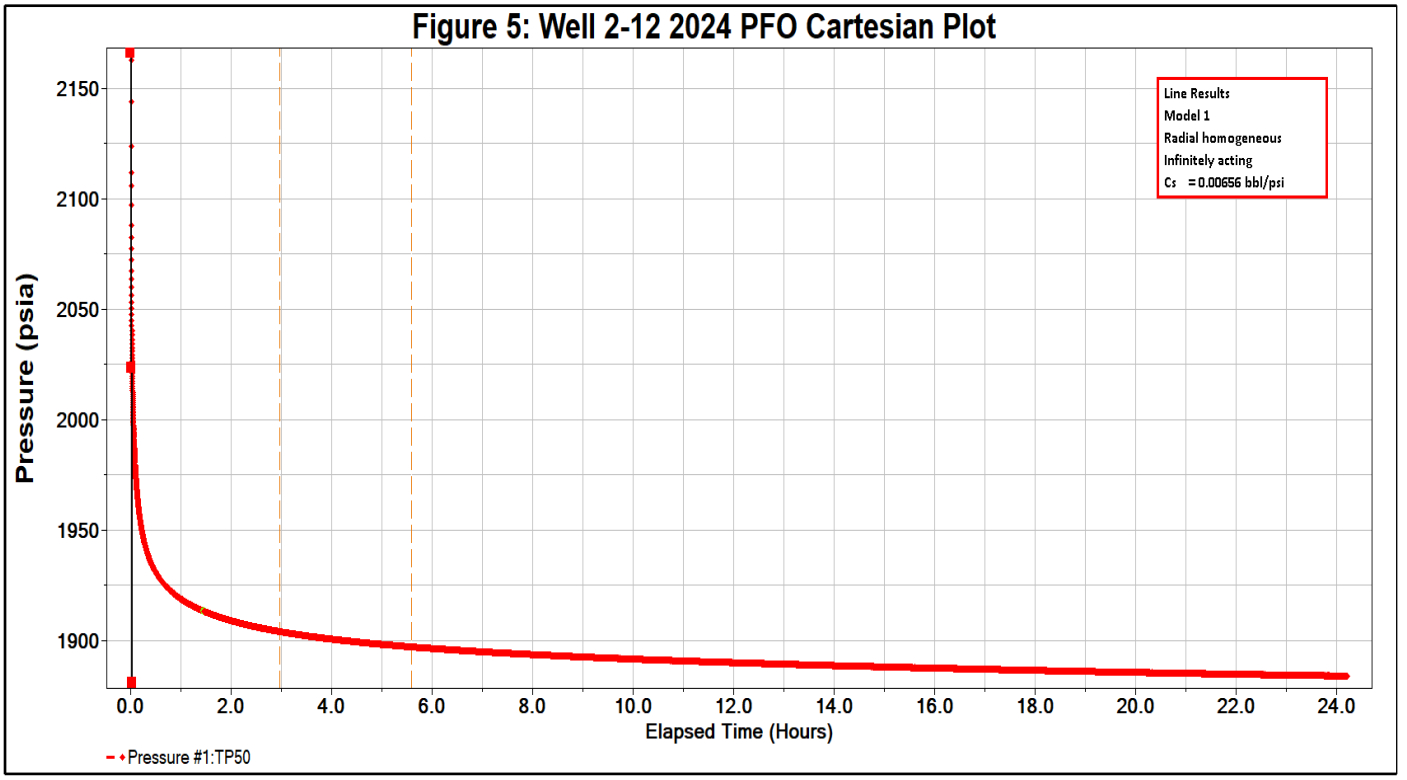


Figure 5: Well 2-12 2024 PFO Cartesian Plot

Line Results

Line Result Parameter	Value
Wellbore storage coefficient (bbl/psi)	0.0065559

Line Details

Details	Value
Line type	Wellbore storage
Slope	-8977.2
Intercept	2142.38
Coefficient of Determination	0.988

APPENDIX J

PRESSURE TEST REPORT DATA

Pressure Test Report

COMPANY INFORMATION

Company Name	Republic Services
Representative	Jeffry Tahtouh with WSP USA, Inc.
Phone	713-503-7704
Fax	
Address	Republic Services 28470 Citrin Drive Romulus, MI 48174
E-Mail Address	
Service Company	Impact Completions, LLC

WELL INFORMATION

Well Name	Romulus Facility 2-12
Well Location	Romulus, MI
Field and Pool	
Status (Oil, Gas, Water, Injection)	
Perforated Intervals	
Mid-point of Perforated Intervals (MPP)	
Drilling Rig Number	
Elevations	
Kelly Bushing (KB)	13 feet above ground level
Casing Flange (CF)	
KB-CF	
Ground Level	
Plug Back Total Depth	
Total Depth	
Production Casing	
Production Tubing	

TEST INFORMATION

Type of Test	Injection/fall-Off
Date(s) of Test	August 06, 2024 thru August 08, 2024
Dead-weight Gauge Tubing Pressure	
Dead-weight Gauge Casing Pressure	
Shut-in Date (Duration)	August 07, 2024 at 06:28:30
Date / Time on Bottom	August 06, 2024 at 17:31:00
Date / Time off Bottom	August 08, 2024 at 06:41:57
Probe Serial Number	91933
Probe Offset from End of Tool String	
Run Depth at Probe Pressure Port	

PRESSURE TEST RESULTS

Maximum Recorded Probe Pressure	2159.9 psig
Maximum Recorded Probe Temperature	78.2 deg F
Final Buildup Pressure	
Gradient Survey Information	
Extrapolated Pressure to MPP	
Final Gradient at Depth	
Job Number	

Company Name	Republic Services
Well Name	Romulus Facility 2-12
Type of Test	Injection/fall-Off
Date(s) of Test	August 06, 2024 thru August 08, 2024

PROBE INFORMATION

Probe Serial Number	91933
Model	Badger Low Temp
Pressure	
Calibrated Pressure Range	0.00 - 10,000.00
Accuracy	2.4000 psi (0.024 %FS)
Resolution	0.0300 psi (0.0003 %FS)
Temperature	
Calibrated Temperature Range	0.00 - 150.0 deg C
Accuracy	0.40 deg C (0.40 %FS)
Resolution	0.001 deg C (0.001%FS)
Calibration File Used for Reports	October 04, 2023

PROGRAMMING DETAILS

Step	Sample Mode	Period	Duration	Comment

Program Start Time	
Program End Time	
Total Samples Taken	
Usage for this Test	
Generic Data File Name	

COMMENTS

Reported By Tim Auker

Zeroed bottom gauge in reference to Kelly Bushing Measurements.

Top Gauge: 91932 (two feet above bottom gauge)
Bottom Gauge: 91933

The bottom gauge was used for this report.

R.I.H. with tandem electronic memory gauges. Hang bottom gauge at 3975 feet. Record data for injection/fall-off test. P.O.O.H. with gauges making gradient stops.

Company Name	Republic Services
Well Name	Romulus Facility 2-12
Type of Test	Injection/fall-Off
Date(s) of Test	August 06, 2024 thru August 08, 2024

Pressure vs. Depth

Probe Serial Number 91933

		(ft)	(psig)	(psi/ft)	(deg F)	(deg F/ft)
06:26	06:41	3975.000	1869.275	-	74.426	-
06:46	06:51	3000.000	1444.969	0.4352	74.305	0.0001
06:55	07:00	2000.000	1009.795	0.4352	63.349	0.0110
07:04	07:09	1000.000	575.829	0.4340	59.221	0.0041
07:13	07:18	13.000	148.761	0.4327	66.785	-0.0077

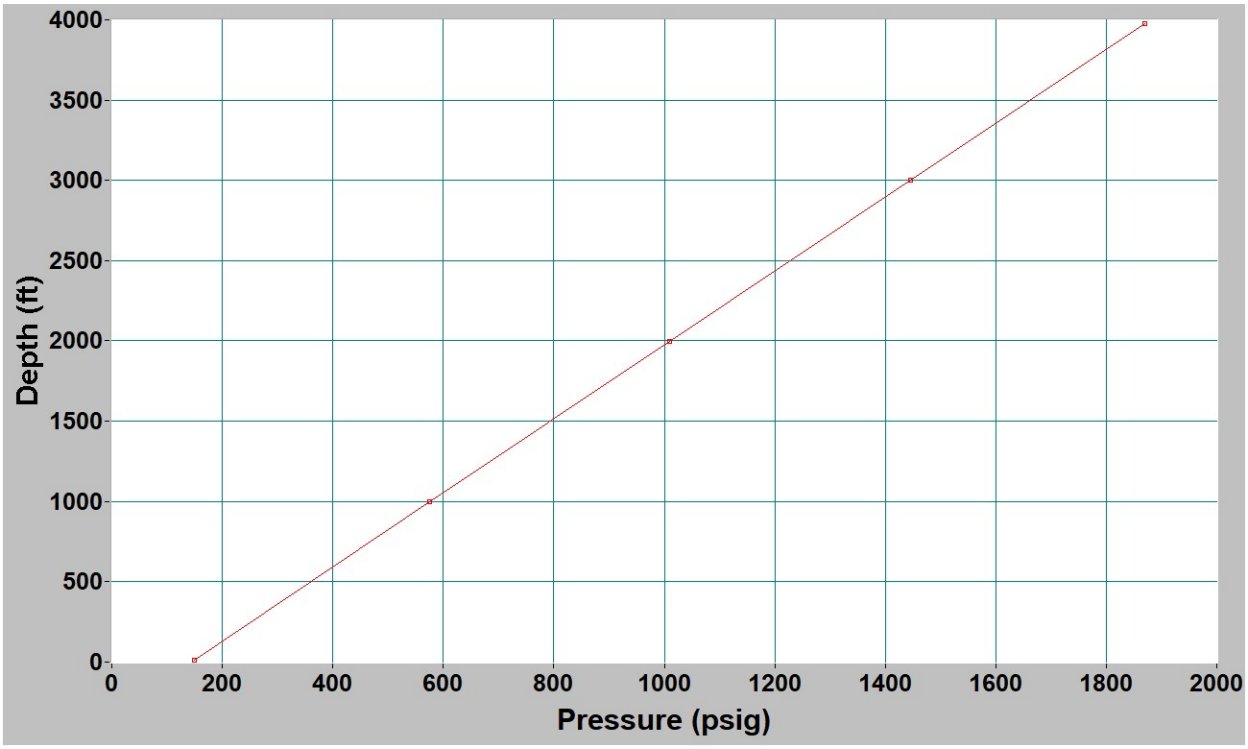
Extrapolated to MPP:

(ft)	(psig)	(deg F)
0.000		

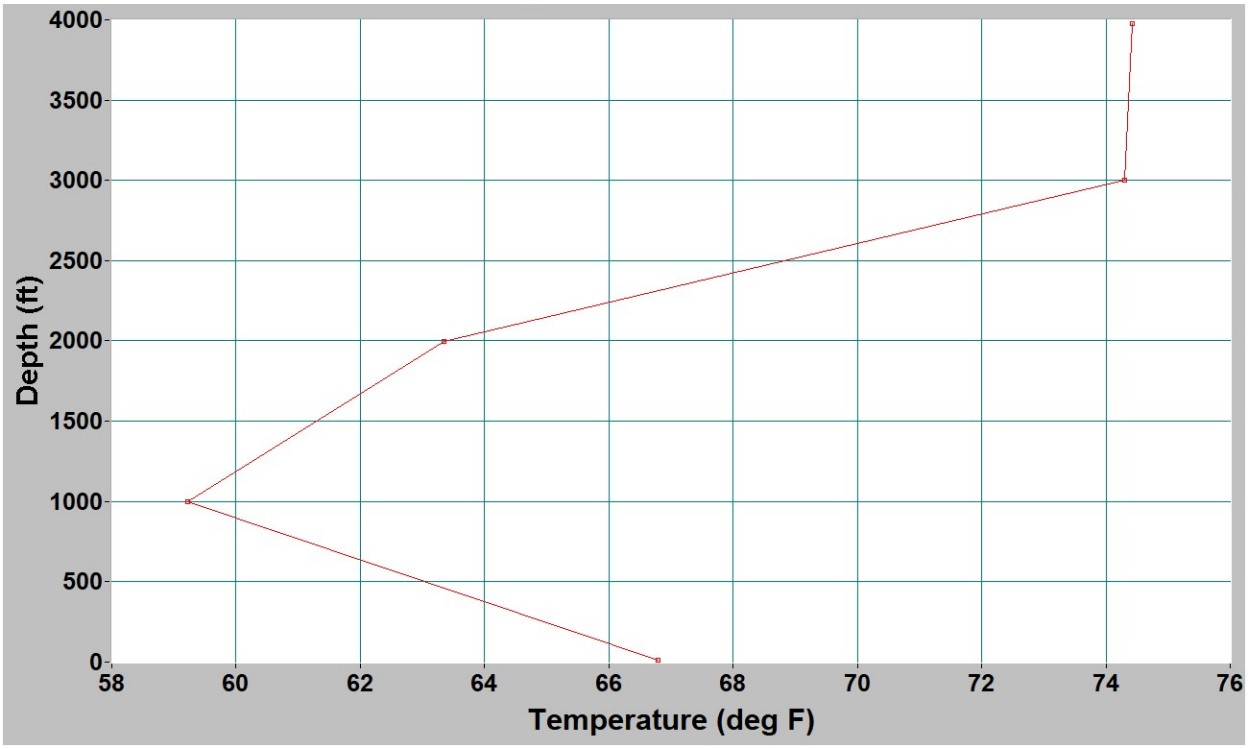
Company Name	Republic Services
Well Name	Romulus Facility 2-12
Type of Test	Injection/fall-Off
Date(s) of Test	August 06, 2024 thru August 08, 2024

Probe Serial Number 91933

Static Pressure Gradients

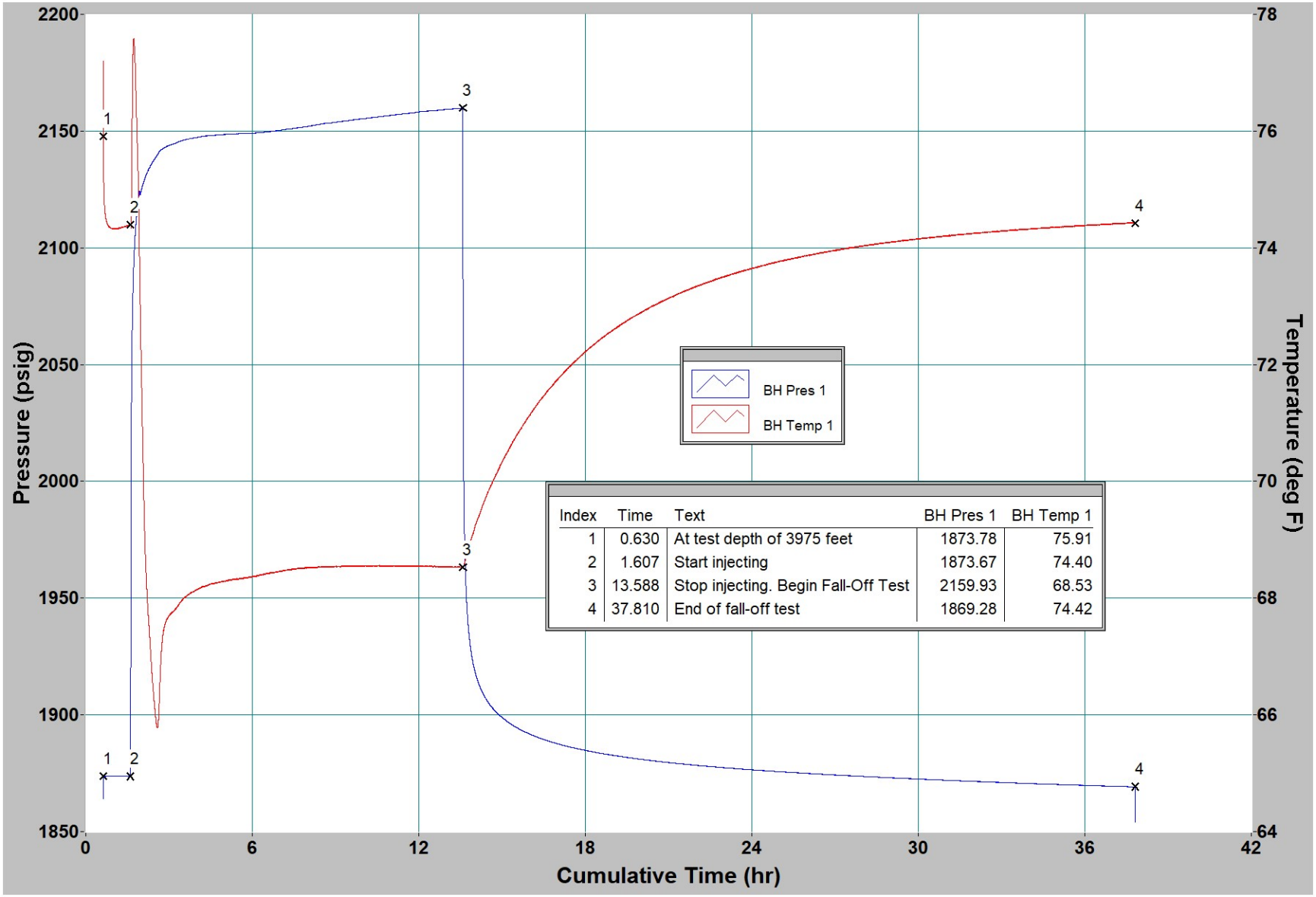


Static Temperature Gradients



Company Name	Republic Services
Well Name	Romulus Facility 2-12
Type of Test	Injection/fall-Off
Date(s) of Test	August 06, 2024 thru August 08, 2024

Fall-Off Test



Index	Time	Text	BH Pres 1	BH Temp 1
1	0.630	At test depth of 3975 feet	1873.78	75.91
2	1.607	Start injecting	1873.67	74.40
3	13.588	Stop injecting. Begin Fall-Off Test	2159.93	68.53
4	37.810	End of fall-off test	1869.28	74.42

Company Name	Republic Services
Well Name	Romulus Facility 2-12
Type of Test	Injection/fall-Off
Date(s) of Test	August 06, 2024 thru August 08, 2024

Date	Time	Cum.Time BH1	BH Pres 1	BH Temp 1
		hr	psig	deg F
Gauge on surface				
2024/08/06	16:53:15	0.0000	-1.809	67.984
2024/08/06	16:59:39	0.1067	-1.501	70.360
Begin equalizing lubricator				
2024/08/06	17:02:21	0.1517	-1.516	70.543
R.I.H. with gauges				
2024/08/06	17:05:15	0.2000	149.765	67.003
2024/08/06	17:05:39	0.2067	152.818	66.859
2024/08/06	17:11:39	0.3067	476.859	60.795
2024/08/06	17:17:39	0.4067	860.937	62.715
2024/08/06	17:23:39	0.5067	1357.246	68.005
2024/08/06	17:29:39	0.6067	1818.789	77.221
At test depth of 3975 feet				
2024/08/06	17:31:03	0.6300	1873.781	75.909
2024/08/06	17:35:39	0.7067	1873.652	74.548
2024/08/06	17:41:39	0.8067	1873.746	74.385
2024/08/06	17:47:39	0.9067	1873.797	74.332
2024/08/06	17:53:39	1.0067	1873.812	74.327
2024/08/06	17:59:39	1.1067	1873.832	74.329
2024/08/06	18:05:39	1.2067	1873.815	74.336
2024/08/06	18:11:39	1.3067	1873.809	74.350
2024/08/06	18:17:39	1.4067	1873.744	74.365
2024/08/06	18:23:39	1.5067	1873.738	74.385
2024/08/06	18:29:39	1.6067	1873.682	74.397
Start injecting				
2024/08/06	18:29:42	1.6075	1873.670	74.395
2024/08/06	18:35:39	1.7067	2085.014	77.484
2024/08/06	18:41:39	1.8067	2110.437	76.622
2024/08/06	18:47:39	1.9067	2122.034	74.705
2024/08/06	18:53:39	2.0067	2124.941	71.757
2024/08/06	18:59:39	2.1067	2128.990	69.370
2024/08/06	19:05:39	2.2067	2132.139	68.061
2024/08/06	19:11:39	2.3067	2134.523	67.298
2024/08/06	19:17:39	2.4067	2136.669	66.551
2024/08/06	19:23:39	2.5067	2138.528	65.995
2024/08/06	19:29:39	2.6067	2140.244	65.840
2024/08/06	19:35:39	2.7067	2141.858	66.951
2024/08/06	19:41:39	2.8067	2142.643	67.451
2024/08/06	19:47:39	2.9067	2143.369	67.626
2024/08/06	19:53:39	3.0067	2143.912	67.701
2024/08/06	19:59:39	3.1067	2144.235	67.755
2024/08/06	20:05:39	3.2067	2144.667	67.798
2024/08/06	20:11:39	3.3067	2145.211	67.858
2024/08/06	20:17:39	3.4067	2145.683	67.924
2024/08/06	20:23:39	3.5067	2146.082	67.984
2024/08/06	20:29:39	3.6067	2146.377	68.027
2024/08/06	20:35:39	3.7067	2146.625	68.067
2024/08/06	20:41:39	3.8067	2146.837	68.094
2024/08/06	20:47:39	3.9067	2147.051	68.121
2024/08/06	20:53:39	4.0067	2147.246	68.140
2024/08/06	20:59:39	4.1067	2147.485	68.169
2024/08/06	21:05:39	4.2067	2147.778	68.198
2024/08/06	21:11:39	4.3067	2147.890	68.207
2024/08/06	21:17:39	4.4067	2147.999	68.221
2024/08/06	21:23:39	4.5067	2148.093	68.238
2024/08/06	21:29:39	4.6067	2148.191	68.254
2024/08/06	21:35:39	4.7067	2148.296	68.266
2024/08/06	21:41:39	4.8067	2148.351	68.268
2024/08/06	21:47:39	4.9067	2148.475	68.286
2024/08/06	21:53:39	5.0067	2148.559	68.292
2024/08/06	21:59:39	5.1067	2148.639	68.299
2024/08/06	22:05:39	5.2067	2148.704	68.313
2024/08/06	22:11:39	5.3067	2148.773	68.317
2024/08/06	22:17:39	5.4067	2148.827	68.320
2024/08/06	22:23:39	5.5067	2148.865	68.328
2024/08/06	22:29:39	5.6067	2148.977	68.337
2024/08/06	22:35:39	5.7067	2149.027	68.346
2024/08/06	22:41:39	5.8067	2149.045	68.353
2024/08/06	22:47:39	5.9067	2149.038	68.362
2024/08/06	22:53:39	6.0067	2149.088	68.369
2024/08/06	22:59:39	6.1067	2149.187	68.378
2024/08/06	23:05:39	6.2067	2149.286	68.387
2024/08/06	23:11:39	6.3067	2149.313	68.394
2024/08/06	23:17:39	6.4067	2149.472	68.405
2024/08/06	23:23:39	6.5067	2149.616	68.421
2024/08/06	23:29:39	6.6067	2149.733	68.427
2024/08/06	23:35:39	6.7067	2149.899	68.432
2024/08/06	23:41:39	6.8067	2150.049	68.441
2024/08/06	23:47:39	6.9067	2150.211	68.448
2024/08/06	23:53:39	7.0067	2150.354	68.457
2024/08/06	23:59:39	7.1067	2150.509	68.468
2024/08/07	00:05:39	7.2067	2150.738	68.482
2024/08/07	00:11:39	7.3067	2150.890	68.488
2024/08/07	00:17:39	7.4067	2151.014	68.490
2024/08/07	00:23:39	7.5067	2151.155	68.495
2024/08/07	00:29:39	7.6067	2151.362	68.502
2024/08/07	00:35:39	7.7067	2151.487	68.506
2024/08/07	00:41:39	7.8067	2151.630	68.509
2024/08/07	00:47:39	7.9067	2151.855	68.520
2024/08/07	00:53:39	8.0067	2152.003	68.520
2024/08/07	00:59:39	8.1067	2152.211	68.522
2024/08/07	01:05:39	8.2067	2152.416	68.524
2024/08/07	01:11:39	8.3067	2152.630	68.522
2024/08/07	01:17:39	8.4067	2152.841	68.527
2024/08/07	01:23:39	8.5067	2153.041	68.538
2024/08/07	01:29:39	8.6067	2153.294	68.535
2024/08/07	01:35:39	8.7067	2153.433	68.535
2024/08/07	01:41:39	8.8067	2153.430	68.536
2024/08/07	01:47:39	8.9067	2153.616	68.540
2024/08/07	01:53:39	9.0067	2153.769	68.540

Company Name Republic Services
Well Name Romulus Facility 2-12
Type of Test Injection/fall-Off
Date(s) of Test August 06, 2024 thru August 08, 2024

Date	Time	Cum.Time BH1	BH Pres 1	BH Temp 1
		hr	psig	deg F
2024/08/07	01:59:39	9.1067	2153.940	68.544
2024/08/07	02:05:39	9.2067	2154.078	68.545
2024/08/07	02:11:39	9.3067	2154.251	68.545
2024/08/07	02:17:39	9.4067	2154.429	68.554
2024/08/07	02:23:39	9.5067	2154.559	68.549
2024/08/07	02:29:39	9.6067	2154.718	68.549
2024/08/07	02:35:39	9.7067	2154.933	68.547
2024/08/07	02:41:39	9.8067	2155.041	68.545
2024/08/07	02:47:39	9.9067	2155.183	68.553
2024/08/07	02:53:39	10.0067	2155.306	68.551
2024/08/07	02:59:39	10.1067	2155.442	68.558
2024/08/07	03:05:39	10.2067	2155.595	68.554
2024/08/07	03:11:39	10.3067	2155.749	68.551
2024/08/07	03:17:39	10.4067	2155.861	68.547
2024/08/07	03:23:39	10.5067	2156.011	68.553
2024/08/07	03:29:39	10.6067	2156.197	68.551
2024/08/07	03:35:39	10.7067	2156.334	68.553
2024/08/07	03:41:39	10.8067	2156.507	68.549
2024/08/07	03:47:39	10.9067	2156.588	68.549
2024/08/07	03:53:39	11.0067	2156.757	68.547
2024/08/07	03:59:39	11.1067	2156.914	68.553
2024/08/07	04:05:39	11.2067	2157.032	68.549
2024/08/07	04:11:39	11.3067	2157.215	68.556
2024/08/07	04:17:39	11.4067	2157.344	68.556
2024/08/07	04:23:39	11.5067	2157.453	68.551
2024/08/07	04:29:39	11.6067	2157.556	68.551
2024/08/07	04:35:39	11.7067	2157.692	68.549
2024/08/07	04:41:39	11.8067	2157.854	68.553
2024/08/07	04:47:39	11.9067	2157.969	68.544
2024/08/07	04:53:39	12.0067	2158.223	68.549
2024/08/07	04:59:39	12.1067	2158.364	68.542
2024/08/07	05:05:39	12.2067	2158.463	68.542
2024/08/07	05:11:39	12.3067	2158.533	68.542
2024/08/07	05:17:39	12.4067	2158.608	68.545
2024/08/07	05:23:39	12.5067	2158.705	68.544
2024/08/07	05:29:39	12.6067	2158.784	68.536
2024/08/07	05:35:39	12.7067	2158.914	68.535
2024/08/07	05:41:39	12.8067	2159.053	68.538
2024/08/07	05:47:39	12.9067	2159.175	68.531
2024/08/07	05:53:39	13.0067	2159.290	68.533
2024/08/07	05:59:39	13.1067	2159.349	68.533
2024/08/07	06:05:39	13.2067	2159.491	68.535
2024/08/07	06:11:39	13.3067	2159.611	68.535
2024/08/07	06:17:39	13.4067	2159.657	68.531
2024/08/07	06:23:39	13.5067	2159.780	68.533
Stop injecting. Begin Fall-Off Test				
2024/08/07	06:28:30	13.5875	2159.926	68.531
2024/08/07	06:29:39	13.6067	2019.817	68.526
2024/08/07	06:35:39	13.7067	1952.526	68.722
2024/08/07	06:41:39	13.8067	1934.522	68.880

Date	Time	Cum.Time BH1	BH Pres 1	BH Temp 1
		hr	psig	deg F
2024/08/07	06:47:39	13.9067	1925.227	69.040
2024/08/07	06:53:39	14.0067	1919.274	69.195
2024/08/07	06:59:39	14.1067	1915.135	69.339
2024/08/07	07:05:39	14.2067	1911.868	69.460
2024/08/07	07:11:39	14.3067	1909.314	69.602
2024/08/07	07:17:39	14.4067	1907.093	69.714
2024/08/07	07:23:39	14.5067	1905.242	69.831
2024/08/07	07:29:39	14.6067	1903.706	69.939
2024/08/07	07:35:39	14.7067	1902.231	70.039
2024/08/07	07:41:39	14.8067	1900.992	70.137
2024/08/07	07:47:39	14.9067	1899.858	70.234
2024/08/07	07:53:39	15.0067	1898.802	70.338
2024/08/07	07:59:39	15.1067	1897.832	70.425
2024/08/07	08:05:39	15.2067	1896.947	70.518
2024/08/07	08:11:39	15.3067	1896.132	70.610
2024/08/07	08:17:39	15.4067	1895.408	70.696
2024/08/07	08:23:39	15.5067	1894.698	70.770
2024/08/07	08:29:39	15.6067	1893.991	70.849
2024/08/07	08:35:39	15.7067	1893.332	70.921
2024/08/07	08:41:39	15.8067	1892.814	71.001
2024/08/07	08:47:39	15.9067	1892.275	71.073
2024/08/07	08:53:39	16.0067	1891.709	71.145
2024/08/07	08:59:39	16.1067	1891.208	71.204
2024/08/07	09:05:39	16.2067	1890.737	71.280
2024/08/07	09:11:39	16.3067	1890.277	71.343
2024/08/07	09:17:39	16.4067	1889.858	71.407
2024/08/07	09:23:39	16.5067	1889.446	71.463
2024/08/07	09:29:39	16.6067	1889.010	71.521
2024/08/07	09:35:39	16.7067	1888.626	71.589
2024/08/07	09:41:39	16.8067	1888.268	71.640
2024/08/07	09:47:39	16.9067	1887.956	71.701
2024/08/07	09:53:39	17.0067	1887.553	71.740
2024/08/07	09:59:39	17.1067	1887.255	71.798
2024/08/07	10:05:39	17.2067	1886.955	71.856
2024/08/07	10:11:39	17.3067	1886.637	71.901
2024/08/07	10:17:39	17.4067	1886.342	71.949
2024/08/07	10:23:39	17.5067	1886.077	72.003
2024/08/07	10:29:39	17.6067	1885.798	72.050
2024/08/07	10:35:39	17.7067	1885.542	72.099
2024/08/07	10:41:39	17.8067	1885.255	72.131
2024/08/07	10:47:39	17.9067	1885.030	72.185
2024/08/07	10:53:39	18.0067	1884.770	72.225
2024/08/07	10:59:39	18.1067	1884.527	72.262
2024/08/07	11:05:39	18.2067	1884.285	72.304
2024/08/07	11:11:39	18.3067	1884.079	72.342
2024/08/07	11:17:39	18.4067	1883.852	72.381
2024/08/07	11:23:39	18.5067	1883.635	72.417
2024/08/07	11:29:39	18.6067	1883.436	72.459
2024/08/07	11:35:39	18.7067	1883.230	72.489
2024/08/07	11:41:39	18.8067	1883.033	72.525

Company Name	Republic Services
Well Name	Romulus Facility 2-12
Type of Test	Injection/fall-Off
Date(s) of Test	August 06, 2024 thru August 08, 2024

Date	Time	Cum.Time BH1	BH Pres 1	BH Temp 1
		hr	psig	deg F
2024/08/07	11:47:39	18.9067	1882.841	72.558
2024/08/07	11:53:39	19.0067	1882.644	72.595
2024/08/07	11:59:39	19.1067	1882.479	72.624
2024/08/07	12:05:39	19.2067	1882.280	72.660
2024/08/07	12:11:39	19.3067	1882.119	72.691
2024/08/07	12:17:39	19.4067	1881.943	72.720
2024/08/07	12:23:39	19.5067	1881.755	72.754
2024/08/07	12:29:39	19.6067	1881.611	72.786
2024/08/07	12:35:39	19.7067	1881.425	72.808
2024/08/07	12:41:39	19.8067	1881.251	72.838
2024/08/07	12:47:39	19.9067	1881.109	72.869
2024/08/07	12:53:39	20.0067	1880.955	72.892
2024/08/07	12:59:39	20.1067	1880.811	72.925
2024/08/07	13:05:39	20.2067	1880.657	72.941
2024/08/07	13:11:39	20.3067	1880.513	72.972
2024/08/07	13:17:39	20.4067	1880.364	72.997
2024/08/07	13:23:39	20.5067	1880.232	73.018
2024/08/07	13:29:39	20.6067	1880.092	73.045
2024/08/07	13:35:39	20.7067	1879.969	73.071
2024/08/07	13:41:39	20.8067	1879.834	73.089
2024/08/07	13:47:39	20.9067	1879.725	73.116
2024/08/07	13:53:39	21.0067	1879.575	73.139
2024/08/07	13:59:39	21.1067	1879.441	73.157
2024/08/07	14:05:39	21.2067	1879.340	73.179
2024/08/07	14:11:39	21.3067	1879.199	73.200
2024/08/07	14:17:39	21.4067	1879.082	73.224
2024/08/07	14:23:39	21.5067	1878.951	73.242
2024/08/07	14:29:39	21.6067	1878.860	73.263
2024/08/07	14:35:39	21.7067	1878.724	73.281
2024/08/07	14:41:39	21.8067	1878.621	73.303
2024/08/07	14:47:39	21.9067	1878.516	73.321
2024/08/07	14:53:39	22.0067	1878.397	73.341
2024/08/07	14:59:39	22.1067	1878.286	73.359
2024/08/07	15:05:39	22.2067	1878.169	73.377
2024/08/07	15:11:39	22.3067	1878.057	73.391
2024/08/07	15:17:39	22.4067	1877.963	73.405
2024/08/07	15:23:39	22.5067	1877.862	73.425
2024/08/07	15:29:39	22.6067	1877.750	73.440
2024/08/07	15:35:39	22.7067	1877.680	73.461
2024/08/07	15:41:39	22.8067	1877.558	73.474
2024/08/07	15:47:39	22.9067	1877.476	73.494
2024/08/07	15:53:39	23.0067	1877.374	73.504
2024/08/07	15:59:39	23.1067	1877.274	73.521
2024/08/07	16:05:39	23.2067	1877.185	73.535
2024/08/07	16:11:39	23.3067	1877.086	73.553
2024/08/07	16:17:39	23.4067	1876.990	73.560
2024/08/07	16:23:39	23.5067	1876.921	73.582
2024/08/07	16:29:39	23.6067	1876.786	73.589
2024/08/07	16:35:39	23.7067	1876.712	73.607
2024/08/07	16:41:39	23.8067	1876.619	73.621

Date	Time	Cum.Time BH1	BH Pres 1	BH Temp 1
		hr	psig	deg F
2024/08/07	16:47:39	23.9067	1876.539	73.629
2024/08/07	16:53:39	24.0067	1876.454	73.647
2024/08/07	16:59:39	24.1067	1876.349	73.656
2024/08/07	17:05:39	24.2067	1876.289	73.668
2024/08/07	17:11:39	24.3067	1876.211	73.688
2024/08/07	17:17:39	24.4067	1876.139	73.701
2024/08/07	17:23:39	24.5067	1876.041	73.710
2024/08/07	17:29:39	24.6067	1875.965	73.722
2024/08/07	17:35:39	24.7067	1875.868	73.731
2024/08/07	17:41:39	24.8067	1875.807	73.746
2024/08/07	17:47:39	24.9067	1875.726	73.758
2024/08/07	17:53:39	25.0067	1875.664	73.765
2024/08/07	17:59:39	25.1067	1875.573	73.778
2024/08/07	18:05:39	25.2067	1875.494	73.787
2024/08/07	18:11:39	25.3067	1875.430	73.801
2024/08/07	18:17:39	25.4067	1875.346	73.814
2024/08/07	18:23:39	25.5067	1875.292	73.819
2024/08/07	18:29:39	25.6067	1875.208	73.827
2024/08/07	18:35:39	25.7067	1875.139	73.839
2024/08/07	18:41:39	25.8067	1875.092	73.850
2024/08/07	18:47:39	25.9067	1874.998	73.859
2024/08/07	18:53:39	26.0067	1874.901	73.866
2024/08/07	18:59:39	26.1067	1874.831	73.879
2024/08/07	19:05:39	26.2067	1874.743	73.882
2024/08/07	19:11:39	26.3067	1874.687	73.891
2024/08/07	19:17:39	26.4067	1874.662	73.908
2024/08/07	19:23:39	26.5067	1874.574	73.917
2024/08/07	19:29:39	26.6067	1874.526	73.924
2024/08/07	19:35:39	26.7067	1874.447	73.933
2024/08/07	19:41:39	26.8067	1874.400	73.940
2024/08/07	19:47:39	26.9067	1874.313	73.944
2024/08/07	19:53:39	27.0067	1874.261	73.956
2024/08/07	19:59:39	27.1067	1874.191	73.965
2024/08/07	20:05:39	27.2067	1874.123	73.974
2024/08/07	20:11:39	27.3067	1874.071	73.983
2024/08/07	20:17:39	27.4067	1873.974	73.983
2024/08/07	20:23:39	27.5067	1873.947	73.999
2024/08/07	20:29:39	27.6067	1873.862	74.003
2024/08/07	20:35:39	27.7067	1873.815	74.012
2024/08/07	20:41:39	27.8067	1873.768	74.019
2024/08/07	20:47:39	27.9067	1873.703	74.025
2024/08/07	20:53:39	28.0067	1873.643	74.030
2024/08/07	20:59:39	28.1067	1873.574	74.041
2024/08/07	21:05:39	28.2067	1873.516	74.044
2024/08/07	21:11:39	28.3067	1873.468	74.053
2024/08/07	21:17:39	28.4067	1873.395	74.064
2024/08/07	21:23:39	28.5067	1873.328	74.066
2024/08/07	21:29:39	28.6067	1873.288	74.070
2024/08/07	21:35:39	28.7067	1873.219	74.079
2024/08/07	21:41:39	28.8067	1873.168	74.086

Company Name	Republic Services
Well Name	Romulus Facility 2-12
Type of Test	Injection/fall-Off
Date(s) of Test	August 06, 2024 thru August 08, 2024

Date	Time	Cum.Time BH1	BH Pres 1	BH Temp 1
		hr	psig	deg F
2024/08/07	21:47:39	28.9067	1873.121	74.088
2024/08/07	21:53:39	29.0067	1873.061	74.098
2024/08/07	21:59:39	29.1067	1872.994	74.106
2024/08/07	22:05:39	29.2067	1872.945	74.109
2024/08/07	22:11:39	29.3067	1872.886	74.122
2024/08/07	22:17:39	29.4067	1872.815	74.116
2024/08/07	22:23:39	29.5067	1872.770	74.125
2024/08/07	22:29:39	29.6067	1872.704	74.127
2024/08/07	22:35:39	29.7067	1872.672	74.138
2024/08/07	22:41:39	29.8067	1872.595	74.140
2024/08/07	22:47:39	29.9067	1872.554	74.151
2024/08/07	22:53:39	30.0067	1872.514	74.154
2024/08/07	22:59:39	30.1067	1872.455	74.156
2024/08/07	23:05:39	30.2067	1872.407	74.165
2024/08/07	23:11:39	30.3067	1872.360	74.174
2024/08/07	23:17:39	30.4067	1872.298	74.174
2024/08/07	23:23:39	30.5067	1872.252	74.181
2024/08/07	23:29:39	30.6067	1872.194	74.187
2024/08/07	23:35:39	30.7067	1872.138	74.188
2024/08/07	23:41:39	30.8067	1872.110	74.196
2024/08/07	23:47:39	30.9067	1872.064	74.199
2024/08/07	23:53:39	31.0067	1872.016	74.205
2024/08/07	23:59:39	31.1067	1871.927	74.206
2024/08/08	00:05:39	31.2067	1871.896	74.215
2024/08/08	00:11:39	31.3067	1871.838	74.217
2024/08/08	00:17:39	31.4067	1871.793	74.221
2024/08/08	00:23:39	31.5067	1871.755	74.226
2024/08/08	00:29:39	31.6067	1871.692	74.228
2024/08/08	00:35:39	31.7067	1871.656	74.232
2024/08/08	00:41:39	31.8067	1871.576	74.232
2024/08/08	00:47:39	31.9067	1871.554	74.244
2024/08/08	00:53:39	32.0067	1871.494	74.246
2024/08/08	00:59:39	32.1067	1871.438	74.248
2024/08/08	01:05:39	32.2067	1871.404	74.257
2024/08/08	01:11:39	32.3067	1871.376	74.264
2024/08/08	01:17:39	32.4067	1871.303	74.264
2024/08/08	01:23:39	32.5067	1871.262	74.268
2024/08/08	01:29:39	32.6067	1871.205	74.268
2024/08/08	01:35:39	32.7067	1871.155	74.277
2024/08/08	01:41:39	32.8067	1871.125	74.282
2024/08/08	01:47:39	32.9067	1871.086	74.278
2024/08/08	01:53:39	33.0067	1871.046	74.287
2024/08/08	01:59:39	33.1067	1871.005	74.291
2024/08/08	02:05:39	33.2067	1870.943	74.296
2024/08/08	02:11:39	33.3067	1870.902	74.296
2024/08/08	02:17:39	33.4067	1870.868	74.302
2024/08/08	02:23:39	33.5067	1870.803	74.302
2024/08/08	02:29:39	33.6067	1870.767	74.311
2024/08/08	02:35:39	33.7067	1870.735	74.311
2024/08/08	02:41:39	33.8067	1870.672	74.316
2024/08/08	02:47:39	33.9067	1870.663	74.322
2024/08/08	02:53:39	34.0067	1870.584	74.320
2024/08/08	02:59:39	34.1067	1870.556	74.325
2024/08/08	03:05:39	34.2067	1870.500	74.329
2024/08/08	03:11:39	34.3067	1870.441	74.331
2024/08/08	03:17:39	34.4067	1870.414	74.331
2024/08/08	03:23:39	34.5067	1870.388	74.336
2024/08/08	03:29:39	34.6067	1870.339	74.341
2024/08/08	03:35:39	34.7067	1870.295	74.349
2024/08/08	03:41:39	34.8067	1870.254	74.341
2024/08/08	03:47:39	34.9067	1870.233	74.352
2024/08/08	03:53:39	35.0067	1870.167	74.356
2024/08/08	03:59:39	35.1067	1870.149	74.356
2024/08/08	04:05:39	35.2067	1870.101	74.363
2024/08/08	04:11:39	35.3067	1870.075	74.367
2024/08/08	04:17:39	35.4067	1870.022	74.365
2024/08/08	04:23:39	35.5067	1869.985	74.367
2024/08/08	04:29:39	35.6067	1869.967	74.374
2024/08/08	04:35:39	35.7067	1869.886	74.374
2024/08/08	04:41:39	35.8067	1869.866	74.376
2024/08/08	04:47:39	35.9067	1869.843	74.377
2024/08/08	04:53:39	36.0067	1869.791	74.381
2024/08/08	04:59:39	36.1067	1869.755	74.385
2024/08/08	05:05:39	36.2067	1869.732	74.392
2024/08/08	05:11:39	36.3067	1869.692	74.394
2024/08/08	05:17:39	36.4067	1869.630	74.392
2024/08/08	05:23:39	36.5067	1869.602	74.397
2024/08/08	05:29:39	36.6067	1869.562	74.403
2024/08/08	05:35:39	36.7067	1869.548	74.403
2024/08/08	05:41:39	36.8067	1869.500	74.403
2024/08/08	05:47:39	36.9067	1869.469	74.404
2024/08/08	05:53:39	37.0067	1869.411	74.410
2024/08/08	05:59:39	37.1067	1869.394	74.410
2024/08/08	06:05:39	37.2067	1869.335	74.413
2024/08/08	06:11:39	37.3067	1869.322	74.419
2024/08/08	06:17:39	37.4067	1869.310	74.424
2024/08/08	06:23:39	37.5067	1869.249	74.422
2024/08/08	06:29:39	37.6067	1869.198	74.421
2024/08/08	06:35:39	37.7067	1869.171	74.422
2024/08/08	06:41:39	37.8067	1869.294	74.431
End of fall-off test				
2024/08/08	06:41:51	37.8100	1869.276	74.424
POOH Gradient: 3975.000 ft				
2024/08/08	06:41:54	37.8108	1869.275	74.426
P.O.O.H. making gradient stops				
2024/08/08	06:41:57	37.8117	1869.285	74.428
Stop at 3000 feet				
2024/08/08	06:46:03	37.8800	1445.132	75.227
2024/08/08	06:47:39	37.9067	1445.031	74.559
POOH Gradient: 3000.000 ft				

Company Name	Republic Services
Well Name	Romulus Facility 2-12
Type of Test	Injection/fall-Off
Date(s) of Test	August 06, 2024 thru August 08, 2024

Date	Time	Cum.Time BH1	BH Pres 1	BH Temp 1
		hr	psig	deg F
2024/08/08	06:50:51	37.9600	1444.969	74.305
2024/08/08	06:53:39	38.0067	1111.985	67.694
Stop at 2000 feet				
2024/08/08	06:54:51	38.0267	1010.074	64.612
2024/08/08	06:59:39	38.1067	1009.857	63.351
POOH Gradient: 2000.000 ft				
2024/08/08	06:59:45	38.1083	1009.795	63.349
Stop at 2000 feet				
2024/08/08	07:03:57	38.1783	575.956	59.787
2024/08/08	07:05:39	38.2067	575.845	59.387
POOH Gradient: 1000.000 ft				
2024/08/08	07:08:42	38.2575	575.829	59.221
2024/08/08	07:11:39	38.3067	265.001	57.886
Stop at 13 feet				
2024/08/08	07:13:15	38.3333	149.182	61.261
2024/08/08	07:17:39	38.4067	148.823	66.607
POOH Gradient: 13.000 ft				
2024/08/08	07:18:15	38.4167	148.761	66.785
Bleed-Off Lubricator				
2024/08/08	07:22:03	38.4800	145.115	67.356
2024/08/08	07:23:39	38.5067	-0.750	67.359

APPENDIX K

EPA PRESSURE FALLOFF TEST FORM

BACKGROUND INFORMATION FOR ANALYSIS OF PRESSURE FALL-OFF TEST

FACILITY NAME		OPERATOR	
Republic Industrial and Energy Solutions, LLC		Republic Industrial and Energy Solutions, LLC	
WELL NAME		USEPA PERMIT NUMBER	STATE PERMIT NUMBER
#2-12		MI-163-1W-C0011	M-453
TEST START DATE	TEST END DATE	Depth Reference:	
August 6, 2024	August 8, 2024	Kelly Bushing ☐ ☑	Ground Level ☐ ☐

GEOLOGICAL DATA

POROSITY, decimal	NET PERMEABLE THICKNESS, ft.	VISCOSITY, cp.	COMPRESSIBILITY, per psi
0.11	133	1.34	6.20E-006

WELL AND OPERATION DATA

LONGSTRING CASING DIAMETER, ins	FINAL PRETEST FLOW RATE, gpm	INJECTATE TEMPERATURE, deg.F	KB ELEVATION, ft
7	41.20	68.53	626.6
OPEN HOLE DIAMTER, ins	PRETEST FLOW TIME, hrs. **SEE BELOW**	SPECIFIC GRAVITY OF TEST FLUID	TEST DEPTH FOR COMPARISON, ft
8.75	11.98	1	
GAUGE DEPTH, ft		CUMULATIVE VOLUME INJECTED SINCE LAST PRESSURE EQUALIZATION,	
3975		09/09/23 - 08/09/24 11,234,560	

TEST DATA

GAUGE CALIBRATION DATE			
October 04,2023			
FLOW RATE, gpm	PRESSURE AT BEGINNING OF FALL-OFF, p	PRESSURE AT END OF FALL-OFF, ps	TO SUPPORT FULL COLUMN, psi
41-44	2174.62	1883.98	
TEST LENGTH, hrs.	INITIAL GRADIENT, psi/ft.	FINAL GRADIENT, psi/ft.	FINAL FLUID LEVEL, ft.
24.22		0.435	0

REMEMBER

"Pre-test flow time" is the time since the reservoir was last in equilibrium. This may be the time since the well was last shut-in but only if the well was shut-in long enough for the pressure in the reservoir to approach equilibrium pressure.

1. Please fill in the above cells.
2. Injection of normal injectate at normal rate is preferred.
3. Submit an up-to-date well schematic.
4. The well should be shut-in as quickly as possible.
5. Data should be collected at the maximum rate for at least the first five minutes; between five and thirty minutes at no less than one reading every 30 seconds. After thirty minutes, the operator can reduce frequency as required.
6. The pressure gauge should have been calibrated no more than a year prior to the test. Submit a copy of the calibration certificate for the gauge used for pressure measurements with your report.
7. The report on the test must explain any anomalies shown in the results.
8. Submit digital logging data on a CD in .las or .asc format.

APPENDIX L

STATIC PRESSURE GRADIENT SURVEY (ABRIDGED)

Static Pressure Gradient Survey Data

Well Name: Well 2-12
Operating Company: Republic Industrial and Energy Solutions, LLC
Well Location: Romulus, MI
Wireline Company: Impact Completions, LLC
Downhole Data Recorder: MRO 2 Serial No. 91933

Job Number: 192128.0156
WSP Rep.: Jeffry Tahtouh
Data Start: 8/8/24 06:40:00
Data End: 8/8/24 07:15:30
Data Interval (secs): 15

Date/Time	Pressure, psig	Temperature, °F	Date/Time	Pressure, psig	Temperature, °F	Date/Time	Pressure, psig	Temperature, °F
8/8/24 06:40:00	1869.249	74.429	8/8/24 06:56:15	1009.953	63.769	8/8/24 07:12:30	170.741	58.628
8/8/24 06:40:15	1869.250	74.427	8/8/24 06:56:30	1009.907	63.706	8/8/24 07:12:45	156.466	59.301
8/8/24 06:40:30	1869.250	74.425	8/8/24 06:56:45	1009.920	63.662	8/8/24 07:13:00	149.214	60.031
8/8/24 06:40:45	1869.280	74.428	8/8/24 06:57:00	1009.887	63.615	8/8/24 07:13:15	149.182	61.260
8/8/24 06:41:00	1869.278	74.425	8/8/24 06:57:15	1009.899	63.580	8/8/24 07:13:30	149.169	62.233
8/8/24 06:41:15	1869.278	74.425	8/8/24 06:57:30	1009.893	63.543	8/8/24 07:13:45	149.145	62.930
8/8/24 06:41:30	1869.280	74.428	8/8/24 06:57:45	1009.881	63.518	8/8/24 07:14:00	149.087	63.473
8/8/24 06:41:45	1869.297	74.429	8/8/24 06:58:00	1009.865	63.486	8/8/24 07:14:15	149.102	63.923
8/8/24 06:42:00	1868.277	74.427	8/8/24 06:58:15	1009.854	63.463	8/8/24 07:14:30	149.064	64.317
8/8/24 06:42:15	1849.625	74.459	8/8/24 06:58:30	1009.848	63.439	8/8/24 07:14:45	149.035	64.644
8/8/24 06:42:30	1828.149	75.005	8/8/24 06:58:45	1009.856	63.418	8/8/24 07:15:00	148.983	64.941
8/8/24 06:42:45	1797.664	76.010	8/8/24 06:59:00	1009.848	63.393	8/8/24 07:15:15	148.981	65.200
8/8/24 06:43:00	1765.599	76.961	8/8/24 06:59:15	1009.858	63.379	8/8/24 07:15:30	148.981	65.426
8/8/24 06:43:15	1732.834	77.643	8/8/24 06:59:30	1009.858	63.365			
8/8/24 06:43:30	1700.073	78.040	8/8/24 06:59:45	1009.795	63.348			
8/8/24 06:43:45	1667.705	78.185	8/8/24 07:00:00	989.796	63.319			
8/8/24 06:44:00	1634.690	78.128	8/8/24 07:00:15	961.066	63.227			
8/8/24 06:44:15	1601.292	77.929	8/8/24 07:00:30	931.890	63.152			
8/8/24 06:44:30	1567.115	77.578	8/8/24 07:00:45	902.395	63.022			
8/8/24 06:44:45	1533.207	77.195	8/8/24 07:01:00	872.520	62.787			
8/8/24 06:45:00	1501.194	76.789	8/8/24 07:01:15	842.100	62.505			
8/8/24 06:45:15	1479.545	76.381	8/8/24 07:01:30	811.119	62.241			
8/8/24 06:45:30	1462.309	76.005	8/8/24 07:01:45	779.283	61.997			
8/8/24 06:45:45	1448.116	75.629	8/8/24 07:02:00	747.146	61.864			
8/8/24 06:46:00	1445.206	75.288	8/8/24 07:02:15	714.643	61.687			
8/8/24 06:46:15	1445.152	75.046	8/8/24 07:02:30	681.457	61.400			
8/8/24 06:46:30	1445.079	74.887	8/8/24 07:02:45	647.972	61.126			
8/8/24 06:46:45	1445.150	74.773	8/8/24 07:03:00	618.243	60.782			
8/8/24 06:47:00	1445.111	74.697	8/8/24 07:03:15	597.123	60.442			
8/8/24 06:47:15	1445.051	74.630	8/8/24 07:03:30	582.048	60.164			
8/8/24 06:47:30	1445.060	74.585	8/8/24 07:03:45	576.093	59.923			
8/8/24 06:47:45	1445.013	74.542	8/8/24 07:04:00	575.935	59.761			
8/8/24 06:48:00	1445.001	74.513	8/8/24 07:04:15	575.881	59.646			
8/8/24 06:48:15	1444.977	74.480	8/8/24 07:04:30	575.857	59.573			
8/8/24 06:48:30	1444.975	74.457	8/8/24 07:04:45	575.845	59.510			
8/8/24 06:48:45	1444.957	74.431	8/8/24 07:05:00	575.870	59.471			
8/8/24 06:49:00	1444.947	74.409	8/8/24 07:05:15	575.851	59.431			
8/8/24 06:49:15	1444.968	74.384	8/8/24 07:05:30	575.853	59.401			
8/8/24 06:49:30	1444.969	74.372	8/8/24 07:05:45	575.843	59.376			
8/8/24 06:49:45	1445.000	74.361	8/8/24 07:06:00	575.824	59.352			
8/8/24 06:50:00	1444.987	74.347	8/8/24 07:06:15	575.847	59.338			
8/8/24 06:50:15	1444.987	74.335	8/8/24 07:06:30	575.852	59.321			
8/8/24 06:50:30	1444.983	74.320	8/8/24 07:06:45	575.842	59.304			
8/8/24 06:50:45	1444.975	74.309	8/8/24 07:07:00	575.834	59.291			
8/8/24 06:51:00	1437.141	74.299	8/8/24 07:07:15	575.836	59.277			
8/8/24 06:51:15	1410.011	74.226	8/8/24 07:07:30	575.836	59.269			
8/8/24 06:51:30	1381.047	73.959	8/8/24 07:07:45	575.843	59.254			
8/8/24 06:51:45	1351.648	73.464	8/8/24 07:08:00	575.849	59.246			
8/8/24 06:52:00	1321.381	72.817	8/8/24 07:08:15	575.829	59.240			
8/8/24 06:52:15	1290.751	72.057	8/8/24 07:08:30	575.839	59.229			
8/8/24 06:52:30	1259.964	71.229	8/8/24 07:08:45	575.629	59.226			
8/8/24 06:52:45	1228.904	70.440	8/8/24 07:09:00	556.262	59.209			
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8/8/24 06:53:15	1164.213	68.946	8/8/24 07:09:30	507.597	59.147			
8/8/24 06:53:30	1131.482	68.141	8/8/24 07:09:45	481.526	59.149			
8/8/24 06:53:45	1098.647	67.385	8/8/24 07:10:00	454.907	59.040			
8/8/24 06:54:00	1064.865	66.578	8/8/24 07:10:15	427.759	58.933			
8/8/24 06:54:15	1035.699	65.836	8/8/24 07:10:30	399.784	58.721			
8/8/24 06:54:30	1016.469	65.239	8/8/24 07:10:45	371.575	58.532			
8/8/24 06:54:45	1010.242	64.765	8/8/24 07:11:00	342.285	58.297			
8/8/24 06:55:00	1010.095	64.432	8/8/24 07:11:15	312.772	58.043			
8/8/24 06:55:15	1010.054	64.204	8/8/24 07:11:30	283.358	57.906			
8/8/24 06:55:30	1010.017	64.049	8/8/24 07:11:45	252.677	57.868			
8/8/24 06:55:45	1010.014	63.931	8/8/24 07:12:00	221.824	57.936			
8/8/24 06:56:00	1009.925	63.841	8/8/24 07:12:15	190.262	58.129			

EXHIBITS

michigan wireline services

NUCLEAR TRACER LOG

Company	REPUBLIC SERVICES
Well	EDS 2-12
Field	ROMULUS STORAGE
County	WAYNE
State	MICHIGAN

Location: API 21-163-M453

SW NW SE
1670' FSL & 2372' FEL
OF 1/4 SEC.

SEC 12 TWP RGE 09E

Other Services

Permanent Datum	GROUND LEVEL	Elevation	626'
Log Measured From	KELLY BUSHING		
Drilling Measured From	KELLY BUSHING		

Elevation
K.B. 639'
D.F. 638'
G.L. 626'

Date	08/06/2024
Run Number	ONE
Depth Driller	4550'
Depth Logger	4267'
Bottom Logged Interval	4267'
Top Log Interval	3000'
Packer Depth	
Type Fluid	WATER
Fluid Level	N/A
Max. Recorded Temp.	N/A
Estimated Cement Top	N/A
Time Well Ready	8:00 AM
Time Logger on Bottom	8:52 AM
Equipment Number	#117
Location	MT. PLEASANT
Recorded By	B. WRIGHT
Witnessed By	JEFFRY TAHTOUH

Tubing Liner Record

SIZE	Weight	From	To
4 1/2"	F.G	SURFACE	3934'

Casing Record

SIZE	Weight	From	To
16"	65#	SURFACE	178'
13 3/8"	48#	SURFACE	579'
9 5/8"	N/A	SURFACE	1444'
7"	N/A	SUFACE	3970'

<<< Fold Here >>>

Comments

THIS LOG IS CORRELATED TO MWL
GAMMA RAY LOG DATE 09/05/2023

4 SECOND EJECTION
2"BOWEN

THANK YOU FOR USING MICHIGAN WIRELINE

BASE PASS

michigan wireline services

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Presentation Format	tracermwl
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Charted by	Depth in Feet scaled 1:240

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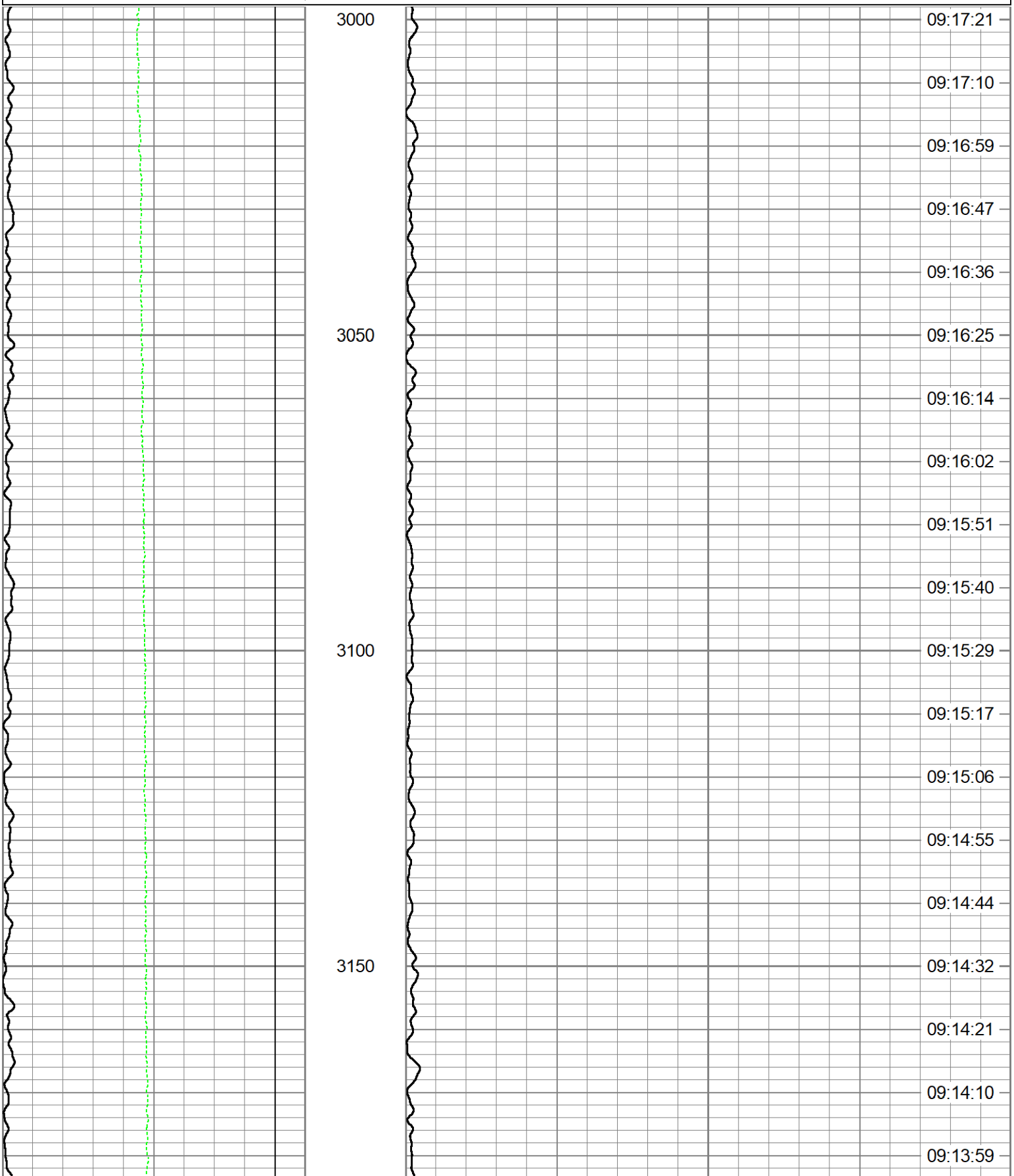
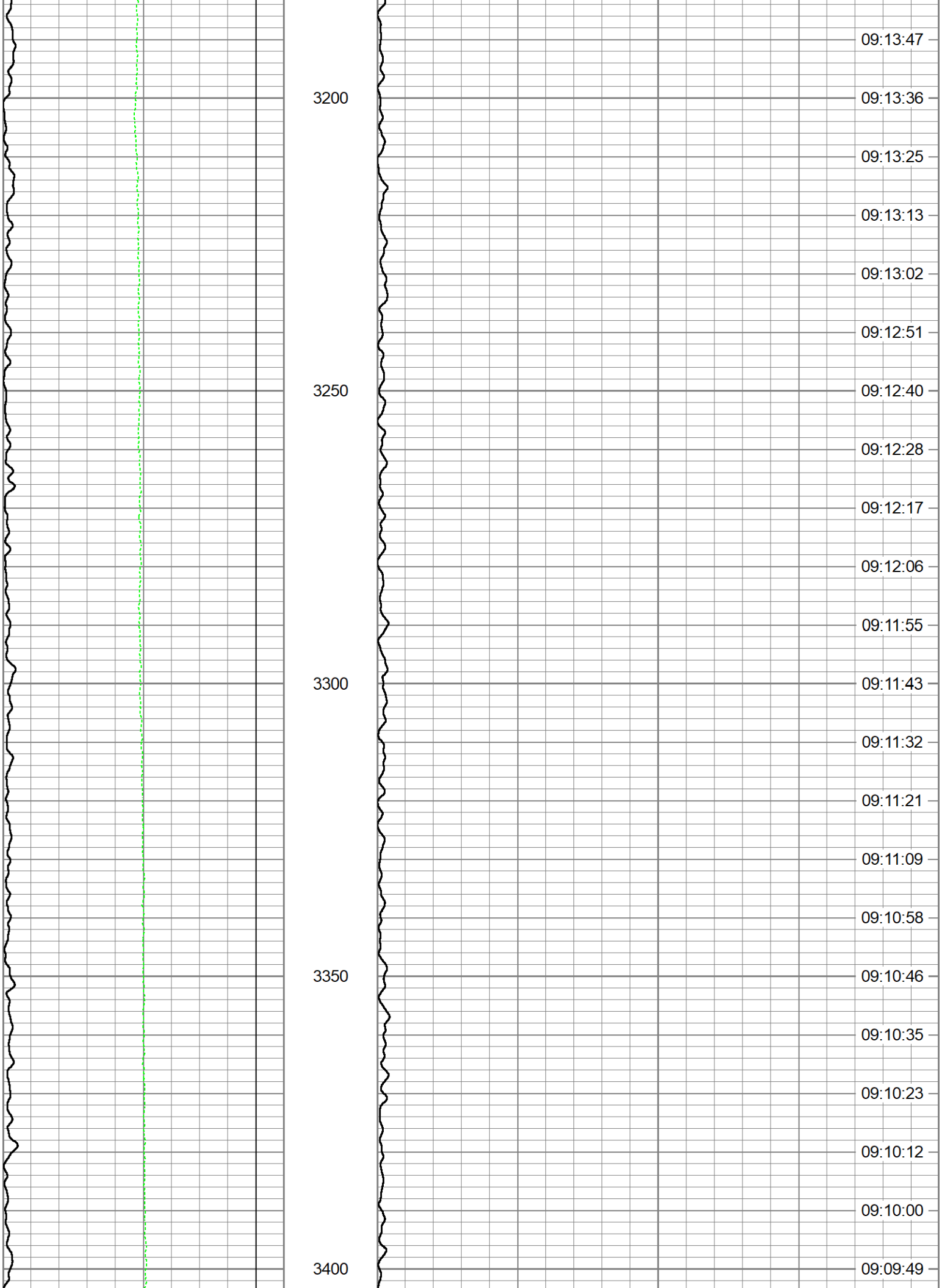
0	LTEN (lb)	1000

0	Bot Gr CPS	200
	TOD (sec)	

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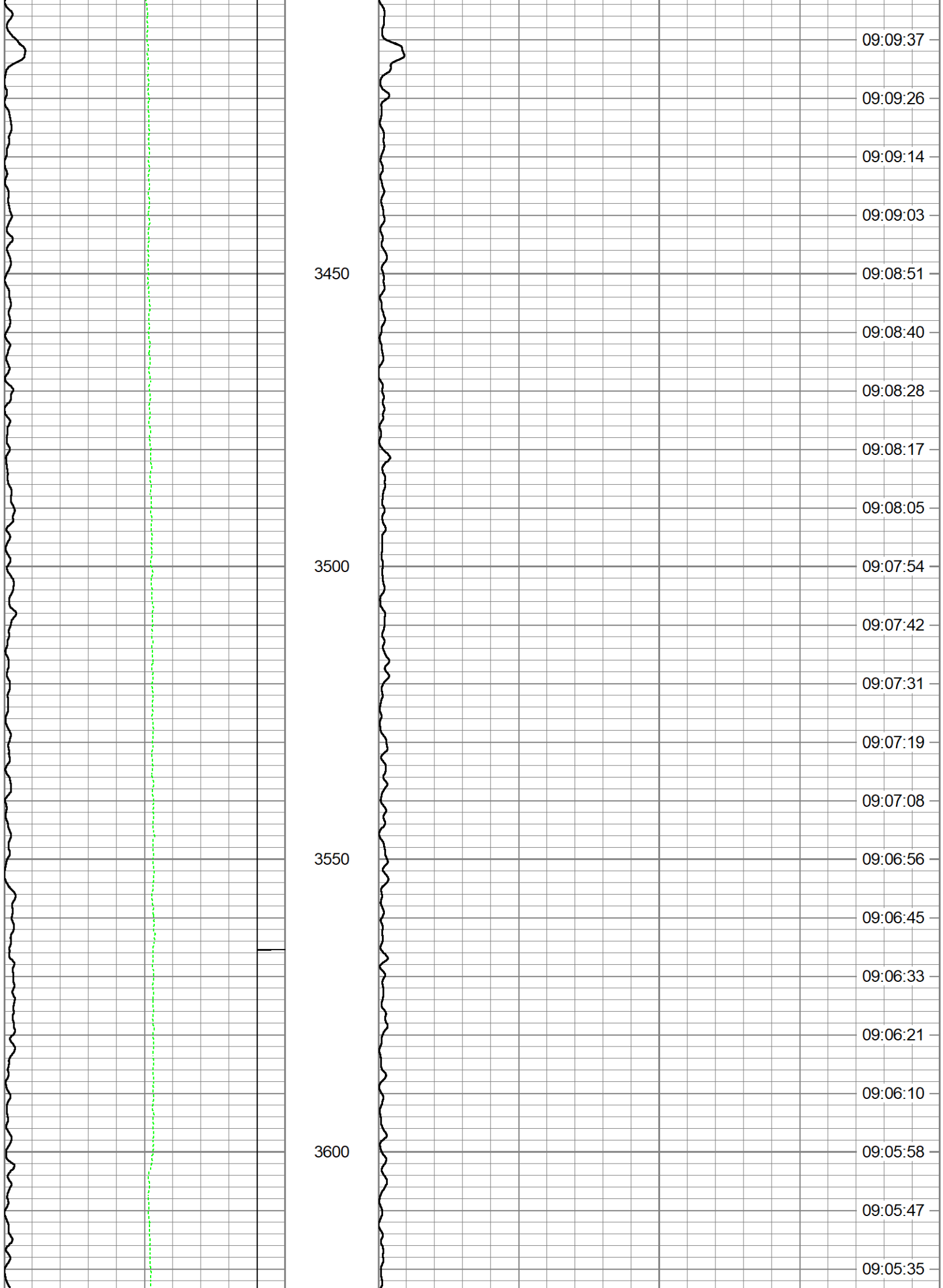
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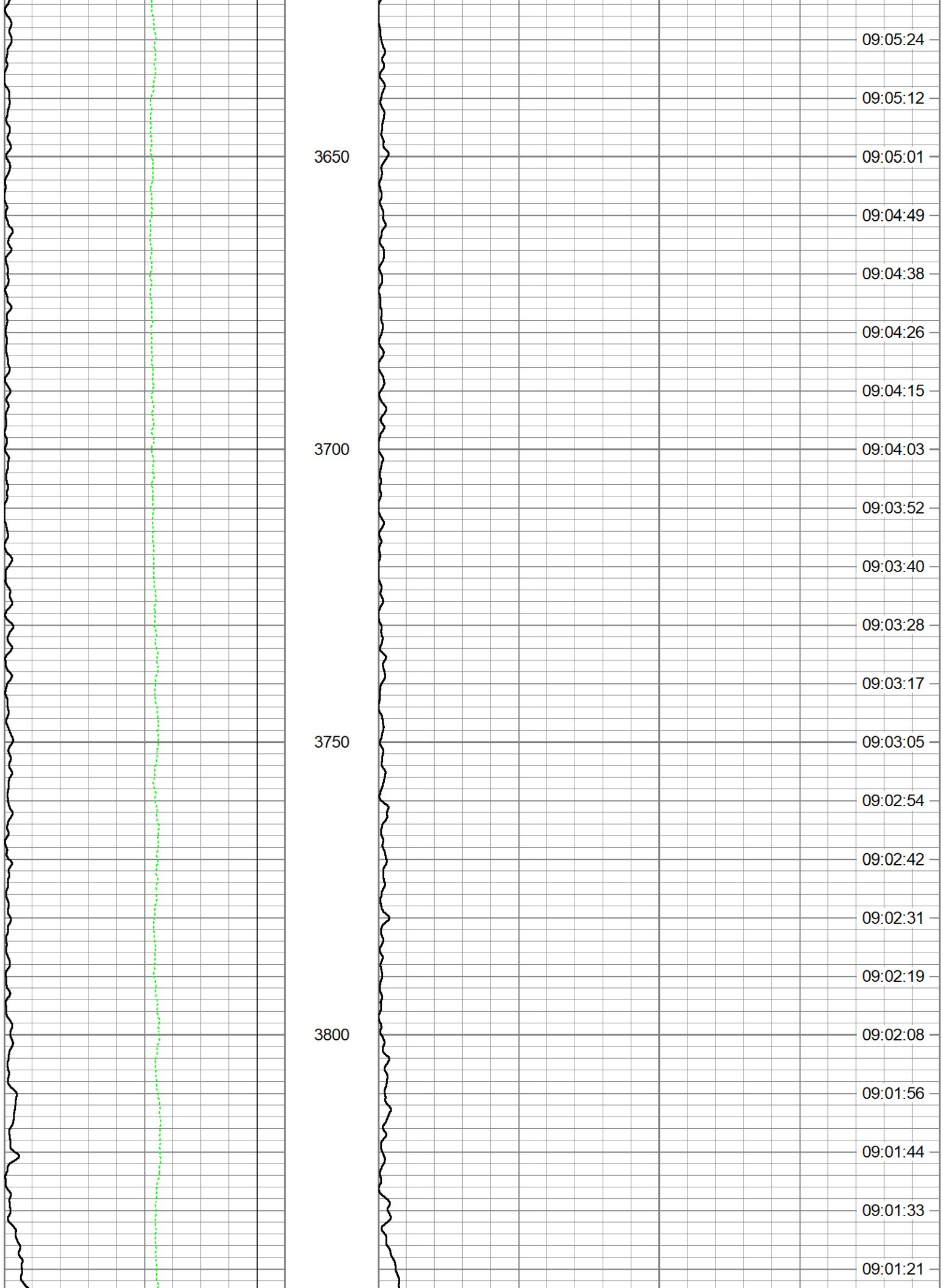
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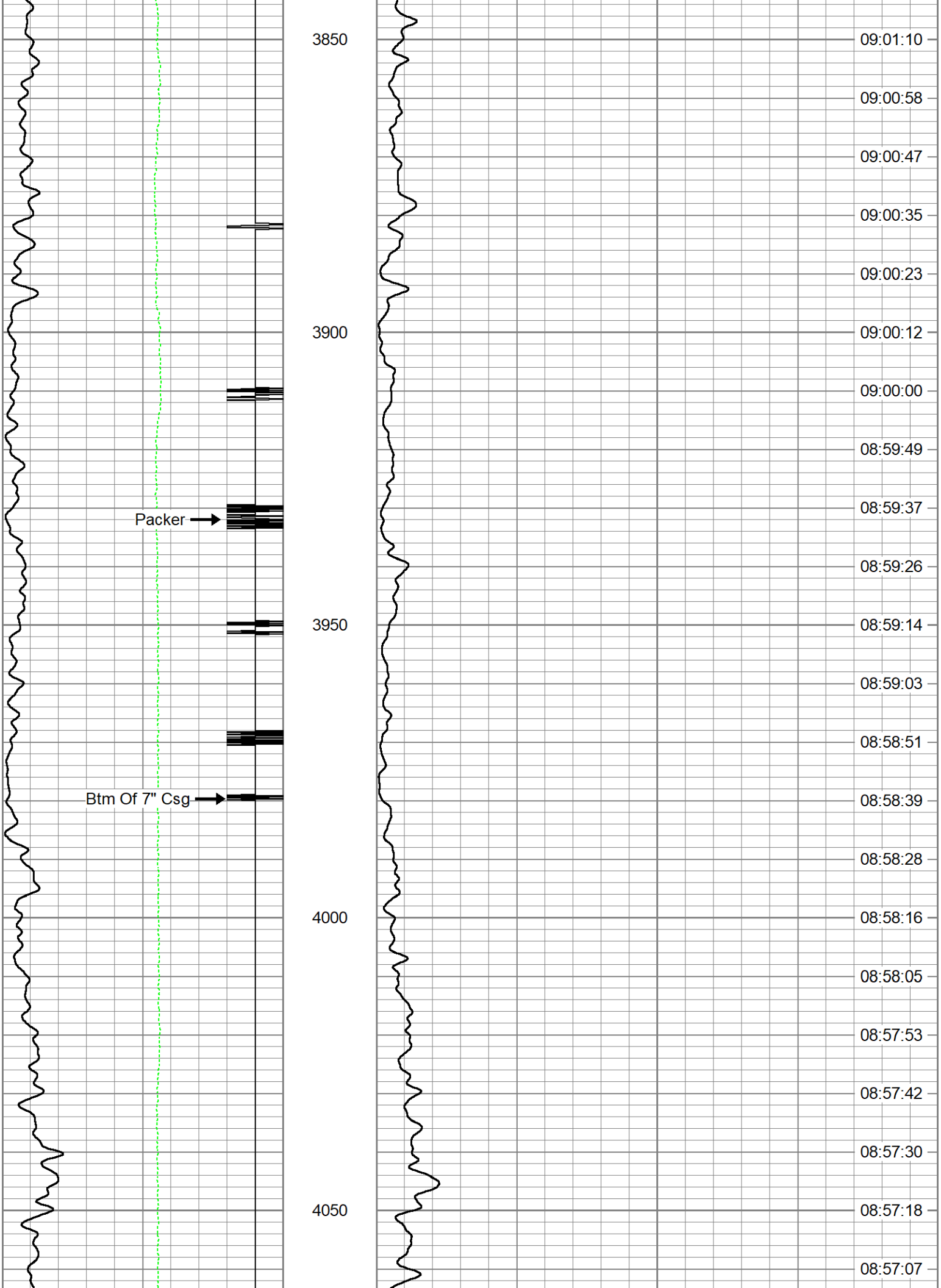
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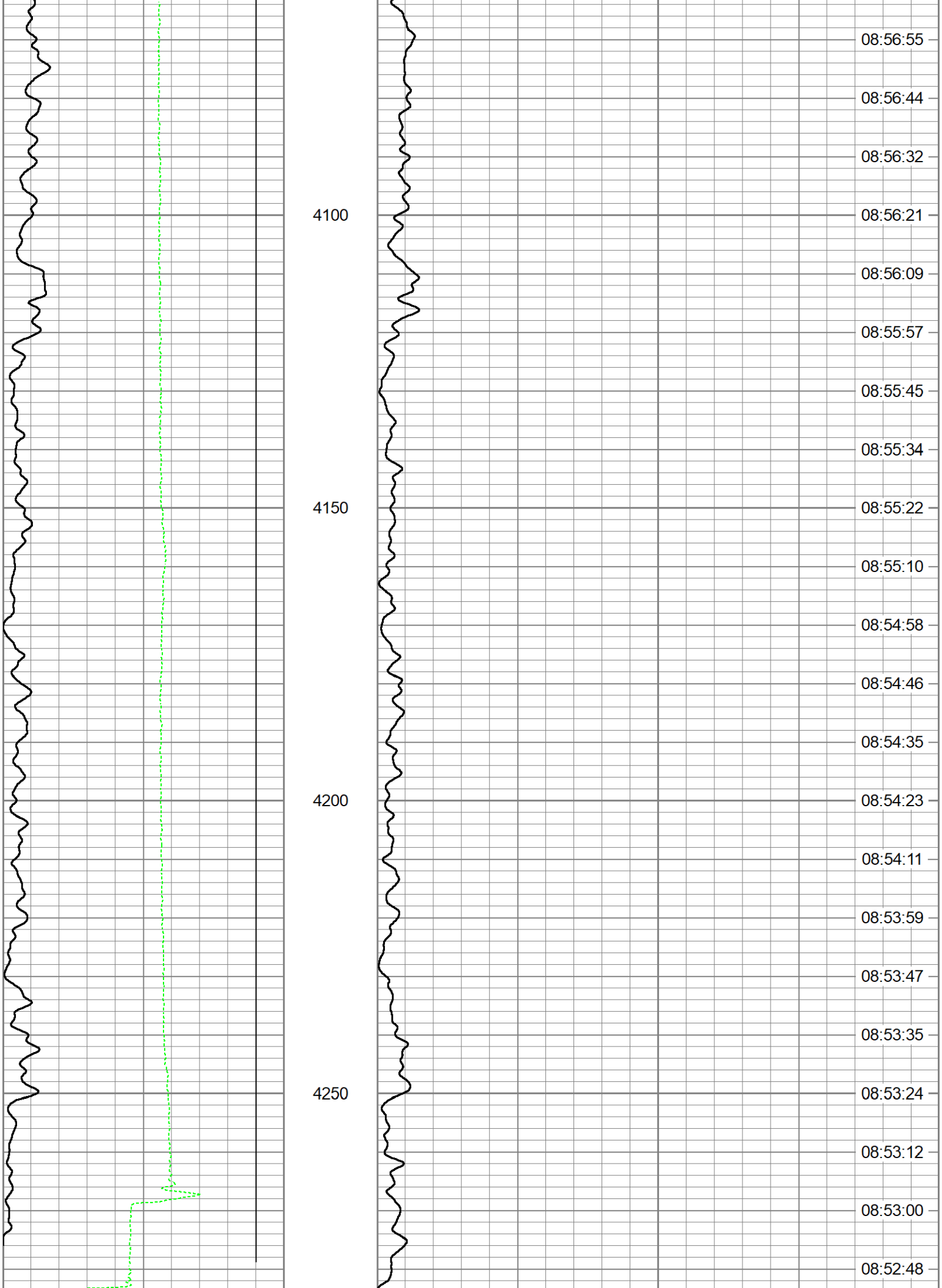
Packer
Btm Of 7" Csg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08:54:35
08:54:23
08:54:11
08:53:59
08:53:47
08:53:35
08:53:24
08:53:12
08:53:00
08:52:48

0	Top Gr CPS	100	0	Bot Gr CPS	200
-9	CCL	1			TOD (sec)
0	LTEN (lb)	1000			

5 MIN STAT CHECK 3800'

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Presentation Format	tracer_time_10
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Charted by	Time scaled 360/hour

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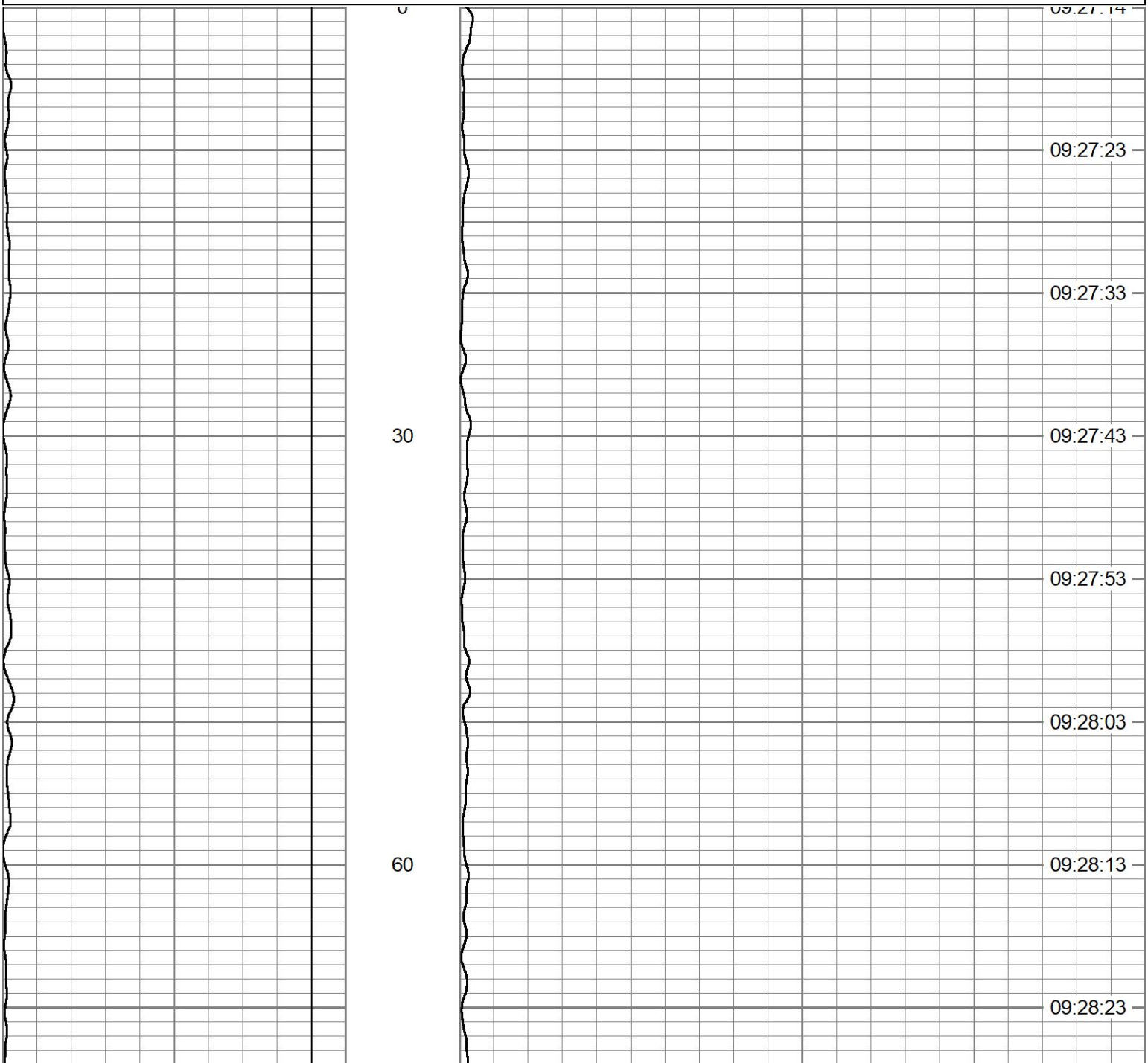

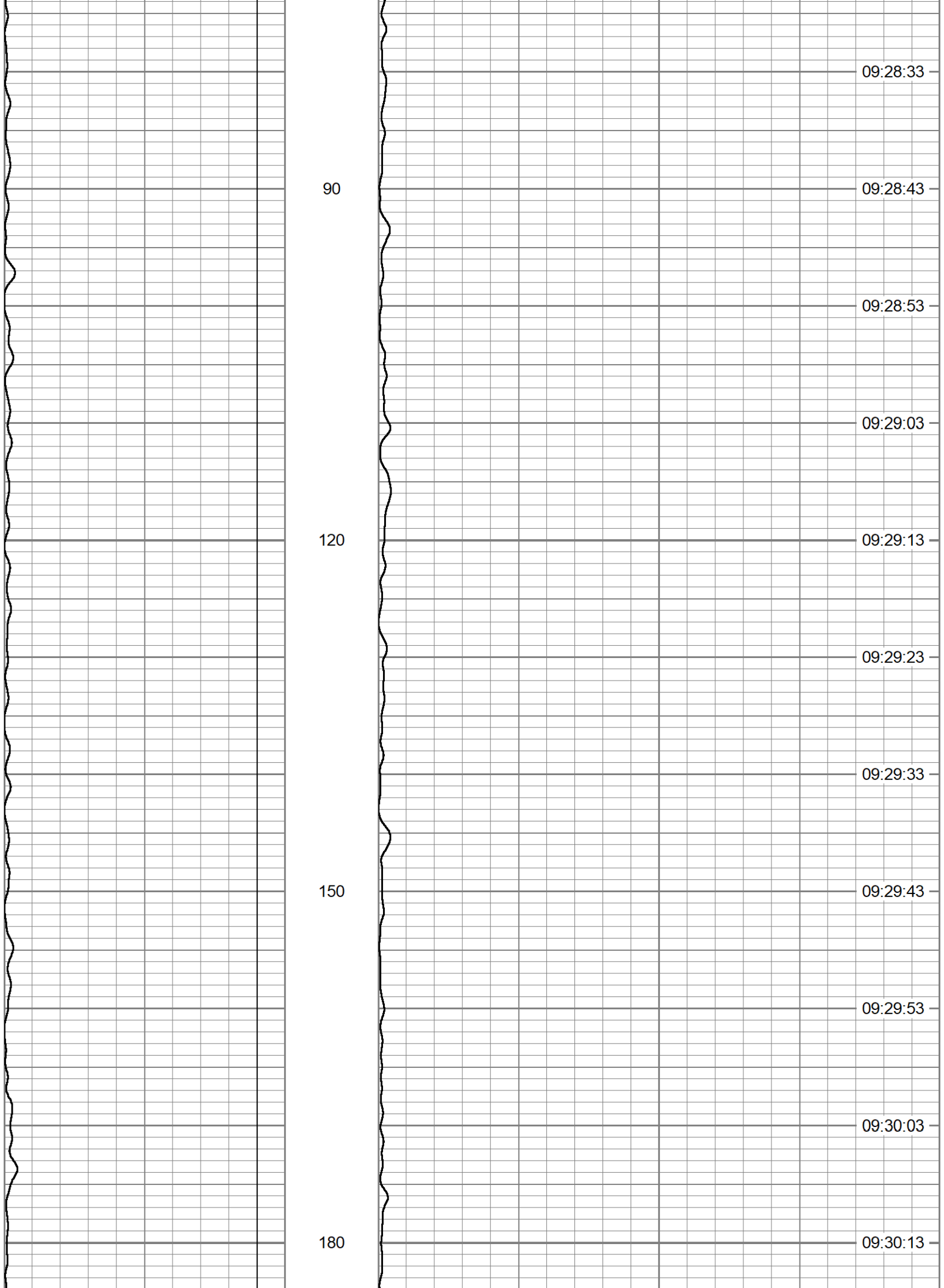
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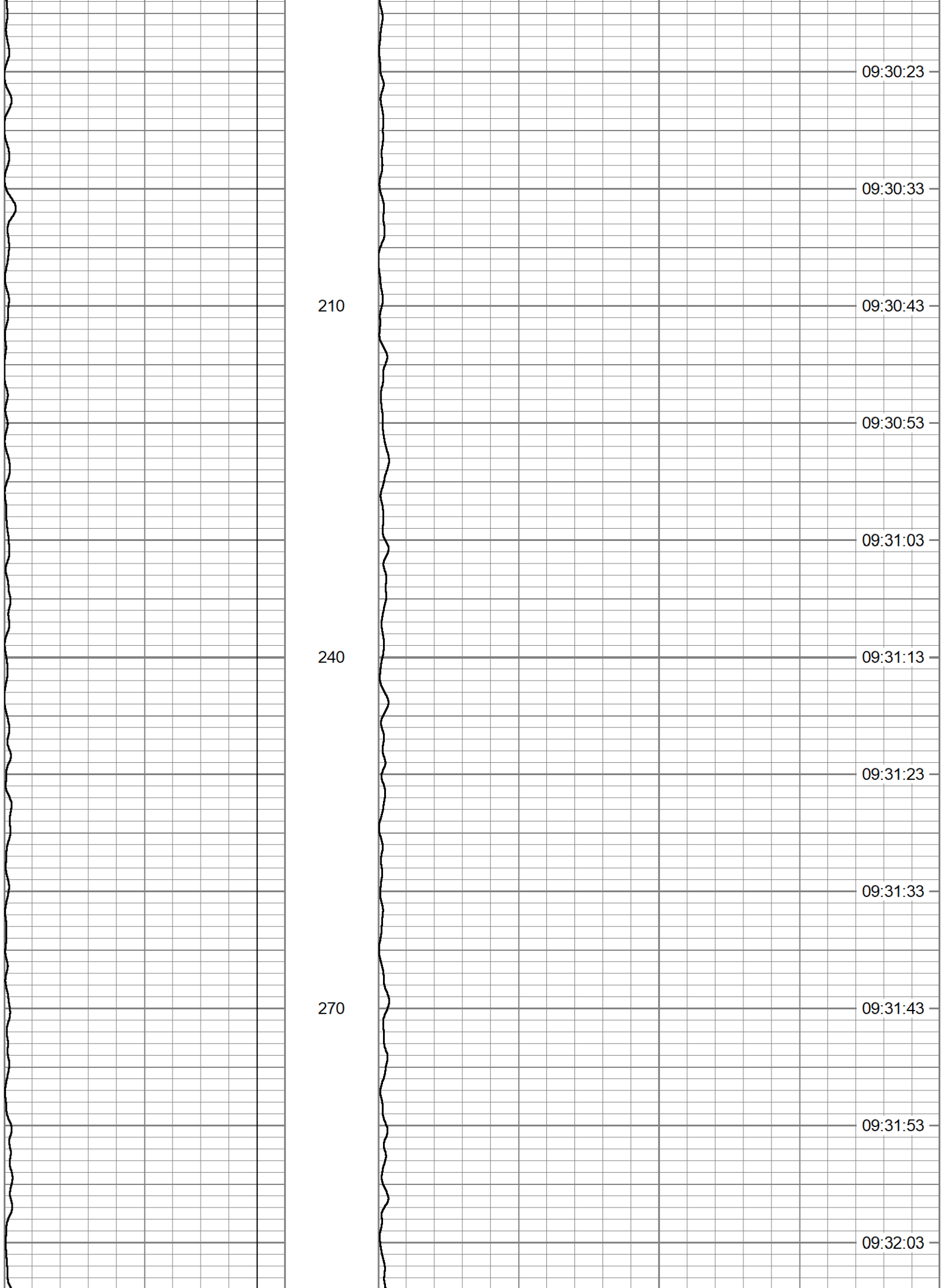
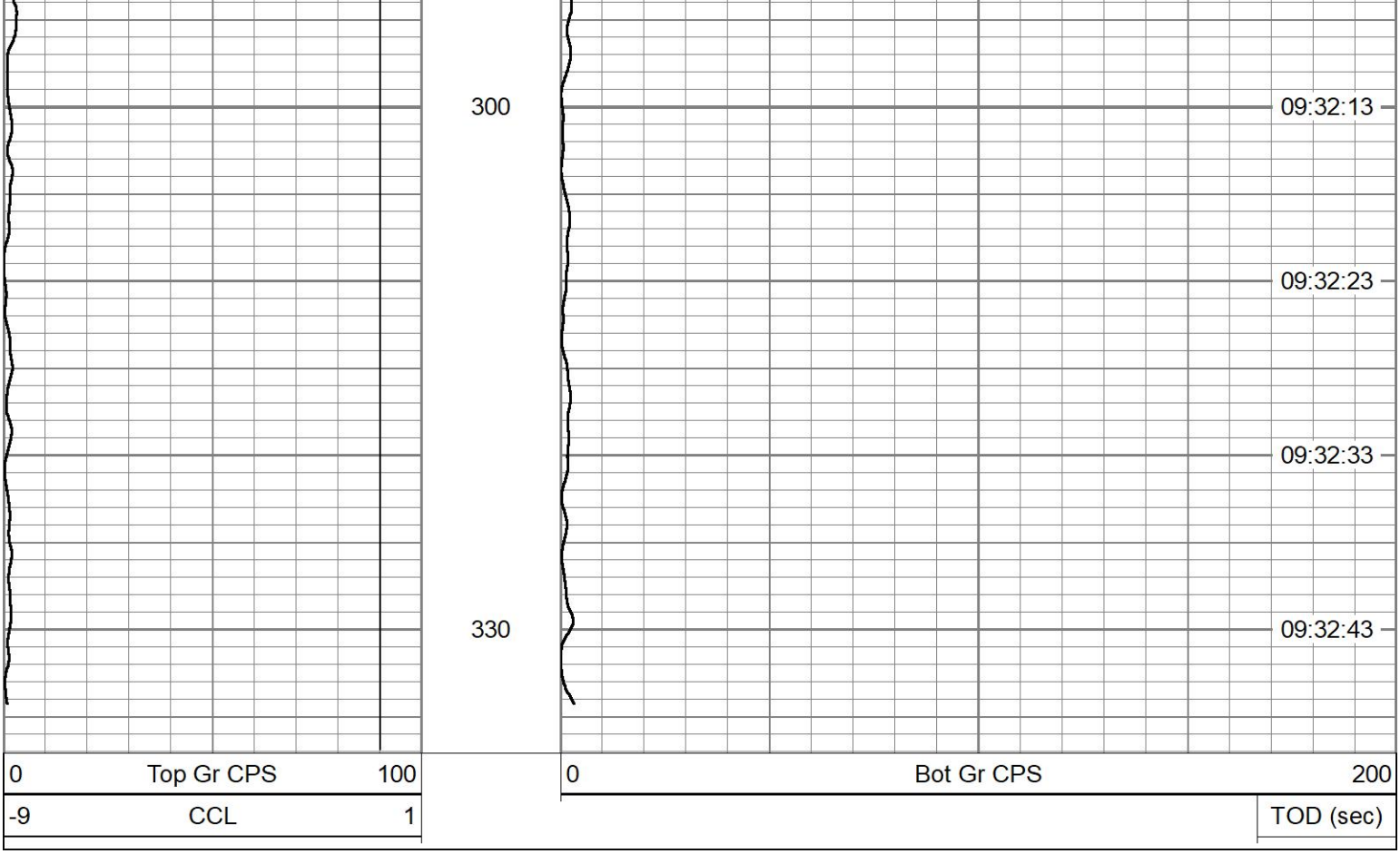
09:29:53
09:30:03
180
09:30:13


09:30:23
09:30:33
210
09:30:43
09:30:53
09:31:03
240
09:31:13
09:31:23
09:31:33
270
09:31:43
09:31:53
09:32:03



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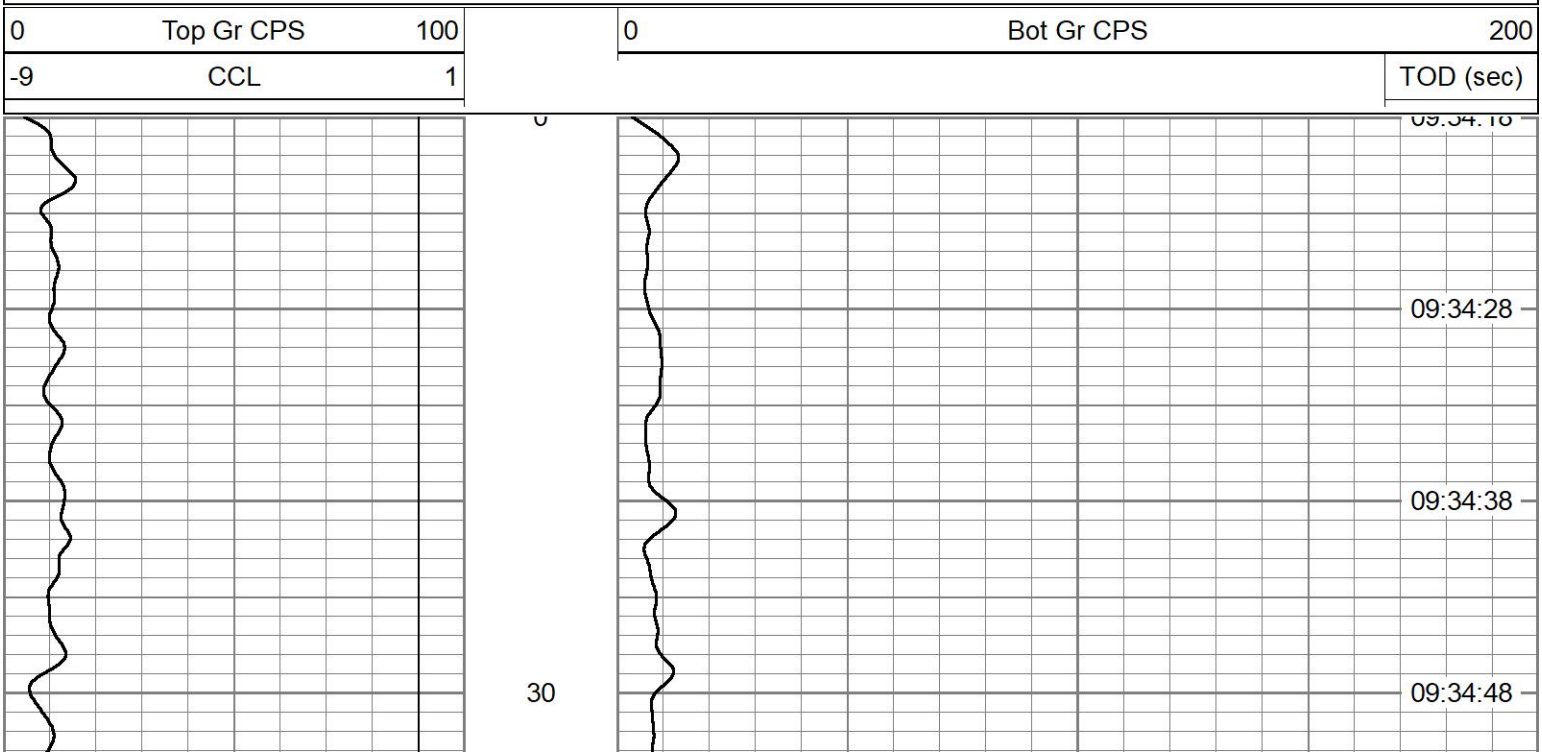
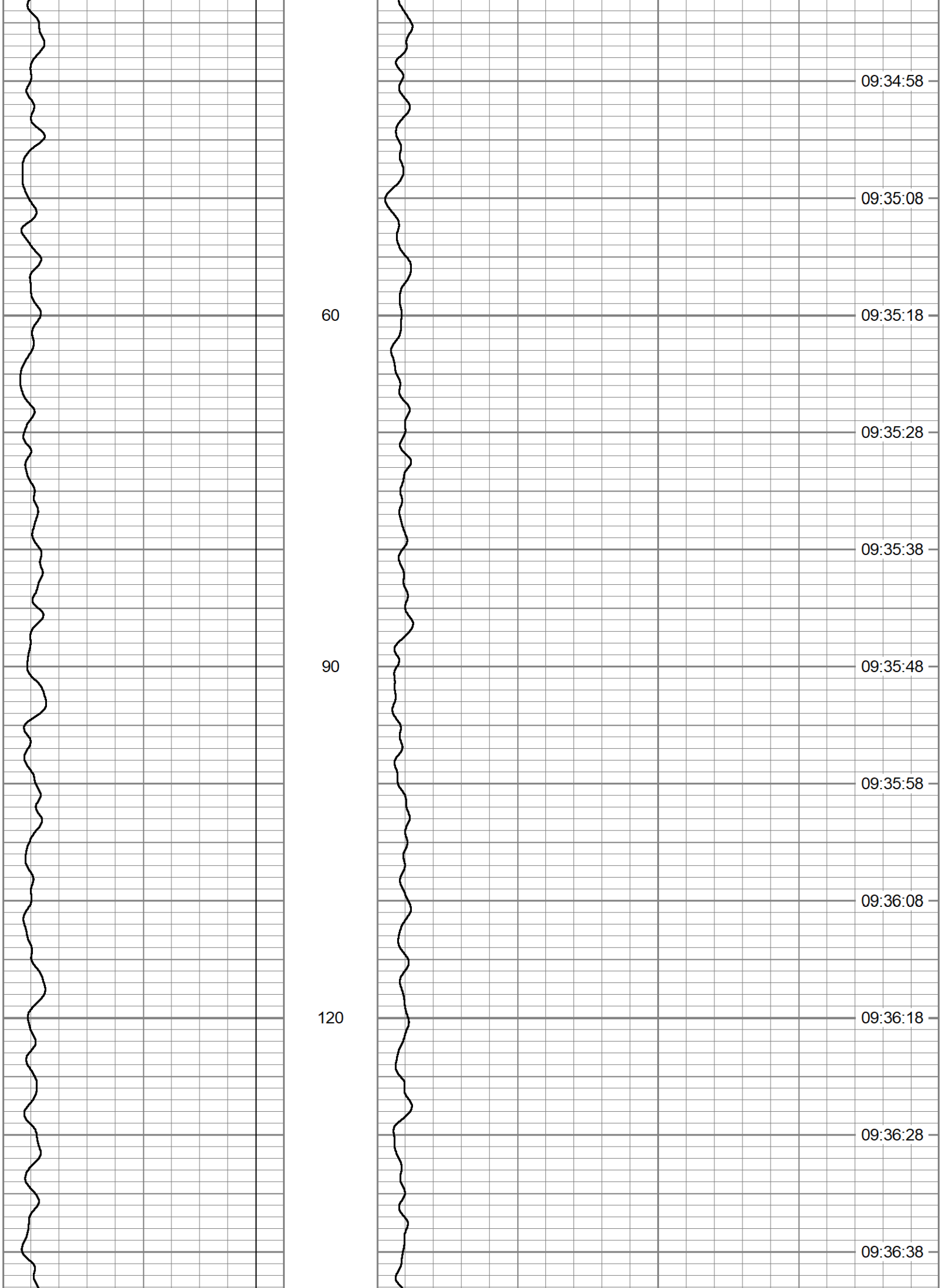
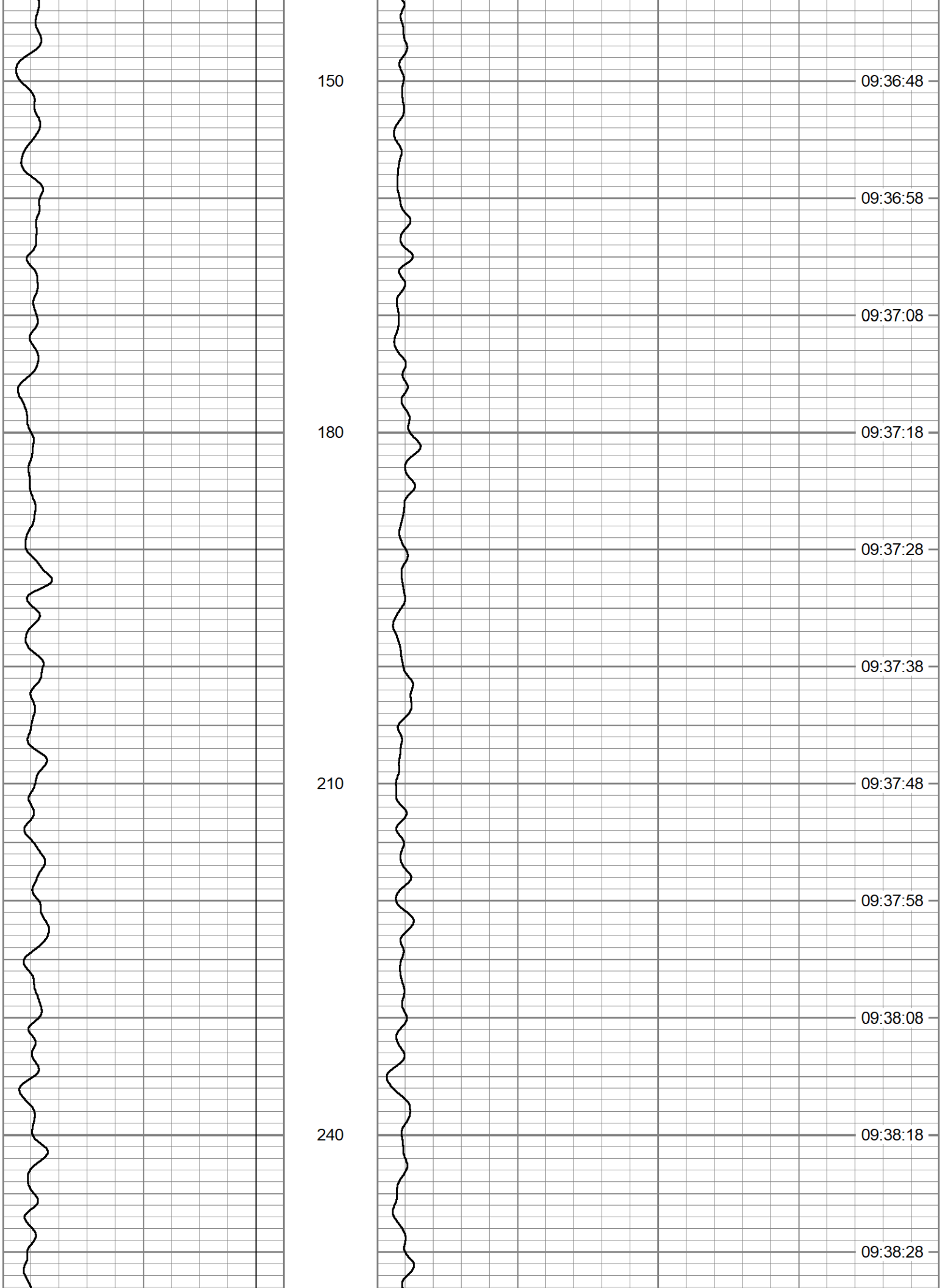
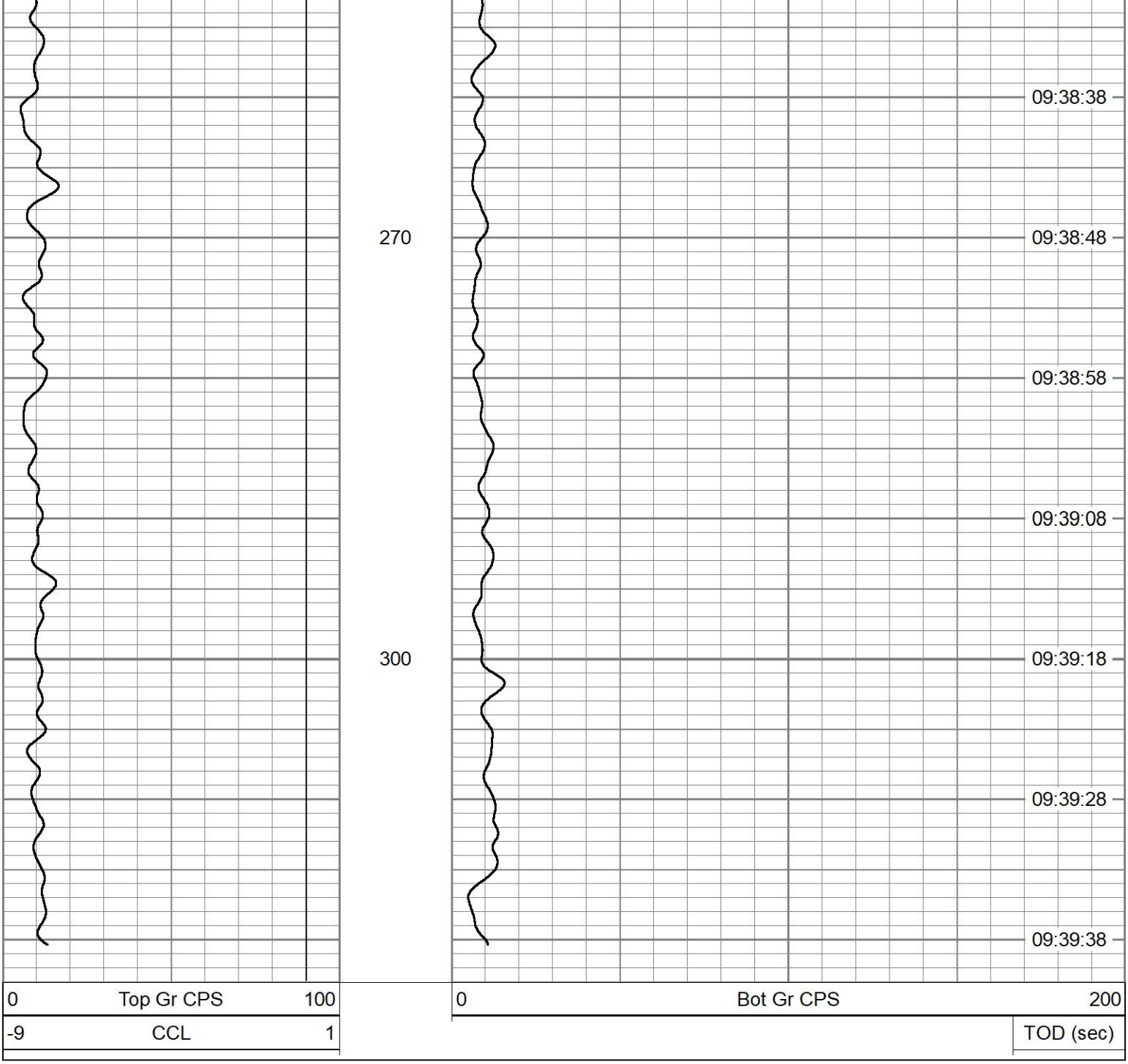
5 MINUTE STAT CHECK 3855'

Database File	d:\egt\egt #2-12\2024\egt 2-12 2024.db
Dataset Pathname	5MIN3855
Presentation Format	tracer_time_10
Dataset Creation	Tue Aug 06 09:34:18 2024
Charted by	Time scaled 360/hour




09:34:58
09:35:08
60
09:35:18
09:35:28
09:35:38
90
09:35:48
09:35:58
09:36:08
120
09:36:18
09:36:28
09:36:38


150
180
210
240
09:36:48
09:36:58
09:37:08
09:37:18
09:37:28
09:37:38
09:37:48
09:37:58
09:38:08
09:38:18
09:38:28



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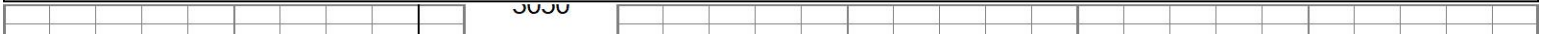
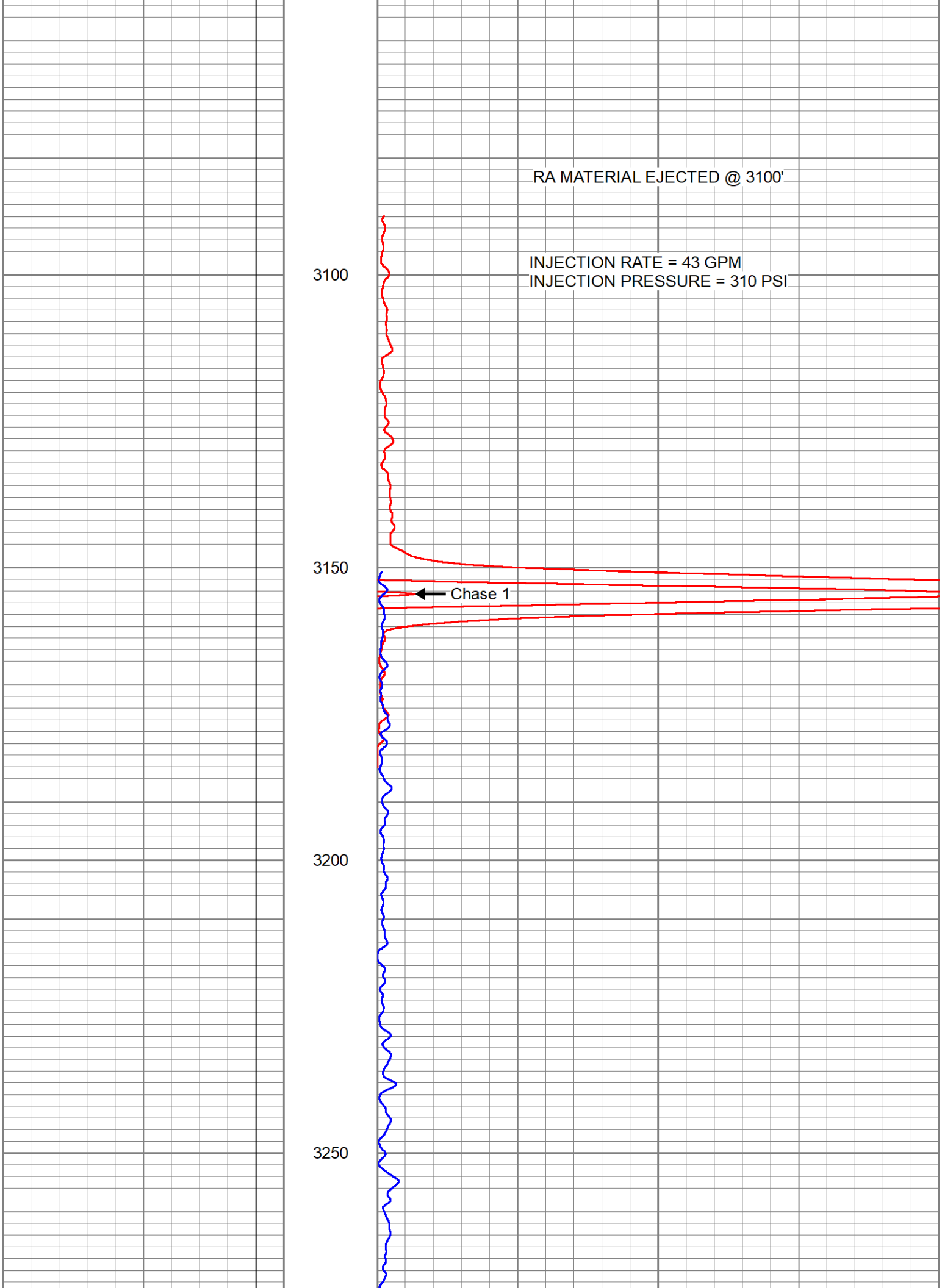
CHASE MERGED PASSES

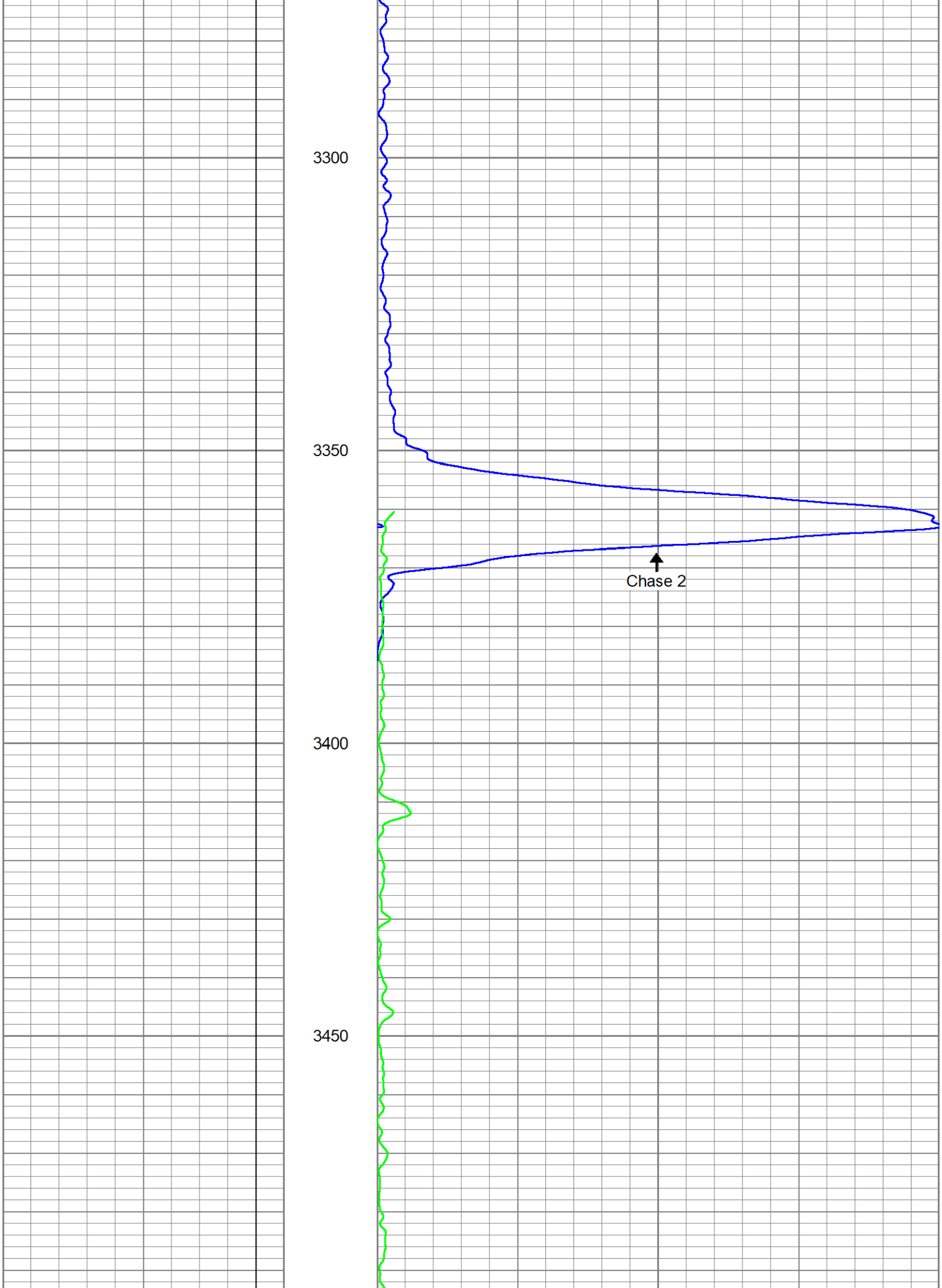
INJECTION RATE 43 GPM
INJECION PRESSURE 310 PSI

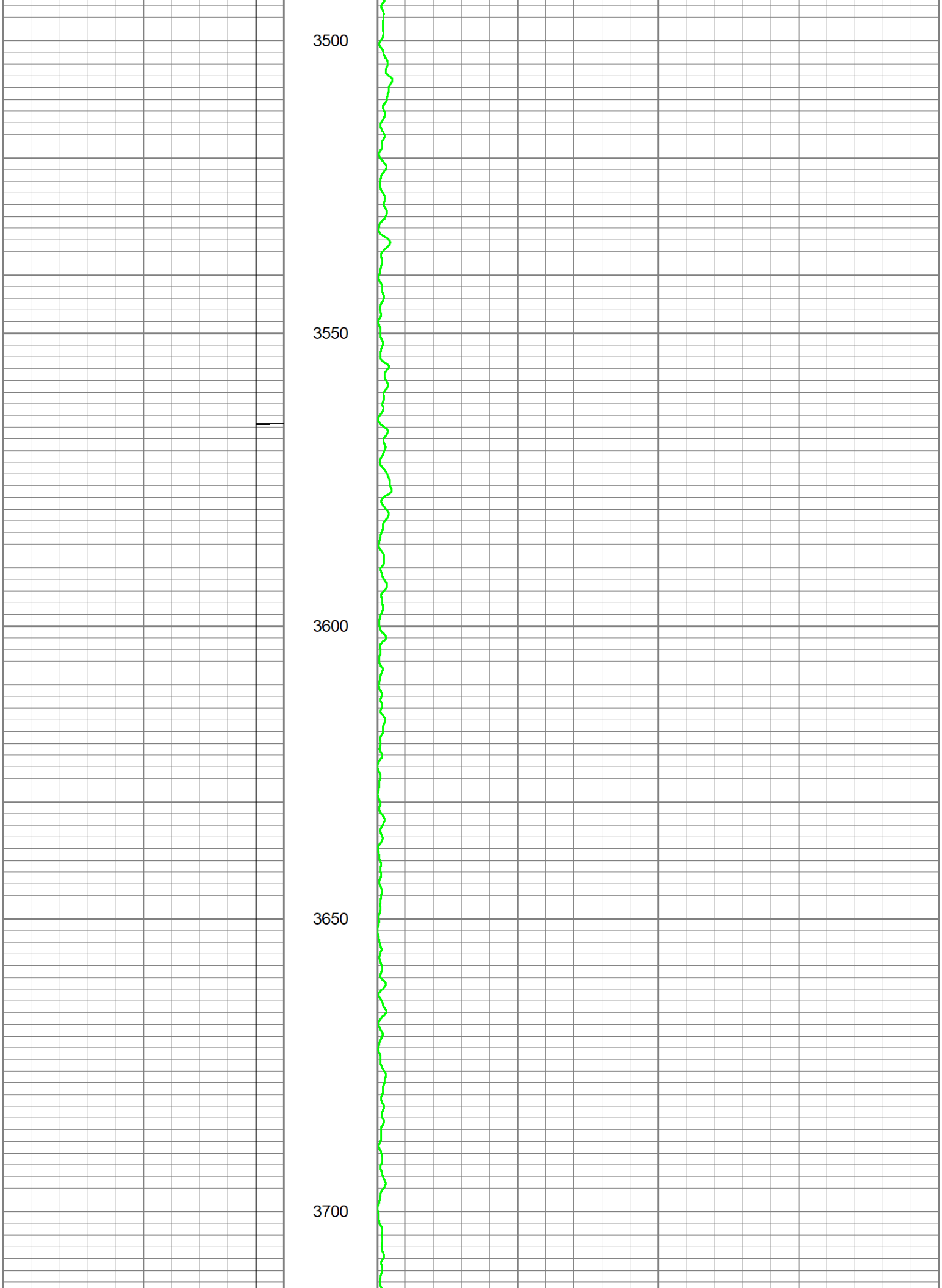
Database File	d:\egt\egt #2-12\2024\egt 2-12 2024.db
Dataset Pathname	CHASE
Presentation Format	tracer_chase
Dataset Creation	Tue Aug 06 11:22:41 2024
Charted by	Depth in Feet scaled 1:240

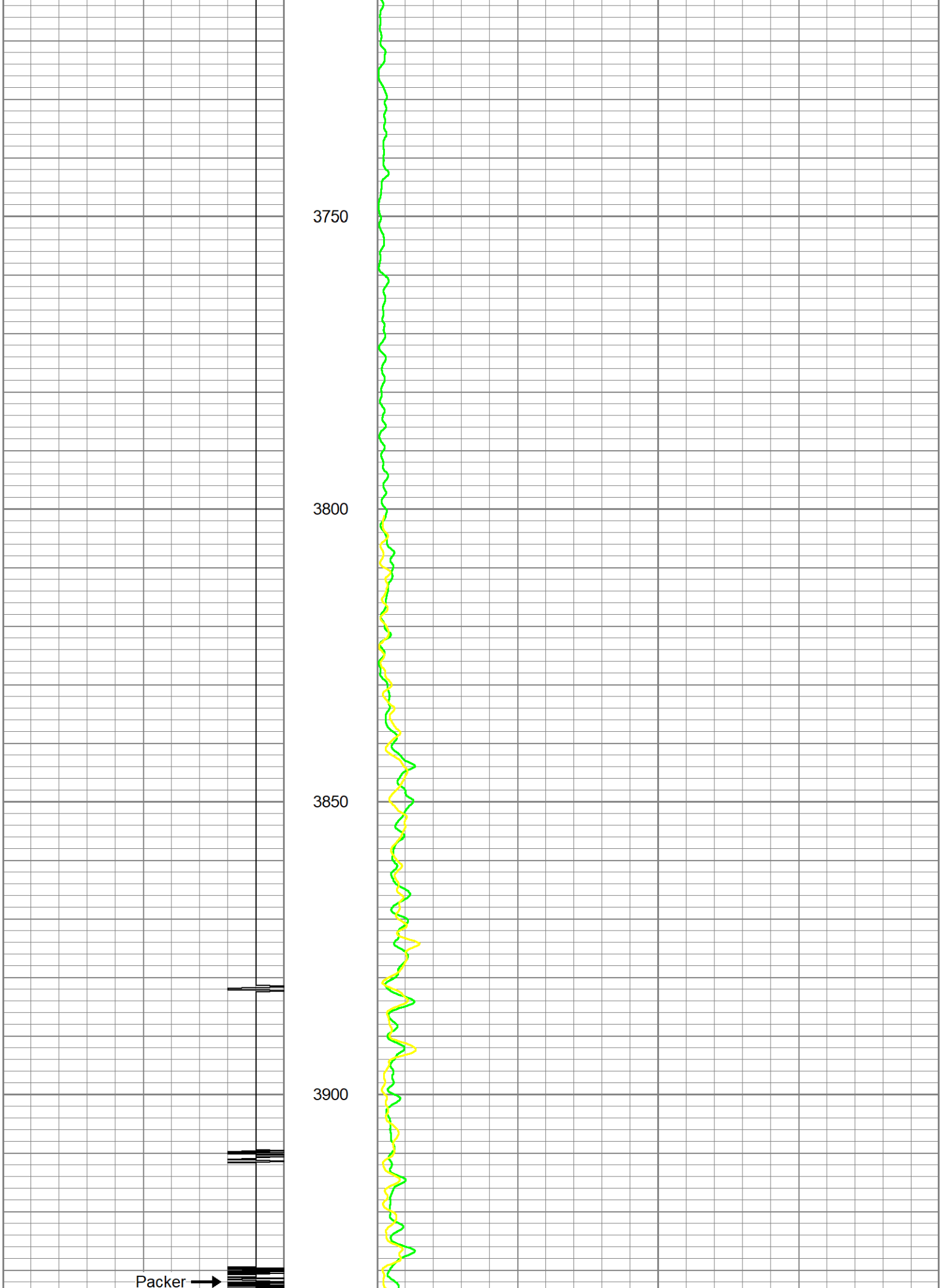
-9	CCL	1
0	Chase 1	200
0	Chase 2	200
0	Chase 3	200
0	Chase 4	200

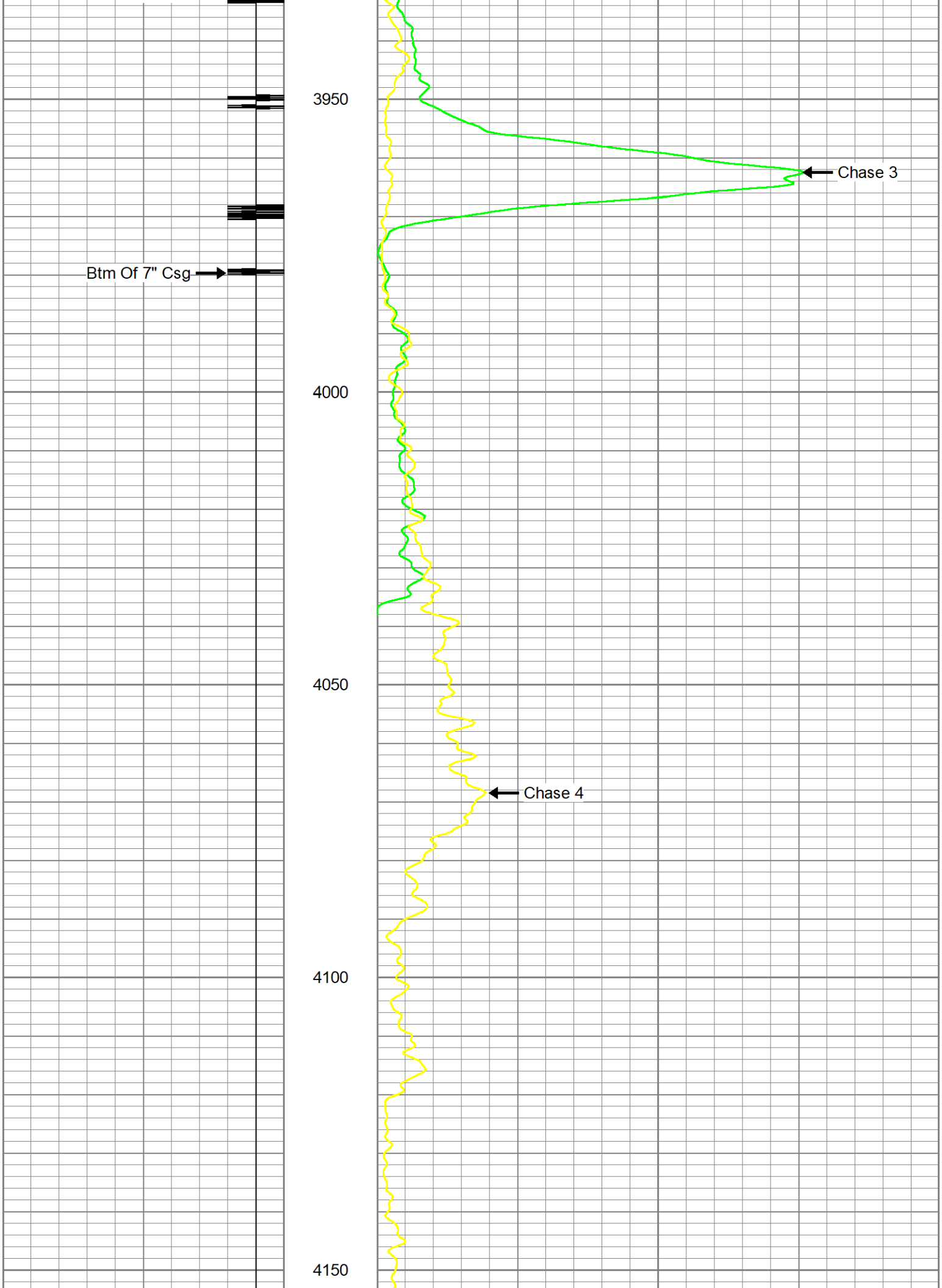


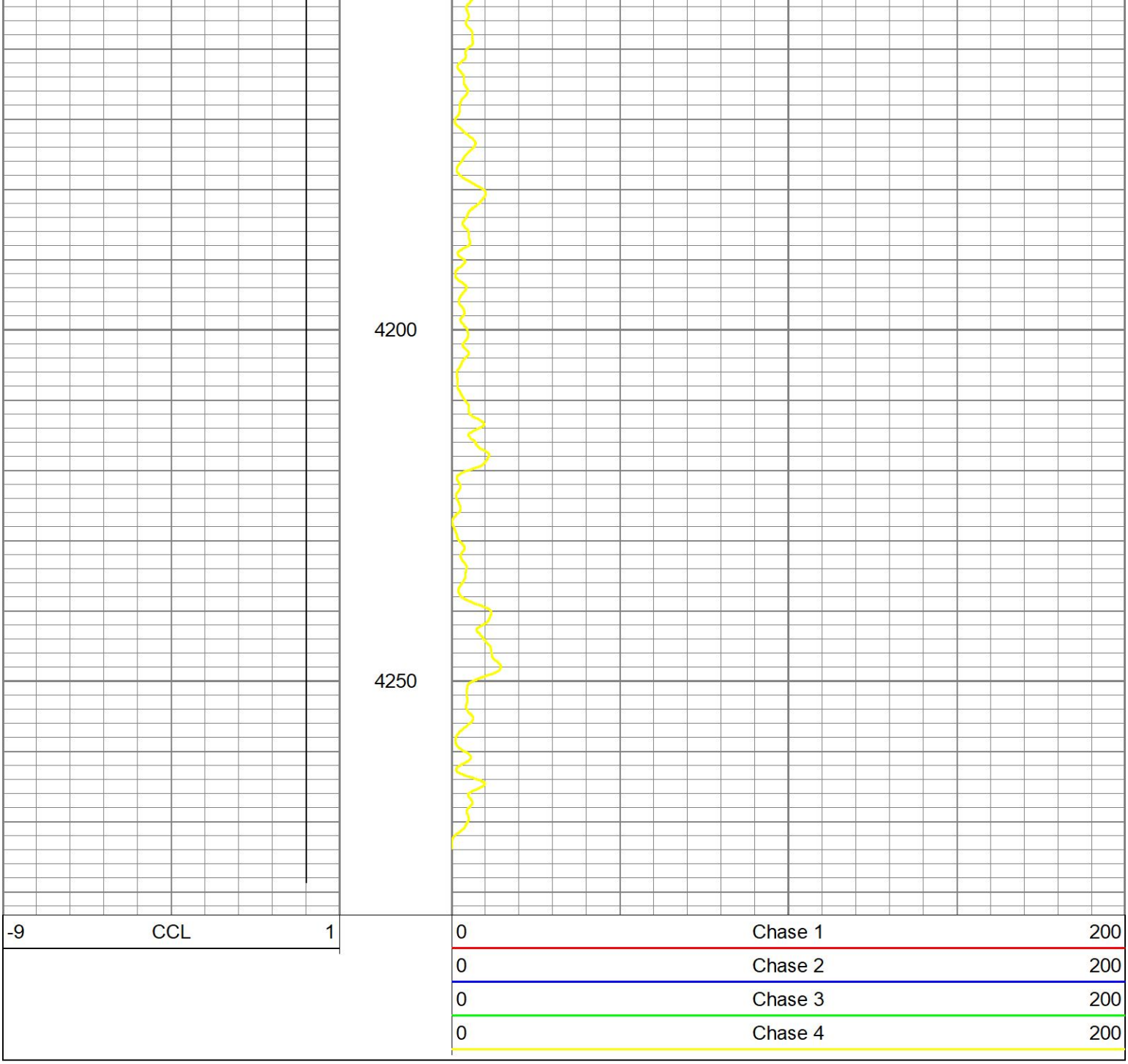

RA MATERIAL EJECTED @ 3100'
INJECTION RATE = 43 GPM
INJECTION PRESSURE = 310 PSI
3100
3150
Chase 1
3200
3250


3300
3350
3400
3450
Chase 2


3500
3550
3600
3650
3700


3750
3800
3850
3900
Packer


3950
4000
4050
4100
4150
Chase 3
Chase 4
Btm Of 7" Csg



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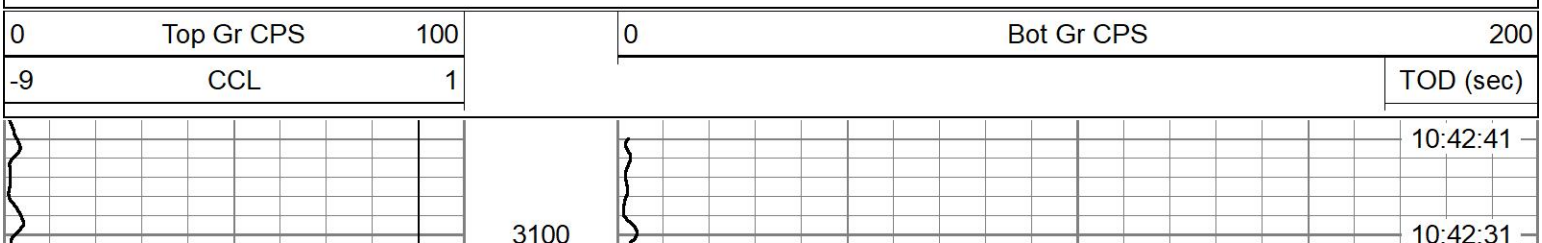
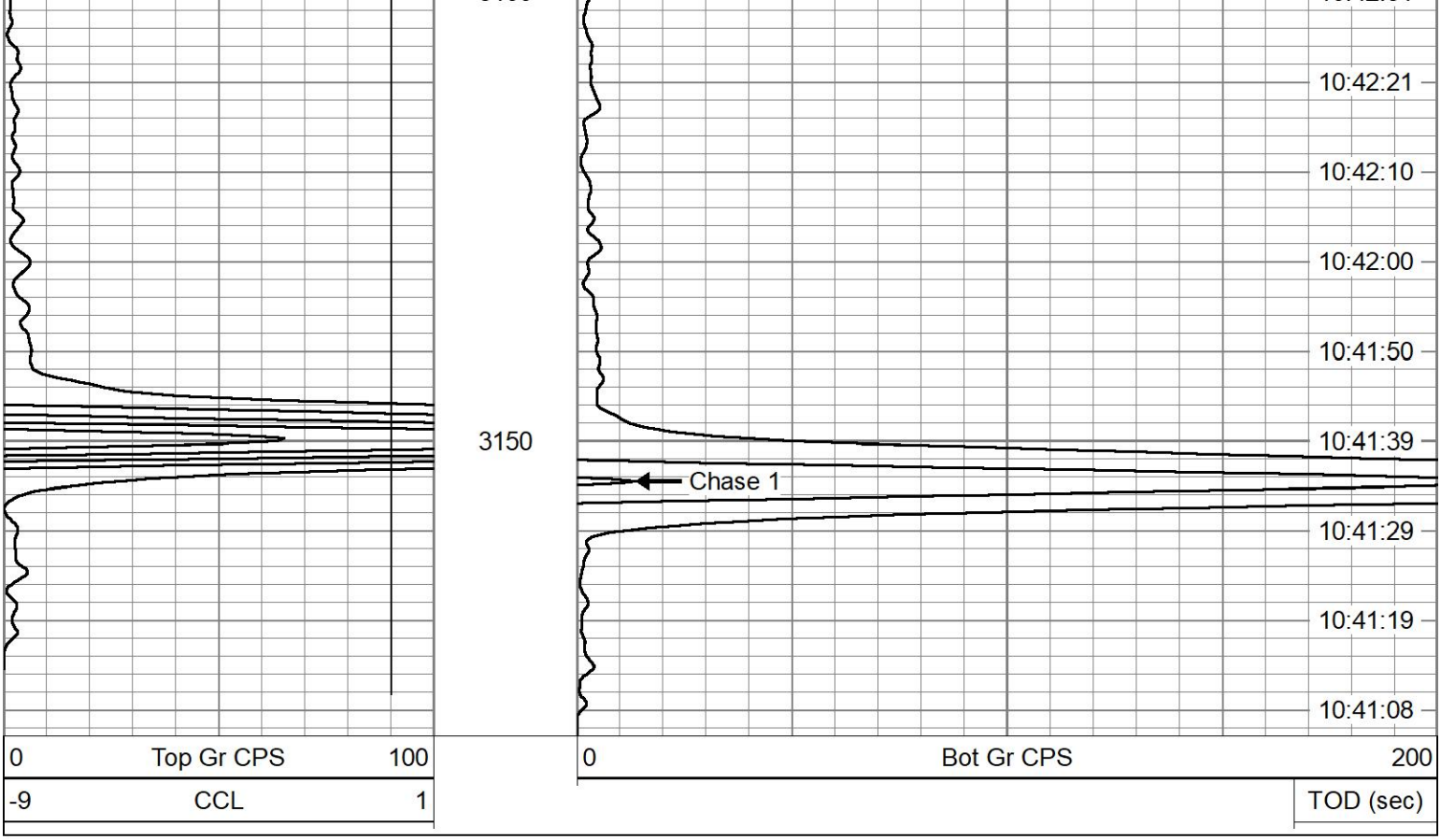
CHASE 1

Database File	d:\egt\egt #2-12\2024\egt 2-12 2024.db
Dataset Pathname	CHASE1
Presentation Format	tracermwl
Dataset Creation	Tue Aug 06 10:41:06 2024
Charted by	Depth in Feet scaled 1:240





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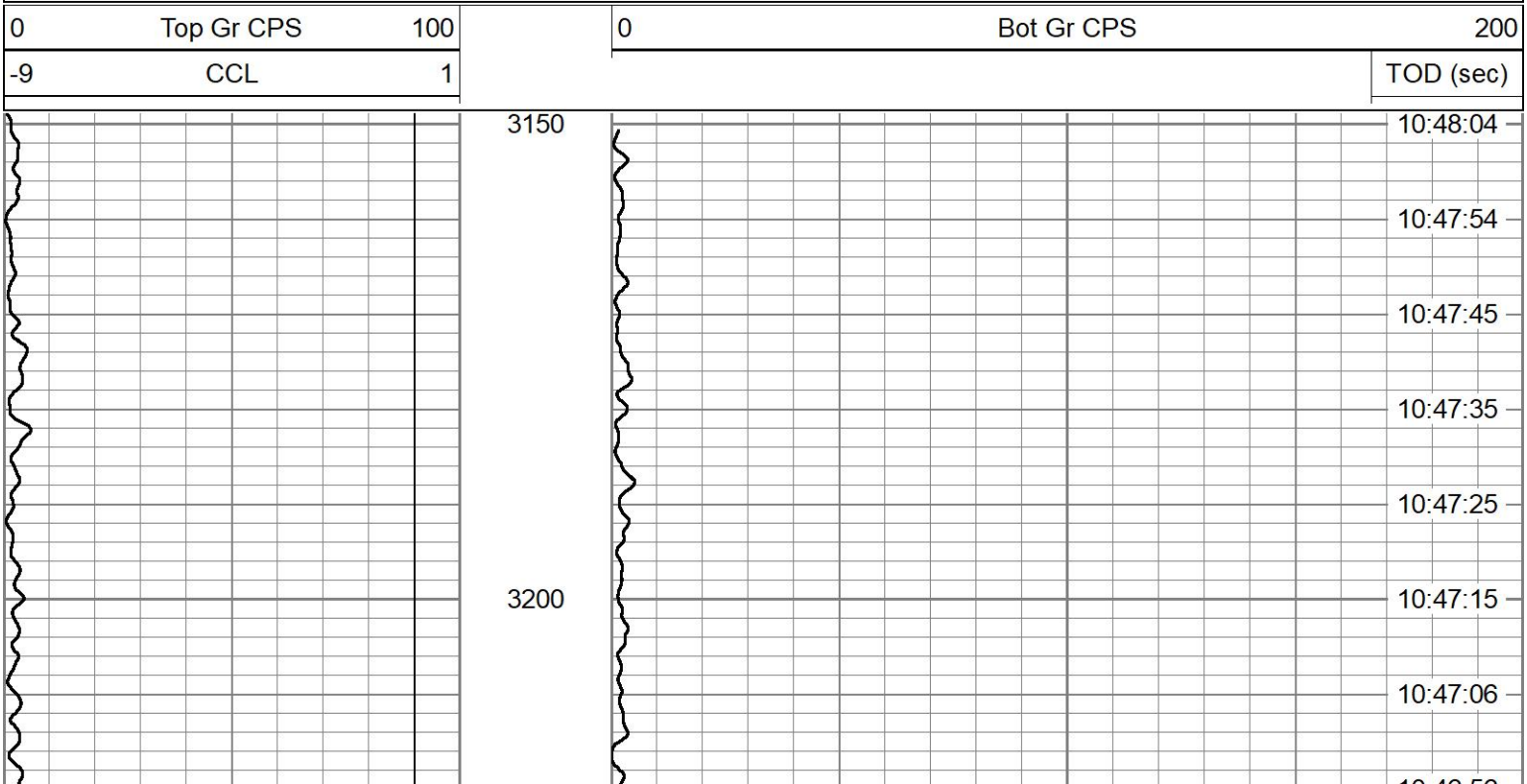
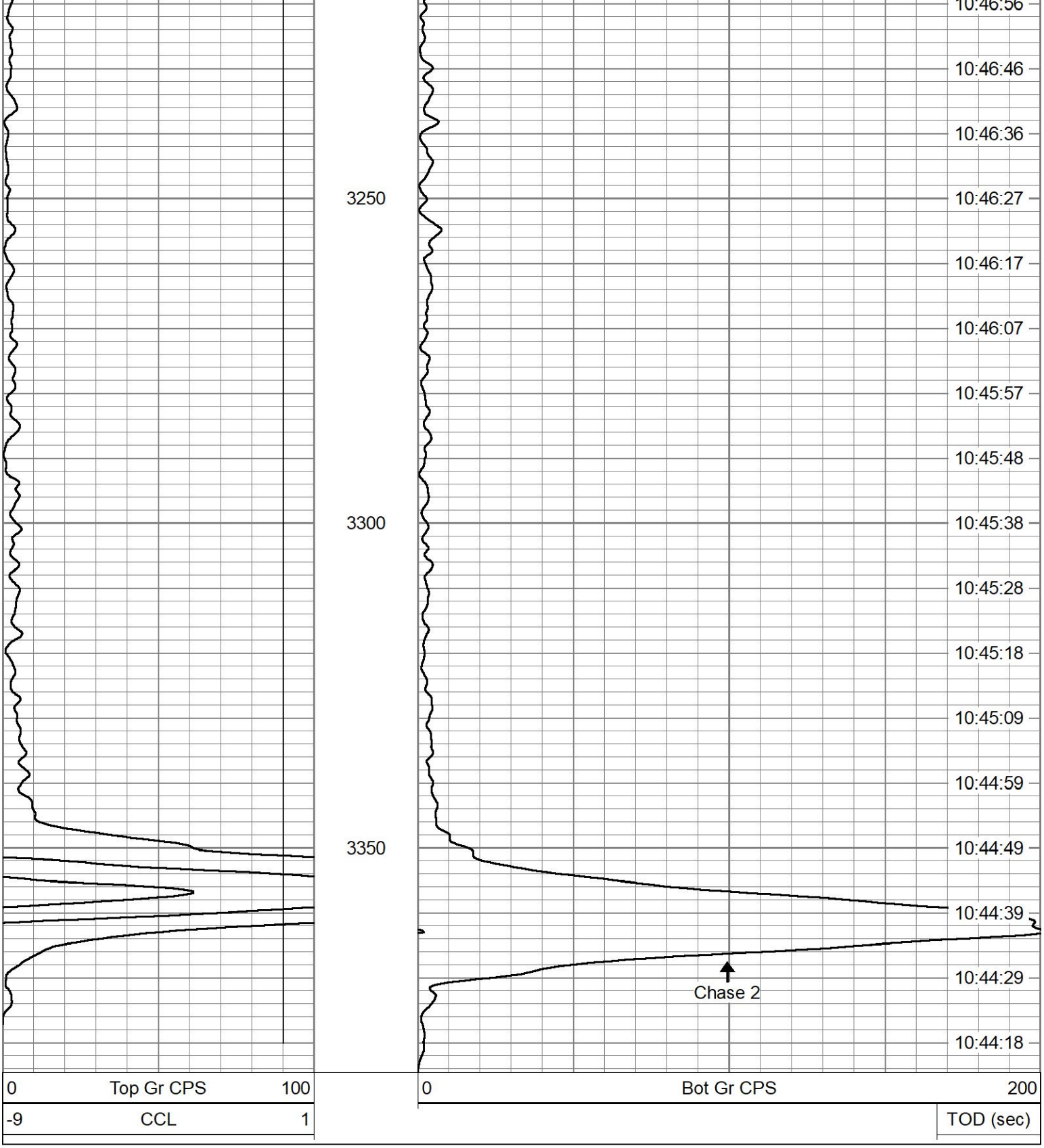
CHASE 2

Database File	d:\egt\egt #2-12\2024\egt 2-12 2024.db
Dataset Pathname	CHASE2
Presentation Format	tracermwl
Dataset Creation	Tue Aug 06 10:44:13 2024
Charted by	Depth in Feet scaled 1:240





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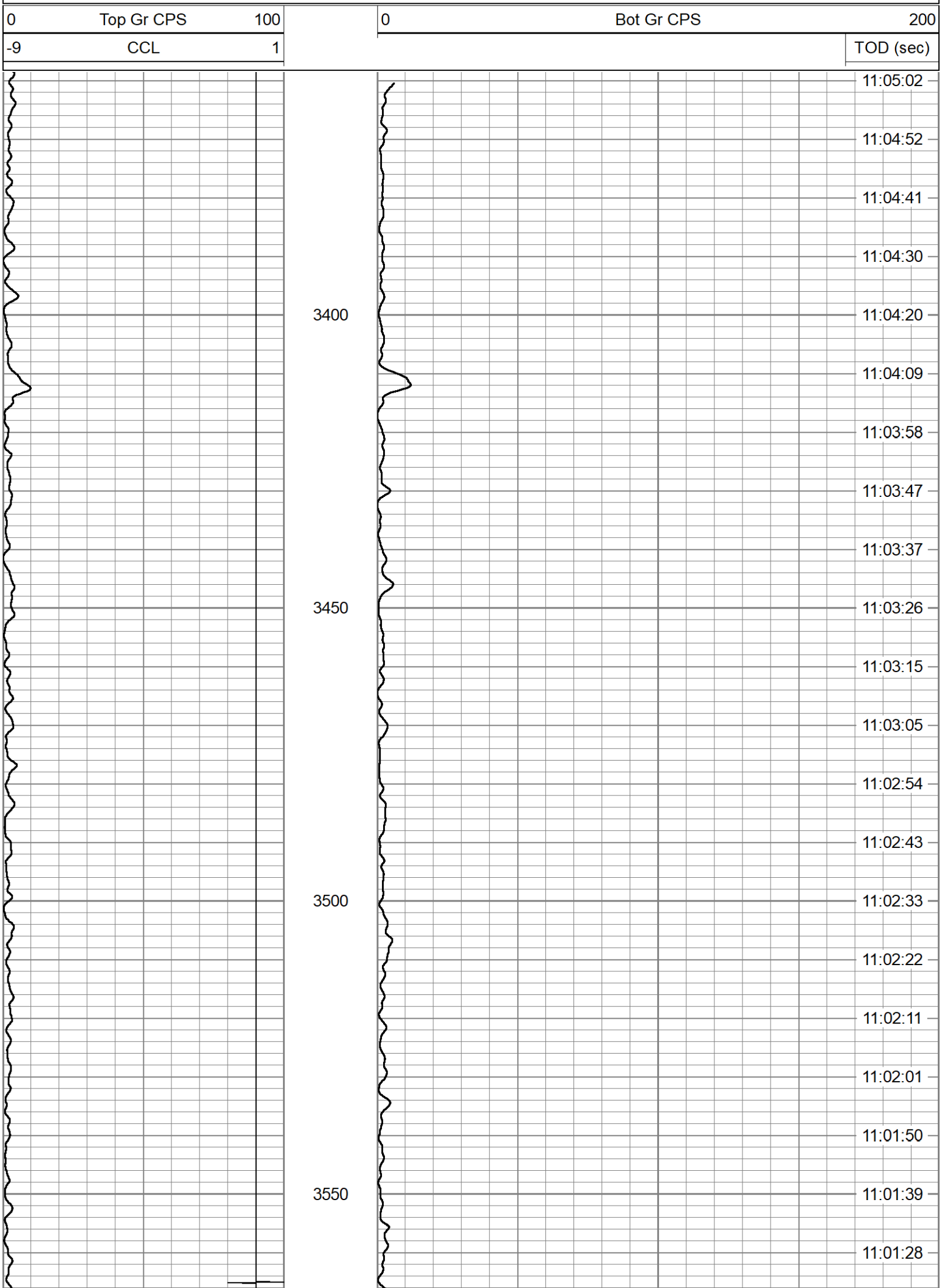
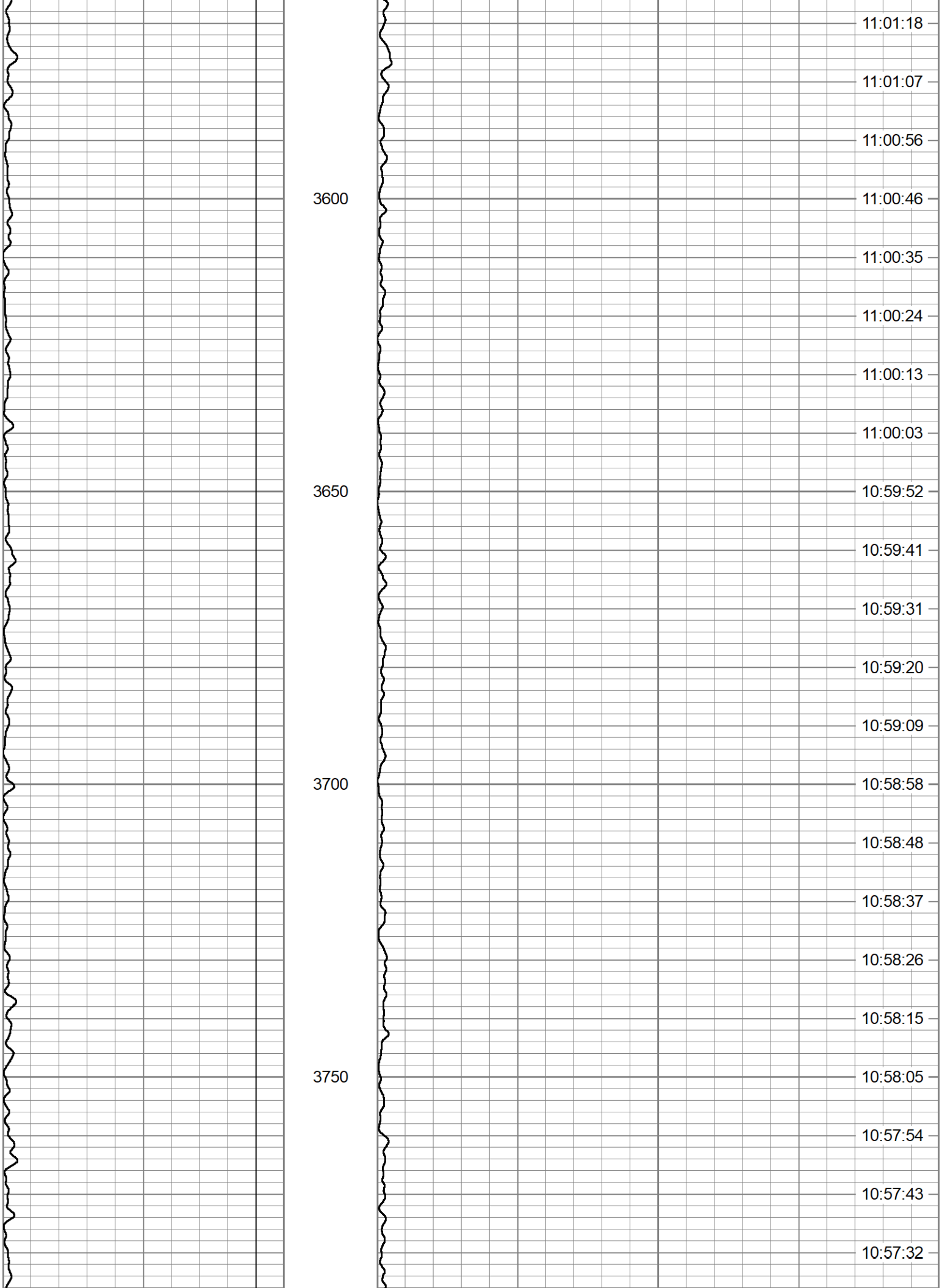
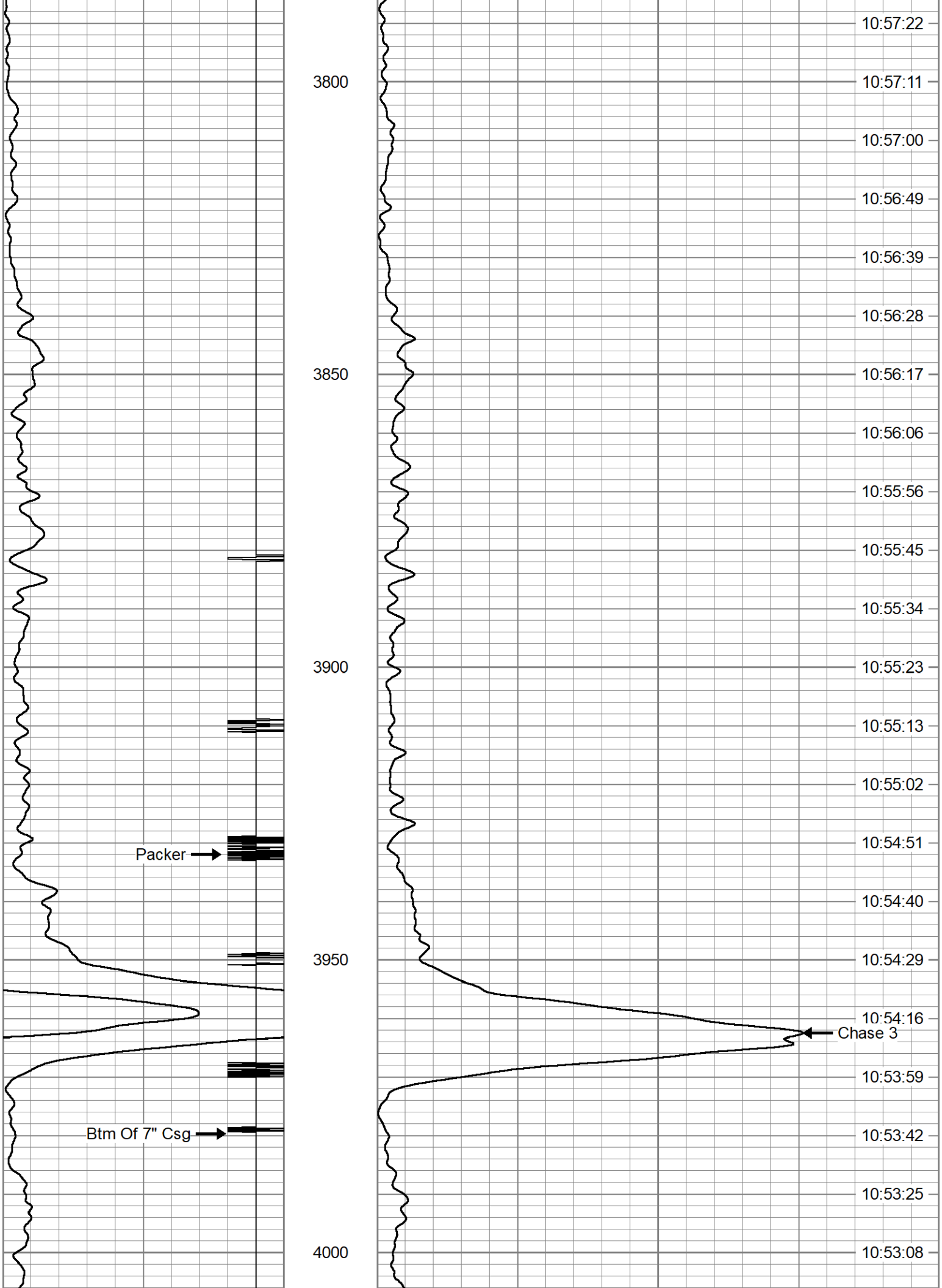
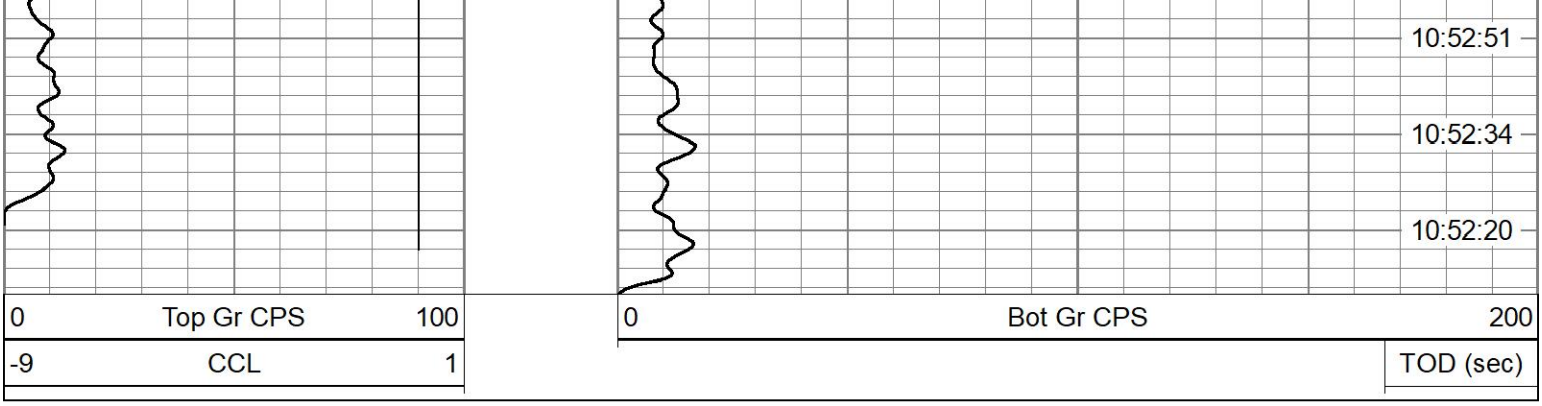
CHASE 3

Database File	d:\egt\egt #2-12\2024\egt 2-12 2024.db
Dataset Pathname	CHASE3
Presentation Format	tracermwl
Dataset Creation	Tue Aug 06 10:52:11 2024
Charted by	Depth in Feet scaled 1:240


0
Top Gr CPS
100
-9
CCL
1
0
Bot Gr CPS
200
TOD (sec)
11:05:02
11:04:52
11:04:41
11:04:30
3400
11:04:20
11:04:09
11:03:58
11:03:47
11:03:37
3450
11:03:26
11:03:15
11:03:05
11:02:54
11:02:43
3500
11:02:33
11:02:22
11:02:11
11:02:01
11:01:50
3550
11:01:39
11:01:28


3600
3650
3700
3750
11:01:18
11:01:07
11:00:56
11:00:46
11:00:35
11:00:24
11:00:13
11:00:03
10:59:52
10:59:41
10:59:31
10:59:20
10:59:09
10:58:58
10:58:48
10:58:37
10:58:26
10:58:15
10:58:05
10:57:54
10:57:43
10:57:32


3800
3850
3900
3950
4000
10:57:22
10:57:11
10:57:00
10:56:49
10:56:39
10:56:28
10:56:17
10:56:06
10:55:56
10:55:45
10:55:34
10:55:23
10:55:13
10:55:02
10:54:51
10:54:40
10:54:29
10:54:16
10:53:59
10:53:42
10:53:25
10:53:08
Packer
Btm Of 7" Csg
Chase 3



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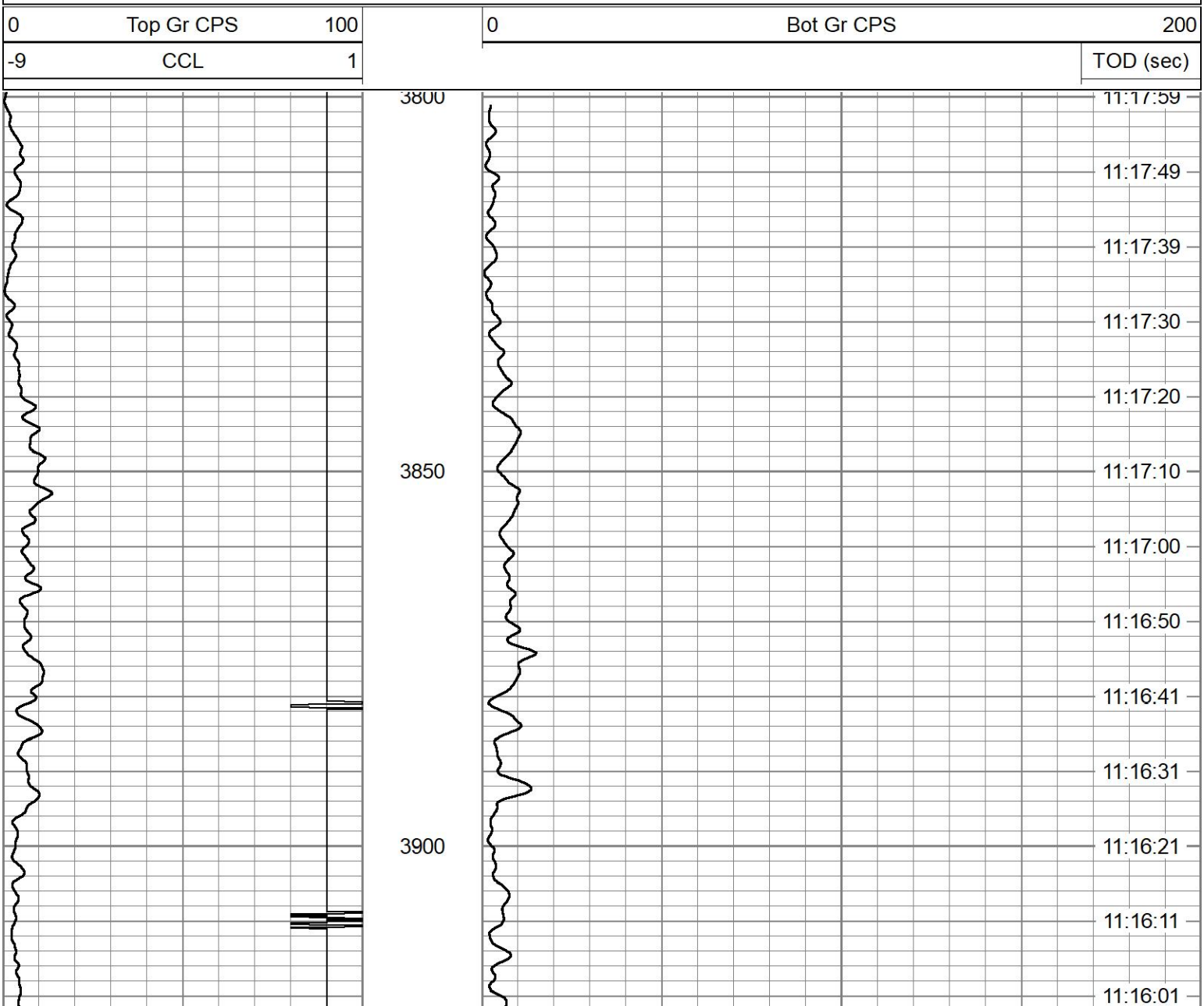
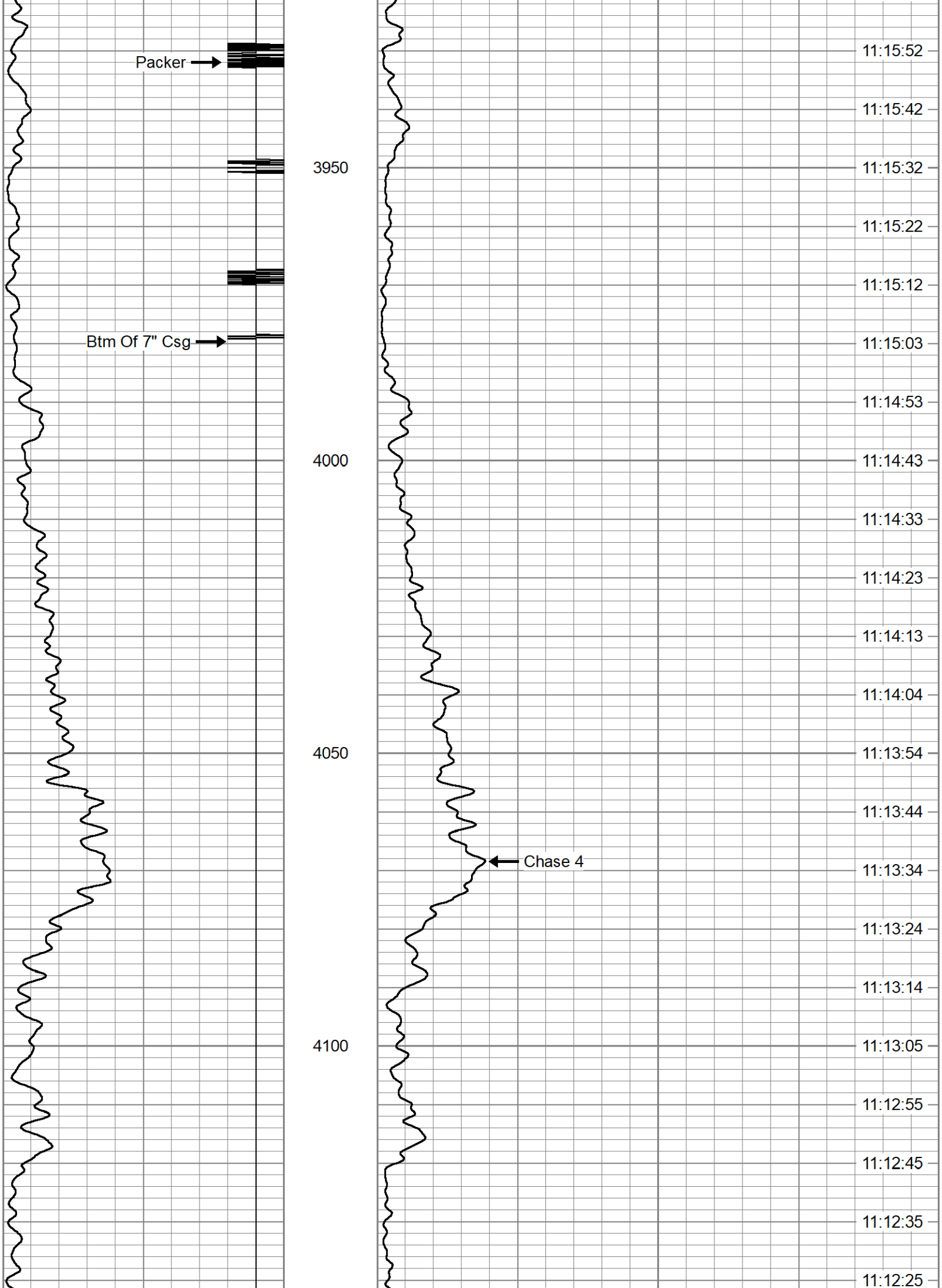
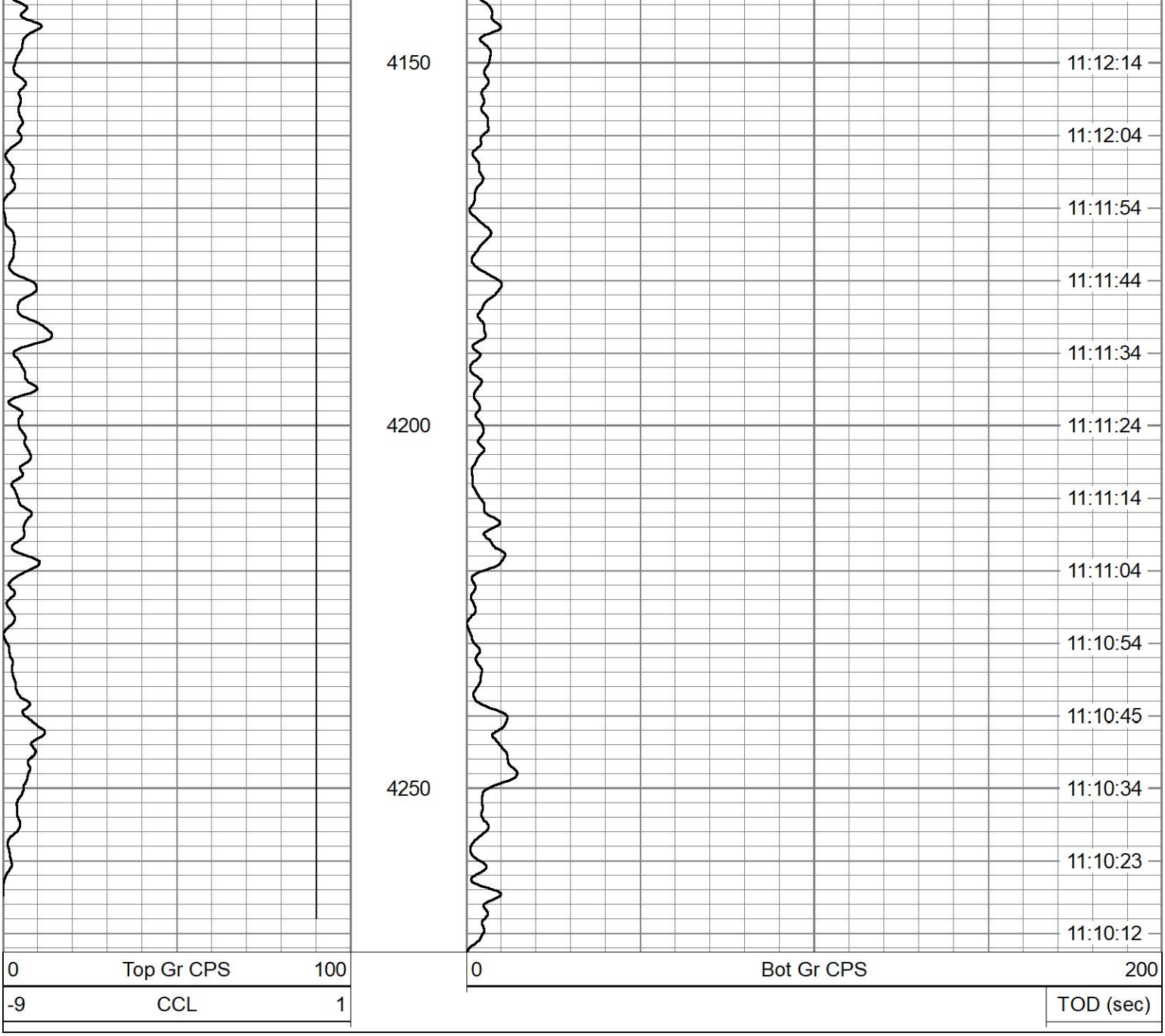
CHASE 4

Database File	d:\egt\egt #2-12\2024\egt 2-12 2024.db
Dataset Pathname	CHASE4
Presentation Format	tracermwl
Dataset Creation	Tue Aug 06 11:10:10 2024
Charted by	Depth in Feet scaled 1:240




Packer
Btm Of 7" Csg
Chase 4
3950
4000
4050
4100
11:15:52
11:15:42
11:15:32
11:15:22
11:15:12
11:15:03
11:14:53
11:14:43
11:14:33
11:14:23
11:14:13
11:14:04
11:13:54
11:13:44
11:13:34
11:13:24
11:13:14
11:13:05
11:12:55
11:12:45
11:12:35
11:12:25



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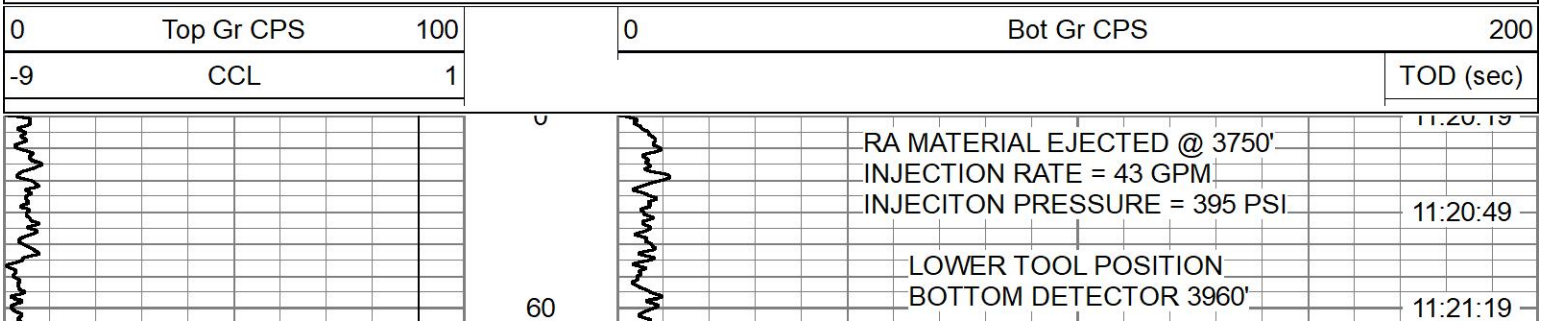
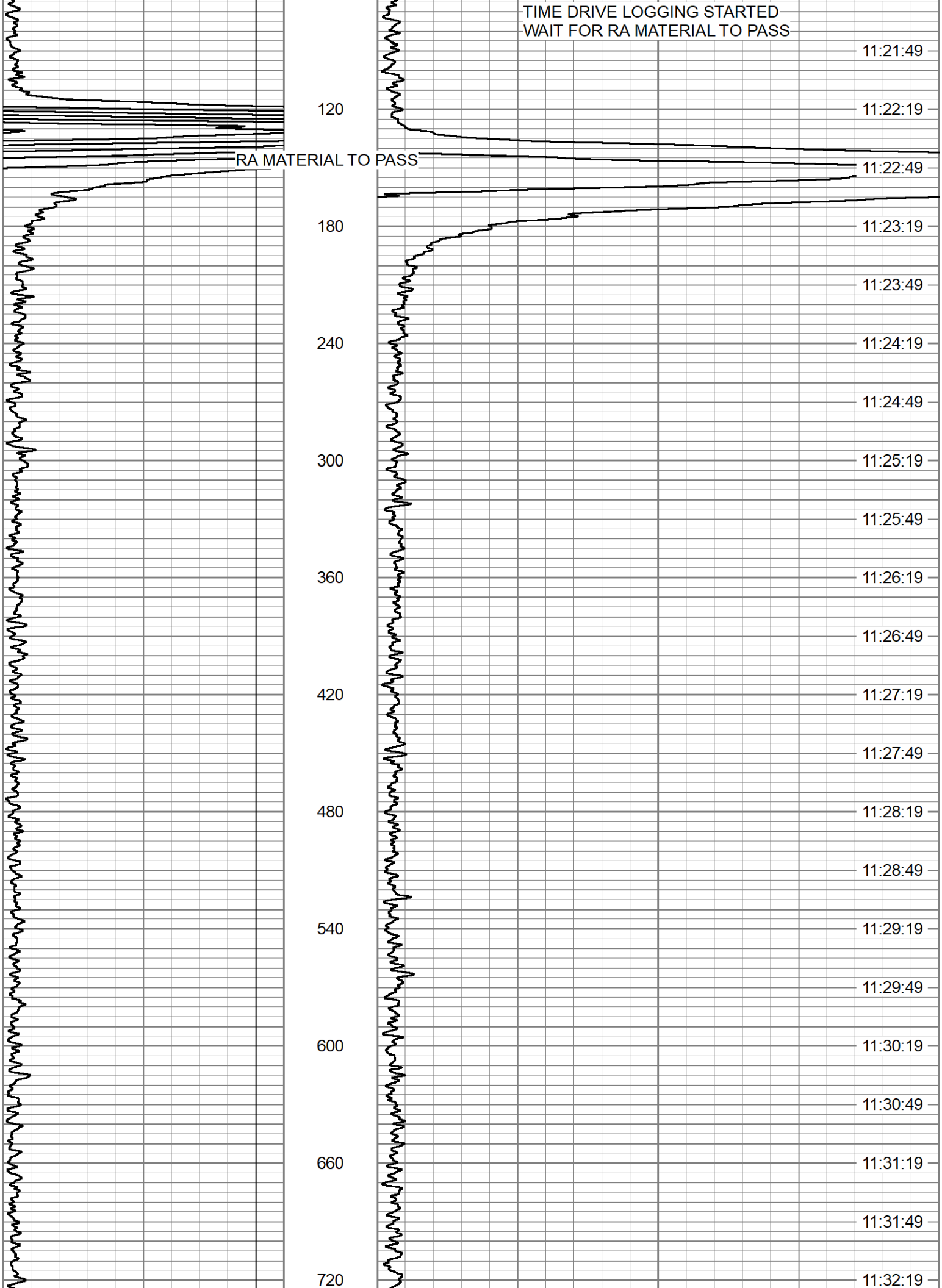
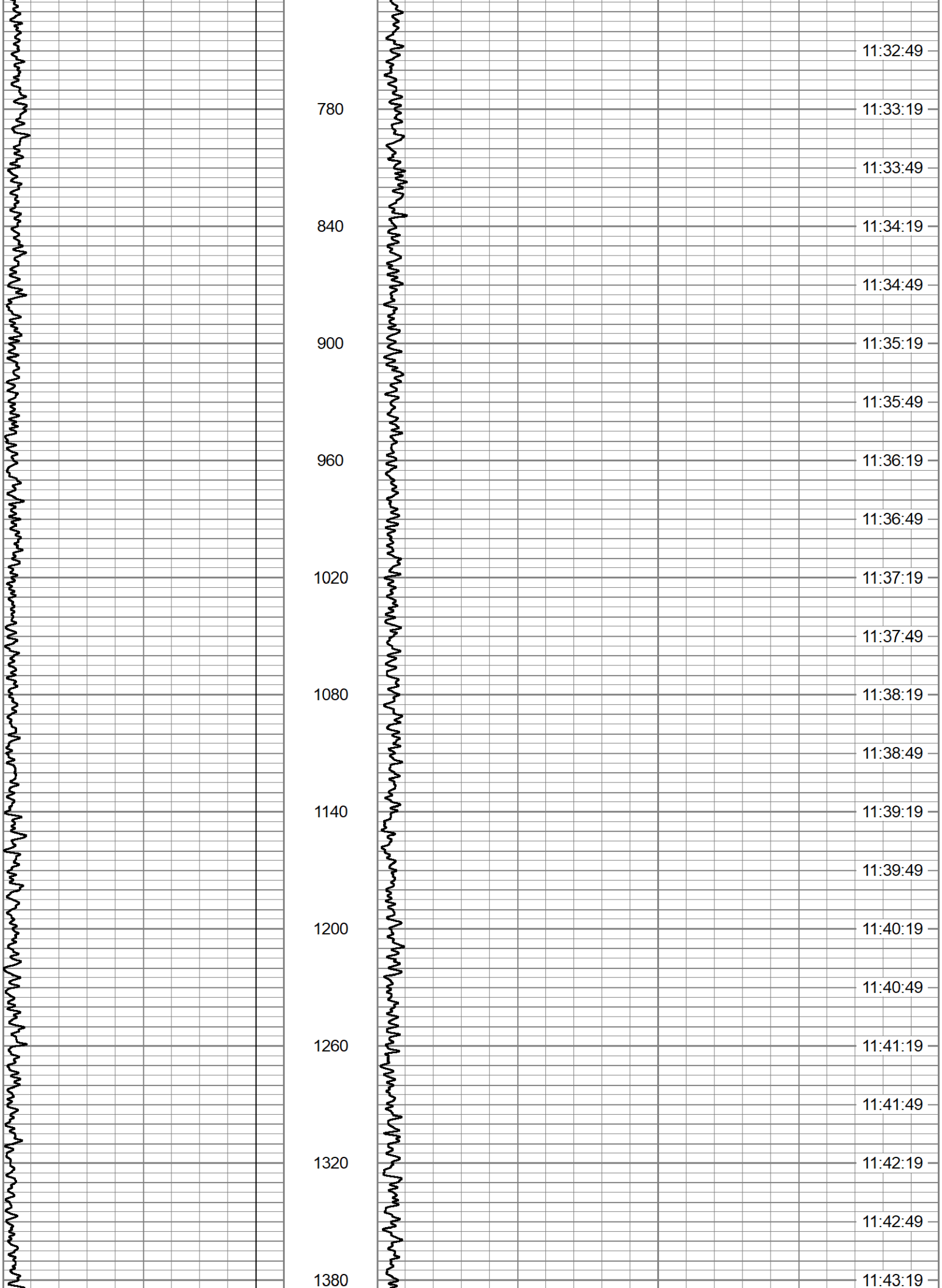
TIME DRIVE SURVEY

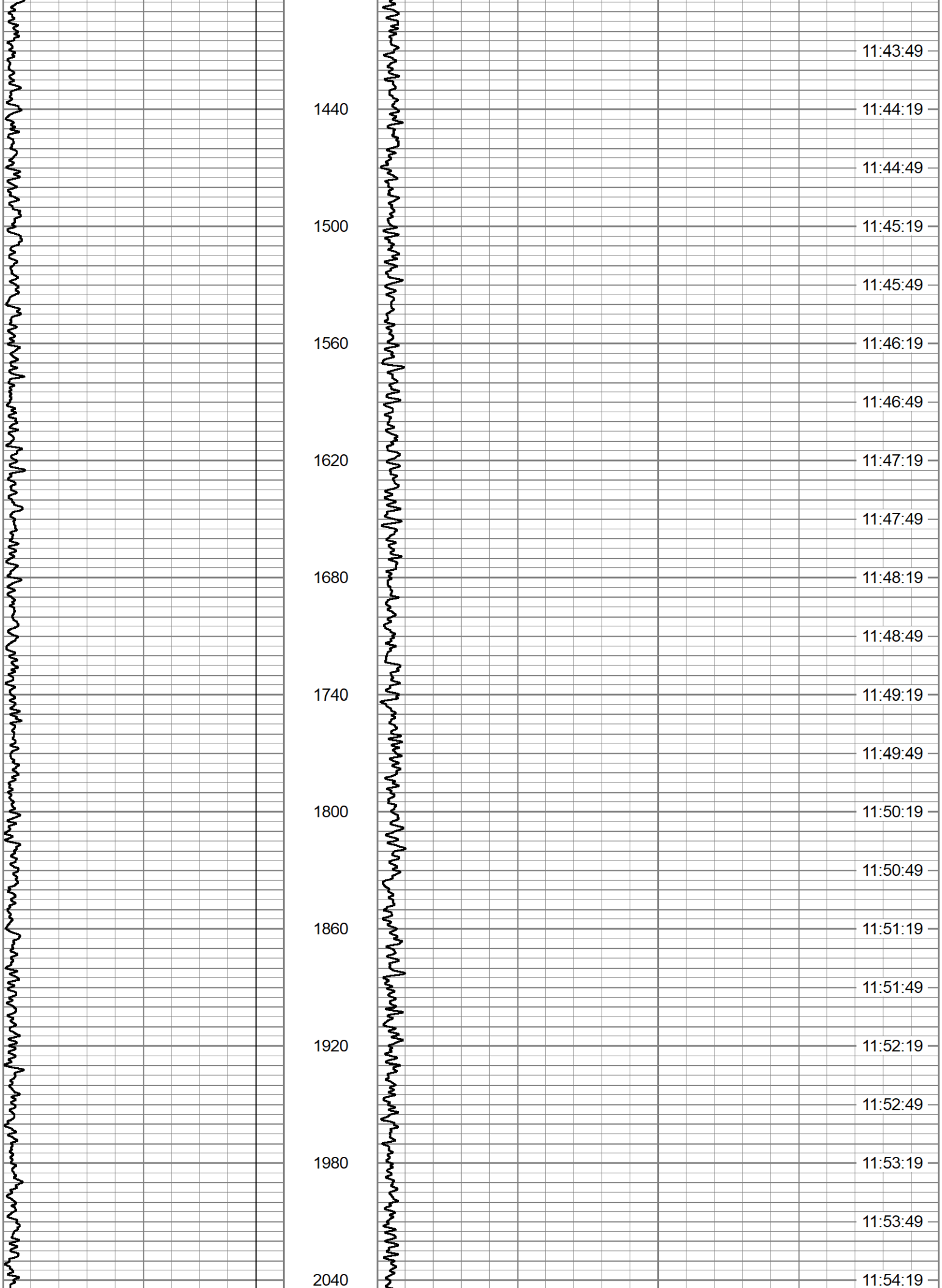
RA MATERIAL EJECTED AT 3750'
INJECTION 43 GPM 395 PSI

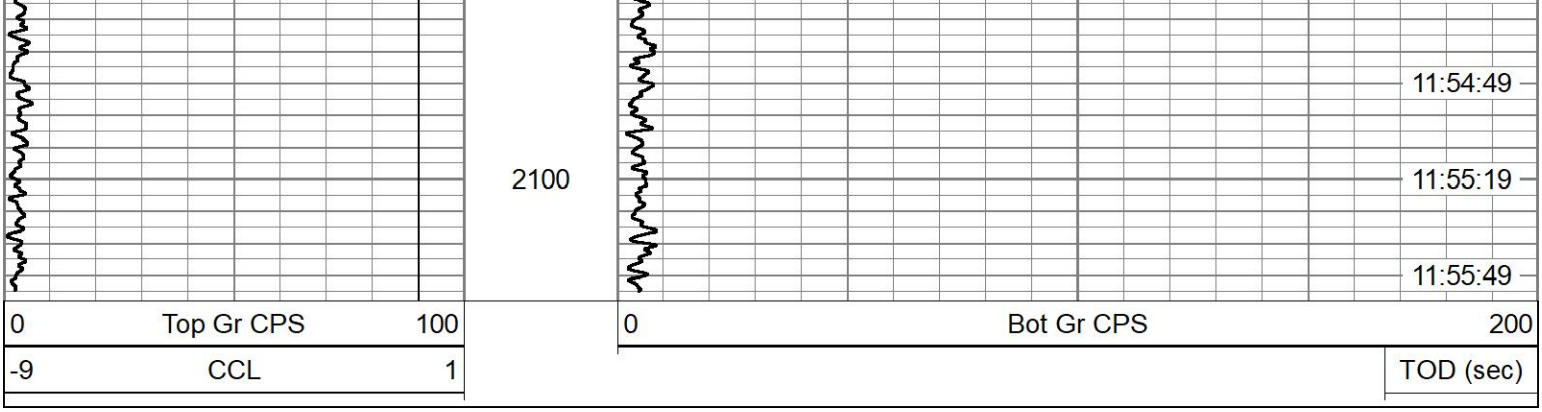
Database File	d:\egt\egt #2-12\2024\egt 2-12 2024.db
Dataset Pathname	30MIN
Presentation Format	tracer_time_60
Dataset Creation	Tue Aug 06 11:20:19 2024
Charted by	Time scaled 60/hour




TIME DRIVE LOGGING STARTED
WAIT FOR RA MATERIAL TO PASS
RA MATERIAL TO PASS
120
180
240
300
360
420
480
540
600
660
720
11:21:49
11:22:19
11:22:49
11:23:19
11:23:49
11:24:19
11:24:49
11:25:19
11:25:49
11:26:19
11:26:49
11:27:19
11:27:49
11:28:19
11:28:49
11:29:19
11:29:49
11:30:19
11:30:49
11:31:19
11:31:49
11:32:19


780
840
900
960
1020
1080
1140
1200
1260
1320
1380
11:32:49
11:33:19
11:33:49
11:34:19
11:34:49
11:35:19
11:35:49
11:36:19
11:36:49
11:37:19
11:37:49
11:38:19
11:38:49
11:39:19
11:39:49
11:40:19
11:40:49
11:41:19
11:41:49
11:42:19
11:42:49
11:43:19


1440
1500
1560
1620
1680
1740
1800
1860
1920
1980
2040
11:43:49
11:44:19
11:44:49
11:45:19
11:45:49
11:46:19
11:46:49
11:47:19
11:47:49
11:48:19
11:48:49
11:49:19
11:49:49
11:50:19
11:50:49
11:51:19
11:51:49
11:52:19
11:52:49
11:53:19
11:53:49
11:54:19



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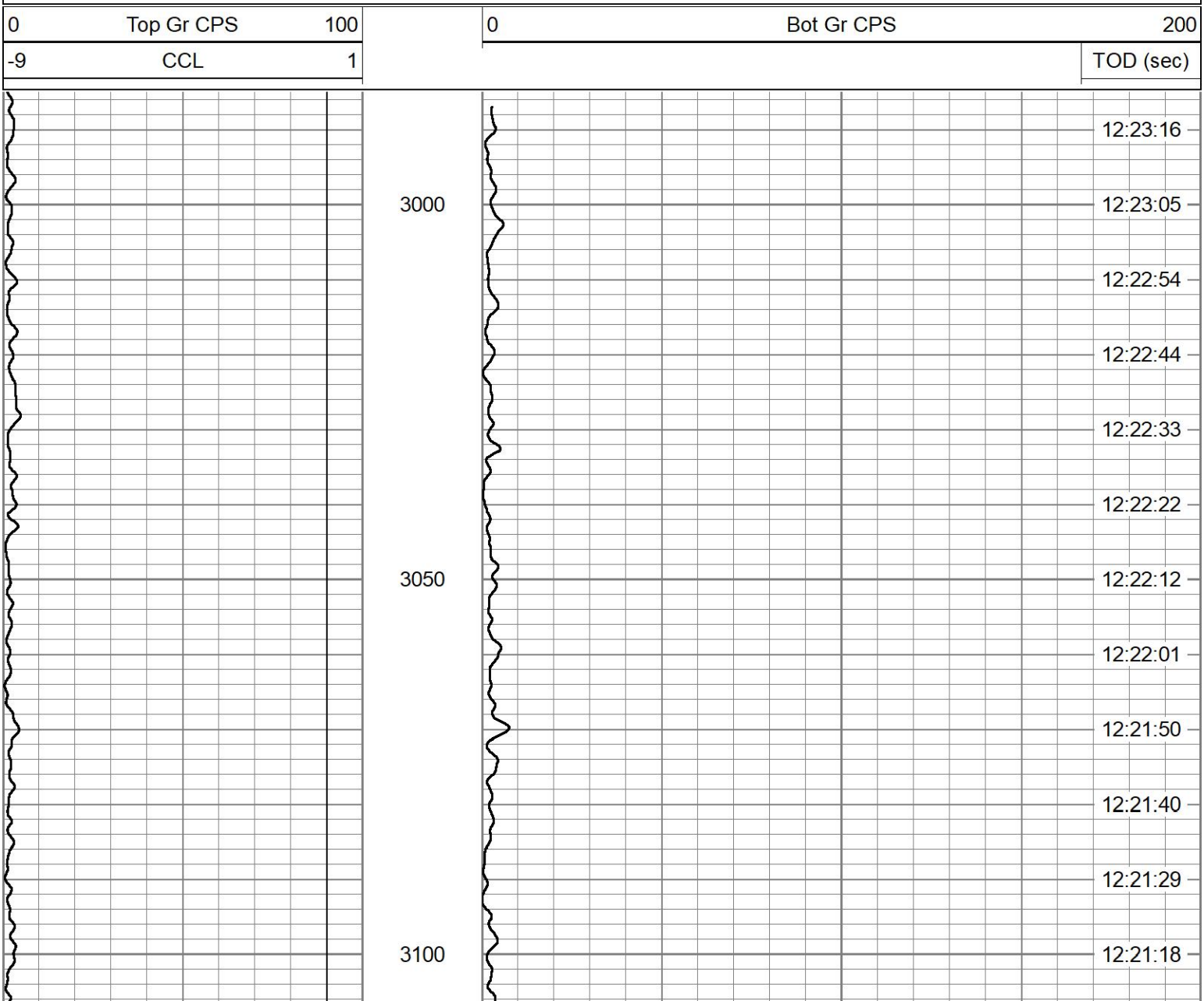
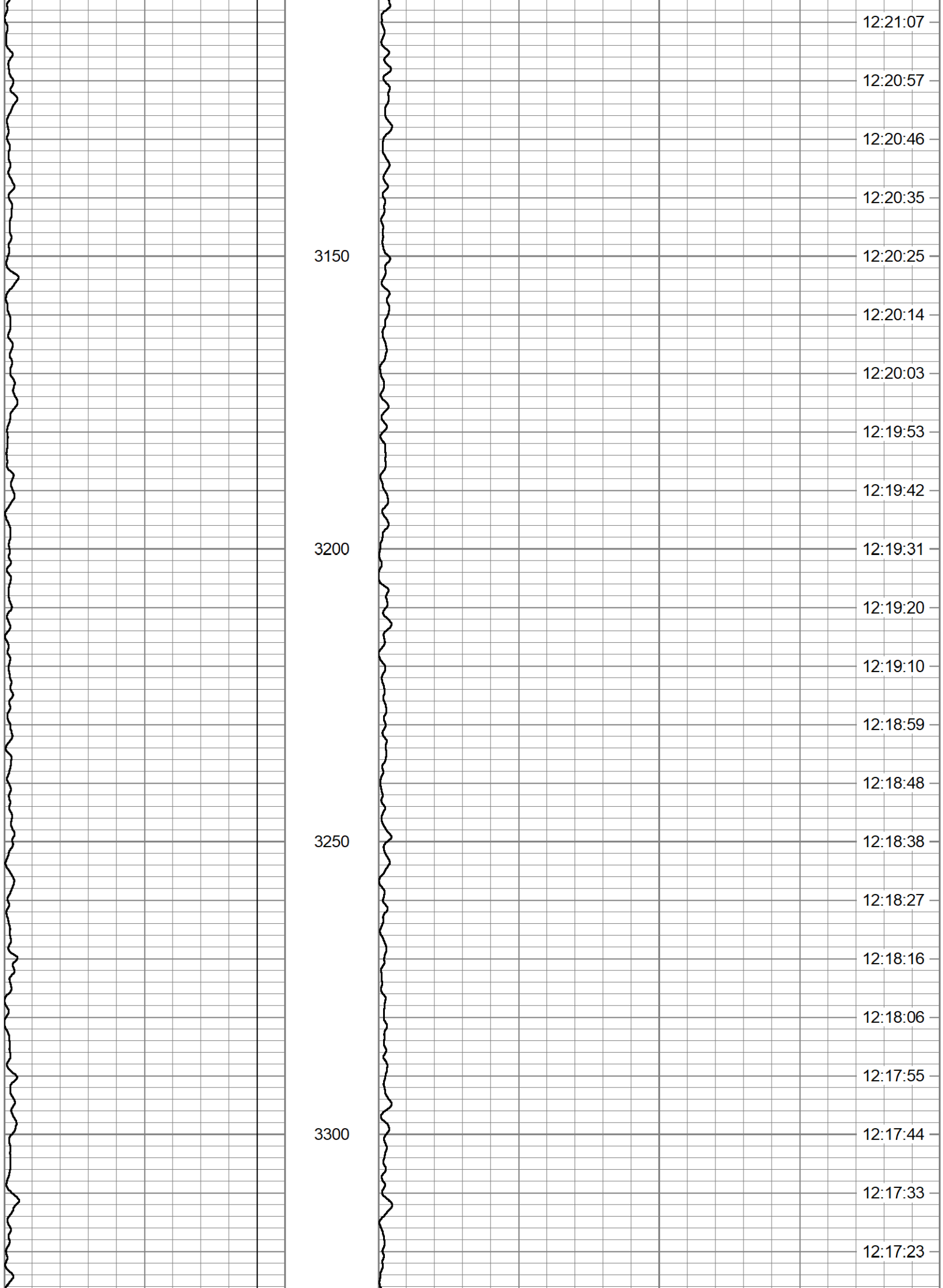
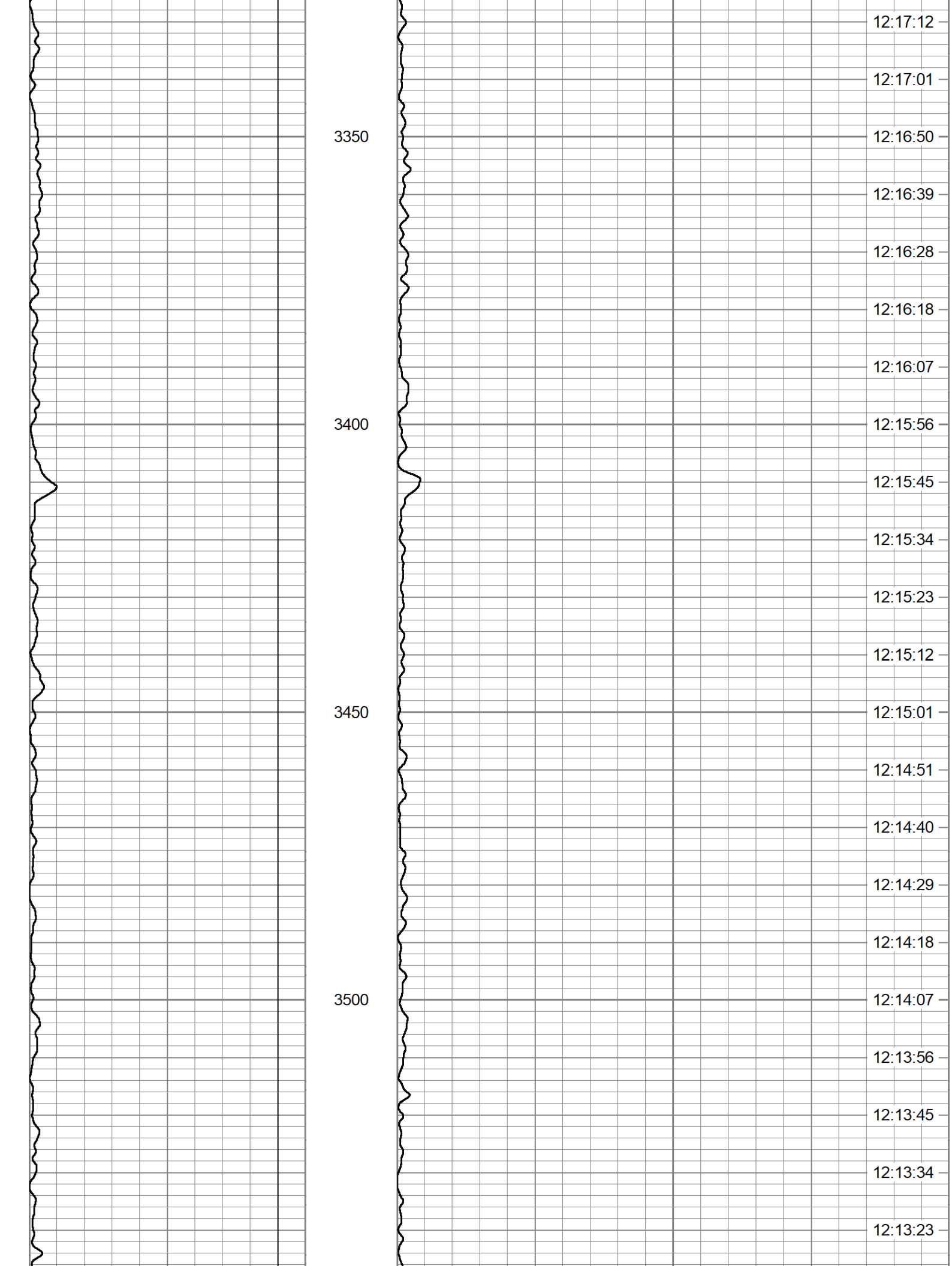
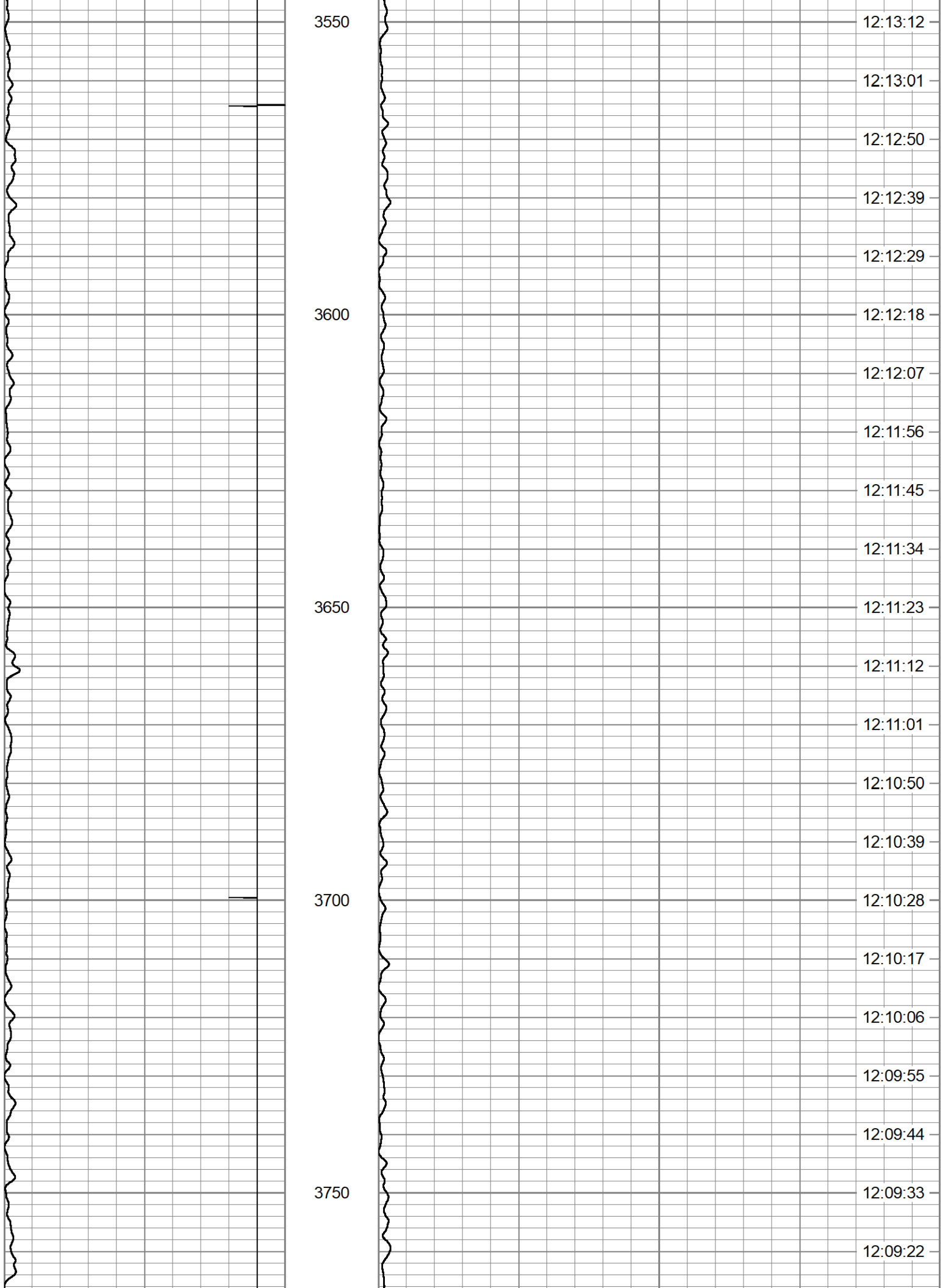
FINAL PASS

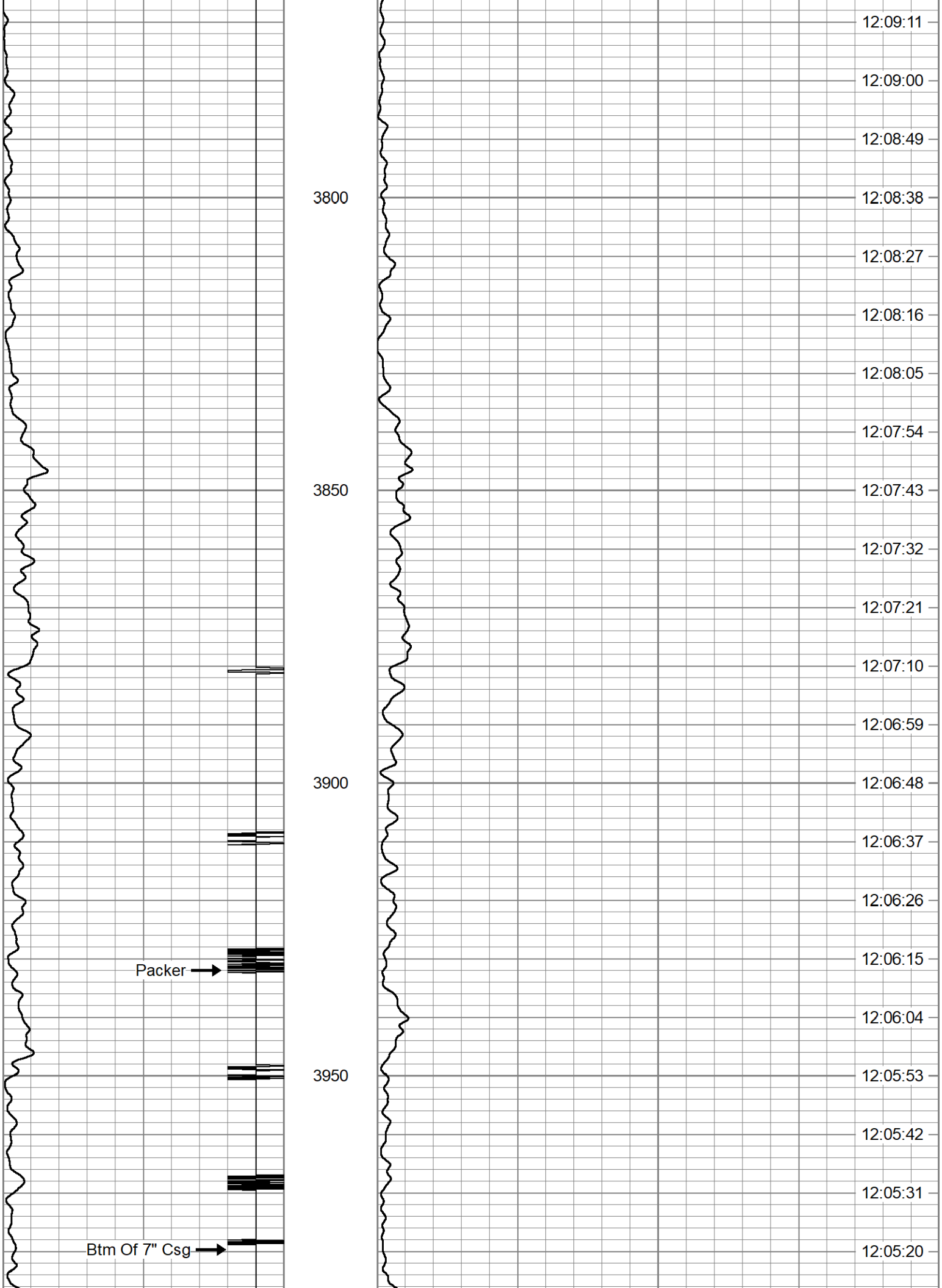
Database File	d:\egt\egt #2-12\2024\egt 2-12 2024.db
Dataset Pathname	FINAL
Presentation Format	tracermwl
Dataset Creation	Tue Aug 06 11:59:50 2024
Charted by	Depth in Feet scaled 1:240

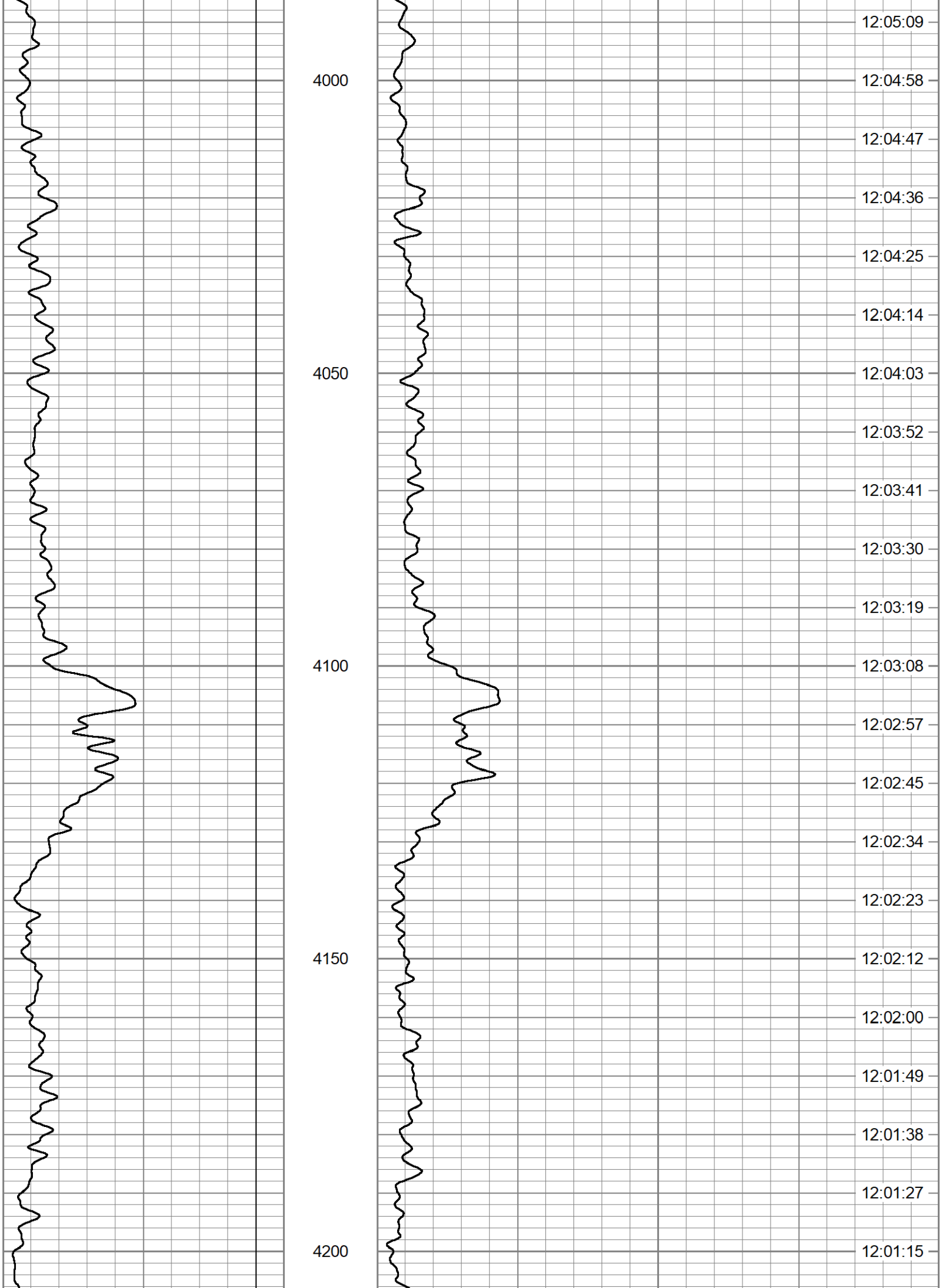


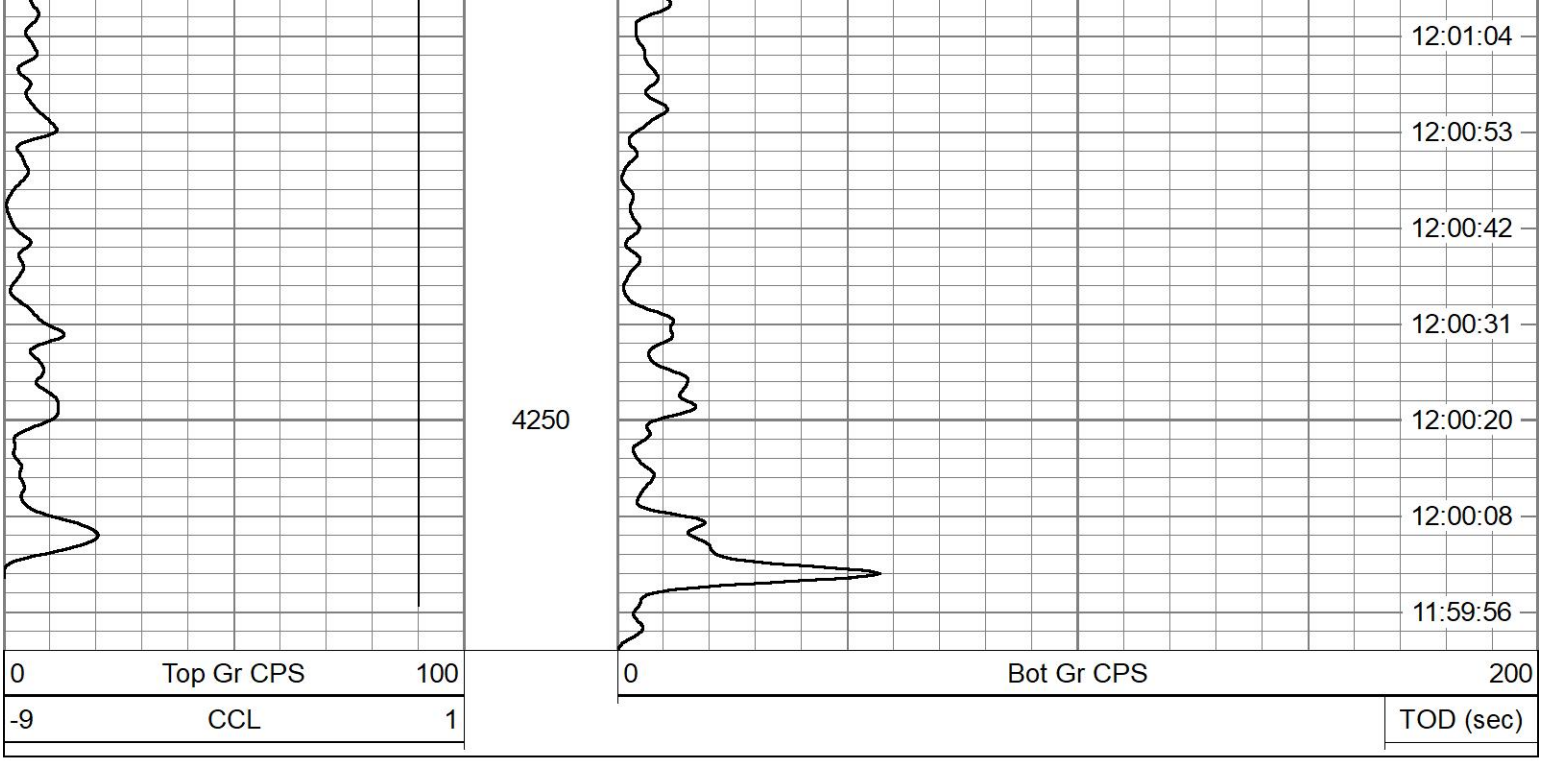

3150
3200
3250
3300
12:21:07
12:20:57
12:20:46
12:20:35
12:20:25
12:20:14
12:20:03
12:19:53
12:19:42
12:19:31
12:19:20
12:19:10
12:18:59
12:18:48
12:18:38
12:18:27
12:18:16
12:18:06
12:17:55
12:17:44
12:17:33
12:17:23


3350
3400
3450
3500
12:17:12
12:17:01
12:16:50
12:16:39
12:16:28
12:16:18
12:16:07
12:15:56
12:15:45
12:15:34
12:15:23
12:15:12
12:15:01
12:14:51
12:14:40
12:14:29
12:14:18
12:14:07
12:13:56
12:13:45
12:13:34
12:13:23


3550
3600
3650
3700
3750
12:13:12
12:13:01
12:12:50
12:12:39
12:12:29
12:12:18
12:12:07
12:11:56
12:11:45
12:11:34
12:11:23
12:11:12
12:11:01
12:10:50
12:10:39
12:10:28
12:10:17
12:10:06
12:09:55
12:09:44
12:09:33
12:09:22


3800
3850
3900
3950
Packer
Btm Of 7" Csg
12:09:11
12:09:00
12:08:49
12:08:38
12:08:27
12:08:16
12:08:05
12:07:54
12:07:43
12:07:32
12:07:21
12:07:10
12:06:59
12:06:48
12:06:37
12:06:26
12:06:15
12:06:04
12:05:53
12:05:42
12:05:31
12:05:20

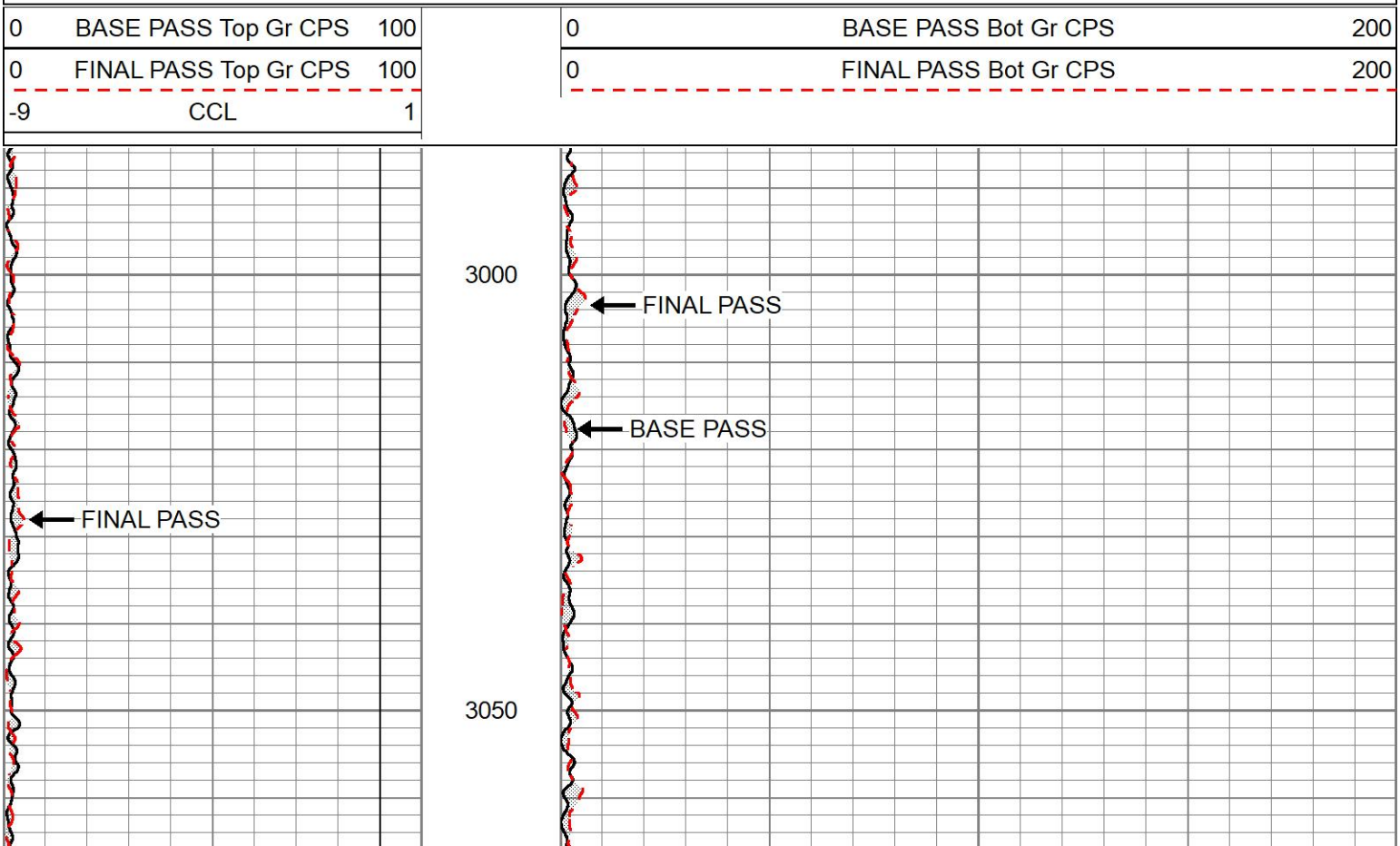

4000
4050
4100
4150
4200
12:05:09
12:04:58
12:04:47
12:04:36
12:04:25
12:04:14
12:04:03
12:03:52
12:03:41
12:03:30
12:03:19
12:03:08
12:02:57
12:02:45
12:02:34
12:02:23
12:02:12
12:02:00
12:01:49
12:01:38
12:01:27
12:01:15

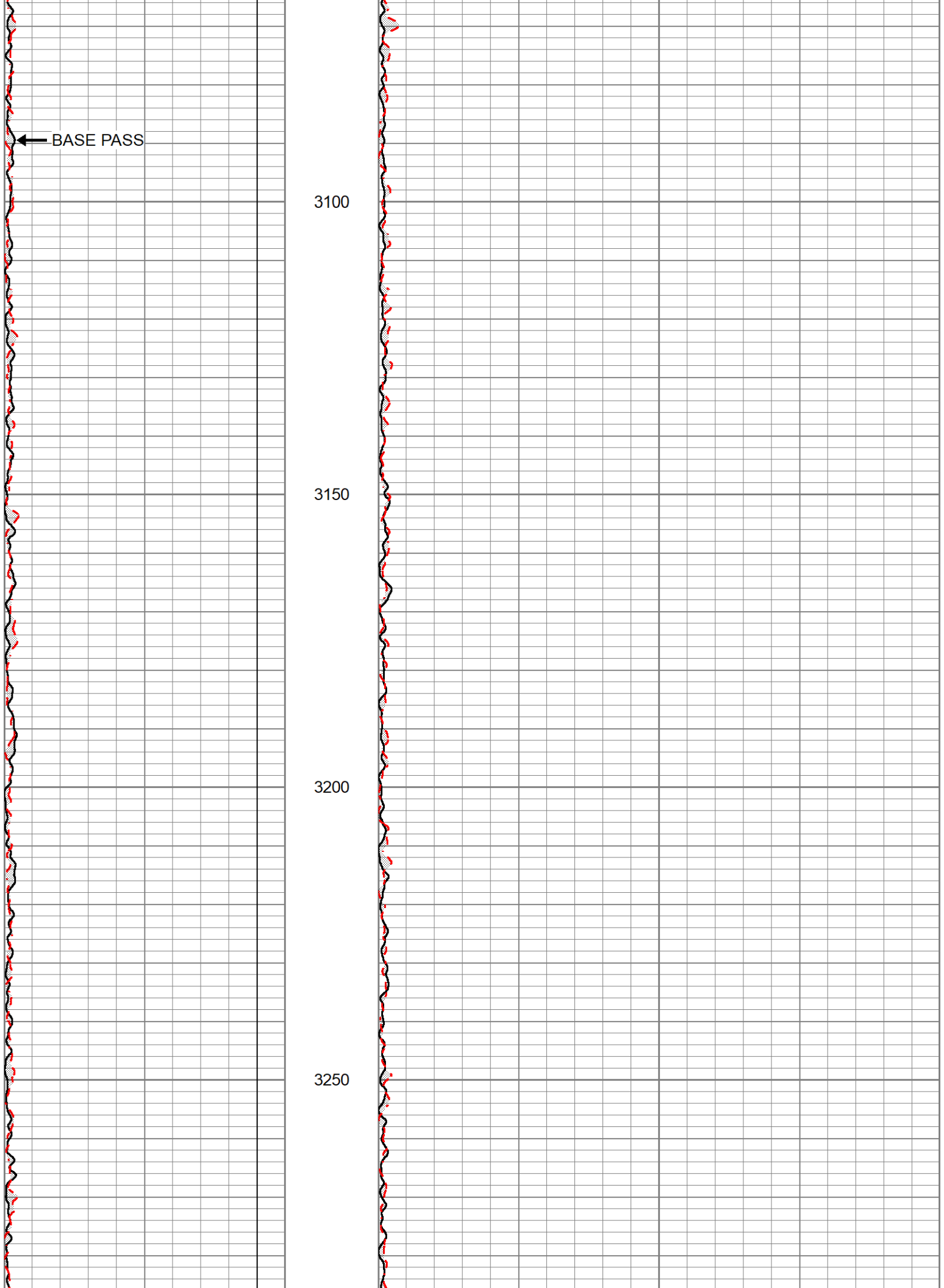


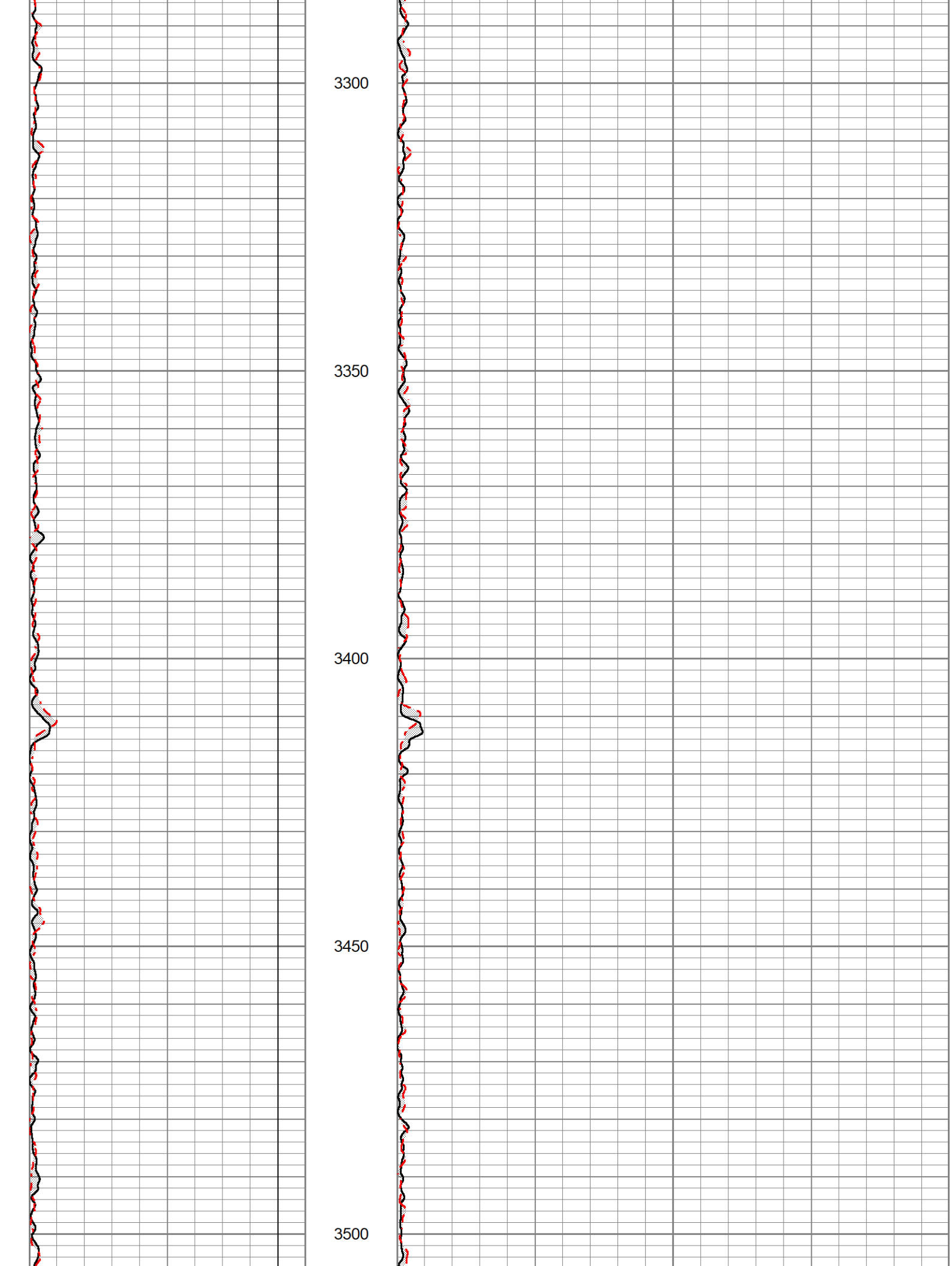
michigan wireline services

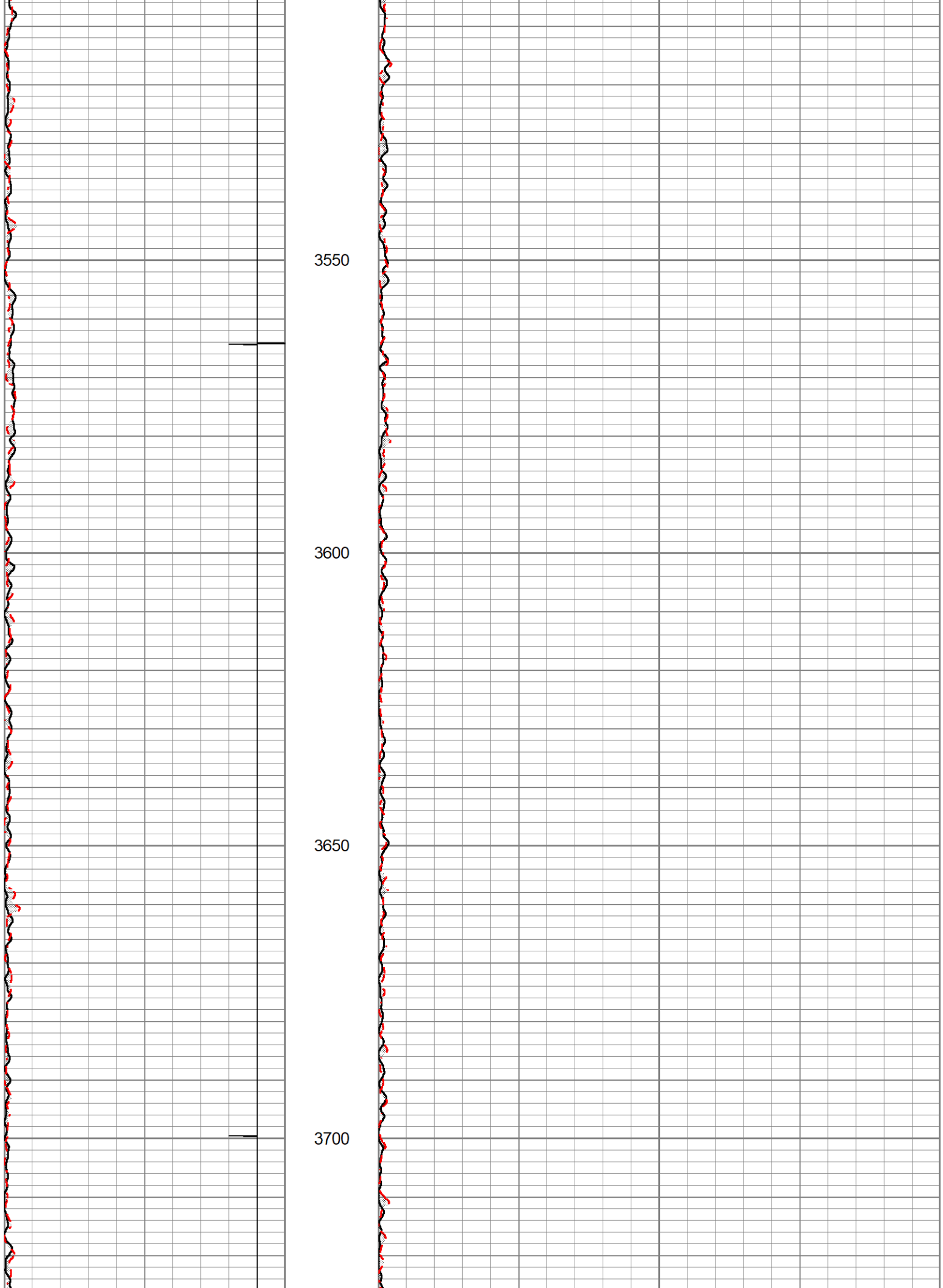
BASE VS FINAL

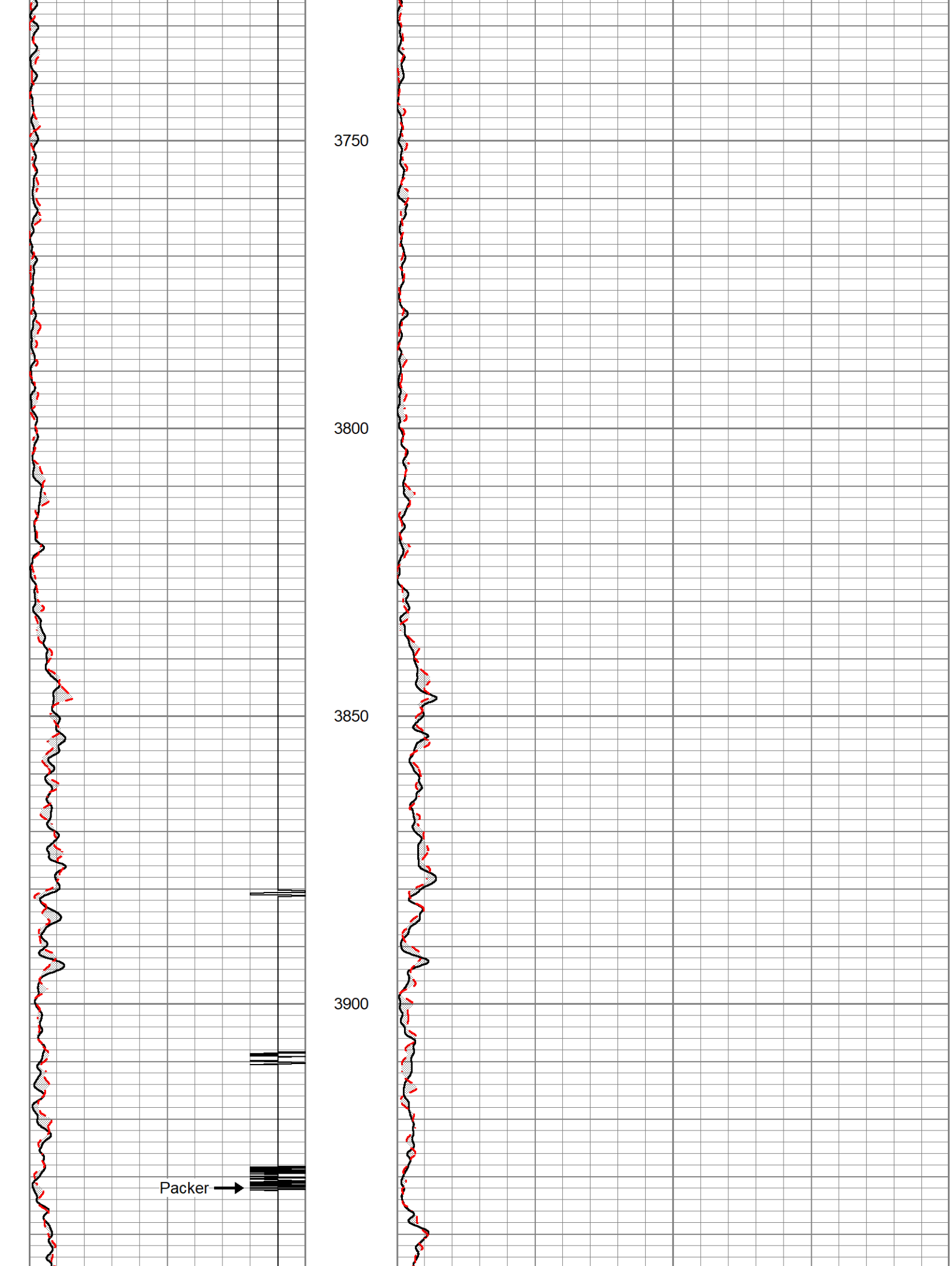
Database File	d:\egt\egt #2-12\2024\egt 2-12 2024.db
Dataset Pathname	FINAL_BASE
Presentation Format	tracer_final_vs_base
Dataset Creation	Tue Aug 06 12:24:05 2024
Charted by	Depth in Feet scaled 1:240

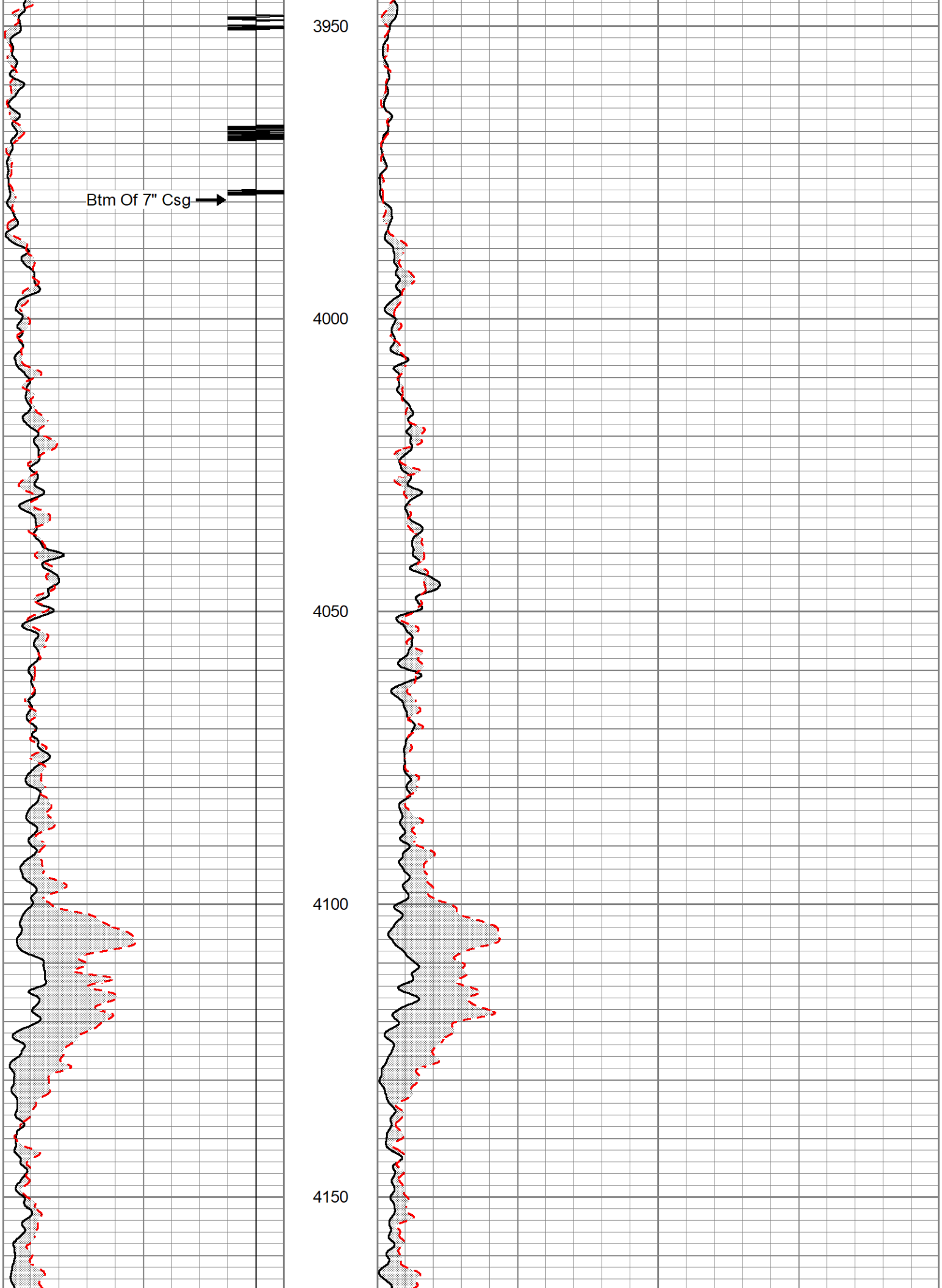


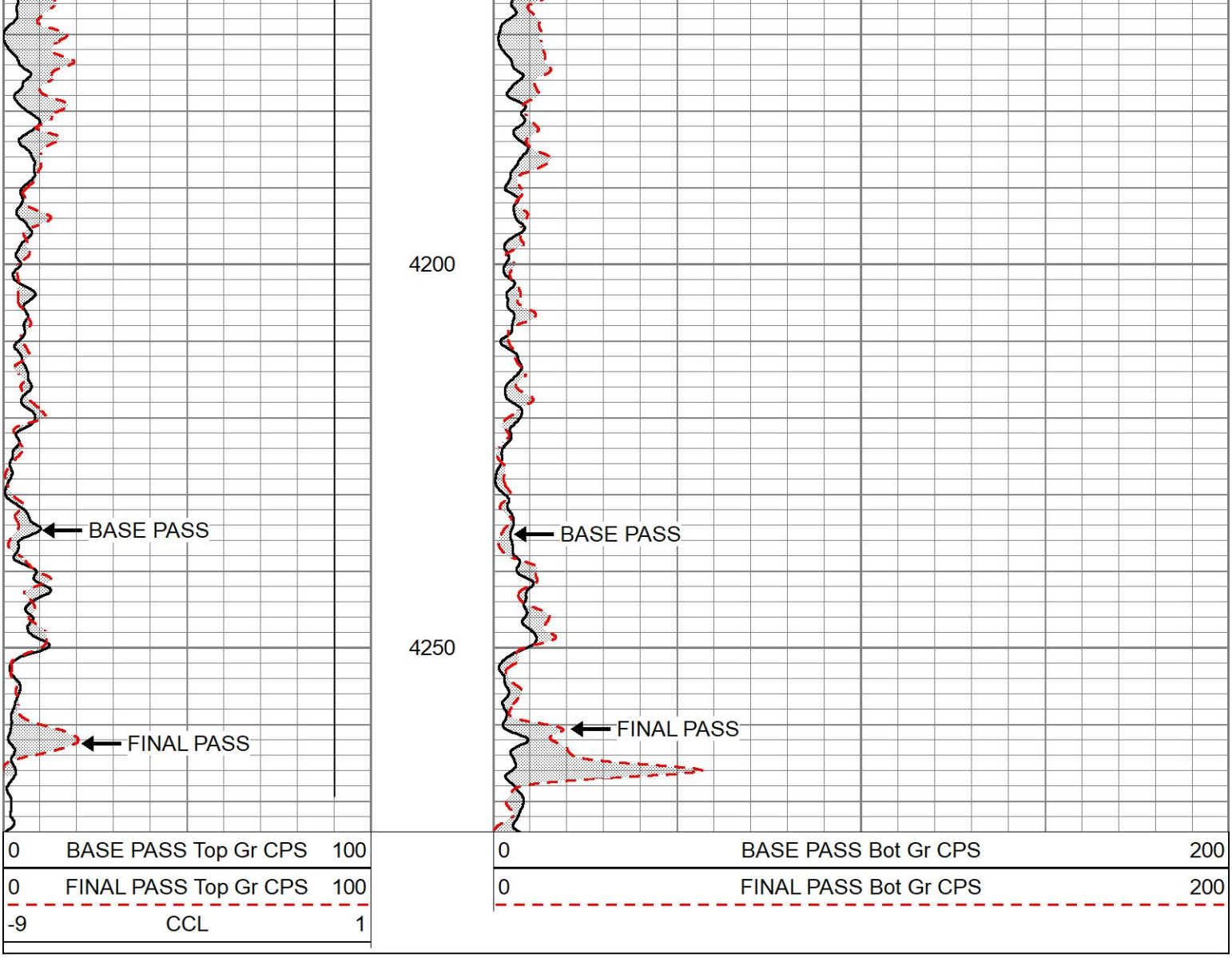

BASE PASS
3100
3150
3200
3250


3300
3350
3400
3450
3500


3550
3600
3650
3700


3750
3800
3850
3900
Packer


Btm Of 7" Csg
3950
4000
4050
4100
4150



Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb
			TREJCT-COMPROBE_MID (0004) Comprobe Ejector DO NOT EXCEED 100ma	0.08	1.38	25.00
DET$2	9.73					

			TRDET-COMPROBE_MID_NO_BAR_SHORT (0006) Comprobe Middle Ejector no spacer bar Ejector 73.6125 from bottom	13.15	1.38	10.00
CCL	4.50					
DET$1	1.00					
LOCTIM	0.00					

Dataset:	egt 2-12 2024.db: field/well/run1/FINAL_BASE
Total length:	13.23 ft
Total weight:	35.00 lb
O.D.:	1.38 in

ATTACHMENTS

ATTACHMENT 1

RAW PRESSURE AND TEMPERATURE DATA FROM FALLOFF AND STATIC PRESSURE GRADIENT (08-06-24 - 08-08-24)

ATTACHMENT 2

WELL 2-12 RAT SURVEY – 4 CHASE PASSES (08-06-24).LAS

ATTACHMENT 3

WELL 2-12 RAT SURVEY - TIME-DRIVE (08-06-24).LAS

ATTACHMENT 4

WELL 2-12 RAT SURVEY - BASE_FINAL PASSES (08-06-24).LAS