

ROP Rate of Penetration
 DDS Drilling Dynamics
 PWD Pressure While Drilling

PROPRIETARY

12.25" Hole Section PWD DDS Time Log

Country	: USA					
Field	: Posey 6912					
Location	: Lat: 71° 10' 24.06" North Long: 163° 28' 18.67" West					
Well	: OCS-Y-2321 BJ001 ST00BP00					
Company	: Shell Gulf of Mexico Inc.					
Rig	: Polar Pioneer					
LOCATION	Company	: Shell Gulf of Mexico Inc.				
	Rig	: Polar Pioneer				
Well	Well	: OCS-Y-2321 BJ001 ST00BP00				
	Field	: Posey 6912				
Country	Country	: USA				
	API Number	: 55-352-00004-00				
Latitude	: 71° 10' 24.06" North					
Longitude	: 163° 28' 18.67" West					
Final UTM Easting	= 555,034,550 m					
Final UTM Northing	= 7,897,425,308 m					
Other Services		ADR, DGR, EWR ALD, CTN, XBAT MRL-WD				
Permanent Datum	: Mean Sea Level	Elevation : 0.00 ft				
Log Measured From	: Drill Floor	76.00 ft Above Permanent Datum				
Drilling Measured From	: Drill Floor	TIME LOG				
Depth Logged	: 222.00 ft To 5,423.00 ft	Unit No. : 1 Job No. : AK-XX-0901604700				
Date Logged	: 30-Jul-15 To 15-Sep-15	Plot Type : Final				
Total Depth MD	: 5,423.00 ft TVD : 5,421.17 ft	Plot Date : 31-Oct-15				
Spud Date	: 30-Jul-15					
Run No.	Size	Borehole Record (MD)	Size	Weight	Casing Record (MD)	
1	8.500 in	222.00 ft From	To	746.00 lbpf	From	To
2	36.000 in	222.00 ft	1,512.00 ft	257.00 ft	257.00 ft	375.00 ft
3	36.000 in	222.00 ft	384.00 ft	224.00 lbpf	257.00 ft	1,475.00 ft
4	26.000 in	222.00 ft	390.00 ft	14.000 in	114.00 lbpf	2,933.00 ft
4B	26.000 in	390.00 ft	425.00 ft			
5	17.500 in	425.00 ft	1,512.00 ft			
6	12.250 in	1,512.00 ft	2,963.00 ft			
		2,963.00 ft	5,423.00 ft			

WELL INFORMATION

MWD Run Number	600			
Date run completed	14-Sep-15			
Rig Bit Number	600			
Bit Size (in)	12.250			
Tool Nominal OD (in)	8.000			
Log Start Depth (MD, ft)	2,963.00			
Log End Depth (MD, ft)	5,423.00			
Drill or Wipe	Drill			
Drill/Wipe Start Date and Time	12-Sep-15 01:20			
Drill/Wipe End Date and Time	13-Sep-15 16:35			
Min Inc (deg) @ Depth (MD, ft)	0.58 @ 3,074.55			
Max Inc (deg) @ Depth (MD, ft)	3.70 @ 5,299.05			
Bit TFA(in2) / Bit Type	0.99 / PDC			
Flow Rate (gpm)	828.00			
Max AV (fpm) / CV (fpm) @ MWD	239.0 / 357.0			
Fluid Type	Polymer			
Density (ppg) / Viscosity (spqt)	11.40 / 56.00			
Filtrate CL (ppm)	100,000.00			
pH / Fluid Loss (mptm)	9.10 / 4			
PV (cP) / YP (lhf2)	20 / 27.00			
% Solids / % Sand	16 / 0.5			
% Oil / Oil:Water Ratio	0 / 0:84			
Rm @ Measured Temp (degF)	0.080 @ 88.00			
Rmf @ Measured Temp (degF)	0.050 @ 88.00			
Rmc @ Measured Temp (degF)	0.120 @ 88.00			
Max Tool Temp (degF) / Source	144.94 / HCIM			

Rm @ Max Tool Temp (degF)	0.0849 @ 144.94			
Lead MWD Engineer	Jack Kleinhans			
Customer Representative	Matt Cazalet			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	HCIM			
Software Version	88.58			
Sub Serial Number	11902800			
Insert Serial Number	12136690			
Date and Time Initialized	11-Sep-15 01:12			
Date and Time Read	18-Sep-15 18:26			
ECMB SW Version	N/A			

Directional Sensor Information

Tool Type	PCDC			
Distance From Bit (ft)	56.82			
Software Version	6.33			
Sub Serial Number	12606713			
Sonde Serial Number	12059488			
Sensor ID Number	N/A			
Toolface Offset (deg)	208.54			

Pressure Sensor Information

Tool Type	PWD			
Distance From Bit (ft)	70.67			
Recorded Sample Period (sec)	2			
Software Version	4.14			
Collar Serial Number	11688571			
Insert Serial Number	11276929			

DDSr-HCIM Sensor Information

Tool Type	DDSr-HCIM			
Distance From Bit (ft)	75.76			
Recorded Sample Period (sec)	12			
Software Version	20.88			
Sub Serial Number	11651705			
Insert Serial Number	11764590			
Sensor ID Number	10088			

REMARKS

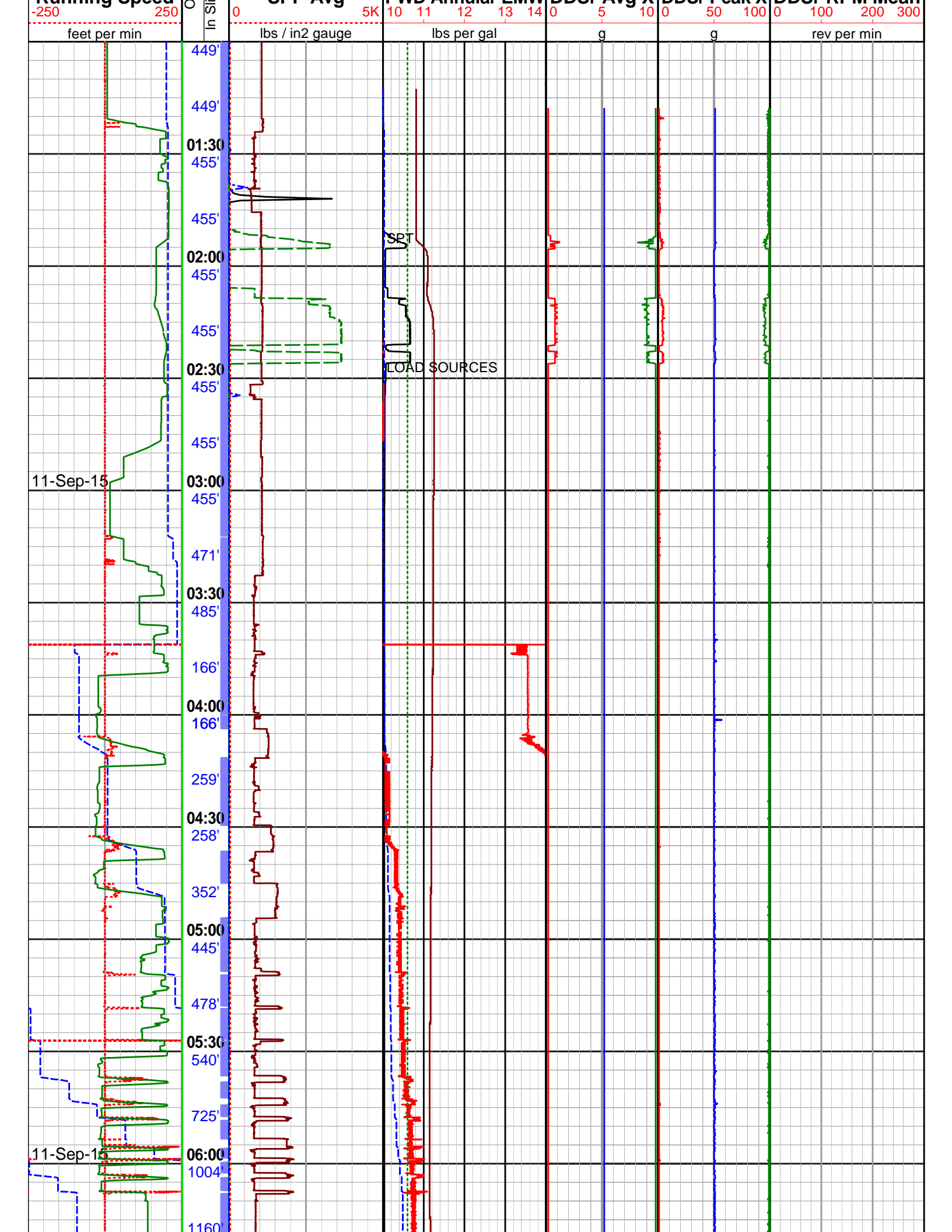
1. ALL DEPTHS ARE MEASURED DEPTHS (MD), UNLESS OTHERWISE NOTED. THESE DEPTHS ARE BIT DEPTHS AND ARE CALLIBRATED TO THE DRILLERS PIPE TALLY. NO DEPTH CORRECTIONS HAVE BEEN MADE FOR PIPE STRETCH OR COMPRESSION.
2. ALL VERTICAL DEPTHS ARE TRUE VERTICAL DEPTHS (TVD), UNLESS OTHERWISE NOTED. ONLY INVERTED / REVERTED SECTIONS GREATER THAN 30' TVD ARE PRESENTED
3. ALL DATA PRESENTED IS RECORDED DATA UNLESS OTHERWISE STATED.
4. LWD RUN 1 WAS COMPRISED OF DIRECTIONAL, DUAL GAMMA RAY (DGR) UTILIZING GEIGER-MUELLER TUBE TYPE DETECTORS, AZIMUTHAL DEEP ELECTROMAGNETIC WAVE RESISTIVITY (ADR), PRESSURE WHILE DRILLING (PWD) DRILLSTRING DYNAMICS SENSOR (DDSr), AZIMUTHAL LITHODENSITY (ALD), COMPENSATED THERMAL NEUTRON (CTN), MAGNETIC RESONANCE WHILE DRILLING (MRIL-WD), AZIMUTHAL BIMODAL ACOUSTIC TOOL (XBAT), AND THE AZIMUTHAL ACOUSTIC CALIPER TOOL (XCAL).

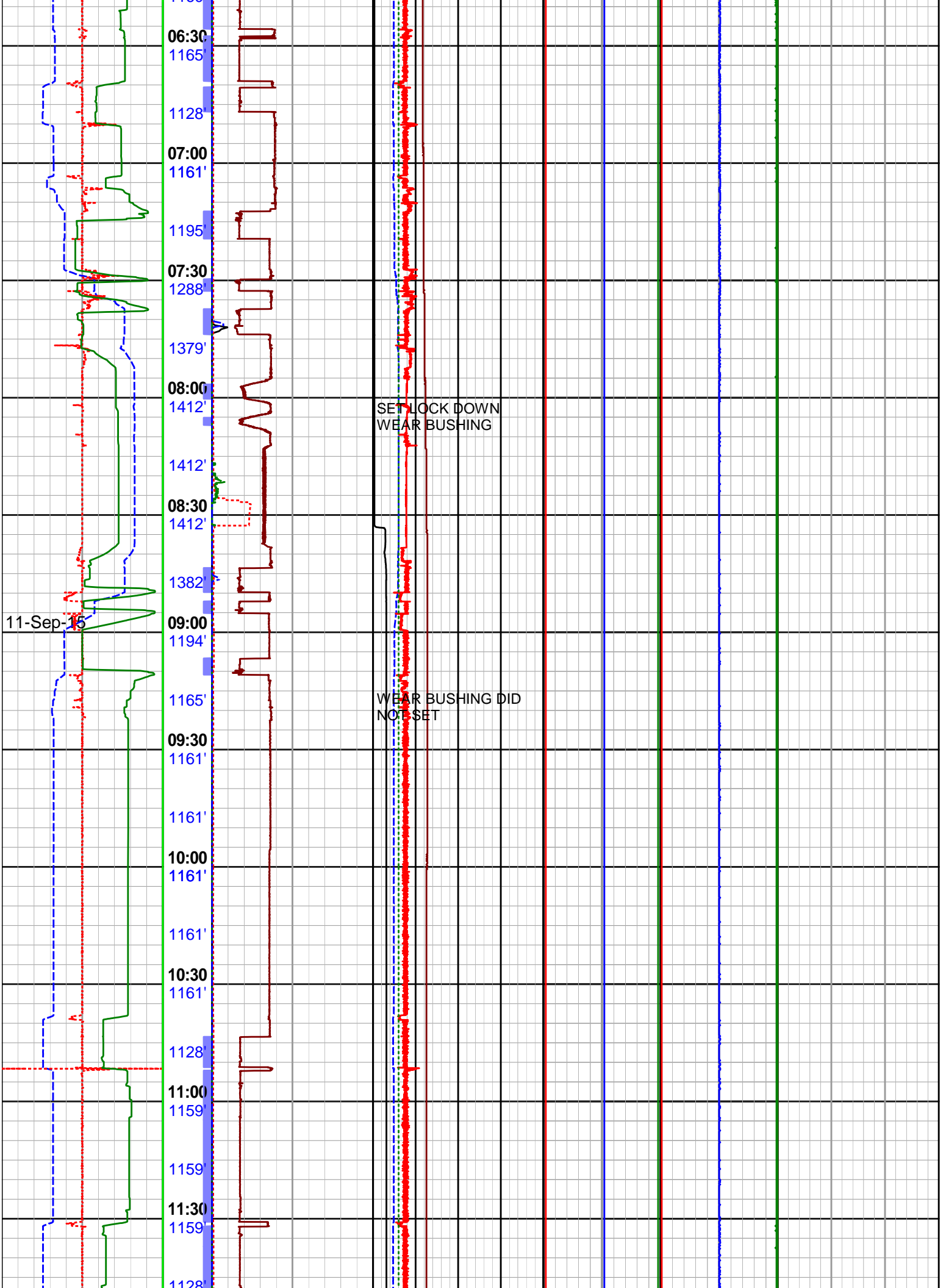
5. RUN 200 WAS A 36" HOLE OPENING RUN, NO MWD TOOLS WERE PRESENT THEREFOR IT IS NOT PRESENTED.
6. RUN 300 WAS A 42" HOLE OPENING RUN, NO MWD TOOLS WERE PRESENT THEREFOR IT IS NOT PRESENTED.
7. RUN 400 WAS A CLEANOUT RUN TO DRILL OUT THE SHOE TRACK AND 30' OF NEW FORMATION, NO MWD TOOLS WERE PRESENT THEREFOR IT IS NOT PRESENTED.
8. RUN 401 WAS A 26" HOLE OPENING RUN UTILIZING DIRECTIONAL, DRILL STRING DYNAMICS SENSOR AND PRESSURE WHILE DRILLING. NO LOGGING SENSORS WERE PRESENT.
9. MWD RUN 500 WAS A 17.5" DRILLING RUN UTILIZING DIRECTIONAL, DRILL STRING DYNAMICS SENSOR AND PRESSURE WHILE DRILLING. NO LOGGING SENSORS WERE PRESENT.
10. LWD RUN 6 WAS COMPRISED OF DIRECTIONAL, DUAL GAMMA RAY (DGR) UTILIZING GEIGER-MUELLER TUBE TYPE DETECTORS, ELECTROMAGNETIC WAVE RESISTIVITY PHASE 4 (EWR-P4), PRESSURE WHILE DRILLING (PWD) DRILLSTRING DYNAMICS SENSOR (DDSr), AZIMUTHAL LITHODENSITY (ALD), COMPENSATED THERMAL NEUTRON (CTN), AZIMUTHAL BIMODAL ACOUSTIC TOOL (XBAT), AND THE AZIMUTHAL ACOUSTIC CALIPER TOOL (XCAL).
11. LWD RUN 7 WAS COMPRISED OF DIRECTIONAL, DUAL GAMMA RAY (DGR) UTILIZING GEIGER-MUELLER TUBE TYPE DETECTORS, AZIMUTHAL DEEP ELECTROMAGNETIC WAVE RESISTIVITY (ADR), PRESSURE WHILE DRILLING (PWD) DRILLSTRING DYNAMICS SENSOR (DDSr), AZIMUTHAL LITHODENSITY (ALD), COMPENSATED THERMAL NEUTRON (CTN), MAGNETIC RESONANCE WHILE DRILLING (MRIL-WD), AZIMUTHAL BIMODAL ACOUSTIC TOOL (XBAT), AND THE AZIMUTHAL ACOUSTIC CALIPER TOOL (XCAL).
12. OVER THE COURSE OF THE 12.25" HOLE SECTION THERE ARE SEVERAL INSTANCES WHERE THE BOREHOLE RUGOSITY HAS CREATED "SPIKES" IN THE RESISTIVITY DATA. THIS IS DUE TO ONE RECIEVER READING THE HIGH SALINITY BOREHOLE FLUID (WASHOUT) AND THE OTHER READING THE FORMATION. THERE ARE ALSO AREAS ACROSS THE LOGGED INTERVAL THAT SHOW AN UNDERGAUGE HOLE.
13. RUNS 1- 7 REPRESENT THE OCS-Y-2321 BJ001 ST00BP00 WELL WITH AN API# OF 55-352-00004-00. THIS WELL REACHED A TOTAL DEPTH OF 6,800'MD / 6,795'TVD

WARRANTY

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		Hookload Avg		EWR Temperature		DDSr Stick Slip						
		0 400		0 50 100 150 200		0 100 200 300 400						
		kilo pounds		fahrenheit								
ROP Avg		Torque Abs		PWD Internal Pressure		100- 150- < 100% 150% 200% > 200%						
400 0		0 25K		0 1.25K 2.5K 3.75K 5K		Low Med High Full Stall						
feet per hr		foot-pound		lbs / in2 gauge								
Bit Depth		RPM Surface Avg		PWD Annular Pressure		DDSr Avg Z		DDSr Peak Z		DDSr RPM Max		
0 500		0 200		0 1.25K 2.5K 3.75K 5K		-5 0 5		-50 0 50		0 100 200 300		
feet		rev per min		lbs / in2 gauge		g		g		rev per min		
Block Position		Flow In		Dens Mud In		DDSr Avg Y		DDSr Peak Y		DDSr RPM Min		
205 -5		0 1K		10 11 12 13 14		10 5 0		100 50 0		0 100 200 300		
feet		gallon per min		lbs per gal		g		g		rev per min		
Running Speed		SPP Avg		PWD Annular EMW		DDSr Avg X		DDSr Peak X		DDSr RPM Mean		
In Btm		ps Status										





06:30

1165'

1128'

07:00

1161'

1195'

07:30

1288'

1379'

08:00

1412'

1412'

08:30

1412'

1382'

11-Sep-15

09:00

1194'

1165'

09:30

1161'

1161'

10:00

1161'

1161'

10:30

1161'

1128'

11:00

1159'

1159'

11:30

1159'

1128'

SET LOCK DOWN WEAR BUSHING

WEAR BUSHING DID NOT SET

11-Sep-15

12:00

1160'

12:30

1161'

13:00

1159'

13:30

1288'

13:30

1398'

14:00

1413'

14:30

1381'

14:30

1194'

15:00

1159'

15:30

1190'

16:00

1284'

16:00

1469'

16:30

1561'

16:30

1837'

17:00

2207'

2573'

ATTEMPT TO SET
LOCK DOWN WEAR
BUSHING AGAIN

RETRIEVE LOCK
DOWN WEAR
BUSHING TOOL

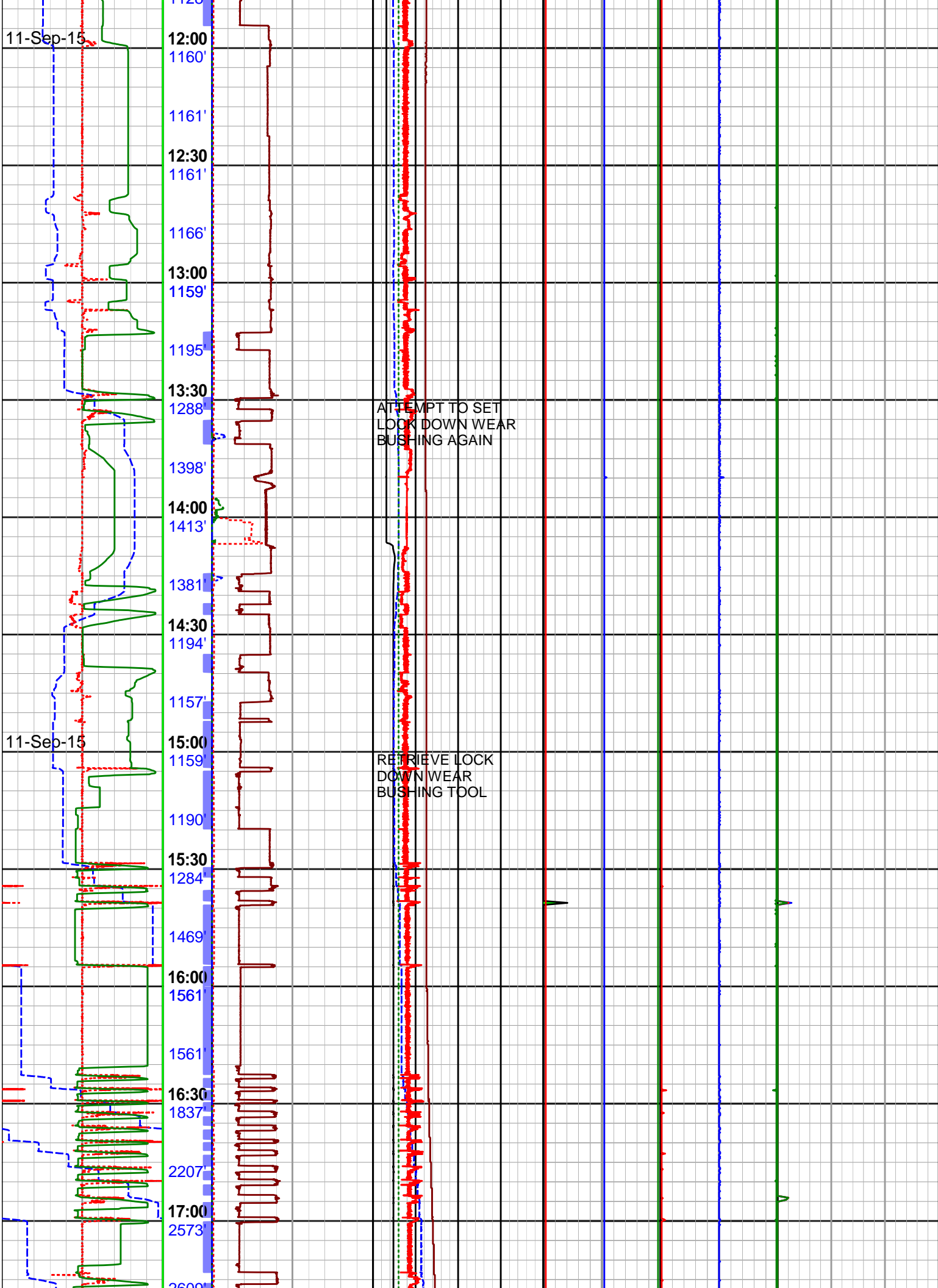
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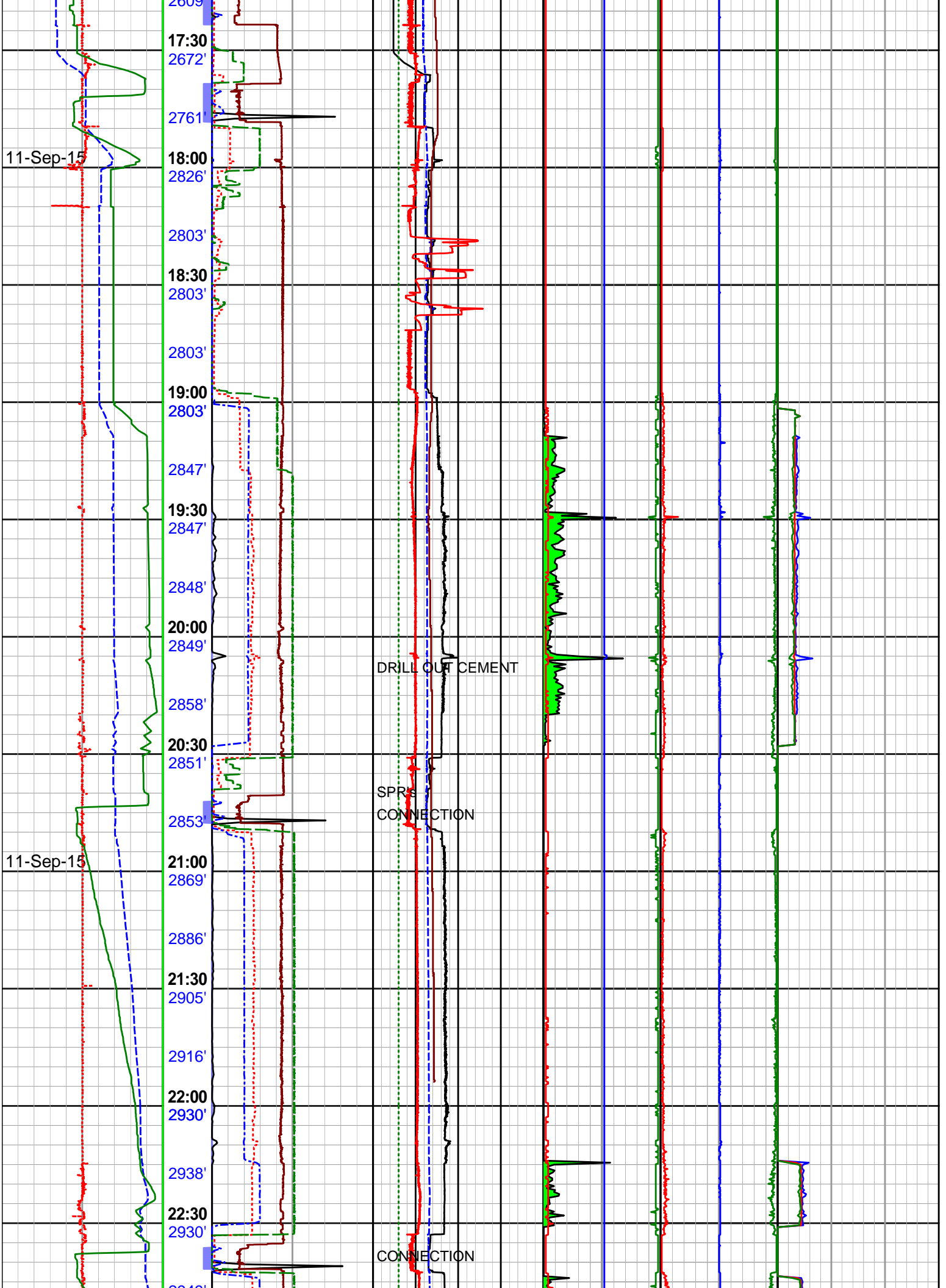
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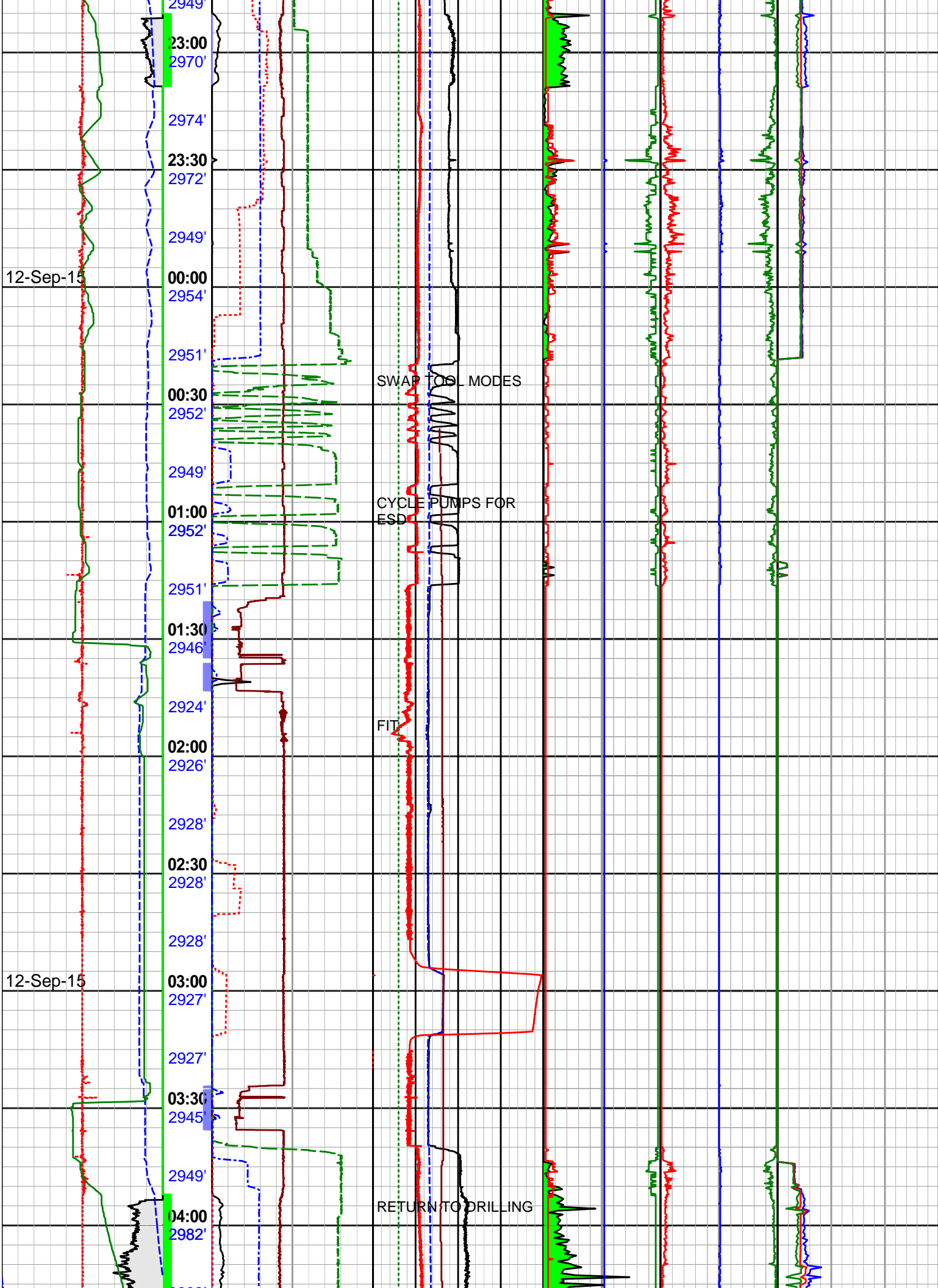
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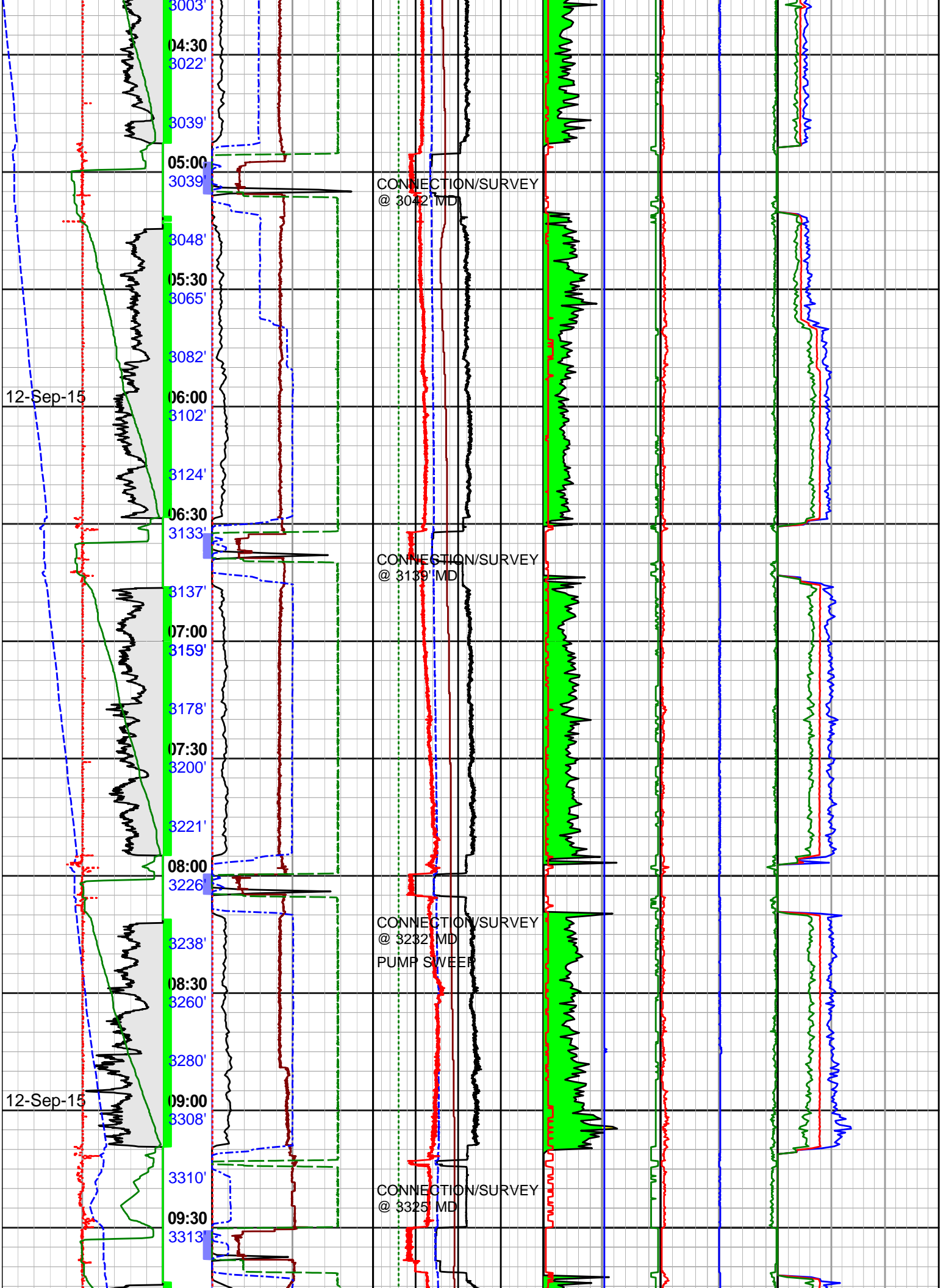
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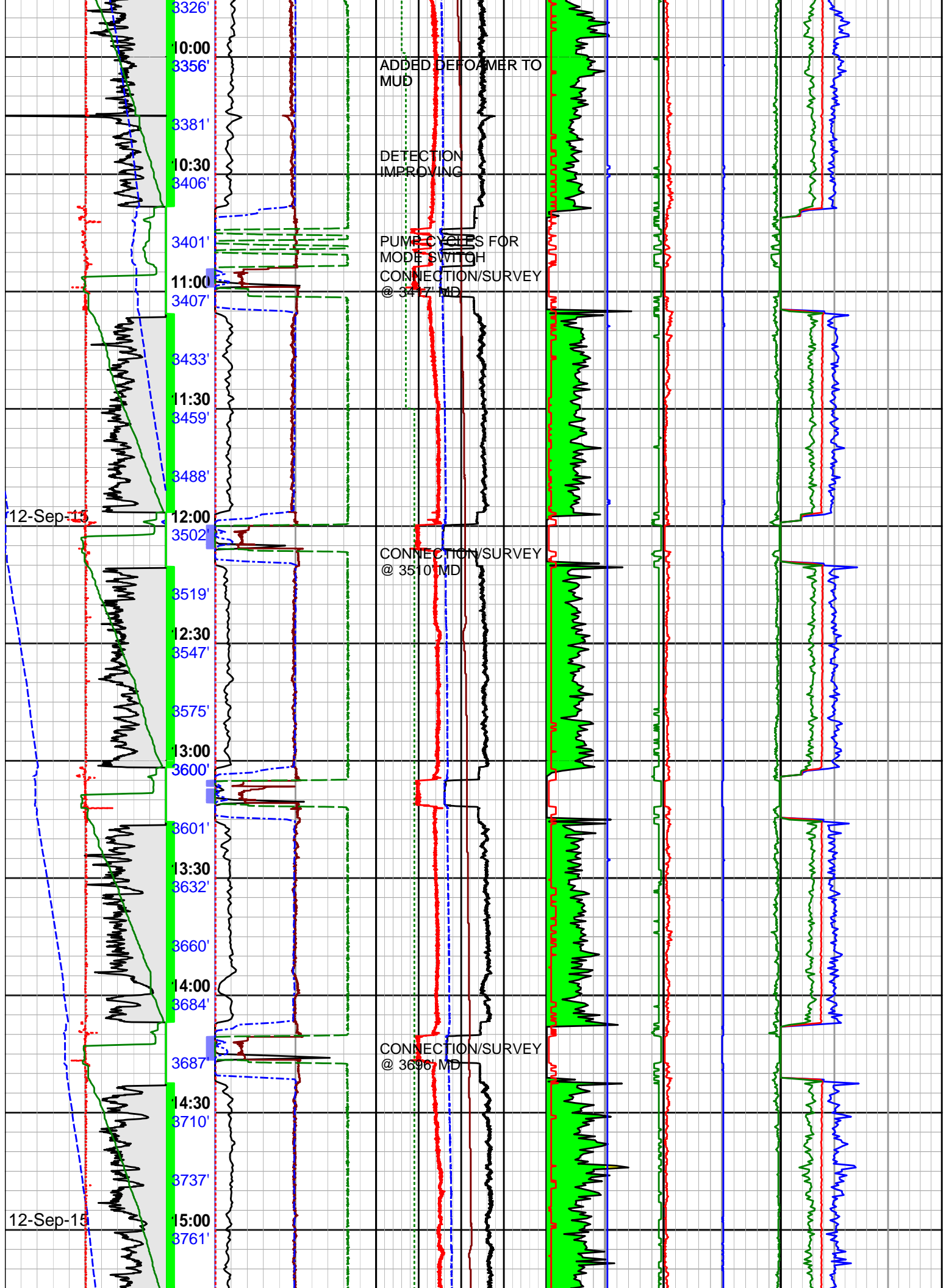
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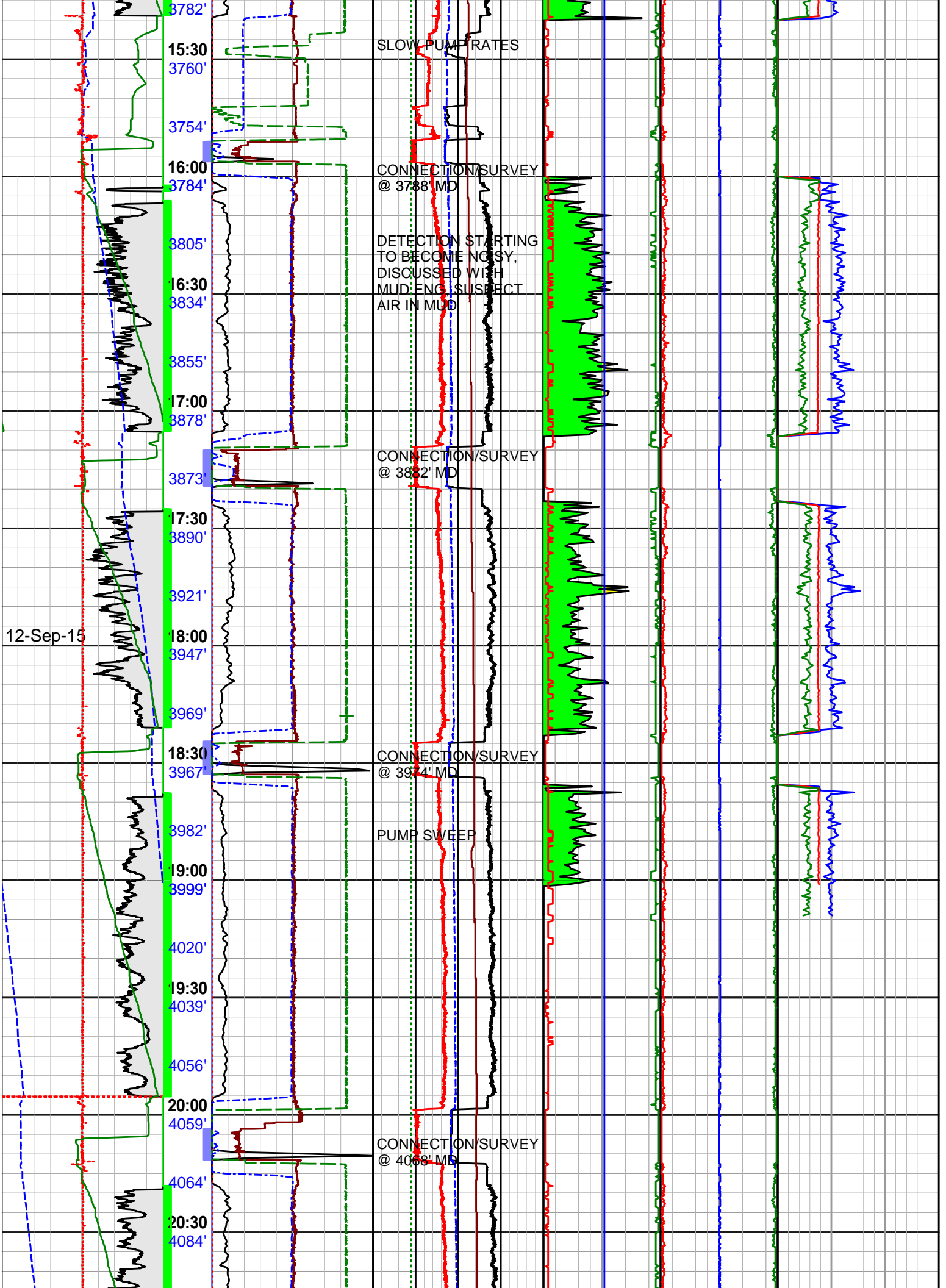












12-Sep-15

4104'

21:00

4122'

4144'

21:30

4159'

4159'

22:00

4180'

4200'

22:30

4218'

4238'

23:00

4246'

4254'

23:30

4275'

4298'

13-Sep-15

00:00

4320'

4340'

00:30

4338'

4356'

01:00

4380'

4403'

01:30

4427'

4430'

02:00

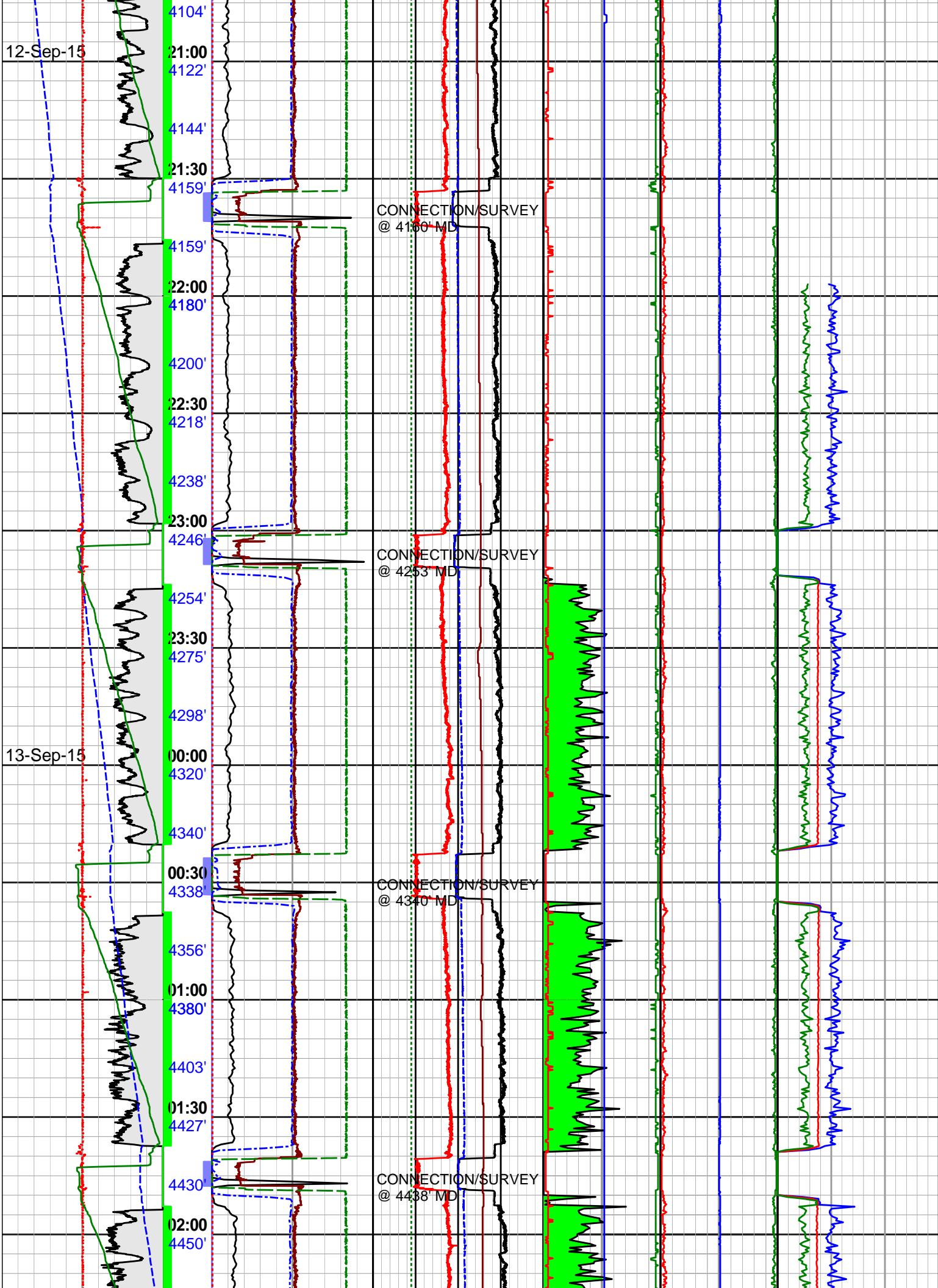
4450'

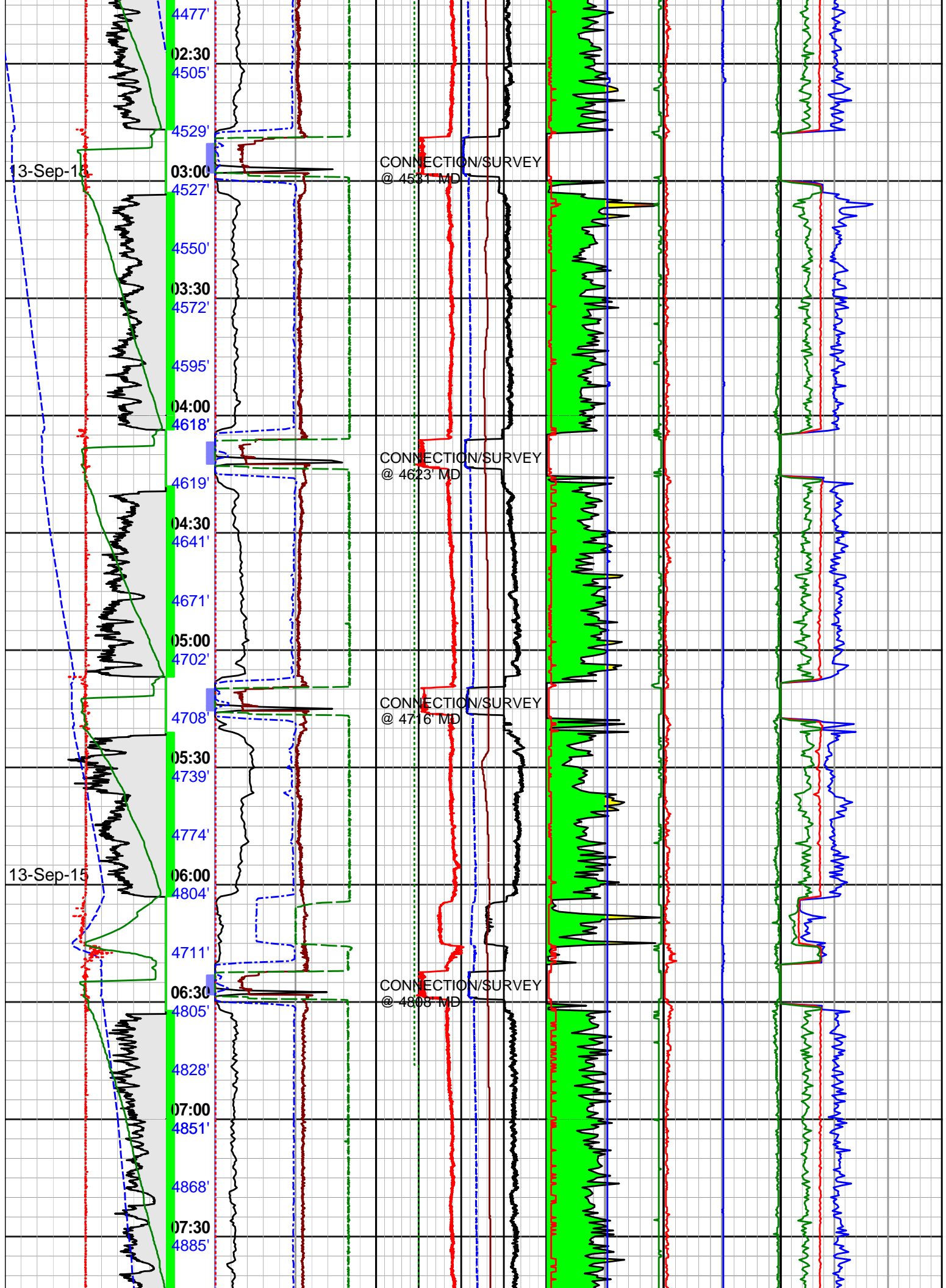
CONNECTION/SURVEY @ 4150' MD

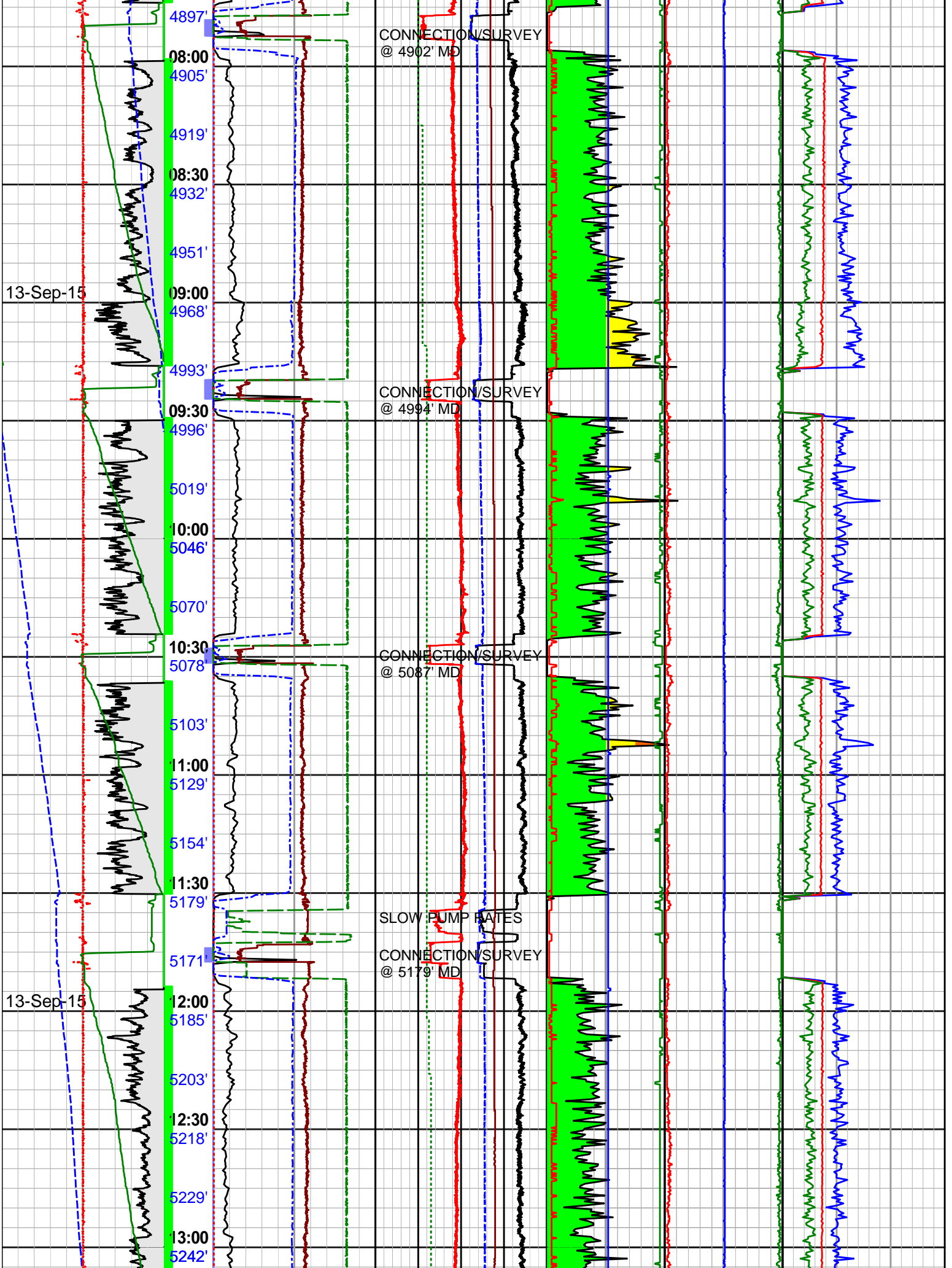
CONNECTION/SURVEY @ 4253' MD

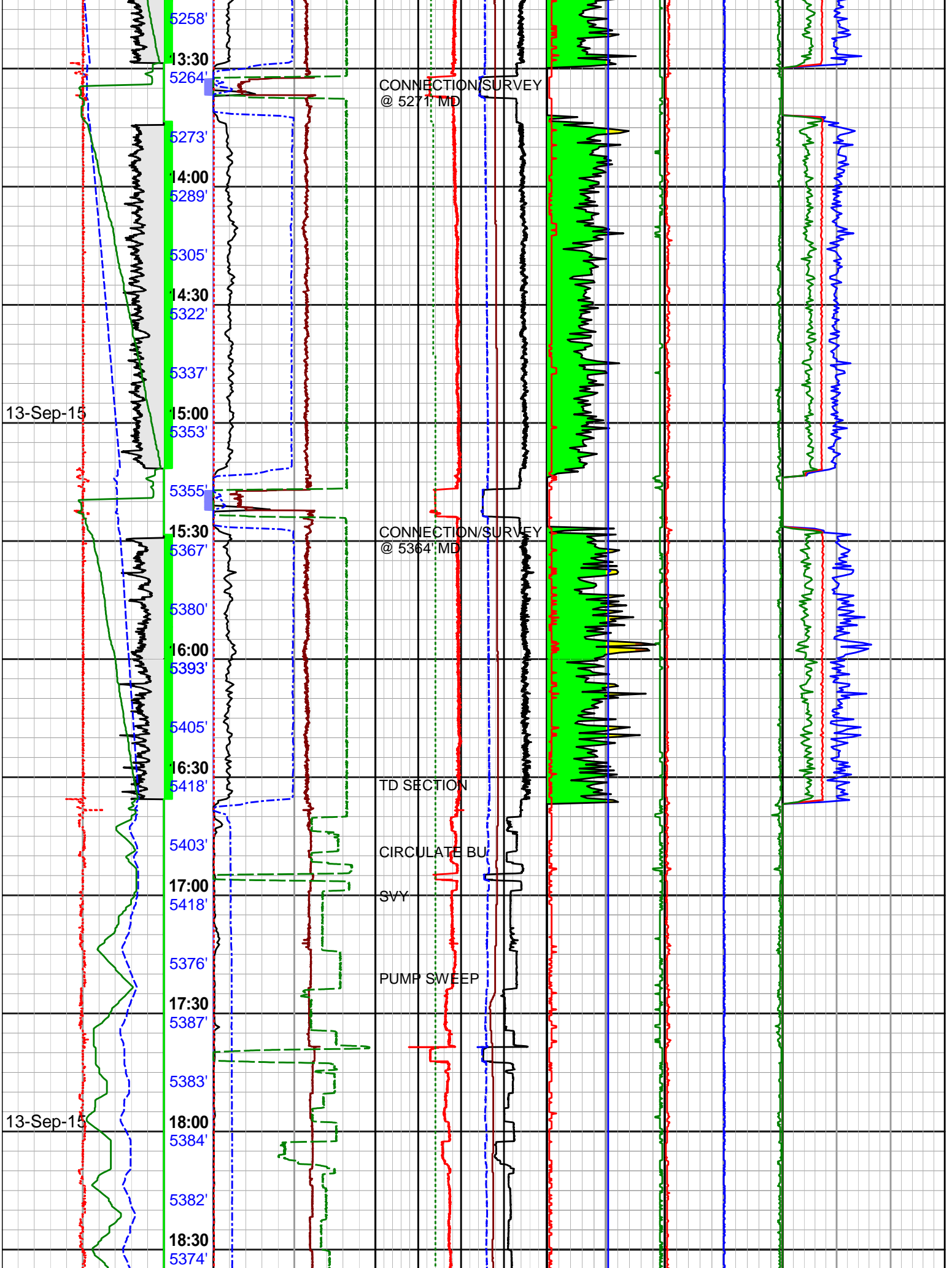
CONNECTION/SURVEY @ 4340' MD

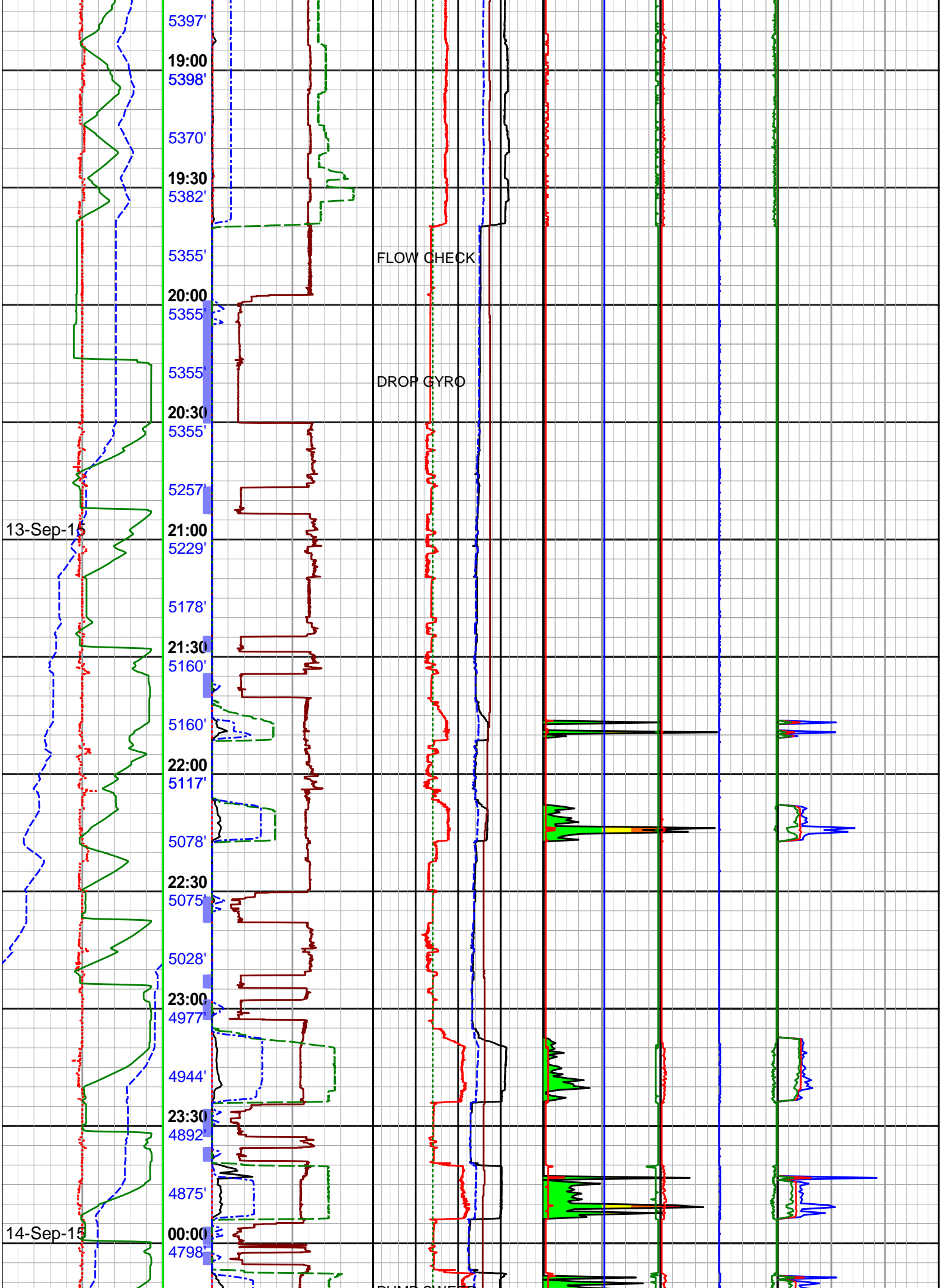
CONNECTION/SURVEY @ 4438' MD



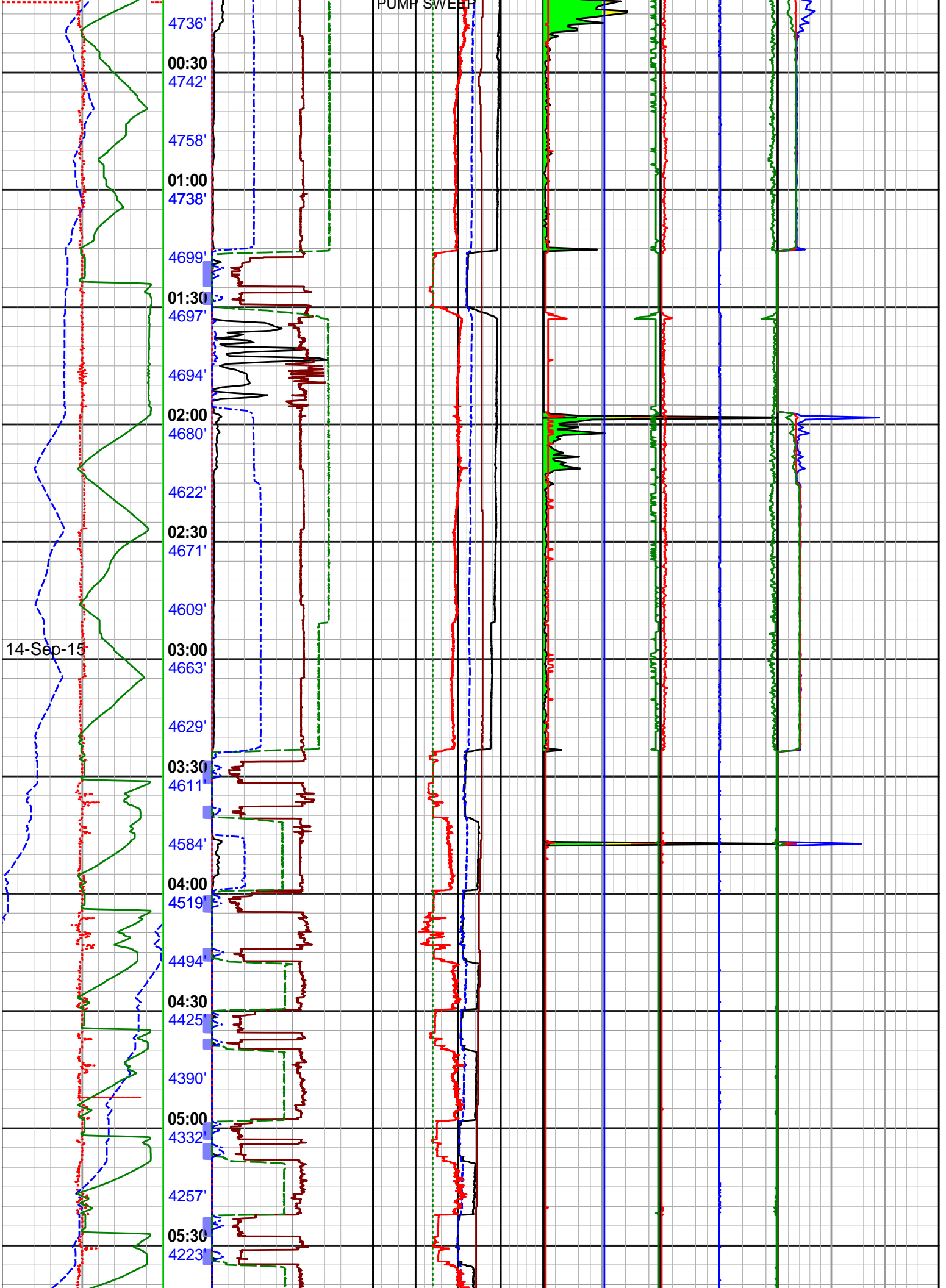


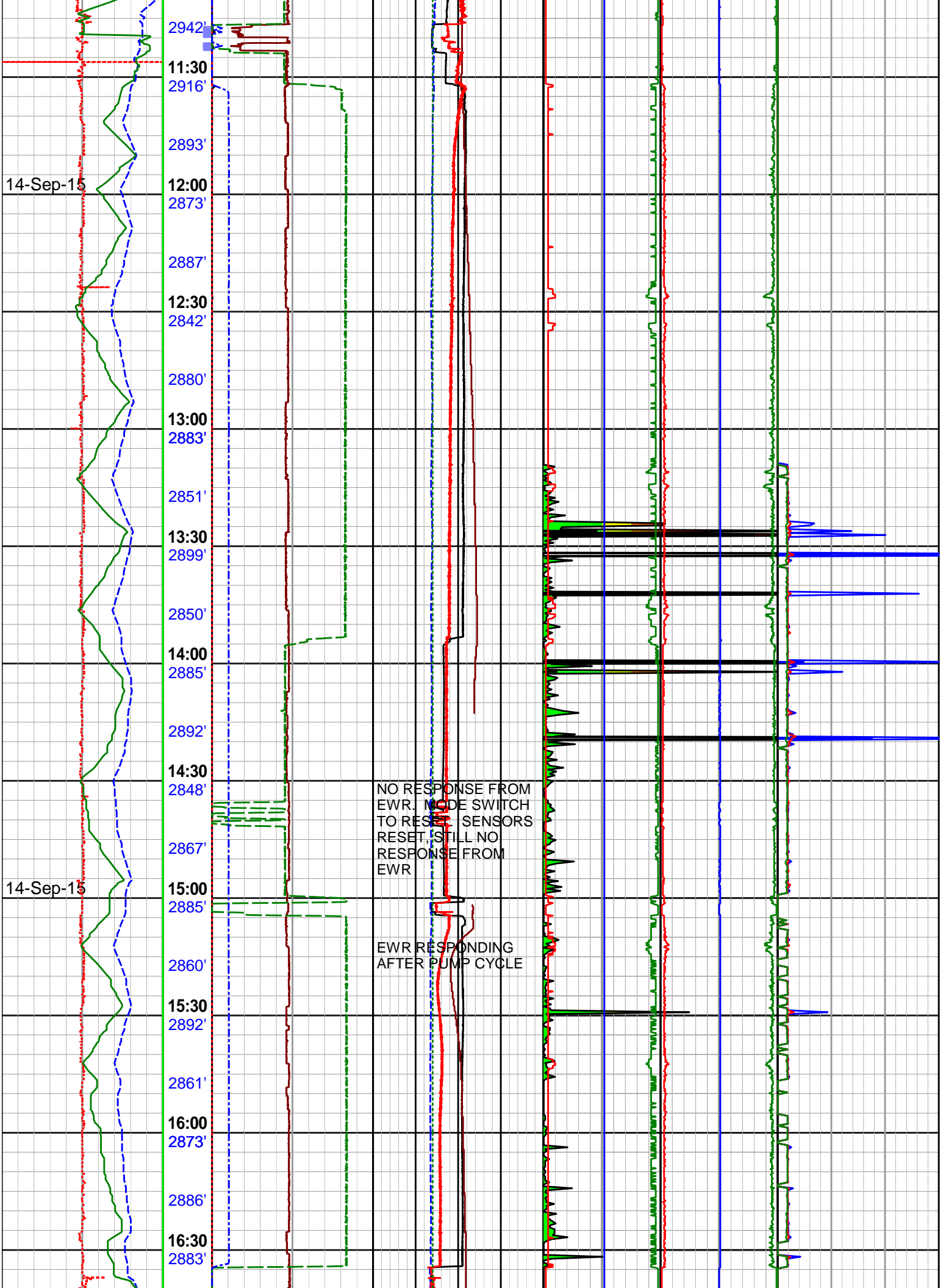


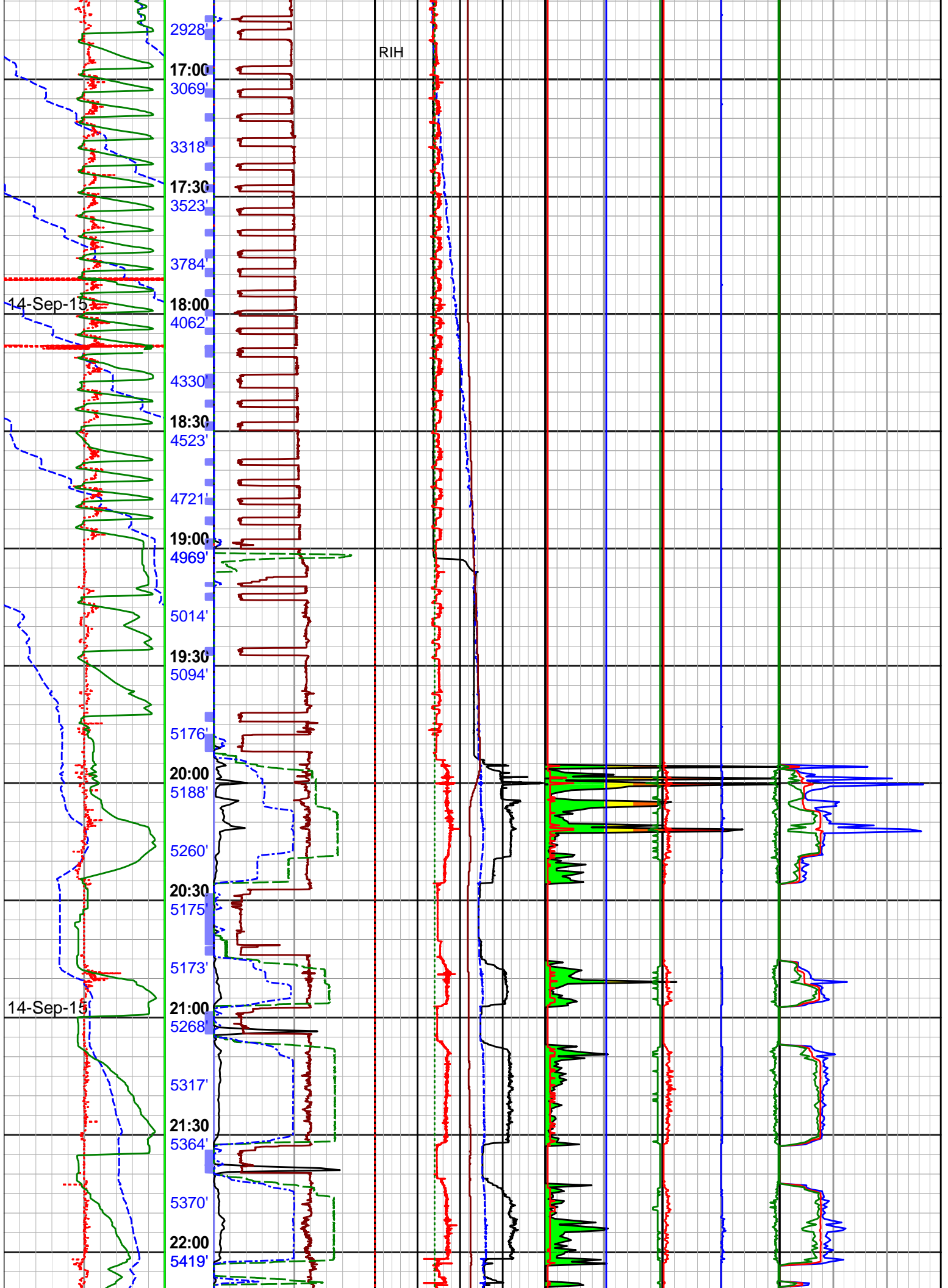


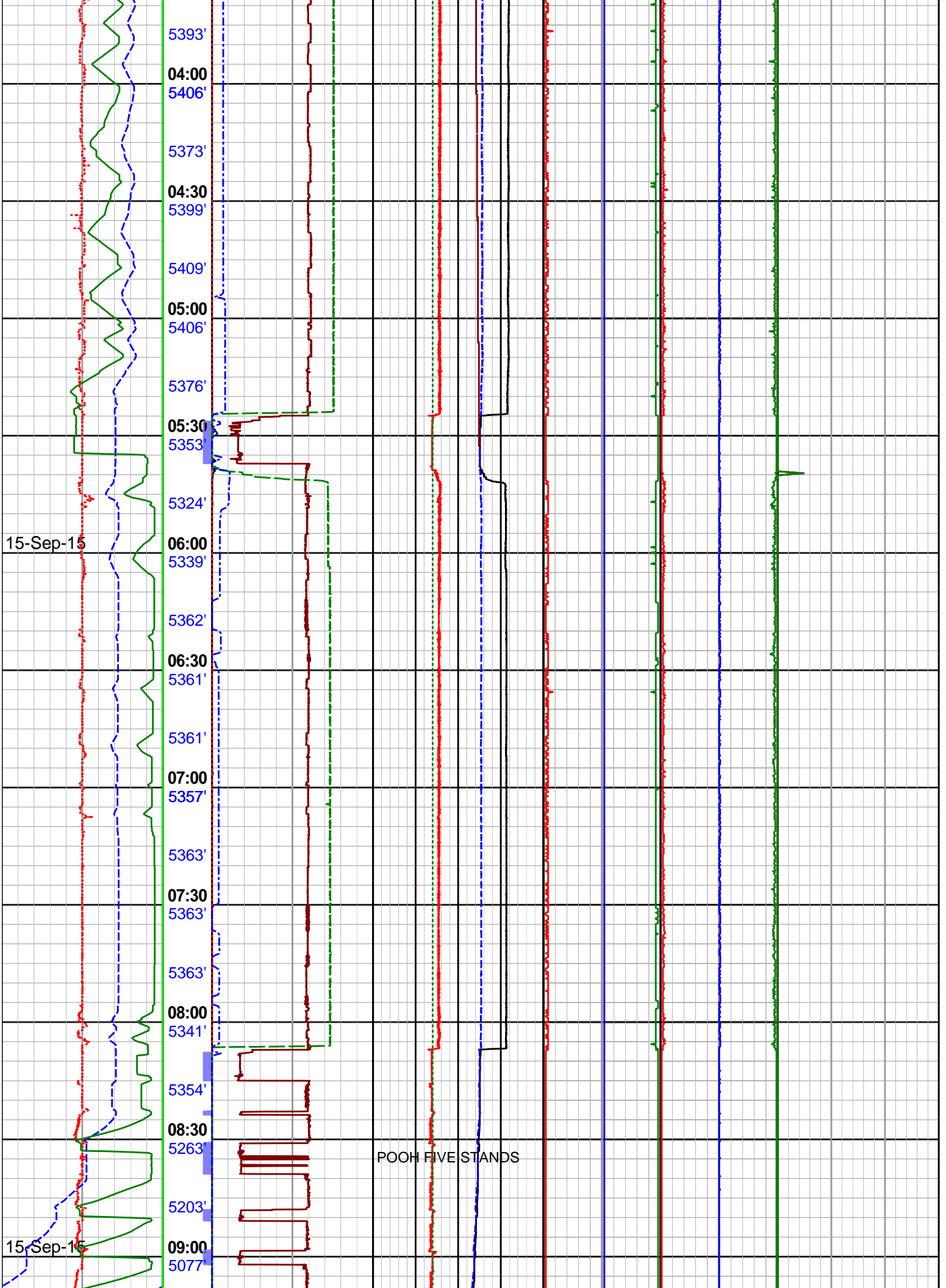


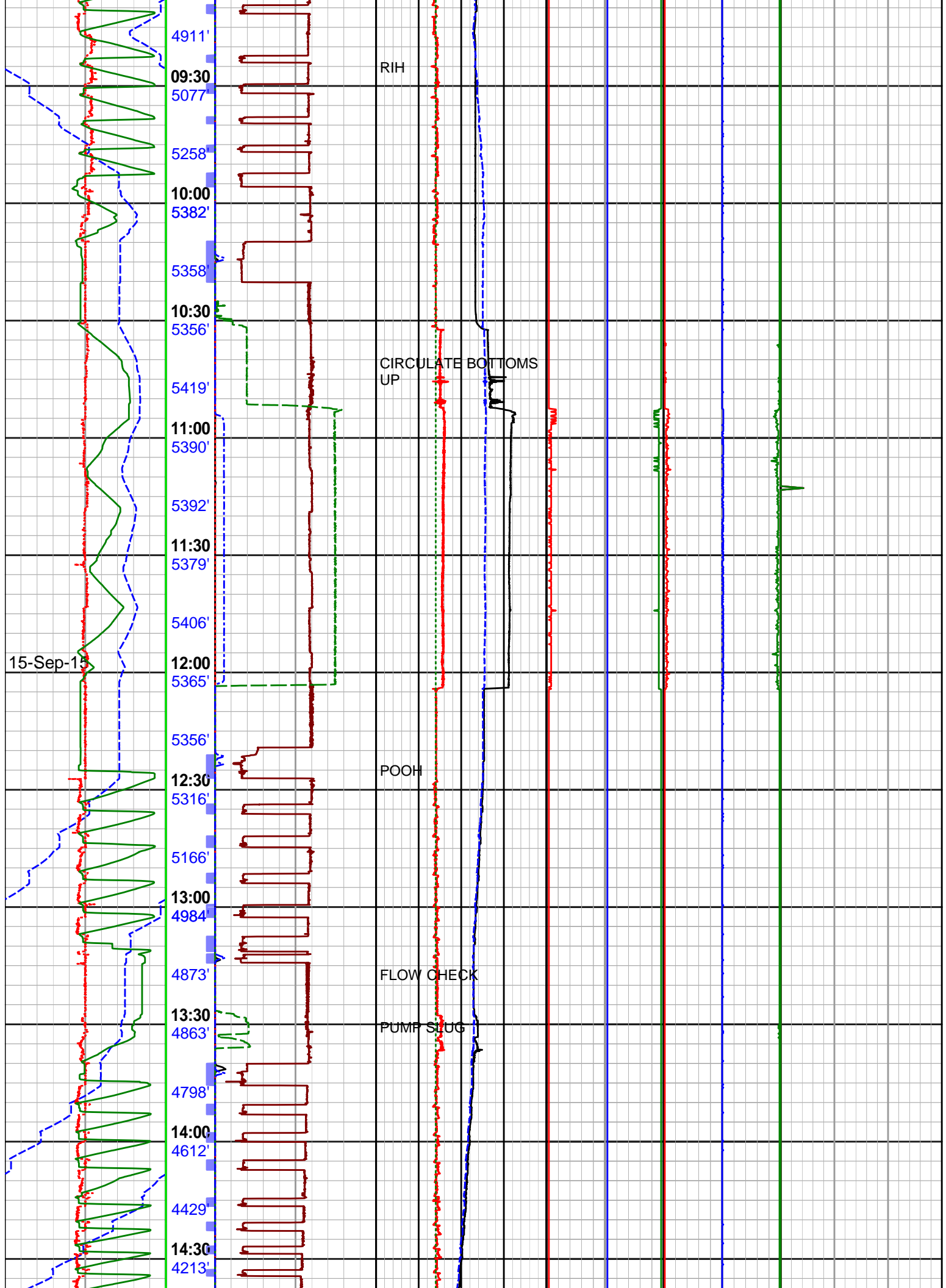
PUMP SWEEP

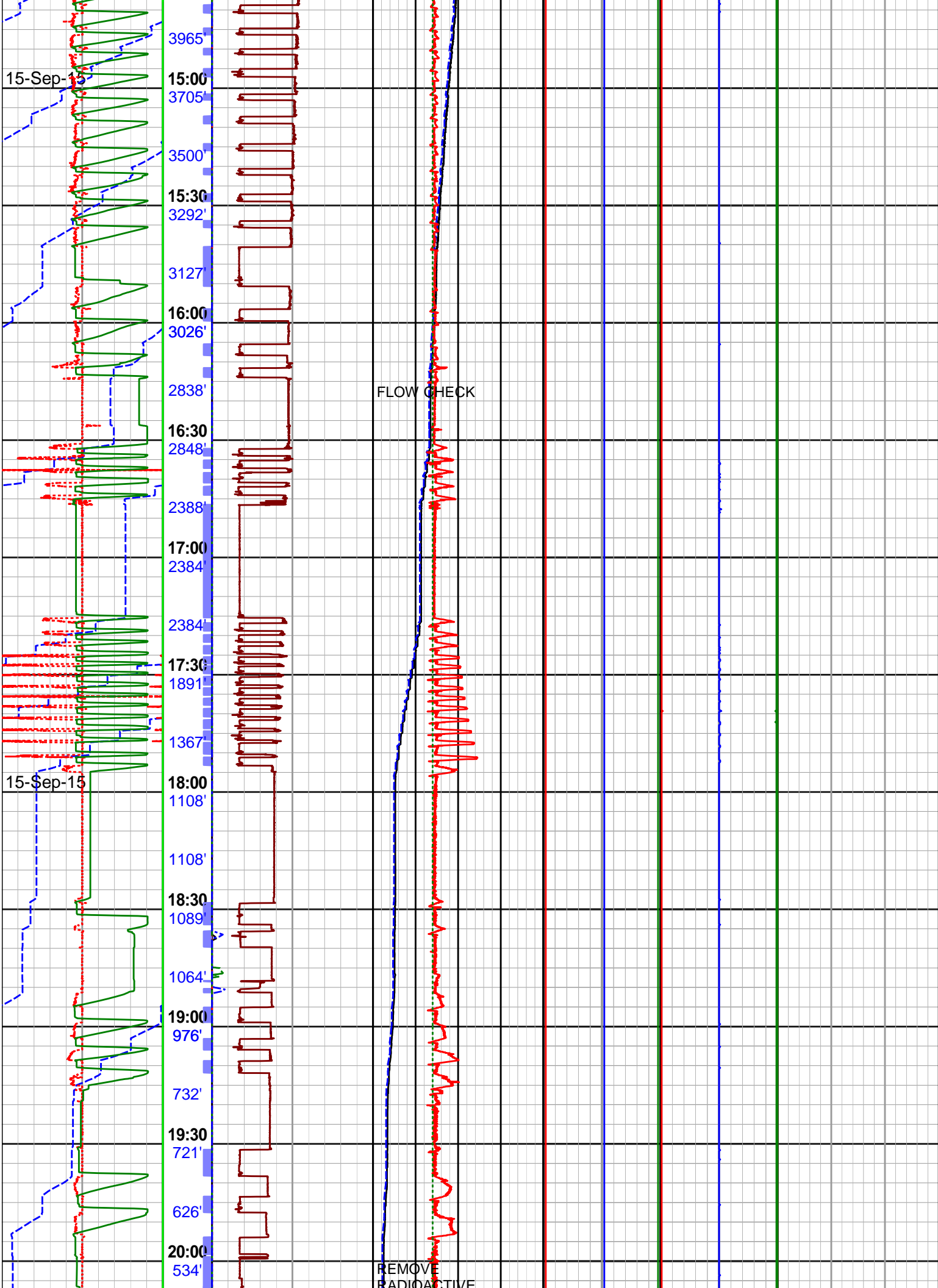


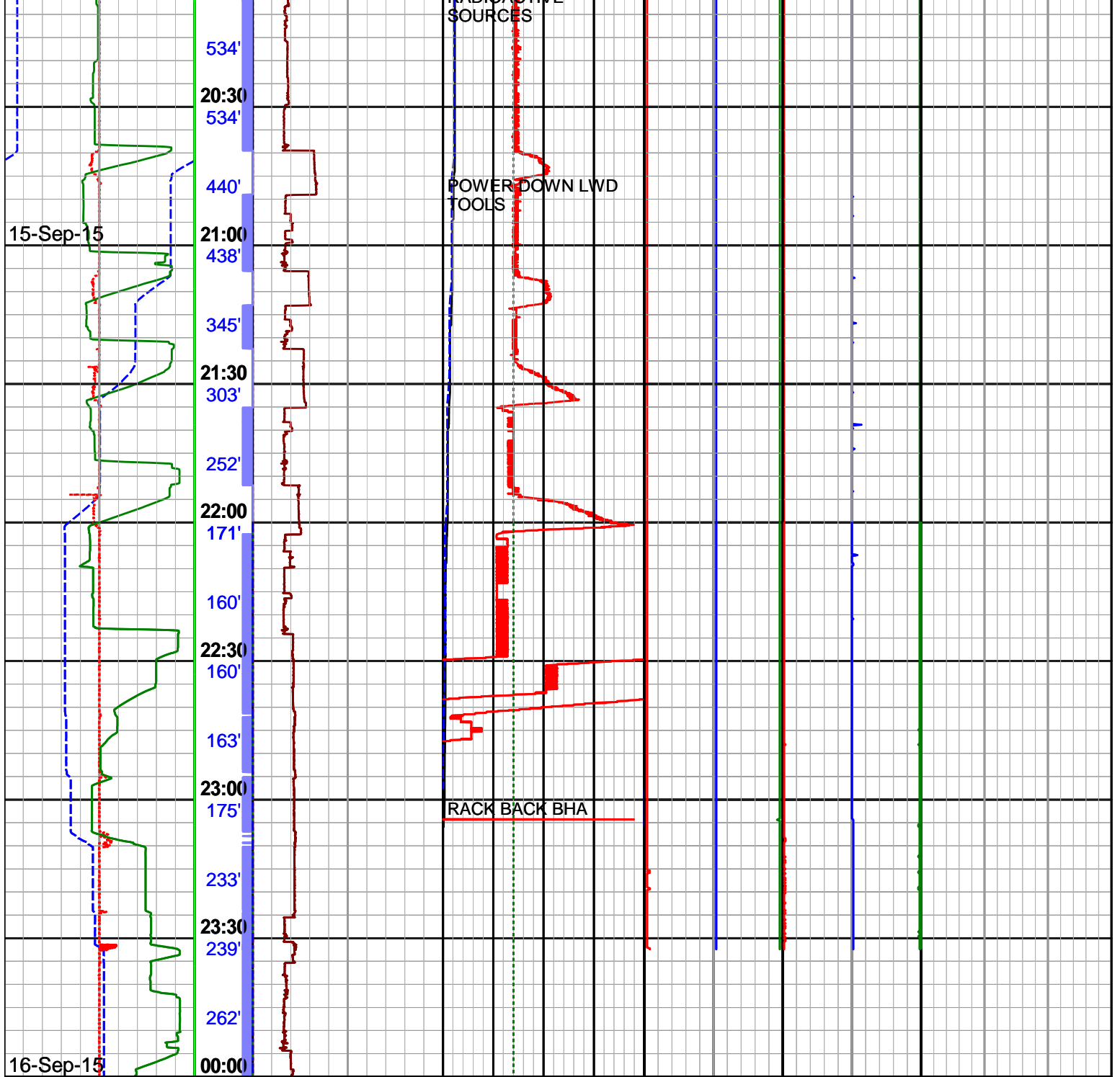












Running Speed -250 250 feet per min	On Btm In Slips Status	SPP Avg 0 5K lbs / in2 gauge	PWD Annular EMW 10 11 12 13 14 lbs per gal	DDSr Avg X 0 5 10 g	DDSr Peak X 0 50 100 g	DDSr RPM Mean 0 100 200 300 rev per min
Block Position 205 -5 feet		Flow In 0 1K gallon per min	Dens Mud In 10 11 12 13 14 lbs per gal	DDSr Avg Y 10 5 0 g	DDSr Peak Y 100 50 0 g	DDSr RPM Min 0 100 200 300 rev per min
Bit Depth 0 500 feet	On BTM	RPM Surface Avg 0 200 rev per min	PWD Annular Pressure 0 1.25K 2.5K 3.75K 5K lbs / in2 gauge	DDSr Avg Z -5 0 5 g	DDSr Peak Z -50 0 50 g	DDSr RPM Max 0 100 200 300 rev per min
ROP Avg 400 0 feet per hr		Torque Abs 0 25K foot-pound	PWD Internal Pressure 0 1.25K 2.5K 3.75K 5K lbs / in2 gauge	DDSr Stick Slip 0 100 200 300 400		
		Hookload Avg 0 400 kilo pounds	EWR Temperature 0 50 100 150 200 fahrenheit	<div style="display: flex; justify-content: space-between;"> < 100% 100- 150- 150% 200% > 200% </div> <div style="display: flex; justify-content: space-between;"> Low Med High Full Stall </div>		

DIRECTIONAL SURVEY REPORT

Shell Gulf of Mexico Inc.
 OCS-Y-2321 BJ001 ST00BP00
 Posey 6912
 Alaska
 USA
 AK-XX-0901604700
 Final Survey is projected to well TD

<i>Measured Depth (feet)</i>	<i>Inclination (degrees)</i>	<i>Direction (degrees)</i>	<i>Vertical Depth (feet)</i>	<i>Latitude (feet)</i>	<i>Departure (feet)</i>	<i>Vertical Section (feet)</i>	<i>Dogleg (deg/100ft)</i>
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
220.00	0.00	0.00	220.00	0.00 N	0.00 E	0.00	0.00
320.88	0.51	129.60	320.88	0.29 S	0.35 E	-0.29	0.50
406.77	0.31	89.93	406.76	0.53 S	0.88 E	-0.53	0.39
495.25	0.99	122.22	495.24	0.93 S	1.76 E	-0.93	0.84
590.43	0.31	82.72	590.41	1.34 S	2.71 E	-1.34	0.81
684.05	0.64	327.24	684.03	0.87 S	2.68 E	-0.87	0.88
866.10	0.28	101.20	866.08	0.09 S	2.55 E	-0.09	0.47
957.99	0.00	269.46	957.97	0.13 S	2.77 E	-0.13	0.30
1051.65	0.14	176.72	1051.63	0.24 S	2.78 E	-0.24	0.15
1144.54	0.26	120.65	1144.52	0.46 S	2.97 E	-0.46	0.23
1235.66	0.41	134.11	1235.63	0.80 S	3.38 E	-0.80	0.19
1328.60	0.51	59.75	1328.58	0.83 S	3.98 E	-0.83	0.61
1378.50	0.25	111.62	1378.48	0.76 S	4.27 E	-0.76	0.81
1540.18	0.12	50.83	1540.15	0.78 S	4.74 E	-0.78	0.14
1723.74	0.39	34.99	1723.71	0.14 S	5.26 E	-0.14	0.15
1818.58	0.58	50.01	1818.55	0.43 N	5.81 E	0.43	0.24
2003.18	1.06	39.81	2003.12	2.35 N	7.62 E	2.35	0.27
2095.93	0.87	35.51	2095.87	3.57 N	8.57 E	3.57	0.22
2186.15	0.69	72.12	2186.07	4.30 N	9.49 E	4.30	0.57
2373.34	0.75	76.36	2373.25	4.93 N	11.76 E	4.93	0.04
2463.93	0.78	75.65	2463.83	5.23 N	12.93 E	5.23	0.03
2555.30	0.79	70.25	2555.19	5.59 N	14.13 E	5.59	0.08
2646.22	0.79	76.51	2646.11	5.95 N	15.33 E	5.95	0.10
2743.03	0.70	74.08	2742.91	6.27 N	16.55 E	6.27	0.10
2837.42	0.74	67.59	2837.29	6.66 N	17.68 E	6.66	0.10
2875.38	0.64	69.95	2875.25	6.83 N	18.10 E	6.83	0.27
2978.31	0.74	64.69	2978.17	7.31 N	19.25 E	7.31	0.11
3074.55	0.58	52.33	3074.40	7.88 N	20.20 E	7.88	0.22
3169.04	0.67	47.05	3168.89	8.55 N	20.99 E	8.55	0.11
3258.93	0.77	27.36	3258.77	9.44 N	21.65 E	9.44	0.30
3351.80	0.94	33.05	3351.63	10.64 N	22.35 E	10.64	0.21
3445.40	0.89	33.34	3445.22	11.90 N	23.18 E	11.90	0.06
3537.90	0.88	39.68	3537.71	13.05 N	24.03 E	13.05	0.11
3630.29	0.86	29.57	3630.09	14.20 N	24.82 E	14.20	0.17
3724.13	1.05	46.97	3723.91	15.40 N	25.80 E	15.40	0.37
3815.47	1.16	37.46	3815.23	16.71 N	26.98 E	16.71	0.24
3909.95	1.11	27.77	3909.70	18.28 N	27.99 E	18.28	0.21
4001.96	1.54	18.87	4001.69	20.24 N	28.80 E	20.24	0.52
4095.18	1.55	21.22	4094.87	22.60 N	29.67 E	22.60	0.07
4189.17	1.52	19.27	4188.83	24.97 N	30.54 E	24.97	0.06
4280.67	1.73	13.84	4280.29	27.46 N	31.27 E	27.46	0.28
4373.26	2.11	22.24	4372.83	30.39 N	32.25 E	30.39	0.51
4465.71	1.69	19.56	4465.23	33.26 N	33.35 E	33.26	0.46
4559.04	2.02	19.56	4558.51	36.11 N	34.37 E	36.11	0.35
4651.17	2.19	23.91	4650.58	39.24 N	35.62 E	39.24	0.25
4743.27	2.64	25.07	4742.59	42.77 N	37.23 E	42.77	0.49
4836.87	3.09	32.03	4836.08	46.87 N	39.49 E	46.87	0.61
4929.20	3.15	34.87	4928.26	51.06 N	42.26 E	51.06	0.18
5021.52	3.28	37.85	5020.45	55.22 N	45.33 E	55.22	0.23
5113.59	3.34	39.69	5112.36	59.37 N	48.66 E	59.37	0.13
5206.14	3.59	47.76	5204.74	63.39 N	52.52 E	63.39	0.59
5299.05	3.70	48.27	5297.46	67.34 N	56.92 E	67.34	0.12
5364.19	3.45	52.11	5362.48	69.95 N	60.04 E	69.95	0.54
5429.81	3.65	46.91	5427.97	72.59 N	63.12 E	72.59	0.58
5518.31	3.73	45.18	5516.29	76.55 N	67.22 E	76.55	0.15
5612.70	3.58	42.26	5610.48	80.90 N	71.39 E	80.90	0.25

5704.09	3.56	42.97	5701.70	85.09 N	75.24 E	85.09	0.06
5795.19	3.47	41.51	5792.62	89.22 N	79.00 E	89.22	0.13
5889.32	3.48	42.48	5886.58	93.46 N	82.82 E	93.46	0.06
5980.70	3.42	42.67	5977.80	97.52 N	86.54 E	97.52	0.07
6075.07	3.43	41.69	6072.00	101.69 N	90.33 E	101.69	0.06
6167.81	3.55	39.12	6164.57	105.99 N	93.98 E	105.99	0.21
6259.59	3.53	39.52	6256.17	110.37 N	97.57 E	110.37	0.03
6346.61	3.75	37.26	6343.02	114.70 N	100.99 E	114.70	0.30
6445.34	3.99	34.54	6441.52	120.10 N	104.89 E	120.10	0.31
6536.48	3.96	35.37	6532.44	125.27 N	108.51 E	125.27	0.07
6628.63	3.92	37.01	6624.37	130.38 N	112.25 E	130.38	0.13
6721.62	3.89	35.41	6717.15	135.49 N	115.99 E	135.49	0.12
6745.05	3.99	35.86	6740.52	136.80 N	116.93 E	136.80	0.46
6800.00	3.99	35.86	6795.34	139.90 N	119.17 E	139.90	0.00

CALCULATION BASED ON MINIMUM CURVATURE METHOD

**SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT
TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT**

**VERTICAL SECTION RELATIVE TO WELL HEAD
VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 0.00 DEGREES (GRID)
A TOTAL CORRECTION OF 10.95 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 6800.00 FEET
IS 183.78 FEET ALONG 40.42 DEGREES (GRID)**

**Map System: NAD 83 UTM Zones
Geo Datum: North American Datum of 1983
Map Zone: Universal Transverse Mercator Zone 03N**

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