Multiple Propagation Resistivity
Gamma Ray

BAKER HUGHES

Memory Log

Company	BP Exploration & Production, Inc.
Well	OCS-G 32306 002 ST00BP00
Field	Mississippi Canyon Block 252
County	Offshore
State	Louisiana
Country	U.S.A.

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Well Location:
Surface Location:
Latitude: 28° 43' 53.338" N
Longitude: 88° 22' 17.927" W

Other Services:
Directional
Annular Pressure
CoPilot

API Number	Section	Township	Range
608174119000	N/A	N/A	N/A

Log Measured From	Drill Floor	@	84 ft.	Above Permanent Datum	Elevation KB N/A
Depth In	5472 ft.	MWD Start	20 May 2010	Permanent Datum	Elevation DF 84 ft.
Depth Out	15961 ft.	MWD End	10 Jul 2010	MSL	Sea Bed/GL 5139 ft.

BOREHOLE RECORD			CASING RECORD		
Hole Diameter	From	To	Casing Size	From	To
32.5 in.	5472 ft.	6657 ft.	36 in.	5208 ft.	5472 ft.
26 in.	6657 ft.	8650 ft.	28 in.	5213 ft.	6616 ft.
22 in.	8650 ft.	9917 ft.	22 in.	5208 ft.	8577 ft.
20 in.	9917 ft.	11950 ft.	18 in.	7678 ft.	9898 ft.
16.5 in.	11950 ft.	13787 ft.	16 in.	7068 ft.	11939 ft.
14.75 in.	13787 ft.	15875 ft.	13.625 in.	5209 ft.	13780 ft.
12.25 in.	15875 ft.	15961 ft.			

Drilling Contractor: Transocean Drilling Co. Rig: DDII

1:1200

TRUE VERTICAL DEPTH FINAL PRINT

Company Representative: Micky Fruge Mitch Bullock

Field Personnel: Reuben Oster, Eric Bui, Ryan Blake, Joe Boudreaux

Job#: 3156476

Bit Run Number	1	2	3	3RR	4	5	5RR	6
INTEQ Data								
Run Number	1	2	3	4	5	6	7	8
DHA Serial Number	11636303	11636303	10220822	10220822	11631180	11636303	10107826	10220822
Surface Gear Serial Number	S2K 00974	S2K 00974	S2K 00974	S2K 00974	S2K 00974	S2K 00974	S2K 00974	S2K 00974
Tool OD (in) / Type	9.5 OTK	9.5 OTK	9.5 OTK	9.5 OTK	9.5 OTK	9.5 OTK	9.5 OTK	9.5 OTK
Run Data								
Bit Diameter (in)	26	26	18.125	18.125	16.5	14.75	14.75	12.25
Measured Depth In (ft)	5472	6750	8650	9120	10000	12038	12038	13871
Measured Depth Out (ft)	6750	8650	9120	10000	12038	12038	13871	15961
Top of Interval Logged (ft)	5472	6722	8622	9092	9973	N/A	12011	13843
Bottom of Interval Logged (ft)	6722	8622	9092	9973	12011	N/A	13843	15934
Min/Max Inclination (deg)	0.2 - 0.5	0.1 - 0.4	0.0 - 0.1	0.0 - 0.8	0.9 - 35.3	N/A - N/A	33.2 - 36.0	15.2 - 35.3
Begin Log (hrs)	09:55	16:40	18:30	00:45	03:50	N/A	07:30	14:00
Begin Log (date)	20 May 2010	22 May 2010	10 Jun 2010	15 Jun 2010	23 Jun 2010	N/A	30 Jun 2010	07 Jul 2010
End Log (hrs)	02:20	00:30	03:00	03:00	20:53	N/A	22:10	06:11
End Log (date)	21 May 2010	24 May 2010	14 Jun 2010	18 Jun 2010	25 Jun 2010	N/A	02 Jul 2010	10 Jul 2010
Mud Data @ Depth (ft)	5471	6750	8661	9120	12038	12038	13560	15961
Mud Type	Sea Water	Sea Water	Synthetic	Synthetic	Synthetic	Synthetic	Synthetic	Synthetic
Density From - To (ppg)	8.6 - 8.6	8.6 - 8.6	8.6 - 10.4	10.4 - 10.9	10.9 - 11.6	11.6 - 12.1	12.1 - 12.7	12.7 - 13.3
Mud Chlorides (ppm)	25000	25000	27000	27000	22500	25000	21000	22000
Oil/Water Ratio (%)	0 / 100	0 / 100	74 / 26	75 / 25	78 / 22	78 / 22	77 / 23	78 / 22

Max Circulating Temp (° F)	58	68	101	112	136	112	137	171
Company Representative	M. Fruge	M. Fruge	R. Speyrer	M. Fruge	M. Fruge	R. Speyrer	R. Speyrer	R. Speyrer
Field Engineer	R. Oster	R. Oster	R. Oster	Boudreaux	C. DeLoach	A. Dufrane	A. Dufrane	R. Oster

Equipment Data								
INTEQ Run Number	1	2	3	4	5	6	7	8
Modular Assembly Number	1	1	2	2	3	4	5	6
Drill Collar S/N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Master S/N	11636303	11636303	10220822	10220822	11631180	11636303	10107826	10220822
Drill Collar Converter S/N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pressure Sub S/N	11636303	11636303	10220822	10220822	10220822	11636303	10107826	10220822
Neutron Sub S/N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Neutron Source S/N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Density Sub S/N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Density Source S/N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gamma Sub S/N	11636303	11636303	10220822	10220822	10220822	11636303	10107826	10220822
Resistivity Detector S/N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Resistivity Sub S/N	11636303	11636303	10220822	10220822	10220822	11636303	10107826	10220822
Sensor Offsets to Bit (ft) / Acquisition Rates (sec)								
Bottom of INTEQ MWD (ft)	1.95	1.95	1.63	1.63	1.61	1.61	1.51	1.46
Resistivity	27.93 / 10	27.93 / 10	27.34 / 10	27.34 / 10	27.49 / 10	27.44 / 10	27.73 / 10	27.41 / 10
Gamma Ray	35.09 / 10	35.09 / 10	25.99 / 10	25.99 / 10	34.65 / 10	34.60 / 10	26.39 / 10	26.07 / 10
Pressure	32.16 / 20	32.16 / 20	25.37 / 20	25.37 / 20	31.72 / 20	31.67 / 20	25.76 / 20	25.45 / 20
Density	N/A /	N/A /	N/A /	N/A /	N/A /	N/A /	N/A /	N/A /
Neutron	N/A /	N/A /	N/A /	N/A /	N/A /	N/A /	N/A /	N/A /
Directional	39.86 / 240	39.86 / 240	34.82 / 240	34.82 / 240	39.42 / 240	39.37 / 240	35.21 / 240	34.89 / 240
Temperature	39.86	39.86	34.82	34.82	39.42	39.37	35.21	34.89
Other Tool Information								
Total INTEQ Length (ft)	71.52	71.29	64.93	64.93	70.66	70.82	65.39	66.69
Assembly Type	AutoTrak	AutoTrak	AutoTrak	AutoTrak	AutoTrak	AutoTrak	AutoTrak	AutoTrak
Stabilizer above Resistivity (ft)	20.69	20.69	15.28	15.28	19.64	19.62	14.84	15.17
Stabilizer below Resistivity (ft)	14.72	14.72	14.41	14.41	15.38	15.21	14.96	15.04
Run Circulating Time (hrs)	17.2	33.7	63.5	58.4	56.7	11.1	39.4	58.6

Calibration Verification								
Post Run	N/A	1	2	N/A	3	4	N/A	5
Pre Run	1	2	N/A	3	4	N/A	5	N/A
Date	20 May 2010	21 May 2010	24 May 2010	05 Jun 2010	14 Jun 2010	18 Jun 2010	20 Jun 2010	26 Jun 2010
Time (hrs)	01:00	20:00	12:57	12:20	13:02	16:21	21:45	03:00
Resistivity Sub S/N	11636303	11636303	11636303	10220822	10220822	10220822	11631180	11631180
Phase Difference Delta (deg)	-0.0651	0.0162	0.0357	0.0138	-0.0018	0.0020	0.1103	0.0155
Base Attenuation Delta (deg)	0.1133	0.1137	0.2600	0.0691	0.0419	0.0828	0.1006	0.0739
Average Temperature (° F)	90.37	84.12	84.36	93.38	71.31	79.3	106.23	84.86
Status	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Gamma Sub S/N	11636303	11636303	11636303	10220822	10220822	10220822	11631180	11631180
Gamma Verifier S/N	Background	Background	Background	Background	Background	Background	Background	Background
*Verifier Field (cps)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
*Verifier Shop (cps)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Background Field (cps)	1.45 / 1.30	1.75 / 1.45	1.40 / 0.75	1.45 / 1.25	2.00 / 1.60	1.15 / 1.45	1.49 / 1.26	1.00 / 1.65
Background Shop (cps)	5.17 / 3.91	5.17 / 3.91	5.17 / 3.91	4.31 / 5.13	4.31 / 5.13	4.31 / 5.13	3.39 / 3.84	3.39 / 3.84
Status	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Neutron Sub S/N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Neutron Sub S/N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Neutron Verifier S/N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Near Shop (cps)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Near Field (cps)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Far Shop (cps)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Far Field (cps)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Status	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Density Sub S/N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Density Verifier S/N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS Shop (cps)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SS Field (cps)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LS Shop (cps)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LS Field (cps)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Status	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Backgound counts have been subtracted from Gamma "Verifier Field (cps)" and "Verifier Shop (cps)"

Calibration Verification

Post Run	N/A	N/A	7	N/A	8			
Pre Run	6	7	N/A	8	N/A			
Date	27 Jun 2010	29 Jun 2010	03 Jul 2010	05 Jul 2010	10 Jul 2010			
Time (hrs)	18:26	21:35	05:51	10:56	15:46			
Resistivity Sub S/N	11636303	10107826	10107826	10220822	10220822			
Phase Difference Delta (deg)	0.0135	0.0000	−0.0171	0.0210	0.0106			
Base Attenuation Delta (deg)	0.0886	0.0521	0.0808	0.0840	0.0706			
Average Temperature (° F)	94.24	87.01	77.66	94.15	70.35			
Status	Pass	Pass	Pass	Pass	Pass			
Gamma Sub S/N	11636303	10107826	10107826	10220822	10220822			
Gamma Verifier S/N	Background	Background	Background	Background	Background			
*Verifier Field (cps)	N/A	N/A	N/A	N/A	N/A			
*Verifier Shop (cps)	N/A	N/A	N/A	N/A	N/A			
Background Field (cps)	1.66 / 1.43	1.90 / 1.70	1.25 / 1.65	1.55 / 1.45	1.10 / 1.35			
Background Shop (cps)	3.51 / 3.17	4.23 / 4.82	4.23 / 4.82	4.31 / 5.13	4.31 / 5.13			
Status	Pass	Pass	Pass	Pass	Pass			
Neutron Sub S/N	N/A	N/A	N/A	N/A	N/A			
Neutron Verifier S/N	N/A	N/A	N/A	N/A	N/A			
Near Shop (cps)	N/A	N/A	N/A	N/A	N/A			
Near Field (cps)	N/A	N/A	N/A	N/A	N/A			
Far Shop (cps)	N/A	N/A	N/A	N/A	N/A			
Far Field (cps)	N/A	N/A	N/A	N/A	N/A			
Status	N/A	N/A	N/A	N/A	N/A			
Density Sub S/N	N/A	N/A	N/A	N/A	N/A			
Density Verifier S/N	N/A	N/A	N/A	N/A	N/A			
SS Shop (cps)	N/A	N/A	N/A	N/A	N/A			
SS Field (cps)	N/A	N/A	N/A	N/A	N/A			
LS Shop (cps)	N/A	N/A	N/A	N/A	N/A			
LS Field (cps)	N/A	N/A	N/A	N/A	N/A			
Status	N/A	N/A	N/A	N/A	N/A			

*Backgound counts have been subtracted from Gamma "Verifier Field (cps)" and "Verifier Shop (cps)"

Enviromental Parameters

Date & Time	Run No.	Bit Depth (ft)	Rm @ BHCT (ohmm) / (° F)	Mud Weight (ppg)	K (%)	Rmf @ BHCT (ohmm) / (° F)
20 May 2010 01:00	1	5471	0.20 / 58	8.6	N/A	0.20 / 58
22 May 2010 09:15	2	6500	0.20 / 58	8.6	N/A	0.20 / 58
22 May 2010 23:25	2	7380	0.06 / 64	11.2	N/A	0.05 / 64
23 May 2010 06:44	2	8164	0.06 / 66	12.0	N/A	0.05 / 66

10 Jun 2010 18:30	3	6041	0.20	/	60	8.6	N/A	0.20	/	60
11 Jun 2010 22:51	3	8388	100.00	/	93	10.0	N/A	100.00	/	93
12 Jun 2010 15:30	3	8661	100.00	/	104	10.2	N/A	100.00	/	104
12 Jun 2010 16:50	3	8661	100.00	/	101	10.4	N/A	100.00	/	101
15 Jun 2010 04:55	4	9120	100.00	/	85	10.4	N/A	100.00	/	85
15 Jun 2010 16:30	4	9135	100.00	/	101	10.5	N/A	100.00	/	101
16 Jun 2010 05:12	4	9779	100.00	/	109	10.6	N/A	100.00	/	109
16 Jun 2010 15:00	4	9926	100.00	/	110	10.8	N/A	100.00	/	110
16 Jun 2010 16:30	4	9926	100.00	/	112	10.9	N/A	100.00	/	112
23 Jun 2010 04:00	5	10000	100.00	/	99	11.1	N/A	100.00	/	99
23 Jun 2010 20:15	5	10074	100.00	/	115	11.4	N/A	100.00	/	115
24 Jun 2010 23:47	5	11638	100.00	/	134	11.6	N/A	100.00	/	134
29 Jun 2010 21:05	6	12039	100.00	/	112	12.1	N/A	100.00	/	112
30 Jun 2010 08:16	7	12039	100.00	/	107	12.2	N/A	100.00	/	107
01 Jul 2010 03:08	7	12462	100.00	/	118	12.3	N/A	100.00	/	118
01 Jul 2010 13:38	7	13023	100.00	/	126	12.4	N/A	100.00	/	126
02 Jul 2010 03:20	7	13671	100.00	/	131	12.5	N/A	100.00	/	131
07 Jul 2010 21:23	8	13872	100.00	/	136	12.7	N/A	100.00	/	136
08 Jul 2010 08:52	8	14175	100.00	/	147	12.8	N/A	100.00	/	147
08 Jul 2010 12:15	8	14363	100.00	/	153	12.9	N/A	100.00	/	153
08 Jul 2010 17:21	8	14648	100.00	/	150	13.2	N/A	100.00	/	150
09 Jul 2010 13:32	8	15615	100.00	/	166	13.3	N/A	100.00	/	166

Remarks

MNEMONICS:

ROP_AVG > Rate of Penetration, ft/hr 3.0 ft. Avg.

GRCM > Gamma Ray Corrected, API 3.0 ft. Avg.

ACTECDM > Actual ECD, ppg

RACLM > Resistivity (AT) (LS) 400kHz-Compensated Borehole Corrected, ohm-m

RPCHM > Resistivity (PD) (LS) 2MHz-Compensated Borehole Corrected, ohm-m

CACLM > Conductivity (AT) (LS) 400kHz-Compensated Borehole Corrected, mmho/m

TCDM > Downhole Temperature, deg F

COMMENTS:

1) All surface parameters except for pump pressure were provided by the client.

2) Baker Hughes INTEQ run 1 utilized 9 1/2 inch OnTrak and CoPilot services (Multiple Propagation Resistivity, Gamma Ray, Directional, Annular Pressure, and Drilling Dynamics) behind a 26 inch bit and rotary steerable assembly from 5472 to 6750 feet MD (5472 to 6750 feet TVD). The hole was opened to 32 1/2 inches while drilling with a Smith Reamer 93.42 feet above the bit.

3) Baker Hughes INTEQ run 2 utilized 9 1/2 inch OnTrak and CoPilot services (Multiple Propagation Resistivity, Gamma Ray, Directional, Annular Pressure, and Drilling Dynamics) behind a 26 inch bit and rotary steerable assembly from 6750 to 8650 feet MD (6750 to 8650 feet TVD).

4) Baker Hughes INTEQ run 3 utilized 9 1/2 inch OnTrak and CoPilot services (Multiple Propagation Resistivity, Gamma Ray, Directional, Annular Pressure, and Drilling Dynamics) behind an 18 1/8 inch bit and rotary steerable assembly from 8650 to 9120 feet MD (8650 to 9120 feet TVD).

5) Baker Hughes INTEQ run 4 utilized 9 1/2 inch OnTrak and CoPilot services (Multiple Propagation Resistivity, Gamma Ray, Directional, Annular Pressure, and Drilling Dynamics) behind an 18 1/8 inch bit and rotary steerable assembly from 9120 to 10000 feet MD (9120 to 9999 feet TVD). The hole was opened to 22 inches while drilling with a Hughes Christensen Reamer 82.67 feet above the bit. The hole drilled during run 3 was opened to 22 inches during run 4. The reamer was picked up after cutting the M110 sand.

6) Baker Hughes INTEQ run 5 utilized 9 1/2 inch OnTrak and CoPilot services (Multiple Propagation Resistivity, Gamma Ray, Directional, Annular Pressure, and Drilling Dynamics) behind an 16 1/2 inch bit and rotary steerable assembly from 10000 to 12038 feet MD (10000 to 11900 feet TVD). The hole was opened to 20 inches while drilling with a Hughes Christensen Reamer 88.28 feet above the bit.

7) Baker Hughes INTEQ runs 6 and 7 utilized 9 1/2 inch OnTrak and CoPilot services (Multiple Propagation Resistivity, Gamma Ray, Directional, Annular Pressure, and Drilling Dynamics) behind a 14 3/4 inch bit and rotary steerable assembly from 12038 to 13871 feet MD (11900 to 13400 feet TVD). The hole was opened to 16 1/2 inches while drilling with a Smith Reamer 84.25 feet above the bit.

8) No post run verification was performed for run 6 at the request of the client.

9) Baker Hughes INTEQ run 8 utilized 9 1/2 inch OnTrak and CoPilot services (Multiple Propagation Resistivity, Gamma Ray, Directional, Annular Pressure, and Drilling Dynamics) behind a 12 1/4 inch bit and rotary steerable assembly from 13871 to 15961 feet MD (13400 to 15200 feet TVD). The hole was opened to 14 1/2 inches while drilling with a Smith Reamer 86.60 feet above the bit.

REMARKS:

1) 36 inch casing depth driller: 5472 feet MD (5472 feet TVD).
36 inch casing depth logger: 5472 feet MD (5472 feet TVD).

2) 28 inch casing depth driller: 6616 feet MD (6616 feet TVD).
28 inch casing depth logger: 6616 feet MD (6616 feet TVD).
The interval from 6722 to 6750 feet MD (6723 to 6750 feet TVD) was logged up to 1.6 days after being drilled due to the sensor offset at the 28 inch casing point.

3) The resistivity readings over the interval from 7352 to 8622 feet MD (7352 to 8622 feet TVD) are affected by eccentricity and amplified by changing to a salt saturated mud.

4) 22 inch casing depth driller: 8577 feet MD (8577 feet TVD).
22 inch casing depth logger: 8577 feet MD (8577 feet TVD).
The interval from 8622 to 8650 feet MD (8622 to 8650 feet TVD) was logged up to 19.9 days after being drilled due to the sensor offset at the 22 inch casing point.
The interval from 8650 to 8660 feet MD (8650 to 8660 feet TVD) was logged up to 14.7 hours after being drilled due to performing a Formation Integrity Test and increasing mud weight.

5) The interval from 9092 to 9120 feet MD (9092 to 9120 feet TVD) was logged up to 1.7 days after being drilled due to a trip out of the hole to pick up a 22 inch Hughes Christensen Reamer.

6) 18 inch casing depth driller: 9898 feet MD (9898 feet TVD).
18 inch casing depth logger: 9894 feet MD (9894 feet TVD).
The interval from 9899 to 9926 feet MD (9899 to 9926 feet TVD) was logged up to 23 hours after being drilled due to circulating out gas.

7) The interval from 9973 to 10000 feet MD (9973 to 9999 feet TVD) was logged up to 6.3 days after being drilled due to the sensor offset at the 18 inch casing point.

8) 16 inch casing depth driller: 11939 feet MD (11819 feet TVD).

16 inch casing depth logger: 11939 feet MD (11819 feet TVD).

The interval from 12011 to 12038 feet MD (11878 to 11900 feet TVD) was logged up to 4.9 days after being drilled due to the sensor offset at the 16 inch casing point and a trip out of the hole to test the Blind Shear Rams.

9) 13 5/8 inch casing depth driller: 13780 feet MD (13325 feet TVD).

13 5/8 inch casing depth logger: 13780 feet MD (13325 feet TVD).

The interval from 13843 to 13871 feet MD (13376 to 13400 feet TVD) was logged up to 5.8 days after being drilled due to the sensor offset at the 13 5/8 inch casing point.

10) The interval from 15934 to 15961 feet MD (15174 to 15200 feet TVD) was not logged after being drilled due to sensor to bit offset at well TD.

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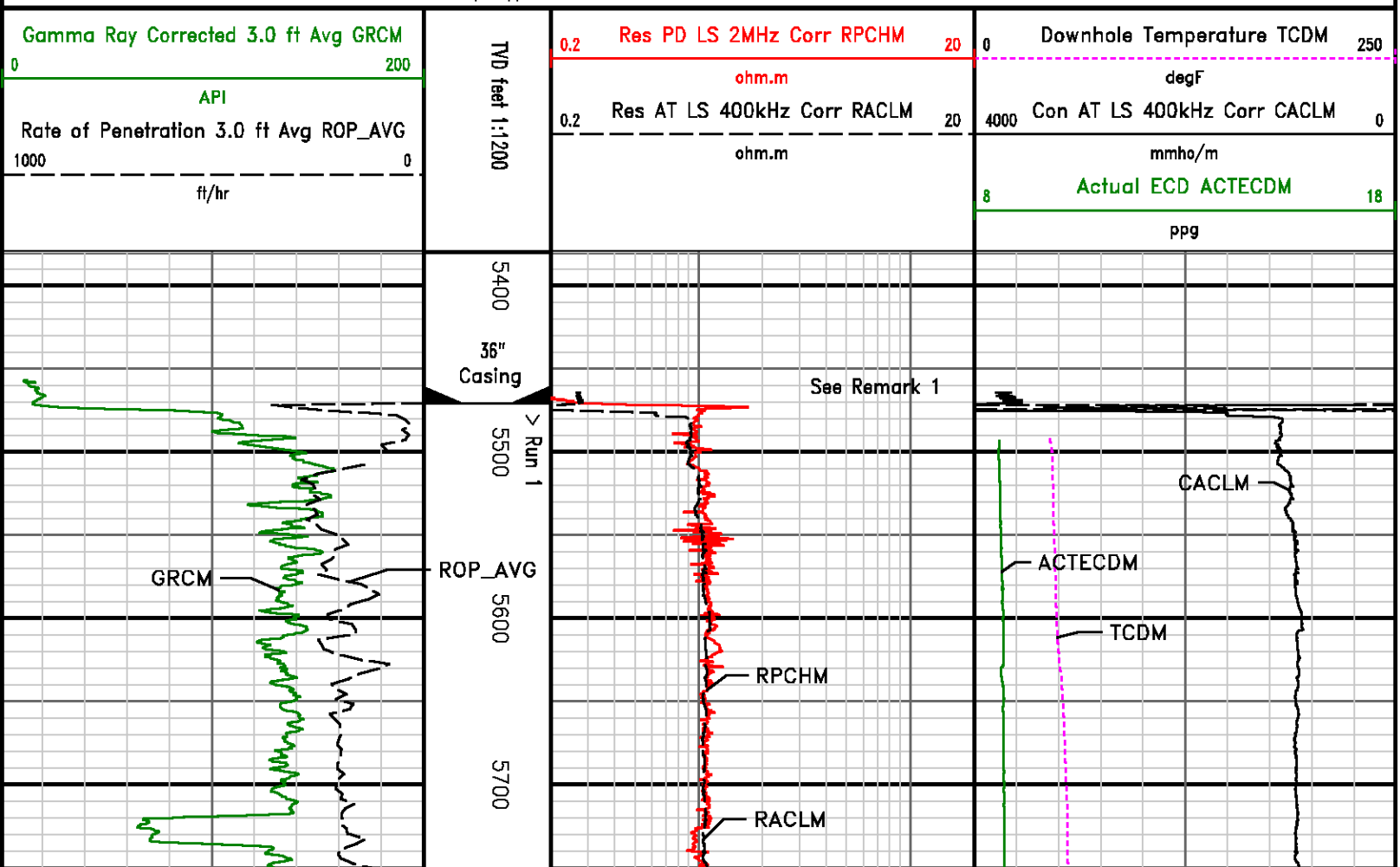
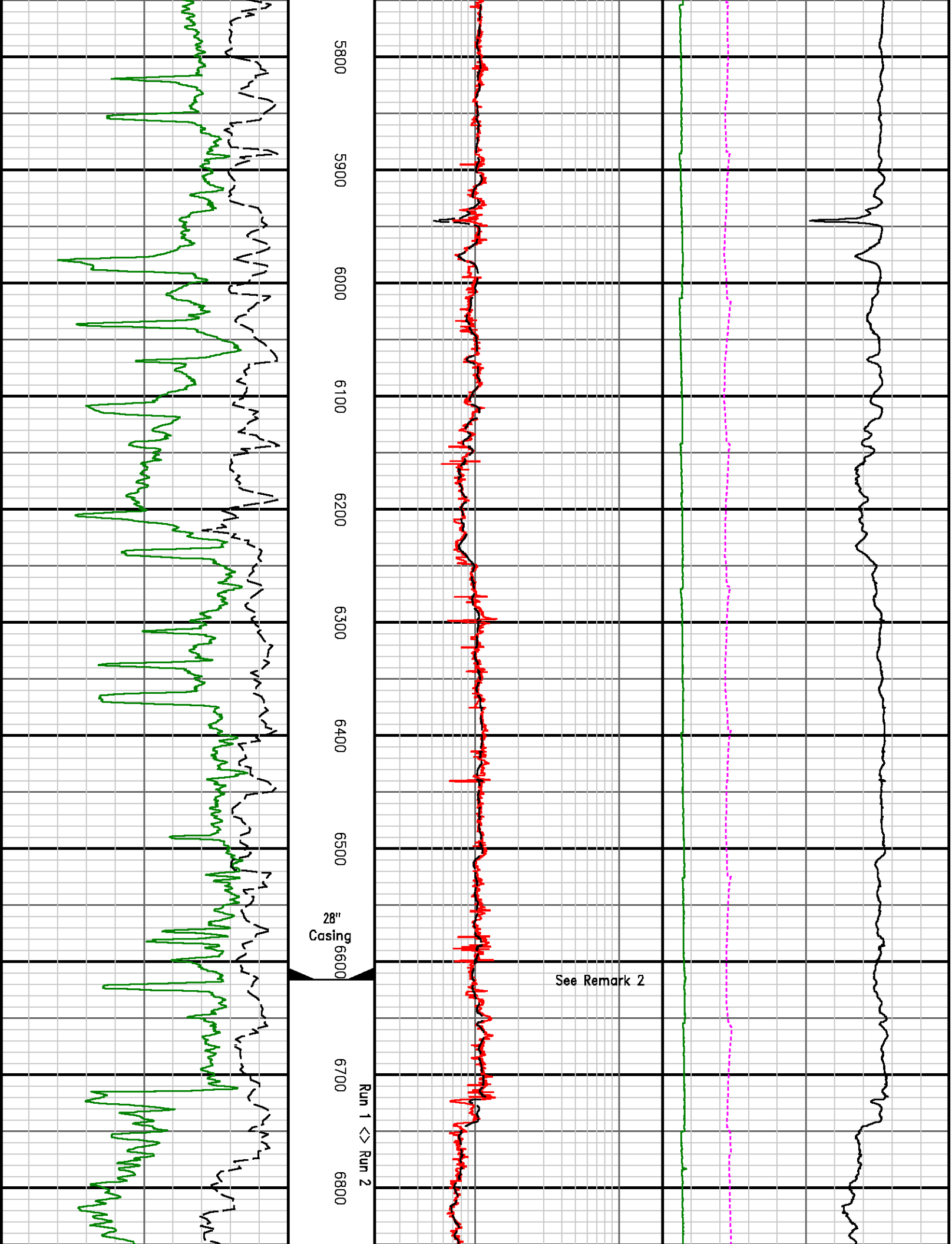
Company : BP Exploration & Production, Inc.
Well : OCS-G 32306 002 ST00BP00
Interval : 5380.00 - 15250.00 feet
Created : 21/May/2010 3:50:01 PM

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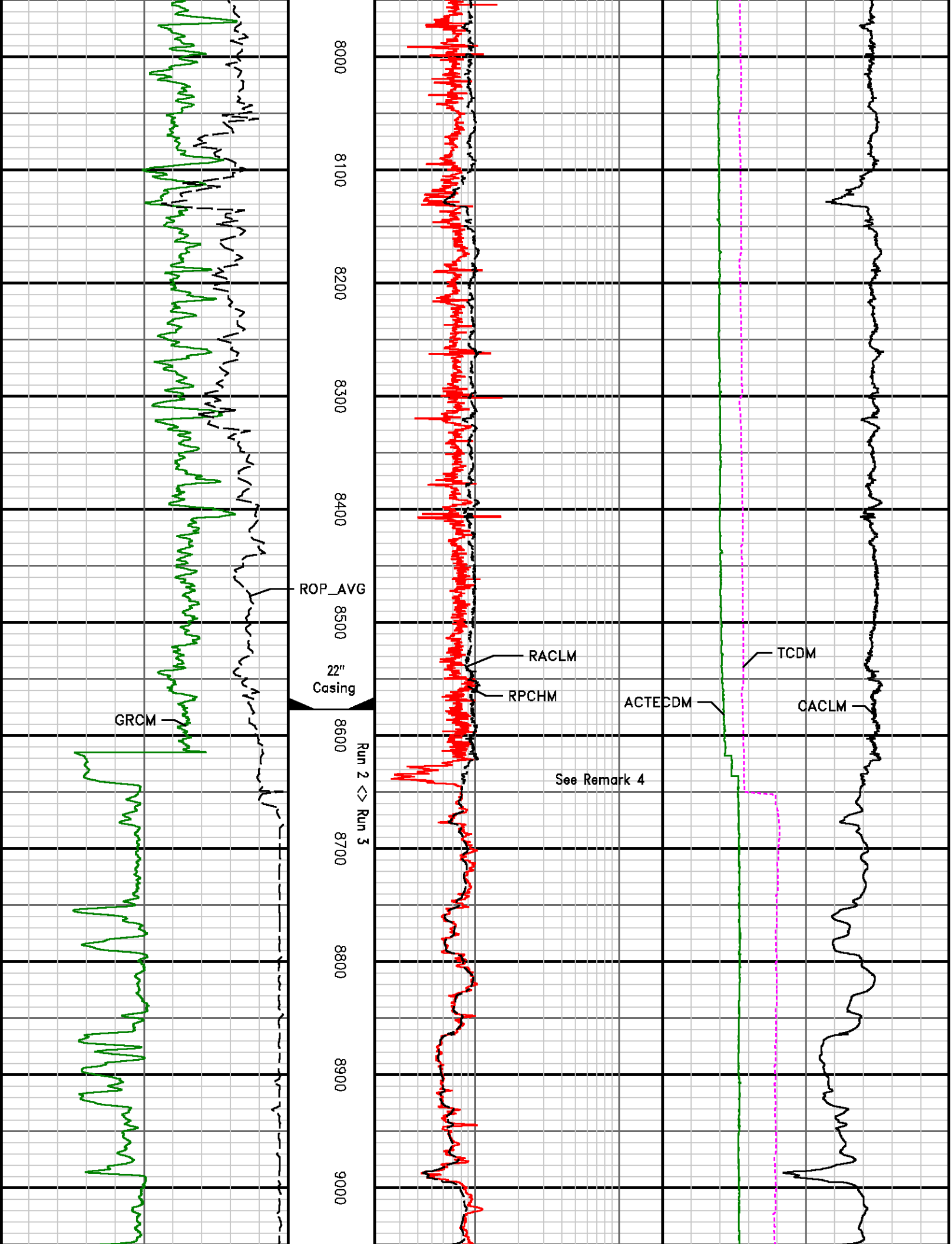
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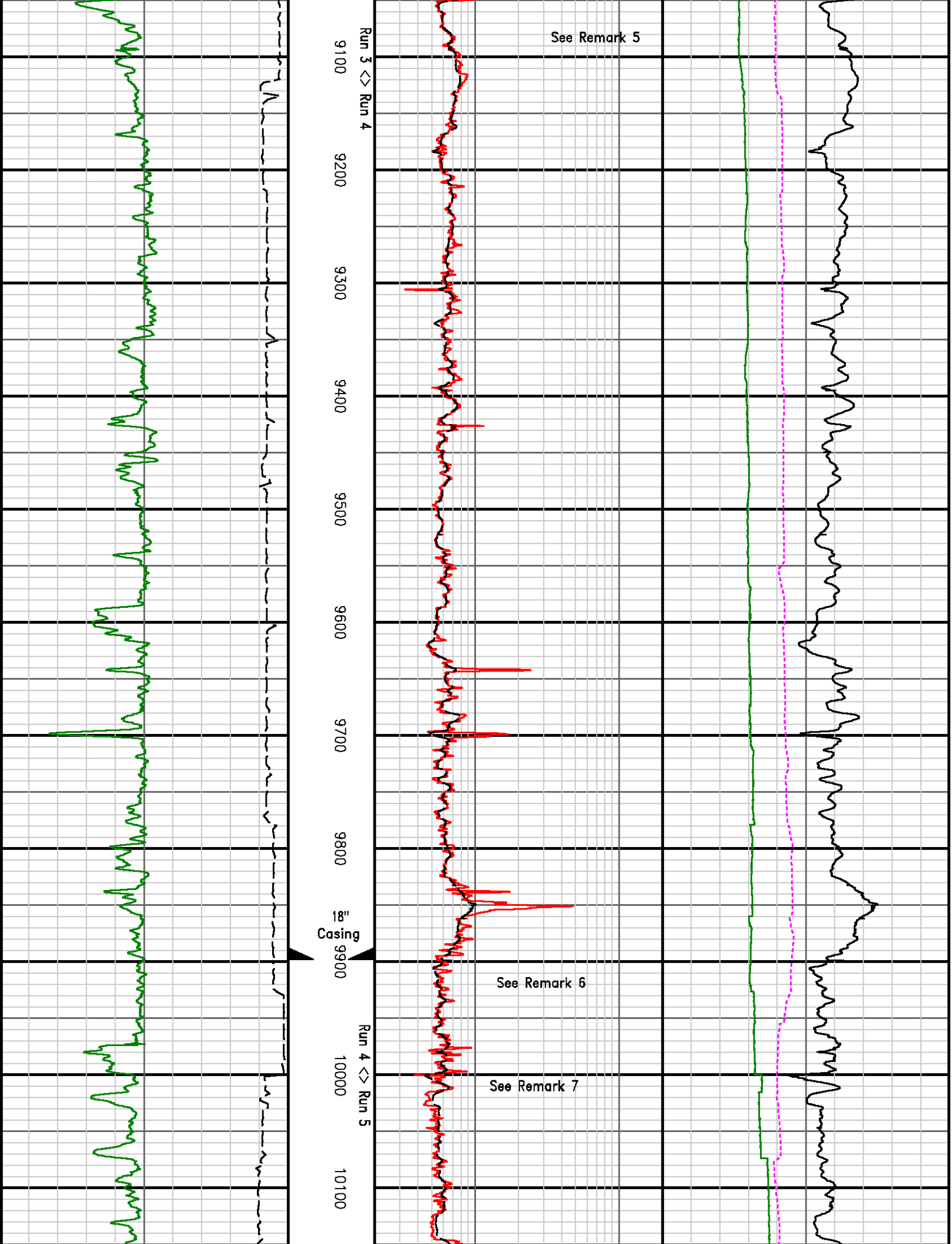
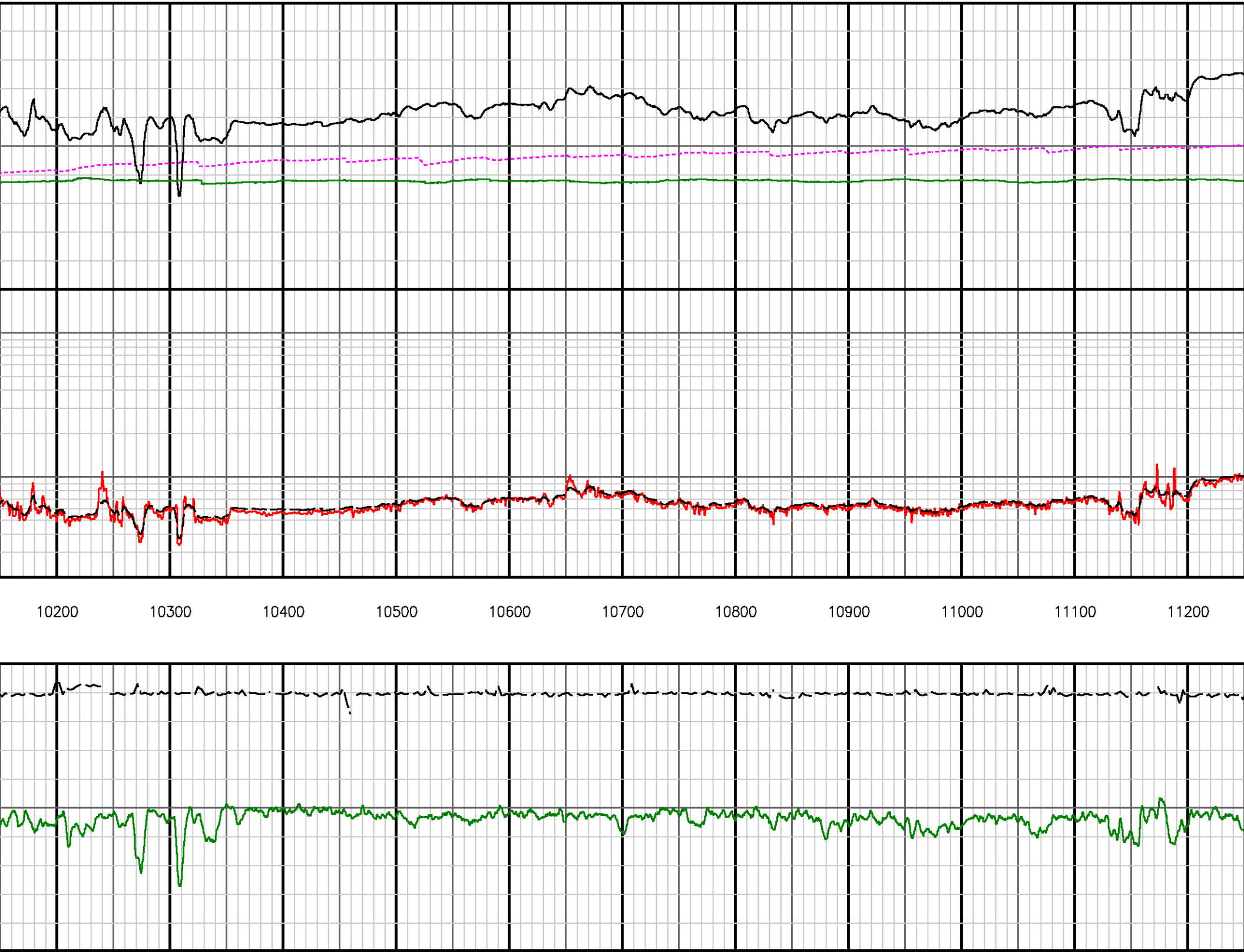
8300
8400
8500
8600
8700
8800
8900
9000
ROP_AVG
GRCM
22"
Casing
Run 2 <> Run 3
RACLM
RPCHM
See Remark 4
ACTECDM
TCDM
CACLM


Run 3 <> Run 4
9100
9200
9300
9400
9500
9600
9700
9800
18"
Casing
9900
10000
10100
Run 4 <> Run 5
See Remark 5
See Remark 6
See Remark 7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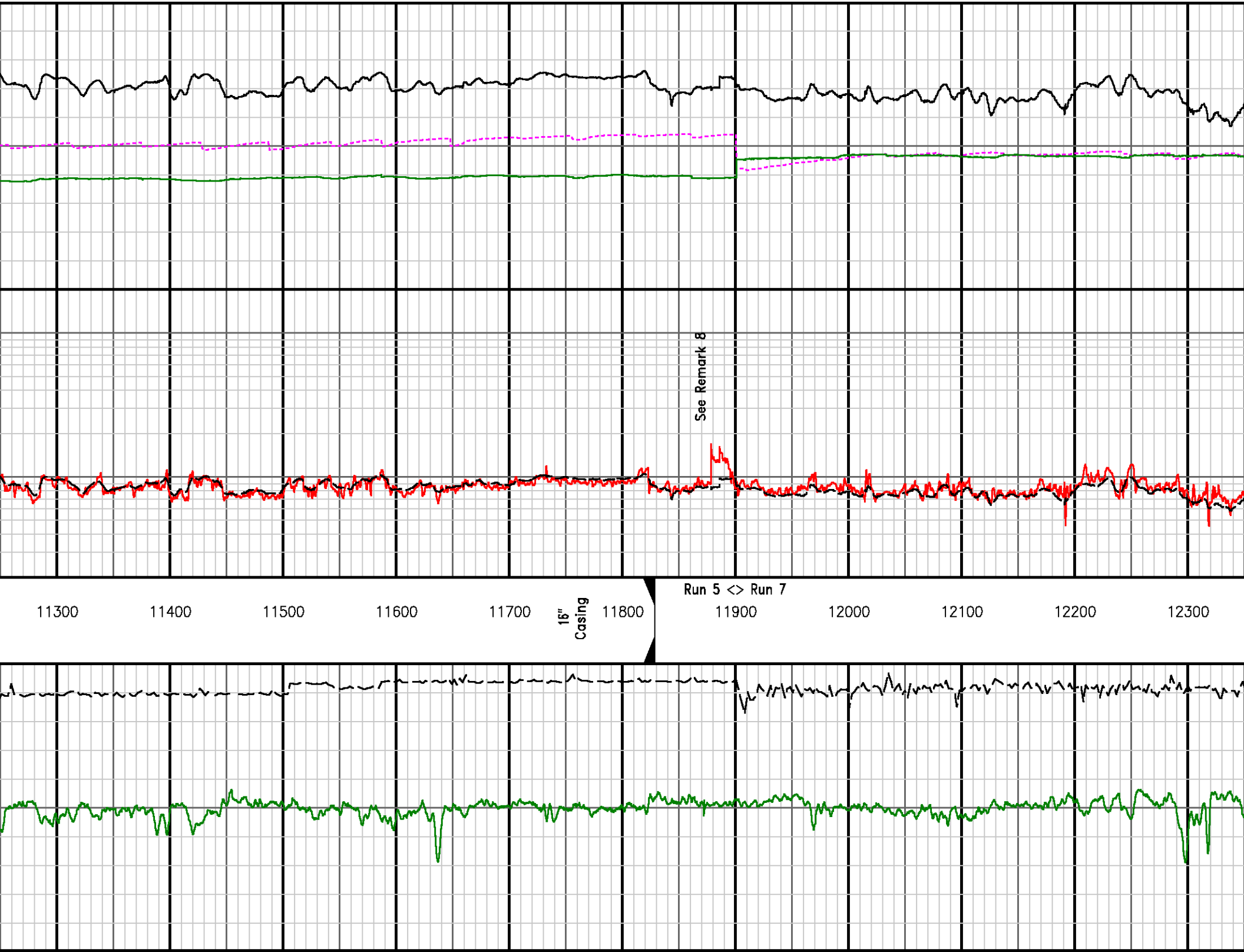
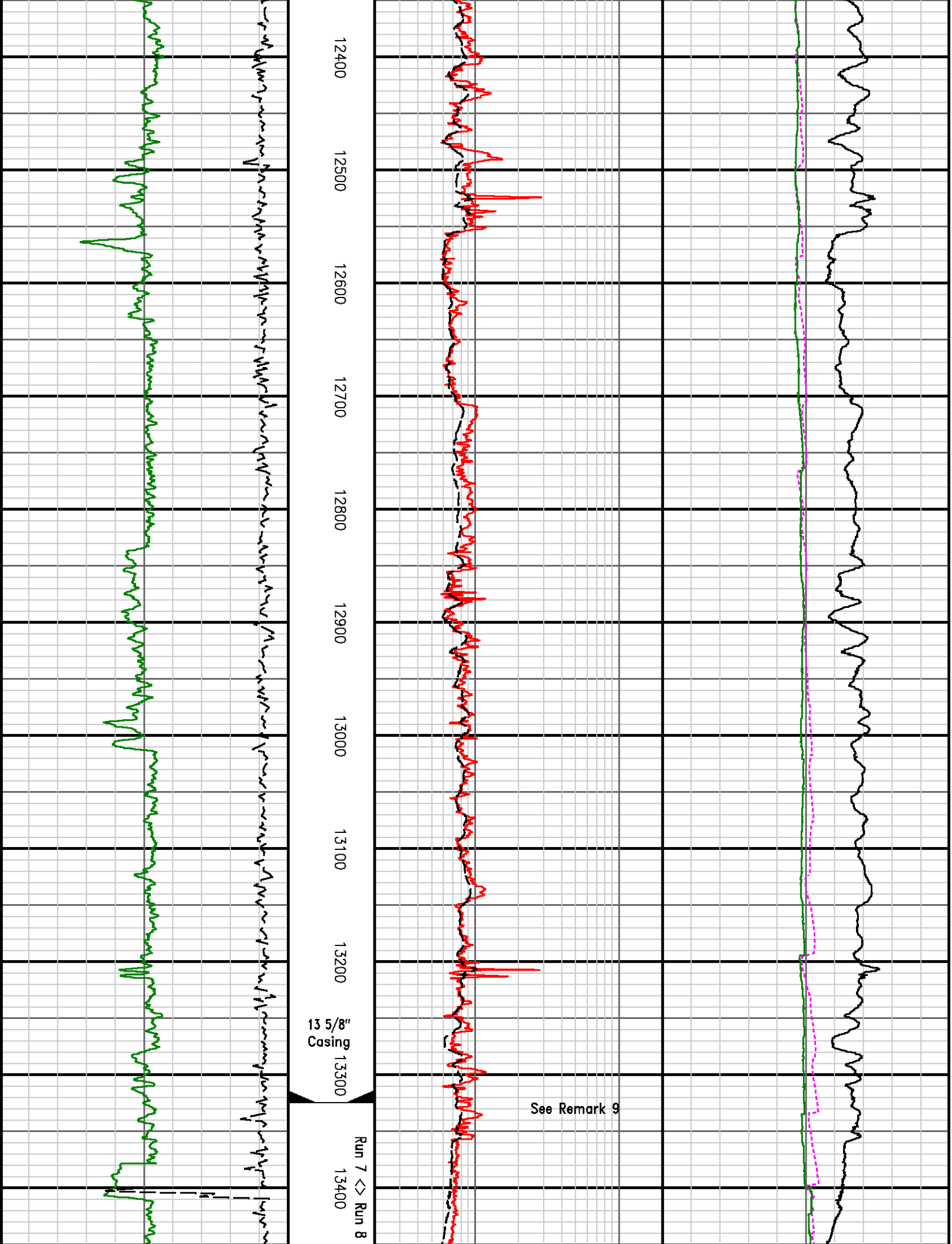
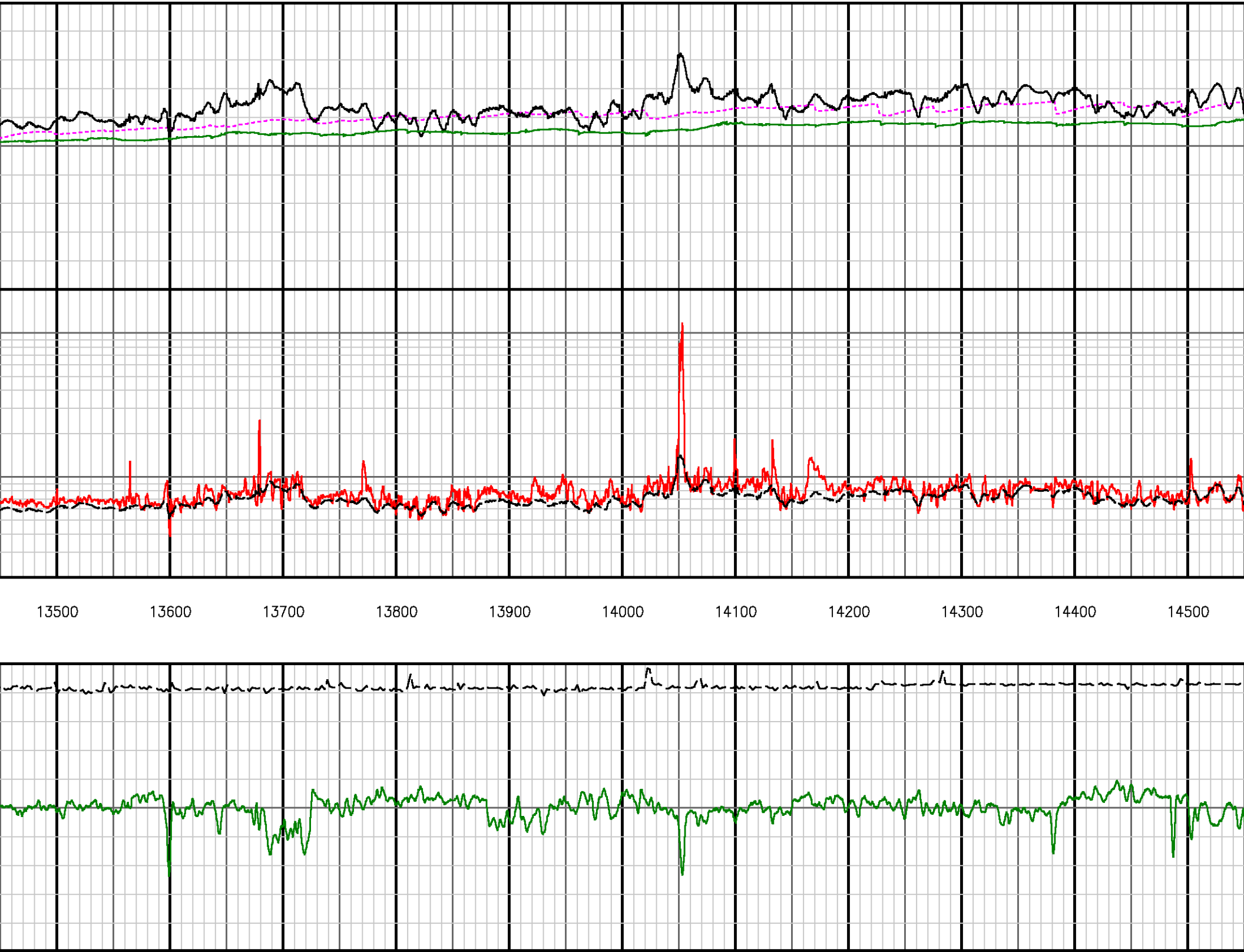
10400
10500
10600
10700
10800
10900
11000
11100
11200


See Remark 8
Run 5 <> Run 7
11300
11400
11500
11600
11700
16" Casing
11800
11900
12000
12100
12200
12300


12400
12500
12600
12700
12800
12900
13000
13100
13200
13 5/8"
Casing
13300
See Remark 9
Run 7 <> Run 8
13400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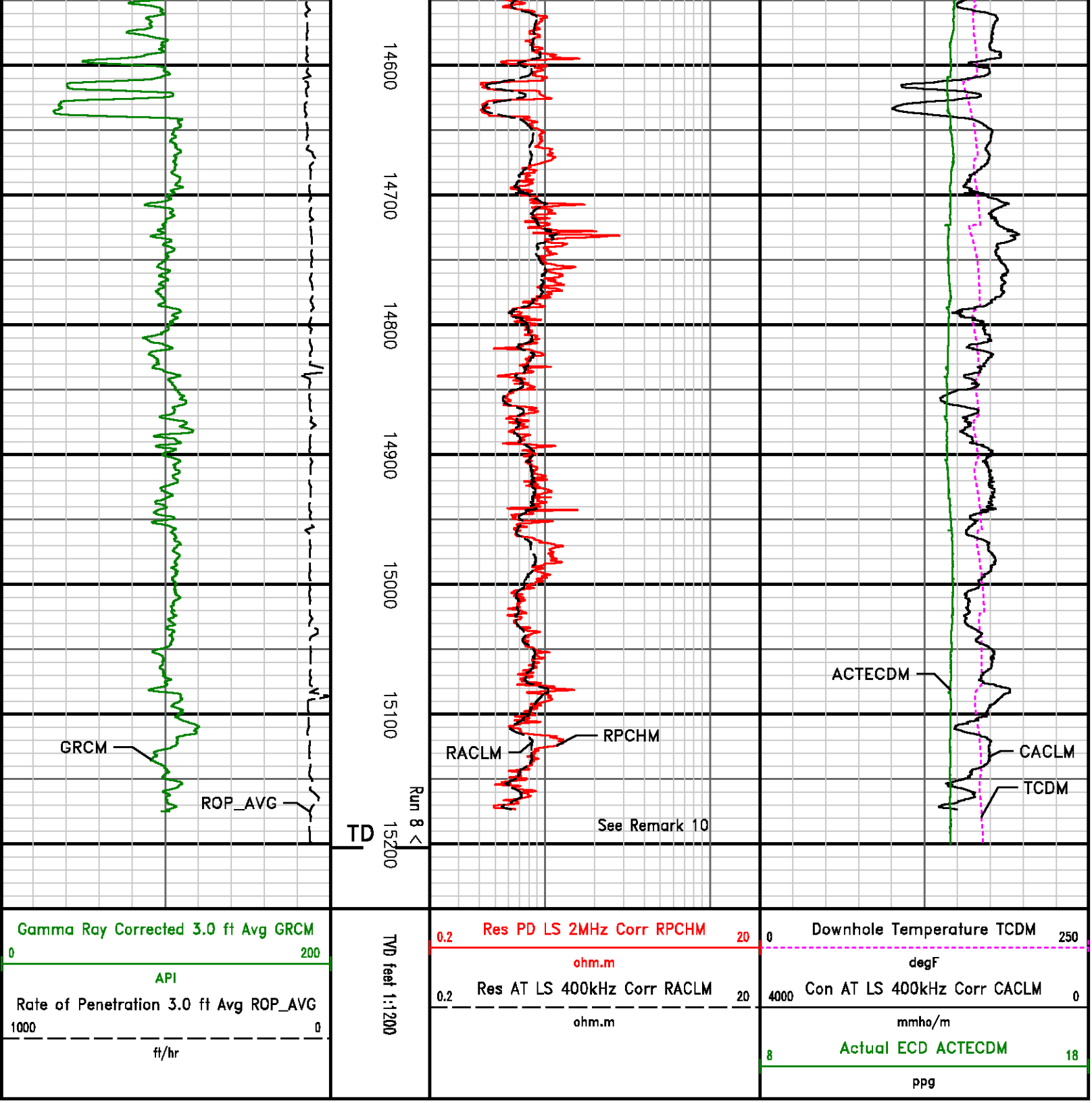

ADVANTAGE Final Survey Listing

Operator	:BP Exploration & Production, Inc.	Field	: Mississippi Canyon Block 252	API No	: 608174119000
Well	:OCS-G 32306 002 ST00BP00	Rig	: Development Driller II	Job	:3156476
Wellbore	: Original Path Hole				

Well Origin

Latitude	28.73 deg	Longitude	-88.37 deg
North Reference	Grid	Drill Depth Zero	Rig Floor

Vertical Datum is	Mean Sea Level	Vertical Datum to DDZ	84.00 ft
Vertical Section North	0.00 ft	Vertical Section East	0.00 ft
Vertical Section Azimuth	36.01 deg	Vertical Section Depth	0.00ft
Grid Convergence	0.66 deg	Magnetic Declination	−1.01 deg
Total Correction	−0.35 deg	TVD Calculation Method	Minimal Curvature
D−Raw Calculation	Magcorr1	Local Magnetic Field	47294 nT
Local Magnetic Dip Angle	58.61 deg	Local Gravity Field	9.79900 m/s^2

Tie	MD ft	Incl deg	Azim deg	North ft	East ft	TVD ft	VS ft	Incr VS ft	Crs Len ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft
U	5223.00	0.00	139.03	0.00	0.00	5223.00	0.00					
	5572.00	0.39	139.03	−0.90	0.78	5572.00	−0.27	1.19	349.00	0.11	0.11	0.00
	5696.00	0.54	113.09	−1.44	1.59	5695.99	−0.23	2.17	124.00	0.20	0.12	−20.92
	5833.00	0.24	117.40	−1.83	2.44	5832.99	−0.05	3.10	137.00	0.22	−0.22	3.14
	5961.00	0.47	125.79	−2.26	3.10	5960.99	−0.00	3.89	128.00	0.18	0.18	6.55
	6090.00	0.46	123.24	−2.85	3.96	6089.98	0.02	4.93	129.00	0.02	−0.01	−1.98
	6216.00	0.49	116.41	−3.37	4.86	6215.98	0.14	5.97	126.00	0.05	0.02	−5.42
	6344.00	0.52	120.64	−3.91	5.86	6343.97	0.28	7.10	128.00	0.04	0.03	3.30
	6473.00	0.46	108.52	−4.37	6.86	6472.97	0.49	8.21	129.00	0.09	−0.05	−9.40
	6606.00	0.23	105.61	−4.62	7.63	6605.97	0.75	9.02	133.00	0.17	−0.17	−2.18
	6698.00	0.28	107.30	−4.73	8.02	6697.97	0.89	9.42	92.00	0.05	0.04	1.84
	6841.00	0.28	97.64	−4.88	8.70	6840.96	1.17	10.12	143.00	0.03	0.01	−6.75
	6970.00	0.37	123.50	−5.16	9.37	6969.96	1.34	10.84	129.00	0.13	0.07	20.04
	7098.00	0.22	193.05	−5.62	9.66	7097.96	1.13	11.39	128.00	0.28	−0.12	54.34
	7226.00	0.23	352.65	−5.60	9.57	7225.96	1.10	11.48	128.00	0.35	0.01	124.69
	7354.00	0.13	39.14	−5.23	9.63	7353.96	1.43	11.86	128.00	0.14	−0.08	36.32
	7487.00	0.09	154.48	−5.20	9.77	7486.96	1.54	12.00	133.00	0.14	−0.03	86.73
	7613.00	0.03	20.51	−5.26	9.82	7612.96	1.52	12.08	126.00	0.09	−0.04	−106.32
	7748.00	0.06	251.17	−5.25	9.77	7747.96	1.50	12.14	135.00	0.06	0.02	−95.81
	7870.00	0.15	279.23	−5.24	9.54	7869.96	1.37	12.36	122.00	0.09	0.08	23.00
	7998.00	0.07	63.48	−5.18	9.44	7997.96	1.36	12.48	128.00	0.17	−0.07	112.70
	8127.00	0.07	166.06	−5.22	9.53	8126.96	1.38	12.58	129.00	0.08	0.00	79.52
	8256.00	0.22	20.43	−5.06	9.64	8255.96	1.57	12.77	129.00	0.22	0.12	−112.89
	8381.00	0.09	177.62	−4.93	9.72	8380.96	1.73	12.92	125.00	0.25	−0.10	125.75
	8512.00	0.09	176.20	−5.14	9.74	8511.96	1.57	13.13	131.00	0.00	−0.00	−1.08
	8605.00	0.09	91.12	−5.21	9.82	8604.96	1.56	13.23	93.00	0.13	0.01	−91.48
	8625.00	0.13	252.81	−5.22	9.81	8624.96	1.55	13.24	20.00	1.08	0.17	808.43
	8694.00	0.10	336.09	−5.19	9.71	8693.96	1.52	13.34	69.00	0.22	−0.04	120.70
	8756.00	0.10	98.33	−5.15	9.74	8755.96	1.57	13.39	62.00	0.28	0.00	197.17
	8824.00	0.09	197.14	−5.20	9.79	8823.96	1.54	13.47	68.00	0.21	−0.02	145.31
	8886.00	0.09	260.22	−5.26	9.73	8885.96	1.47	13.55	62.00	0.15	0.00	101.74
	8956.00	0.04	78.35	−5.26	9.70	8955.96	1.45	13.57	70.00	0.19	−0.06	254.47
	9019.00	0.06	265.78	−5.26	9.69	9018.96	1.44	13.58	63.00	0.17	0.03	−273.92
	9076.00	0.03	33.46	−5.25	9.67	9075.96	1.44	13.61	57.00	0.15	−0.05	224.01
	9172.00	0.03	153.11	−5.25	9.69	9171.96	1.45	13.63	96.00	0.06	0.00	124.63
	9240.00	0.03	160.65	−5.28	9.71	9239.96	1.43	13.67	68.00	0.01	0.00	11.09
	9302.00	0.10	249.71	−5.32	9.66	9301.96	1.38	13.73	62.00	0.16	0.11	143.64
	9366.00	0.10	346.47	−5.28	9.60	9365.96	1.37	13.80	64.00	0.23	0.00	151.19
	9431.00	0.09	51.10	−5.20	9.63	9430.96	1.45	13.89	65.00	0.15	−0.02	99.43
	9494.00	0.00	359.67	−5.17	9.66	9493.96	1.50	13.93	63.00	0.14	−0.14	−81.63
	9558.00	0.11	136.95	−5.21	9.70	9557.96	1.49	14.00	64.00	0.17	0.17	214.50
	9619.00	0.06	259.41	−5.26	9.71	9618.96	1.45	14.05	61.00	0.25	−0.08	200.76
	9685.00	0.16	75.39	−5.25	9.77	9684.96	1.50	14.10	66.00	0.33	0.14	266.63
	9750.00	0.04	309.80	−5.21	9.83	9749.96	1.57	14.18	65.00	0.29	−0.17	−193.21
	9817.00	0.04	168.79	−5.22	9.82	9816.96	1.55	14.20	67.00	0.12	0.00	−210.46
	9881.00	0.52	328.88	−4.99	9.67	9880.96	1.65	14.47	64.00	0.88	0.75	250.13
	9940.00	0.79	330.82	−4.40	9.33	9939.95	1.93	15.14	59.00	0.45	0.45	3.30
	10023.00	1.35	331.86	−3.04	8.59	10022.94	2.59	16.69	83.00	0.68	0.68	1.25
	10086.00	2.92	343.93	−0.85	7.80	10085.89	3.90	19.03	63.00	2.58	2.49	19.16

	10155.00	3.04	356.77	2.67	7.21	10154.80	6.40	22.59	69.00	0.98	0.17	18.60

Tie	MD ft	Incl deg	Azim deg	North ft	East ft	TVD ft	VS ft	Incr VS ft	Crs Len ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft
	10216.00	3.55	12.60	6.13	7.53	10215.70	9.38	26.06	61.00	1.70	0.84	25.94
	10280.00	4.60	21.03	10.46	8.88	10279.54	13.68	30.60	64.00	1.88	1.64	13.17
	10341.00	5.17	35.16	14.99	11.35	10340.32	18.79	35.75	61.00	2.18	0.93	23.16
	10409.00	5.73	43.59	19.95	15.45	10408.01	25.22	42.20	68.00	1.44	0.82	12.40
	10470.00	6.35	44.56	24.56	19.92	10468.67	31.58	48.61	61.00	1.03	1.02	1.59
	10539.00	7.79	44.08	30.64	25.85	10537.15	39.98	57.11	69.00	2.09	2.09	-0.70
	10597.00	9.30	42.82	36.90	31.77	10594.50	48.53	65.72	58.00	2.62	2.60	-2.17
	10664.00	11.14	41.16	45.74	39.71	10660.44	60.35	77.61	67.00	2.78	2.75	-2.48
	10723.00	12.72	40.03	55.01	47.64	10718.16	72.51	89.80	59.00	2.71	2.68	-1.91
	10793.00	14.47	39.26	67.68	58.13	10786.20	88.93	106.26	70.00	2.51	2.50	-1.11
	10853.00	15.89	39.02	79.87	68.05	10844.10	104.61	121.97	60.00	2.37	2.37	-0.40
	10919.00	17.23	38.81	94.50	79.86	10907.36	123.40	140.78	66.00	2.03	2.03	-0.32
	10985.00	18.40	38.74	110.25	92.51	10970.20	143.57	160.97	66.00	1.77	1.77	-0.11
	11045.00	19.31	38.55	125.39	104.62	11026.98	162.94	180.36	60.00	1.52	1.52	-0.31
	11116.00	20.46	38.18	144.33	119.60	11093.74	187.07	204.51	71.00	1.63	1.62	-0.53
	11175.00	21.31	37.75	160.91	132.54	11148.86	208.09	225.54	59.00	1.46	1.44	-0.73
	11242.00	22.33	37.40	180.65	147.72	11211.06	232.98	250.45	67.00	1.53	1.52	-0.51
	11302.00	23.16	36.62	199.18	161.68	11266.40	256.17	273.64	60.00	1.47	1.38	-1.30
	11369.00	24.16	35.46	220.92	177.50	11327.76	283.06	300.53	67.00	1.65	1.49	-1.74
	11430.00	25.15	34.61	241.76	192.10	11383.20	308.50	325.97	61.00	1.72	1.62	-1.38
	11496.00	26.47	34.48	265.43	208.40	11442.62	337.23	354.71	66.00	2.00	2.00	-0.20
	11558.00	27.84	34.39	288.76	224.40	11497.78	365.51	383.01	62.00	2.21	2.21	-0.15
	11618.00	29.34	34.23	312.48	240.58	11550.47	394.21	411.72	60.00	2.50	2.50	-0.26
	11685.00	31.04	33.97	340.38	259.46	11608.38	427.88	445.41	67.00	2.54	2.54	-0.39
	11746.00	32.62	33.80	367.09	277.40	11660.20	460.03	477.58	61.00	2.59	2.59	-0.28
	11814.00	34.24	33.97	398.19	298.29	11716.95	497.47	515.04	68.00	2.39	2.38	0.25
	11875.00	35.23	33.79	427.04	317.66	11767.08	532.20	549.80	61.00	1.63	1.62	-0.30
	11943.00	35.22	33.12	459.76	339.28	11822.63	571.38	589.02	68.00	0.56	-0.01	-0.97
	11984.00	35.24	32.72	479.62	352.13	11856.12	595.00	612.67	41.00	0.57	0.05	-0.99
	12084.00	33.21	34.20	526.55	383.13	11938.80	651.18	668.91	100.00	2.19	-2.03	1.48
	12146.00	34.40	34.55	555.02	402.60	11990.31	685.66	703.40	62.00	1.94	1.92	0.56
	12211.00	35.68	34.80	585.71	423.83	12043.53	722.97	740.72	65.00	1.98	1.97	0.39
	12272.00	35.96	35.15	614.96	444.30	12093.00	758.66	776.42	61.00	0.56	0.46	0.56
	12340.00	35.94	35.58	647.51	467.40	12148.04	798.58	816.34	68.00	0.38	-0.03	0.64
	12402.00	35.96	36.14	677.01	488.73	12198.23	834.98	852.74	62.00	0.53	0.03	0.90
	12467.00	35.95	36.62	707.74	511.36	12250.85	873.14	890.90	65.00	0.43	-0.02	0.74
	12536.00	35.62	36.78	740.09	535.47	12306.82	913.49	931.25	69.00	0.50	-0.48	0.23
	12596.00	35.59	36.45	768.13	556.31	12355.61	948.42	966.18	60.00	0.32	-0.05	-0.54
	12655.00	35.01	35.98	795.64	576.45	12403.76	982.51	1000.28	59.00	1.08	-0.98	-0.80
	12723.00	34.88	35.77	827.20	599.28	12459.50	1021.46	1039.23	68.00	0.27	-0.20	-0.31
	12792.00	34.87	35.37	859.29	622.22	12516.10	1060.92	1078.68	69.00	0.33	-0.01	-0.58
	12851.00	34.86	35.10	886.84	641.68	12564.51	1094.64	1112.41	59.00	0.26	-0.02	-0.45
	12910.00	34.85	34.89	914.46	661.02	12612.93	1128.35	1146.13	59.00	0.20	-0.02	-0.36
	12978.00	34.88	34.65	946.39	683.19	12668.72	1167.22	1185.00	68.00	0.20	0.04	-0.35
	13042.00	35.02	34.44	976.59	703.98	12721.18	1203.87	1221.66	64.00	0.29	0.22	-0.33
	13103.00	35.10	34.47	1005.48	723.80	12771.11	1238.89	1256.70	61.00	0.13	0.13	0.05
	13171.00	35.07	34.75	1037.65	746.00	12826.76	1277.97	1295.79	68.00	0.24	-0.04	0.41
	13234.00	35.04	35.12	1067.32	766.73	12878.33	1314.15	1331.97	63.00	0.34	-0.05	0.58
	13296.00	35.04	35.28	1096.41	787.24	12929.09	1349.74	1367.57	62.00	0.15	0.00	0.26
	13363.00	35.04	35.62	1127.74	809.56	12983.95	1388.21	1406.04	67.00	0.29	0.00	0.50

Tie	MD ft	Incl deg	Azim deg	North ft	East ft	TVD ft	VS ft	Incr VS ft	Crs Len ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft
	13424.00	35.07	35.94	1156.17	830.04	13033.88	1423.24	1441.07	61.00	0.31	0.05	0.54
	13492.00	35.03	36.10	1187.75	853.01	13089.55	1462.29	1480.13	68.00	0.15	-0.06	0.23
	13551.00	35.00	35.91	1215.14	872.91	13137.87	1496.15	1513.98	59.00	0.19	-0.05	-0.32
	13622.00	35.04	35.76	1248.17	896.76	13196.02	1536.89	1554.72	71.00	0.14	0.06	-0.22

13680.00	35.06	35.57	1275.23	916.18	13243.50	1570.20	1588.03	58.00	0.18	0.03	−0.31
13751.00	35.05	35.44	1308.43	939.87	13301.62	1610.98	1628.81	71.00	0.11	−0.01	−0.19
13821.00	35.11	34.96	1341.30	963.06	13358.91	1651.20	1669.04	70.00	0.40	0.09	−0.68
13875.00	35.28	35.01	1366.80	980.90	13403.03	1682.32	1700.17	54.00	0.32	0.31	0.09
13940.00	35.09	35.18	1397.44	1002.43	13456.16	1719.77	1737.62	65.00	0.33	−0.29	0.27
14004.00	35.07	35.55	1427.44	1023.73	13508.53	1756.55	1774.40	64.00	0.33	−0.03	0.58
14068.00	35.06	35.72	1457.33	1045.15	13560.91	1793.32	1811.17	64.00	0.15	−0.02	0.26
14131.00	35.06	35.99	1486.66	1066.35	13612.48	1829.51	1847.36	63.00	0.25	0.00	0.44
14194.00	35.04	35.75	1515.97	1087.55	13664.06	1865.69	1883.54	63.00	0.23	−0.04	−0.39
14261.00	35.06	35.40	1547.27	1109.93	13718.91	1904.17	1922.02	67.00	0.30	0.04	−0.52
14321.00	35.07	34.94	1575.45	1129.79	13768.02	1938.63	1956.49	60.00	0.44	0.01	−0.77
14385.00	34.93	34.74	1605.58	1150.76	13820.44	1975.33	1993.20	64.00	0.29	−0.22	−0.32
14444.00	34.92	34.79	1633.32	1170.02	13868.82	2009.10	2026.98	59.00	0.06	−0.02	0.09
14515.00	34.87	34.75	1666.69	1193.18	13927.05	2049.71	2067.59	71.00	0.08	−0.07	−0.06
14572.00	34.87	34.62	1693.49	1211.73	13973.82	2082.29	2100.18	57.00	0.13	0.00	−0.22
14643.00	34.89	34.66	1726.89	1234.81	14032.06	2122.88	2140.78	71.00	0.04	0.03	0.05
14705.00	34.92	34.90	1756.03	1255.04	14082.91	2158.35	2176.26	62.00	0.22	0.05	0.38
14770.00	34.91	34.98	1786.53	1276.35	14136.21	2195.55	2213.46	65.00	0.08	−0.02	0.13
14829.00	34.90	35.11	1814.17	1295.73	14184.59	2229.30	2247.23	59.00	0.12	−0.01	0.21
14896.00	34.48	35.26	1845.34	1317.70	14239.68	2267.43	2285.36	67.00	0.64	−0.63	0.23
14958.00	33.30	35.32	1873.56	1337.67	14291.15	2302.00	2319.93	62.00	1.90	−1.90	0.10
15025.00	31.99	35.03	1903.10	1358.49	14347.57	2338.14	2356.07	67.00	1.97	−1.96	−0.43
15089.00	30.69	35.12	1930.34	1377.62	14402.23	2371.42	2389.36	64.00	2.03	−2.03	0.14
15153.00	29.35	35.43	1956.48	1396.11	14457.64	2403.44	2421.38	64.00	2.11	−2.09	0.49
15214.00	28.32	35.71	1980.41	1413.22	14511.08	2432.85	2450.79	61.00	1.70	−1.69	0.46
15283.00	27.41	36.20	2006.52	1432.16	14572.07	2465.10	2483.04	69.00	1.36	−1.32	0.70
15342.00	26.67	36.63	2028.10	1448.08	14624.62	2491.93	2509.87	59.00	1.30	−1.25	0.73
15408.00	25.87	36.34	2051.59	1465.45	14683.81	2521.14	2539.08	66.00	1.22	−1.20	−0.44
15473.00	24.99	36.19	2074.10	1481.96	14742.51	2549.05	2566.99	65.00	1.36	−1.36	−0.23
15540.00	24.01	36.43	2096.49	1498.41	14803.47	2576.84	2594.78	67.00	1.47	−1.46	0.36
15598.00	23.01	36.16	2115.13	1512.11	14856.66	2599.97	2617.91	58.00	1.73	−1.72	−0.46
15664.00	21.57	35.83	2135.39	1526.82	14917.72	2625.00	2642.95	66.00	2.19	−2.18	−0.51
15728.00	19.99	35.40	2153.84	1540.05	14977.56	2647.71	2665.65	64.00	2.48	−2.47	−0.67
15792.00	18.40	35.40	2171.00	1552.23	15038.00	2668.75	2686.69	64.00	2.48	−2.48	0.01
15855.00	16.71	35.31	2186.49	1563.23	15098.06	2687.75	2705.69	63.00	2.68	−2.68	−0.15
15912.00	15.16	34.97	2199.29	1572.24	15152.87	2703.40	2721.34	57.00	2.72	−2.72	−0.60
Projection to TD:											
15961.00	15.16	34.97	2209.79	1579.58	15200.17	2716.21	2734.16	49.00	0.00	−0.00	0.00