



1 : 240

[illegible]

WELL INFORMATION

MWD Run Number	100	200			
Date run completed	28-Apr-13	30-Apr-13			
Rig Bit Number	0100	200			
Bit Size (in)	8.750	8.750			
Tool Nominal OD (in)	6.750	6.750			
Log Start Depth (MD, ft)	967.00	6,560.00			
Log End Depth (MD, ft)	6,560.00	7,610.00			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	26-Apr-13 01:00	28-Apr-13 21:00			
Drill/Wipe End Date and Time	28-Apr-13 12:45	30-Apr-13 06:07			
Min Inc (deg) @ Depth (MD, ft)	.03 @ 6,257.00	2.52 @ 6,580.00			
Max Inc (deg) @ Depth (MD, ft)	11.42 @ 4,715.00	89.40 @ 7,610.00			
Bit TFA(in2) / Bit Type	1.86 / PDC	1.20 / PDC			
Flow Rate (gpm)	553.43	547.31			
Max AV (fpm) / CV (fpm) @ MWD	379.4 / 269.2	379.3 / 312.9			
Fluid Type	Fresh Water Gel	Fresh Water Gel			
Density (ppg) / Viscosity (spqt)	9.28 / 38.00	10.00 / 38.00			
Filtrate CL (ppm)	1,300.00	1,800.00			
pH / Fluid Loss (mptm)	8.00 / 8	9.00 / 7			
PV (cP) / YP (lbf2)	10 / 8.00	9 / 10.00			
% Solids / % Sand	7.00 / 0.25	8.5 / 0.25			
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A			
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Max Tool Temp (deg F) / S	168.00 / PCM	170.70 / PCM			

Max Tool Temp (degF) / Source	160.83 / PCM	172.78 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A			
Lead MWD Engineer	Matt Busche	Matt Busche			
Customer Representative	Will Pettijohn	Will Pettijohn			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.76	5.76			
Sub Serial Number	11344330	11344330			
Insert Serial Number	10809550	11680744			
Date and Time Initialized	25-Apr-13 18:18	27-Apr-13 22:28			
Date and Time Read	28-Apr-13 21:37	30-Apr-13 15:30			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	55.87	49.00			
Software Version	6.21	6.21			
Sub Serial Number	11344330	11344330			
Sonde Serial Number	10859922	11478094			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	153.21	102.63			

Gamma Ray Sensor Information

Tool Type		PCG			
Distance From Bit (ft)		51.50			
Recorded Sample Period (sec)		10			
Software Version		8.15			
Sub Serial Number		11344330			
Insert/Sonde Serial Number		11293394			

REMARKS

1. All depths are true vertical depths, referenced to the Driller's pipe tally and are measured from the Kelly Bushing, unless otherwise specified.
2. No depth corrections have been made for pipe stretch or compression.
3. All data presented is recorded data unless otherwise specified.
4. The following smoothing parameters have been applied to the data:
 - PGRC (Corrected Gamma Ray):
 - Interval Resolution: 0.5 ft
 - Interval Distance: 0.6 ft
 - Gap Fill: 3.0 ft
 - ROPA (Average Rate Of Penetration):
 - Interval Resolution: 0.5 ft
 - Interval Distance: 1.2 ft
 - Gap Fill: 3.0 ft

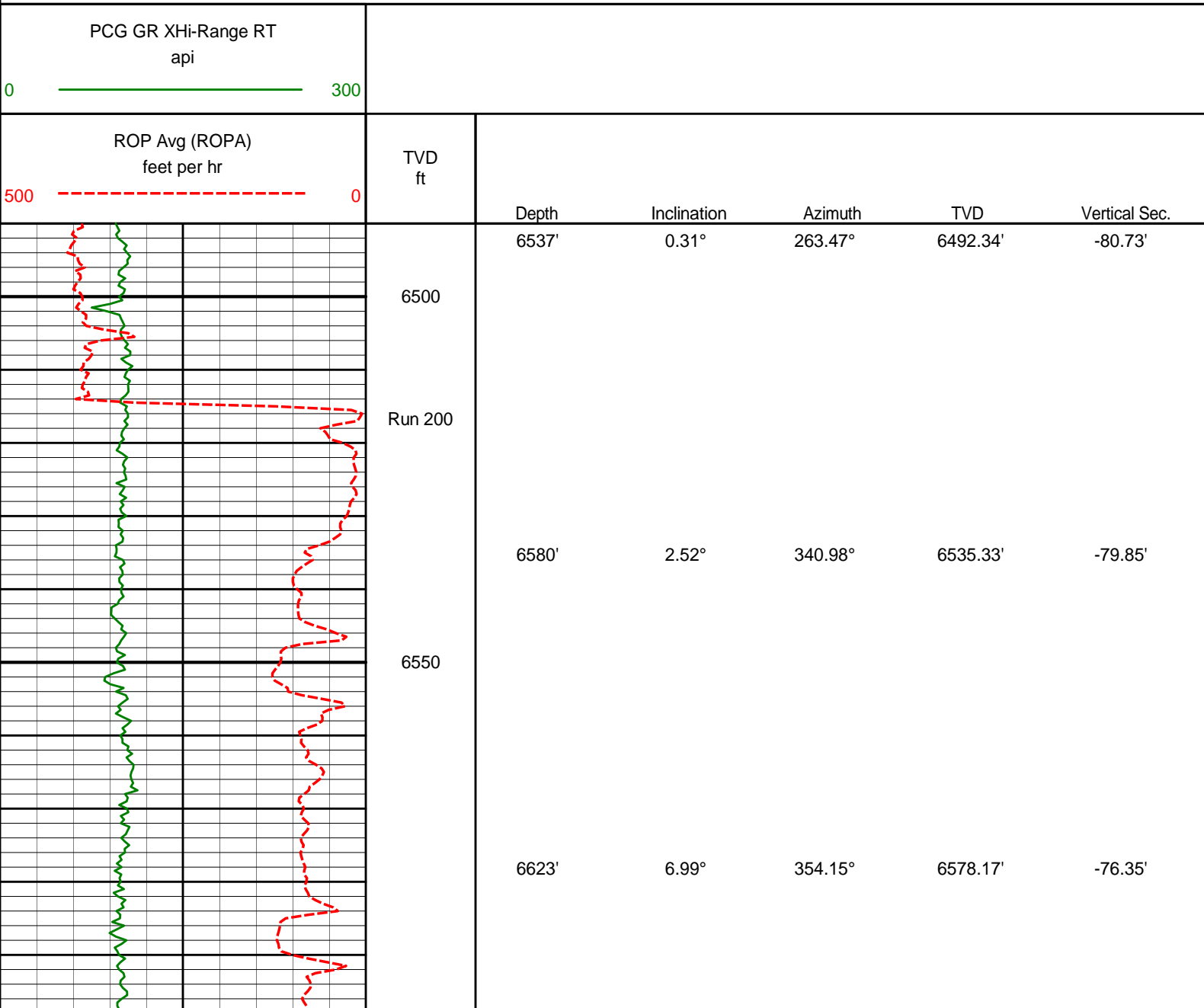
Insite version: 7.4.10

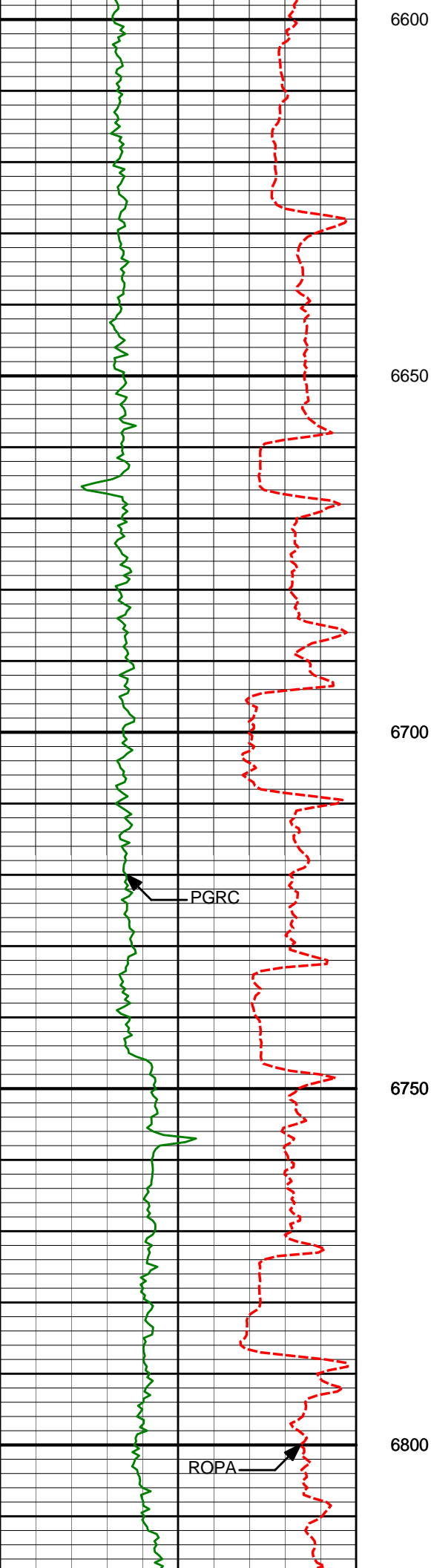
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HALLIBURTON

TVD Main Log 1:240





6600

6665'

11.77°

0.25°

6619.59'

-69.52'

6650

6708'

16.43°

2.93°

6661.29'

-59.05'

6700

6751'

19.42°

3.42°

6702.20'

-45.84'

6750

6794'

22.64°

4.30°

6742.33'

-30.45'

6800

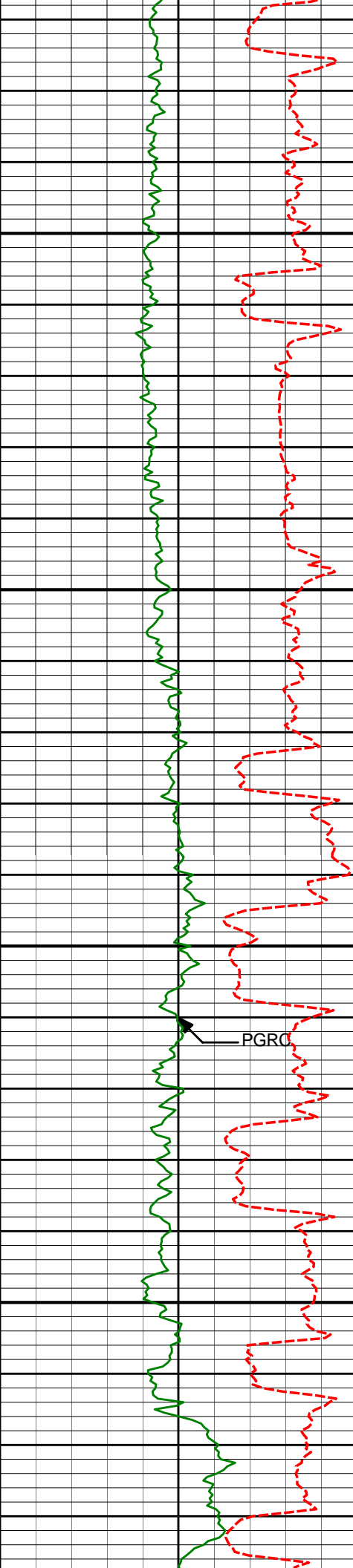
6837'

25.40°

3.91°

6781.60'

-12.99'



6850

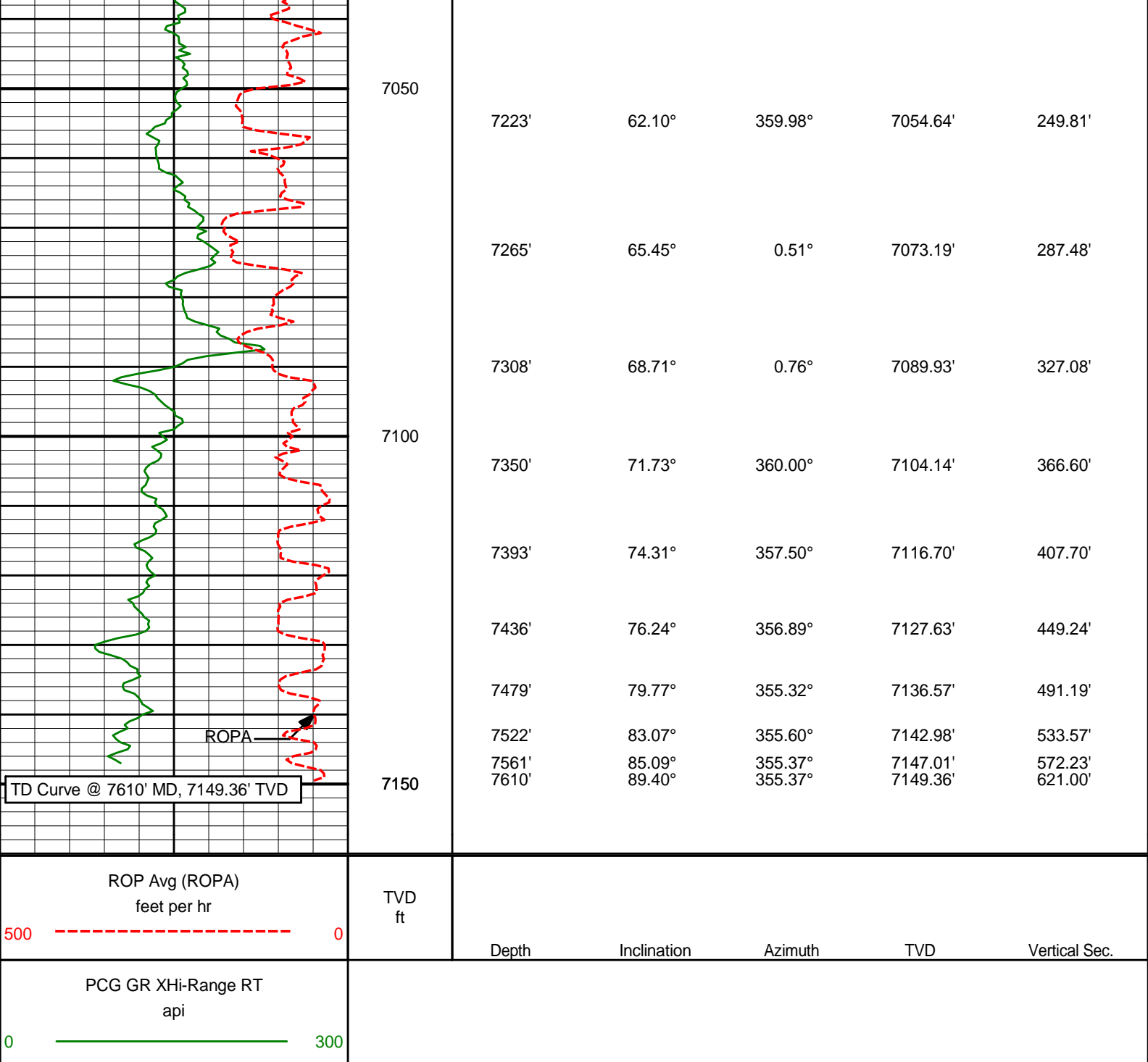
6900

6950

7000

PGRC

6880'	28.28°	0.87°	6819.96'	6.40'
6922'	32.34°	0.75°	6856.22'	27.59'
6965'	38.47°	3.39°	6891.25'	52.47'
7008'	43.96°	3.87°	6923.58'	80.74'
7051'	46.83°	4.14°	6953.77'	111.28'
7094'	49.55°	3.79°	6982.44'	143.25'
7137'	53.94°	1.59°	7009.06'	176.97'
7180'	57.91°	0.29°	7033.15'	212.58'



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Anadarko PC
Melbon 19N-E8HZ
Wattenburg
Weld Colorado
USA
CA-XX-0900217525

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
976.00	0.91	325.63	975.91	6.13 N	11.23 W	6.12	TIE-IN
1345.00	0.68	356.05	1344.88	10.73 N	13.03 W	10.72	0.13
1619.00	0.84	328.78	1618.85	14.07 N	14.19 W	14.05	0.14
1745.00	0.71	105.07	1744.85	14.65 N	13.91 W	14.64	1.14
1802.00	2.08	114.06	1801.83	14.14 N	12.63 W	14.13	2.43

1892.00	2.08	114.08	1891.85	14.14 N	12.05 W	14.15	2.45
1894.00	5.01	110.08	1893.64	12.08 N	7.32 W	12.07	3.19
1986.00	4.95	112.72	1985.30	9.16 N	0.11 E	9.17	0.26
2077.00	6.47	111.16	2075.84	5.80 N	8.52 E	5.80	1.68
2169.00	7.36	113.17	2167.17	1.60 N	18.78 E	1.62	1.00
2261.00	8.86	108.81	2258.25	3.00 S	30.90 E	-2.97	1.75
2352.00	9.98	106.04	2348.02	7.44 S	45.11 E	-7.39	1.33
2444.00	10.20	99.73	2438.60	11.02 S	60.80 E	-10.95	1.22
2535.00	8.90	99.94	2528.34	13.59 S	75.67 E	-13.51	1.43
2627.00	9.27	95.70	2619.19	15.56 S	90.04 E	-15.46	0.83
2718.00	9.42	100.93	2708.98	17.70 S	104.65 E	-17.59	0.95
2810.00	11.17	101.93	2799.50	20.97 S	120.76 E	-20.84	1.91
2902.00	10.00	104.64	2889.93	24.83 S	137.21 E	-24.69	1.38
2993.00	11.34	102.87	2979.35	28.82 S	153.58 E	-28.66	1.51
3086.00	10.10	103.88	3070.73	32.81 S	170.41 E	-32.63	1.34
3172.00	10.60	98.18	3155.33	35.75 S	185.56 E	-35.55	1.32
3258.00	9.82	96.49	3239.97	37.70 S	200.68 E	-37.49	0.97
3343.00	10.73	99.61	3323.61	39.84 S	215.68 E	-39.62	1.25
3429.00	9.59	97.60	3408.26	42.13 S	230.67 E	-41.88	1.38
3515.00	10.29	98.21	3492.97	44.17 S	245.37 E	-43.91	0.82
3601.00	10.39	98.88	3577.57	46.47 S	260.64 E	-46.19	0.18
3686.00	8.67	99.63	3661.39	48.72 S	274.53 E	-48.43	2.02
3772.00	9.09	106.52	3746.37	51.74 S	287.43 E	-51.43	1.33
3858.00	7.62	105.94	3831.45	55.23 S	299.43 E	-54.92	1.71
3943.00	8.90	106.58	3915.57	58.66 S	311.15 E	-58.33	1.50
4029.00	9.35	97.27	4000.48	61.44 S	324.45 E	-61.10	1.79
4115.00	11.21	100.02	4085.10	63.78 S	339.62 E	-63.42	2.24
4286.00	9.27	96.13	4253.37	68.14 S	369.69 E	-67.75	1.20
4372.00	9.56	101.28	4338.21	70.28 S	383.59 E	-69.88	1.04
4458.00	10.31	104.39	4422.92	73.59 S	398.04 E	-73.17	1.07
4543.00	11.39	98.11	4506.40	76.66 S	413.72 E	-76.23	1.88
4629.00	10.57	96.11	4590.83	78.70 S	429.97 E	-78.25	1.04
4715.00	11.42	101.42	4675.25	81.22 S	446.16 E	-80.76	1.53
4800.00	10.98	99.75	4758.63	84.26 S	462.38 E	-83.78	0.65
4886.00	7.66	90.67	4843.49	85.72 S	476.19 E	-85.22	4.20
4972.00	5.23	78.35	4928.94	84.99 S	485.77 E	-84.48	3.24
5057.00	4.15	65.06	5013.66	82.91 S	492.35 E	-82.40	1.80
5143.00	3.80	69.00	5099.45	80.58 S	497.83 E	-80.06	0.52
5229.00	3.38	69.92	5185.29	78.69 S	502.87 E	-78.16	0.49
5315.00	3.88	97.16	5271.12	78.18 S	508.14 E	-77.65	2.06
5400.00	4.14	93.24	5355.91	78.71 S	514.06 E	-78.17	0.44
5486.00	3.46	98.99	5441.72	79.29 S	519.72 E	-78.75	0.91
5572.00	3.21	91.67	5527.58	79.77 S	524.68 E	-79.22	0.57
5657.00	2.62	102.67	5612.47	80.26 S	528.95 E	-79.71	0.95
5743.00	1.79	107.97	5698.40	81.11 S	532.15 E	-80.55	0.98
5829.00	1.59	100.11	5784.37	81.73 S	534.61 E	-81.17	0.36
5914.00	0.84	76.11	5869.35	81.79 S	536.37 E	-81.23	1.05
6000.00	0.25	193.02	5955.34	81.82 S	536.94 E	-81.26	1.14
6086.00	0.17	69.80	6041.34	81.95 S	537.02 E	-81.39	0.43
6172.00	0.16	298.20	6127.34	81.85 S	537.04 E	-81.29	0.35
6257.00	0.03	203.22	6212.34	81.82 S	536.93 E	-81.26	0.19
6343.00	0.17	324.10	6298.34	81.74 S	536.85 E	-81.18	0.21
6429.00	0.33	325.37	6384.34	81.43 S	536.63 E	-80.87	0.19
6502.00	0.39	266.31	6457.34	81.27 S	536.26 E	-80.71	0.49
6537.00	0.31	263.47	6492.34	81.29 S	536.05 E	-80.73	0.24
6580.00	2.52	340.98	6535.33	80.41 S	535.63 E	-79.85	5.76
6623.00	6.99	354.15	6578.17	76.91 S	535.05 E	-76.35	10.64
6665.00	11.77	0.25	6619.59	70.08 S	534.81 E	-69.52	11.59
6708.00	16.43	2.93	6661.29	59.61 S	535.14 E	-59.05	10.96
6751.00	19.42	3.42	6702.20	46.40 S	535.88 E	-45.84	6.94
6794.00	22.64	4.30	6742.33	31.01 S	536.92 E	-30.45	7.53
6837.00	25.40	3.91	6781.60	13.55 S	538.17 E	-12.99	6.44
6880.00	28.28	0.87	6819.96	5.84 N	538.96 E	6.40	7.41
6922.00	32.34	0.75	6856.22	27.03 N	539.25 E	27.59	9.68
6965.00	38.47	3.39	6891.25	51.91 N	540.20 E	52.47	14.69
7008.00	43.96	3.87	6923.58	80.17 N	542.00 E	80.74	12.79
7051.00	46.83	4.14	6953.77	110.71 N	544.14 E	111.28	6.68
7094.00	49.55	3.79	6982.44	142.68 N	546.35 E	143.25	6.36
7137.00	53.94	1.59	7009.06	176.40 N	547.92 E	176.97	10.97
7180.00	57.91	0.29	7033.15	212.00 N	548.49 E	212.58	9.56
7223.00	62.10	359.98	7054.64	249.23 N	548.58 E	249.81	9.78
7265.00	65.45	0.51	7073.19	286.91 N	548.74 E	287.48	8.06
7308.00	68.71	0.76	7089.93	326.51 N	549.18 E	327.08	7.59
7350.00	71.73	360.00	7104.14	366.02 N	549.44 E	366.60	7.38
7393.00	74.31	357.50	7116.70	407.13 N	548.54 E	407.70	8.18

7436.00	76.24	356.89	7127.63	448.67 N	546.50 E	449.24	4.70
7479.00	79.77	355.32	7136.57	490.62 N	543.64 E	491.19	8.94
7522.00	83.07	355.60	7142.98	533.00 N	540.28 E	533.57	7.72
7561.00	85.09	355.37	7147.01	571.67 N	537.23 E	572.23	5.21
7610.00	89.40	355.37	7149.36	620.44 N	533.27 E	621.00	8.79

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 0.06 DEGREES (TRUE)
A TOTAL CORRECTION OF 8.61 DEG FROM MAGNETIC NORTH TO TRUE NORTH HAS BEEN APPLIED**

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.

**HORIZONTAL DISPLACEMENT(CLOSURE) AT 7610.00 FEET
IS 818.13 FEET ALONG 40.68 DEGREES (TRUE)**

**Directional Survey's tied onto surface gyro's @ 976' MD.
Last survey is a projection to the bit.**

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