



1 : 600 / 1 : 240

WELL INFORMATION					
MWD Run Number	100	200			
Date run completed	25-Jul-15	26-Jul-15			
Rig Bit Number	2	3			
Bit Size (in)	8.750	8.750			
Tool Nominal OD (in)	6.750	6.750			
Log Start Depth (TVD, ft)	769.87	6,560.44			
Log End Depth (TVD, ft)	6,560.44	6,734.65			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	24-Jul-15 01:00	26-Jul-15 01:45			
Drill/Wipe End Date and Time	25-Jul-15 11:30	26-Jul-15 08:30			
Min Inc (deg) @ Depth (TVD, ft)	0.23 @ 5,582.24	42.15 @ 6,575.47			
Max Inc (deg) @ Depth (TVD, ft)	34.05 @ 6,500.77	87.35 @ 6,732.59			
Bit TFA(in2) / Bit Type	0.91 / PDC	0.91 / PDC			
Flow Rate (gpm)	561.35	575.00			
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A	N/A / N/A			
Fluid Type	Fresh Water Gel	Fresh Water Gel			
Density (ppg) / Viscosity (spqt)	10.00 / 33.00	10.00 / 37.00			
Filtrate CL (ppm)	1,000.00	1,600.00			
pH / Fluid Loss (mptm)	7.90 / 23	8.00 / 7			
PV (cP) / YP (lbf2)	7 / 5.00	14 / 10.00			
% Solids / % Sand	1.60 / 1.00	3.60 / 0.10			
% 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 (degF) / Source	171.20 / PCM	171.20 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A			
Lead MWD Engineer	Paul Kock	Paul Kock			
Customer Representative	Charles Collver	Justin Fields			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.93	5.93			
Sub Serial Number	11404289	11404289			
Insert Serial Number	10997272	10997272			
Date and Time Initialized	23-Jul-15 21:17	23-Jul-15 21:17			
Date and Time Read	26-Jul-15 16:50	26-Jul-15 16:40			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	54.00	55.00			
Software Version	6.21	6.21			
Sub Serial Number	11404289	11404289			
Sonde Serial Number	12177556	12177556			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	27.30	170.90			

Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	42.36	43.22			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	11404289	11404289			
Insert/Sonde Serial Number	11681025	11681025			

REMARKS

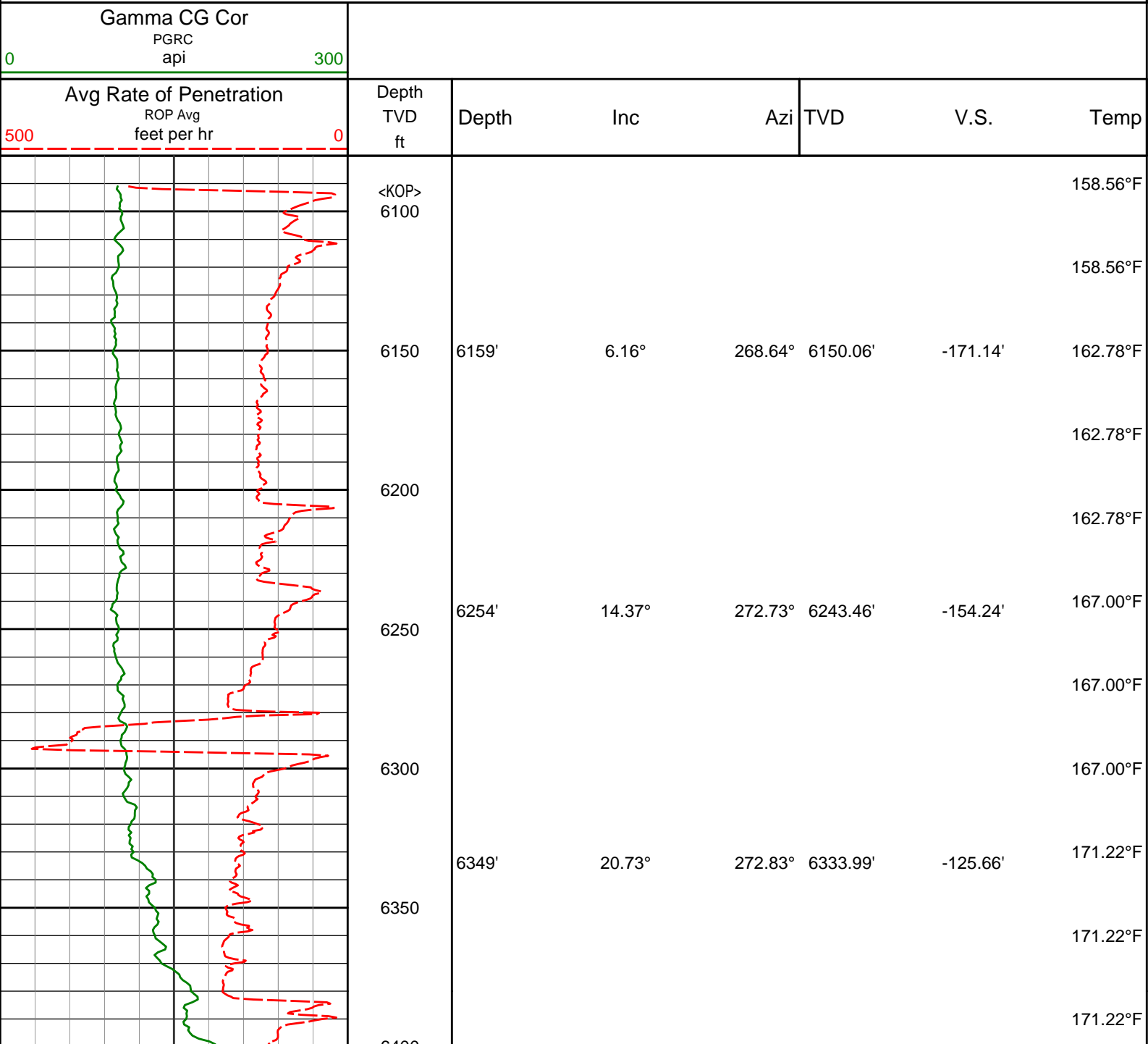
1. All depths are calibrated to the driller's pipe tally and are measured from the Rig drill floor.
2. No depth corrections have been made for pipe stretch or compression.
3. All data presented is recorded (memory data) unless otherwise stated.
 - ROPA: Average Rate of Penetration is real time data.
 - PGRC: Smooth Pressure Case Gamma Ray Borehole corrected is recorded data.
4. The following smoothing parameters have been applied to the data:
 - All ROP in logs - 0.5 ft interval, 1.2 ft coercion distance.
 - Gamma in 2" (1:600) logs - 1 ft interval, 3 ft coercion distance.
 - Gamma in 5" (1:240) logs - 0.5 ft interval, 0.6 ft coercion distance.
5. INSITE version 8.3.0.

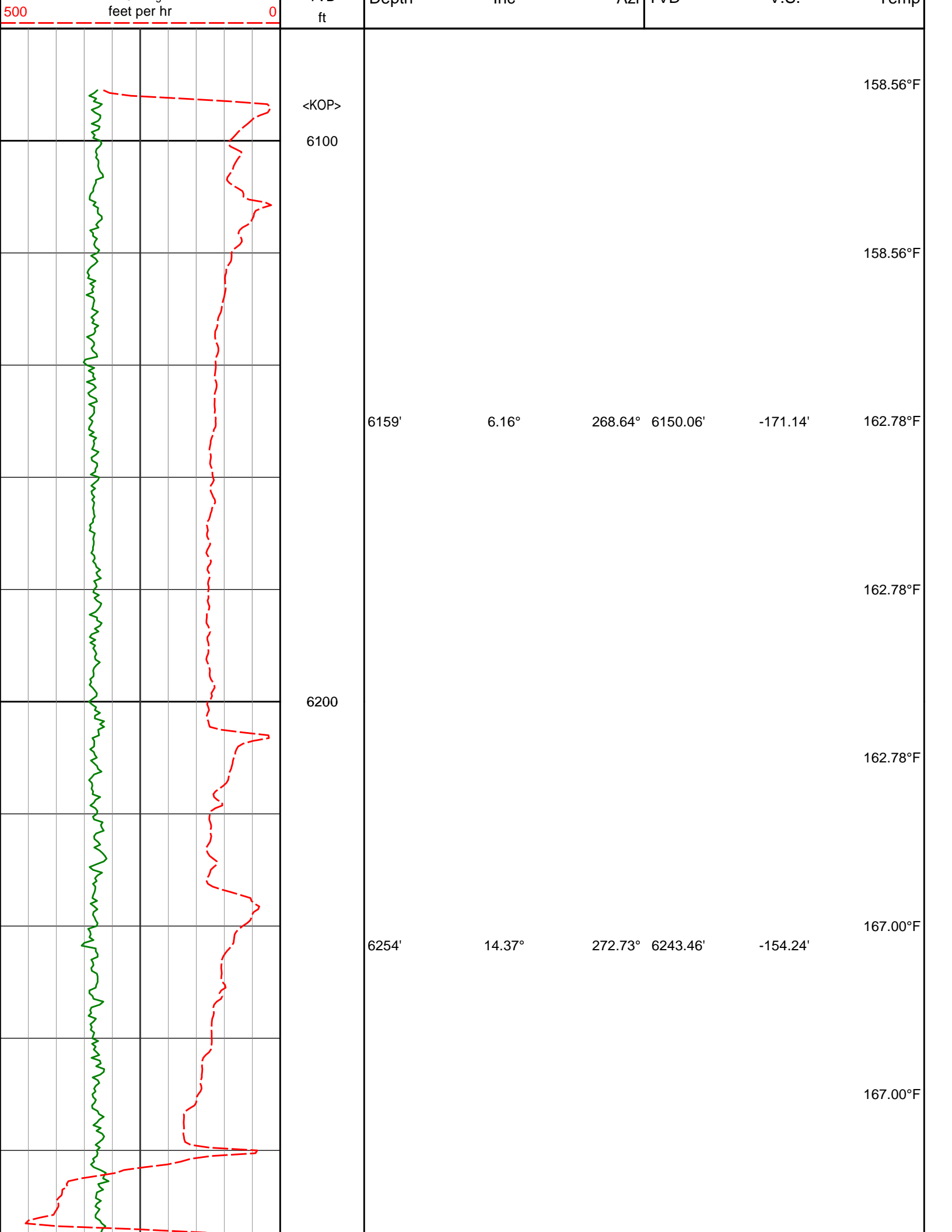
WARRANTY

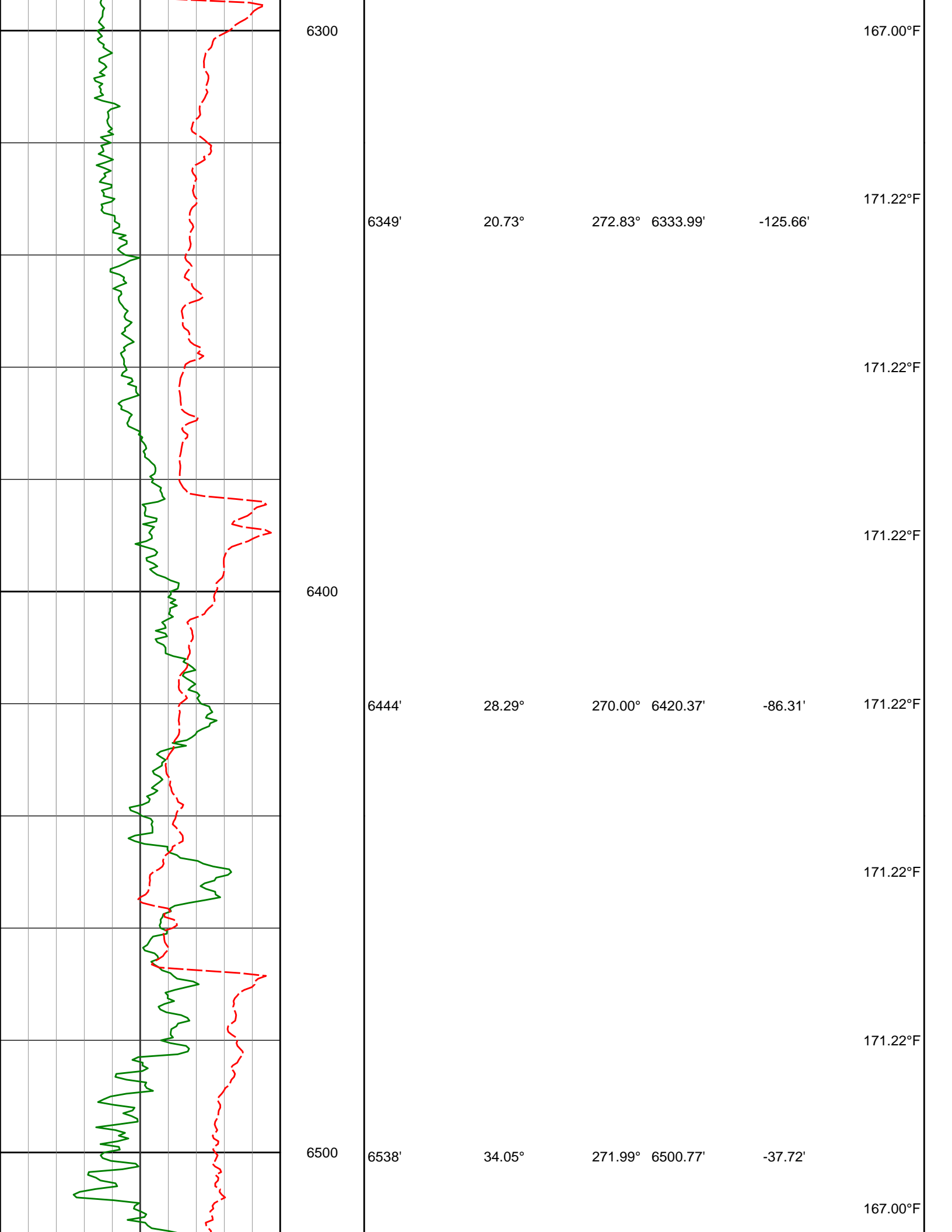
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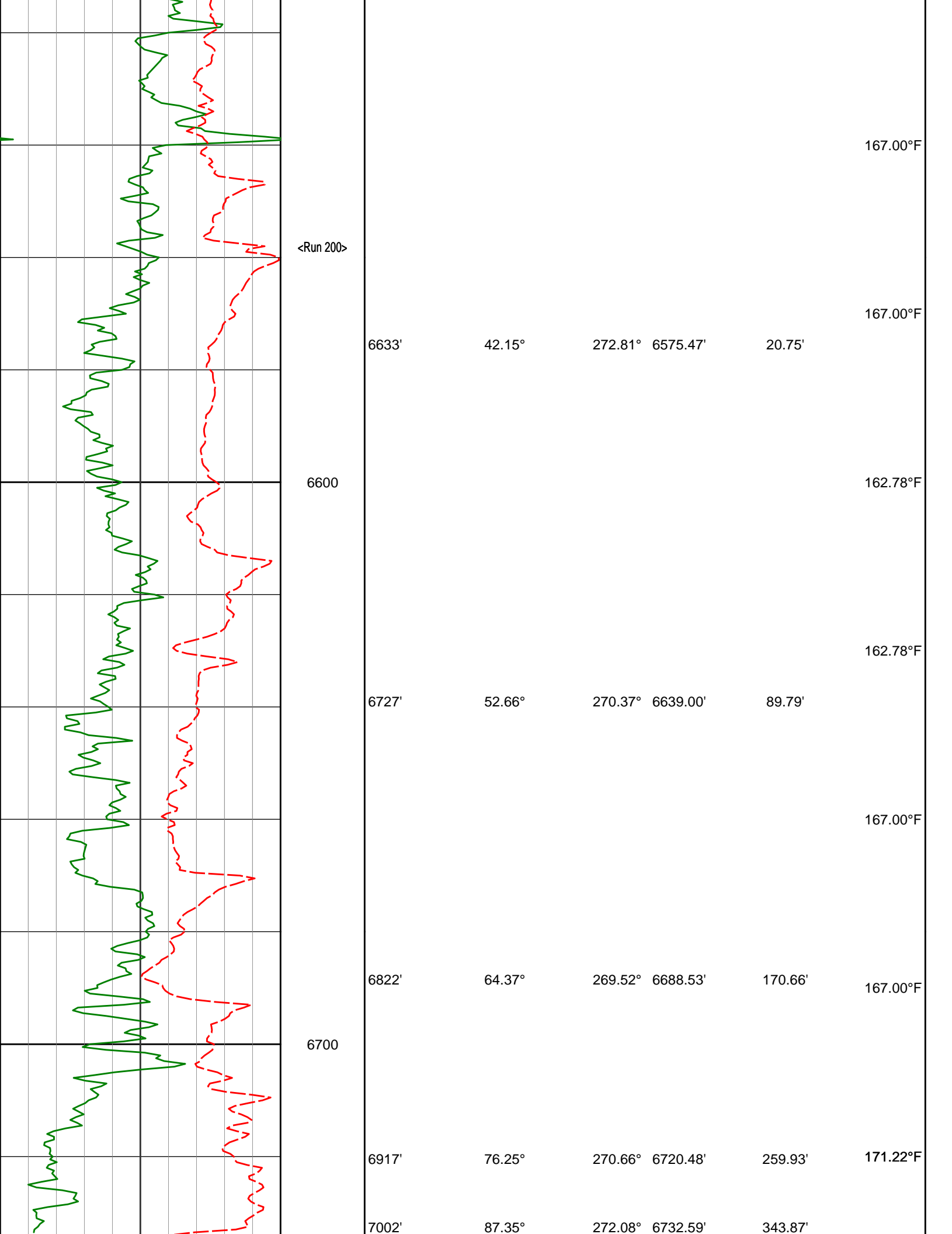
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TVD Detail 1:600 Scale









4834.00	1.80	269.73	4825.35	6.33 S	182.37 E	-182.26	2.52
4928.00	1.50	266.32	4919.31	6.42 S	179.66 E	-179.55	0.33
5023.00	1.15	322.33	5014.29	5.74 S	177.83 E	-177.73	1.35
5118.00	0.83	293.57	5109.28	4.71 S	176.62 E	-176.54	0.62
5307.00	0.77	281.29	5298.26	3.92 S	174.12 E	-174.05	0.09
5402.00	1.04	352.54	5393.25	2.93 S	173.38 E	-173.32	1.14
5496.00	0.56	303.75	5487.24	1.83 S	172.89 E	-172.85	0.85
5591.00	0.23	139.89	5582.24	1.72 S	172.63 E	-172.59	0.83
5686.00	0.31	82.41	5677.24	1.84 S	173.01 E	-172.97	0.29
5780.00	0.56	72.59	5771.24	1.66 S	173.71 E	-173.67	0.27
5875.00	0.40	102.35	5866.23	1.60 S	174.48 E	-174.44	0.31
5970.00	0.49	87.83	5961.23	1.65 S	175.21 E	-175.17	0.15
6065.00	0.37	95.76	6056.23	1.67 S	175.93 E	-175.89	0.14
6159.00	6.16	268.64	6150.06	1.82 S	171.18 E	-171.14	6.95
6254.00	14.37	272.73	6243.46	1.38 S	154.27 E	-154.24	8.67
6349.00	20.73	272.83	6333.99	0.02 N	125.67 E	-125.66	6.70
6444.00	28.29	270.00	6420.37	0.85 N	86.31 E	-86.31	8.04
6538.00	34.05	271.99	6500.77	1.76 N	37.70 E	-37.72	6.23
6633.00	42.15	272.81	6575.47	4.26 N	20.82 W	20.75	8.54
6727.00	52.66	270.37	6639.00	6.05 N	89.89 W	89.79	11.35
6822.00	64.37	269.52	6688.53	5.94 N	170.76 W	170.66	12.35
6917.00	76.25	270.66	6720.48	6.11 N	260.04 W	259.93	12.56
7002.00	87.35	272.08	6732.59	8.14 N	344.02 W	343.87	13.16
7057.00	88.35	272.08	6734.65	10.13 N	398.94 W	398.76	1.82

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 269.20 DEGREES (GRID)
A TOTAL CORRECTION OF 7.54 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 7057.00 FEET
IS 399.07 FEET ALONG 271.45 DEGREES (GRID)**

Surveys at 300 ft, 600 ft and 770 ft were interpolated between surface and first survey at 826 ft per Noble Energy.

Last survey is a projection from 7002 ft MD to TD at 7057 ft MD.