

Country	: USA
Field	: Wattenberg
Location	: Lat: 40° 27' 17.46" North Long: 104° 23' 38.76" West
Well	: Wells Ranch AA26-63HN
Company	: Noble Energy
Rig	: H&P 322
<div> <div> <div>LOCATION</div> <div> <div> <div>Latitude : 40° 27' 17.46" North</div> <div>Longitude : 104° 23' 38.76" West</div> <div>UTM Easting = 3307747.424 ft</div> <div>UTM Northing = 1410461.244 ft</div> </div> <div> <div>Other Services</div> <div>Directional Drilling</div> </div> </div> <div> <div>Company : Noble Energy</div> <div>Rig : H&P 322</div> <div>Well : Wells Ranch AA26-63HN</div> <div>Field : Wattenberg</div> <div>Country : USA</div> <div>API Number : 05-123-37566</div> </div> </div> </div>	

[illegible]

WELL INFORMATION

MWD Run Number	100	200			
Date run completed	17-Oct-13	18-Oct-13			
Rig Bit Number	2	3			
Bit Size (in)	8.750	8.750			
Tool Nominal OD (in)	6.750	6.750			
Log Start Depth (MD, ft)	975.00	5,993.00			
Log End Depth (MD, ft)	5,993.00	7,016.00			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	16-Oct-13 20:00	17-Oct-13 21:30			
Drill/Wipe End Date and Time	17-Oct-13 11:45	18-Oct-13 14:15			
Min Inc (deg) @ Depth (MD, ft)	0.18 @ 1,104.00	1.11 @ 6,023.00			
Max Inc (deg) @ Depth (MD, ft)	14.19 @ 3,753.00	81.24 @ 6,961.00			
Bit TFA(in2) / Bit Type	0.75 / PDC	0.90 / PDC			
Flow Rate (gpm)	556.05	561.80			
Max AV (fpm) / CV (fpm) @ MWD	401.4 / 401.4	446.7 / 446.7			
Fluid Type	Fresh Water Gel	Fresh Water Gel			
Density (ppg) / Viscosity (spqt)	8.80 / 28.00	10.70 / 39.00			
Filtrate CL (ppm)	1,800.00	2,100.00			
pH / Fluid Loss (mptm)	9.10 / N/A	9.60 / N/A			
PV (cP) / YP (lbf2)	1 / 3.00	15 / 9.00			
% Solids / % Sand	.4 / .1	11 / 1			
% 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 (in F) / S	150.10 / PGM	122.00 / PGM			

Max Tool Temp (degF) / Source	150.10 / PCM	162.80 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A			
Lead MWD Engineer	Robert Ley	Robert Ley			
Customer Representative	Jeremy Stolz	Jeremy Stolz			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.84	5.84			
Sub Serial Number	12134692	11331930			
Insert Serial Number	11400855	11400855			
Date and Time Initialized	16-Oct-13 01:44	01-Jan-70 00:00			
Date and Time Read	18-Oct-13 21:03	18-Oct-13 21:12			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	58.00	55.00			
Software Version	6.21	6.21			
Sub Serial Number	12134692	11331930			
Sonde Serial Number	11833053	11833053			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	261.42	20.47			

Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	50.99	48.50			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	12134692	11331930			
Insert/Sonde Serial Number	11293390	11293390			

REMARKS

1. All depths are true vertical depths and are calibrated to the driller' pipe tally and are measured from the 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.
4. The Following smoothing parameters have been applied to the data"

PGXR (Gamma Ray CG):
Interval Resolution: 0.5 feet
Coercion Distance: 0.6 feet
Gap Fill: 3.0 feet

ROPA (Rate of Penetration):
Interval Resolution: 0.5 feet
Coercion Distance: 1.2 feet

5. Due to a malfunction with the top drive we are missing datta:

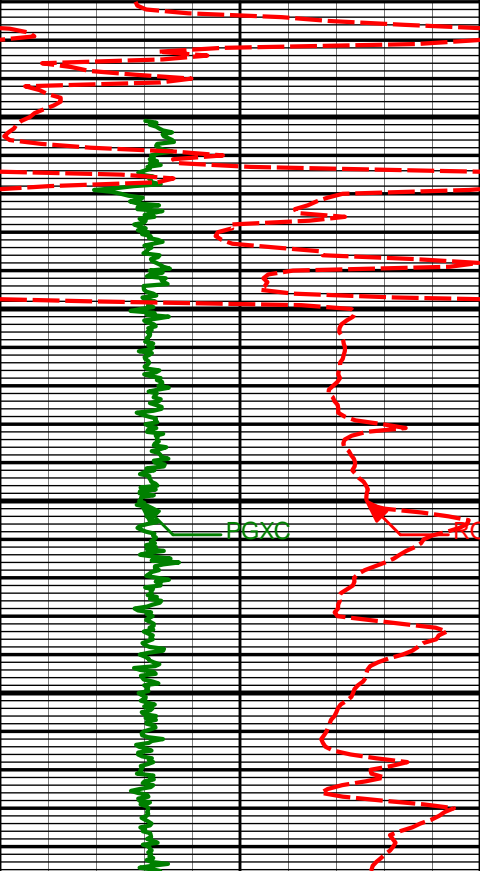
Gamma: 6287 ft to 6301 ft
ROP: 6330 ft to 6346 ft

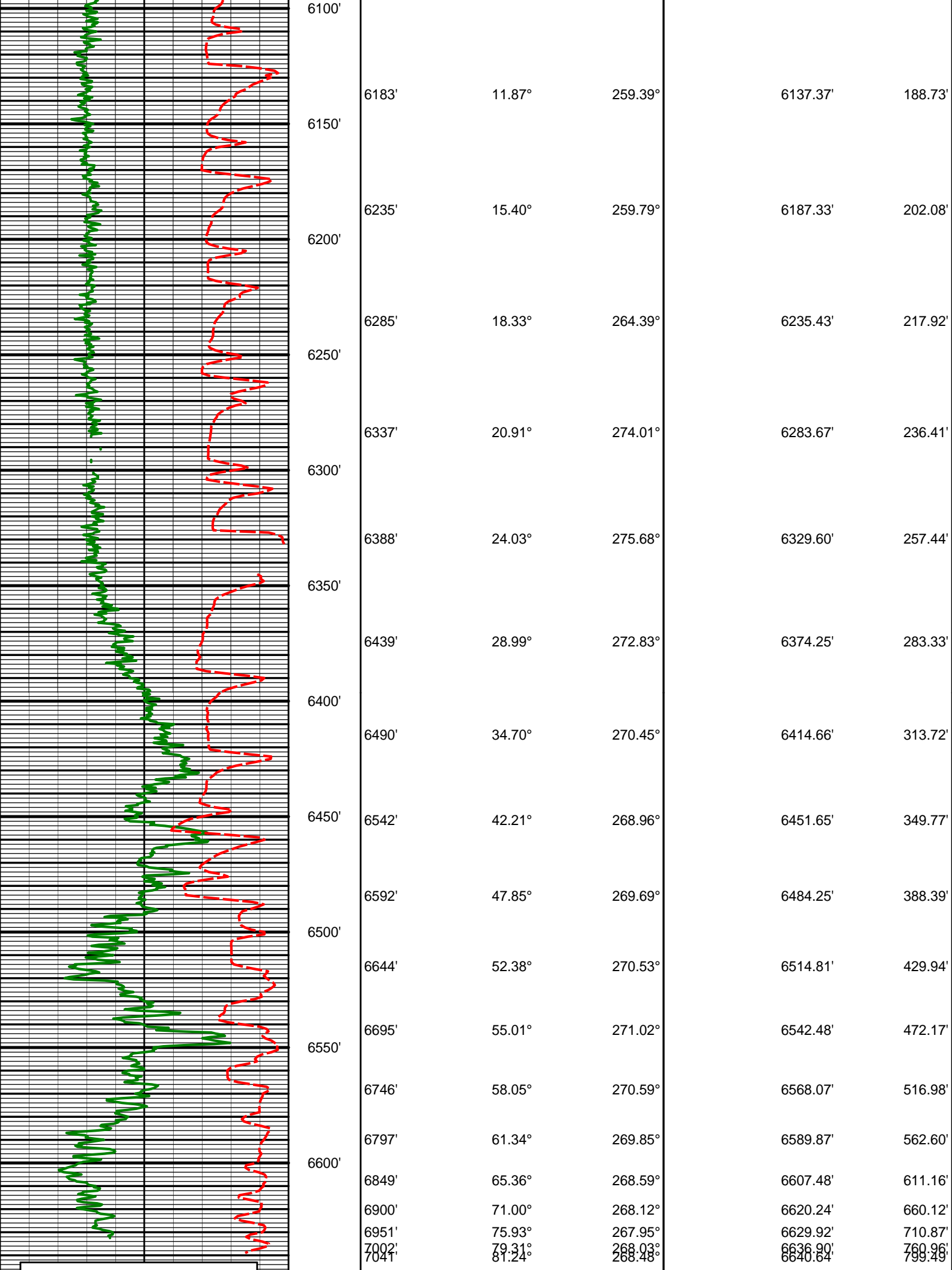
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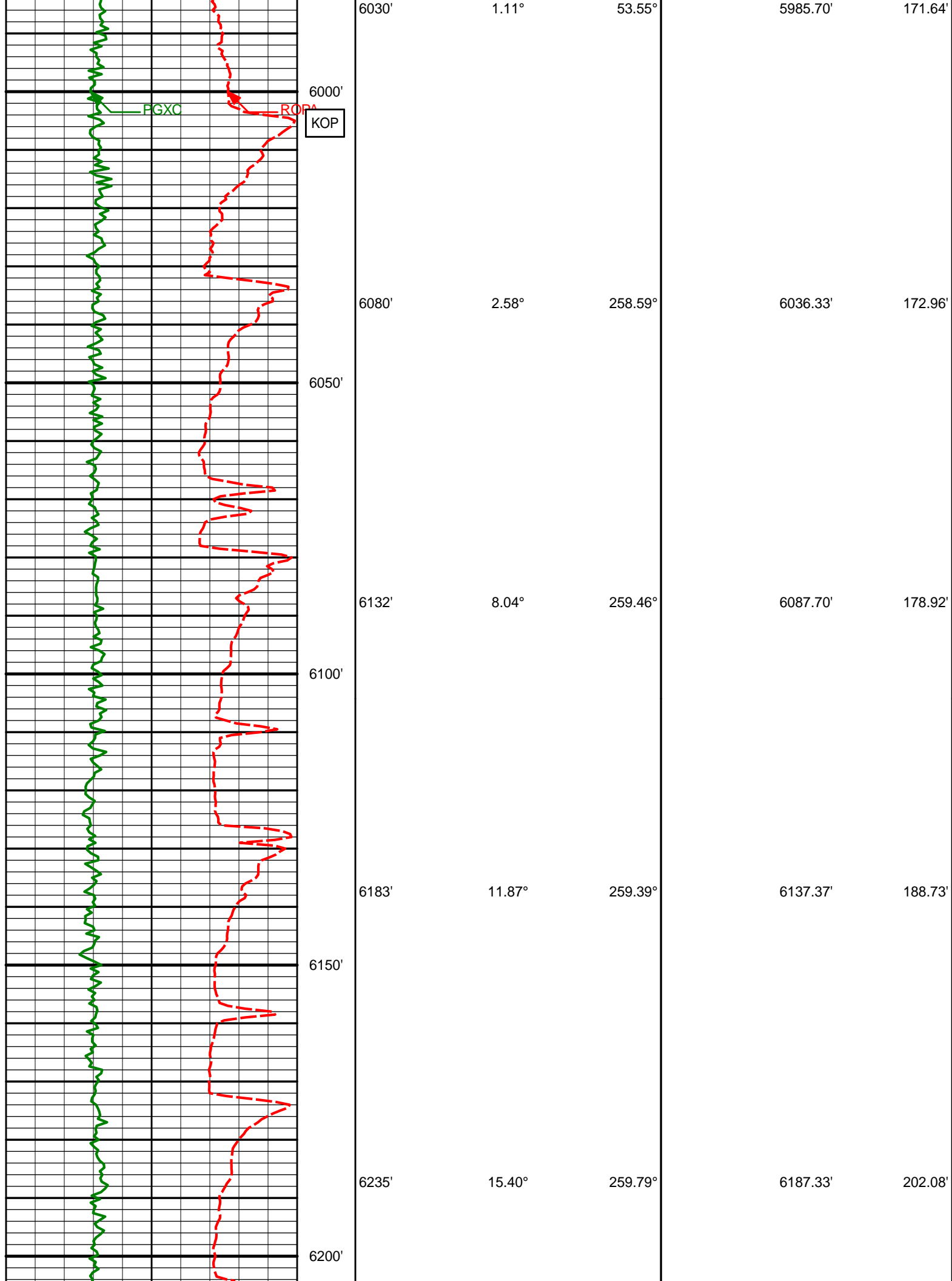
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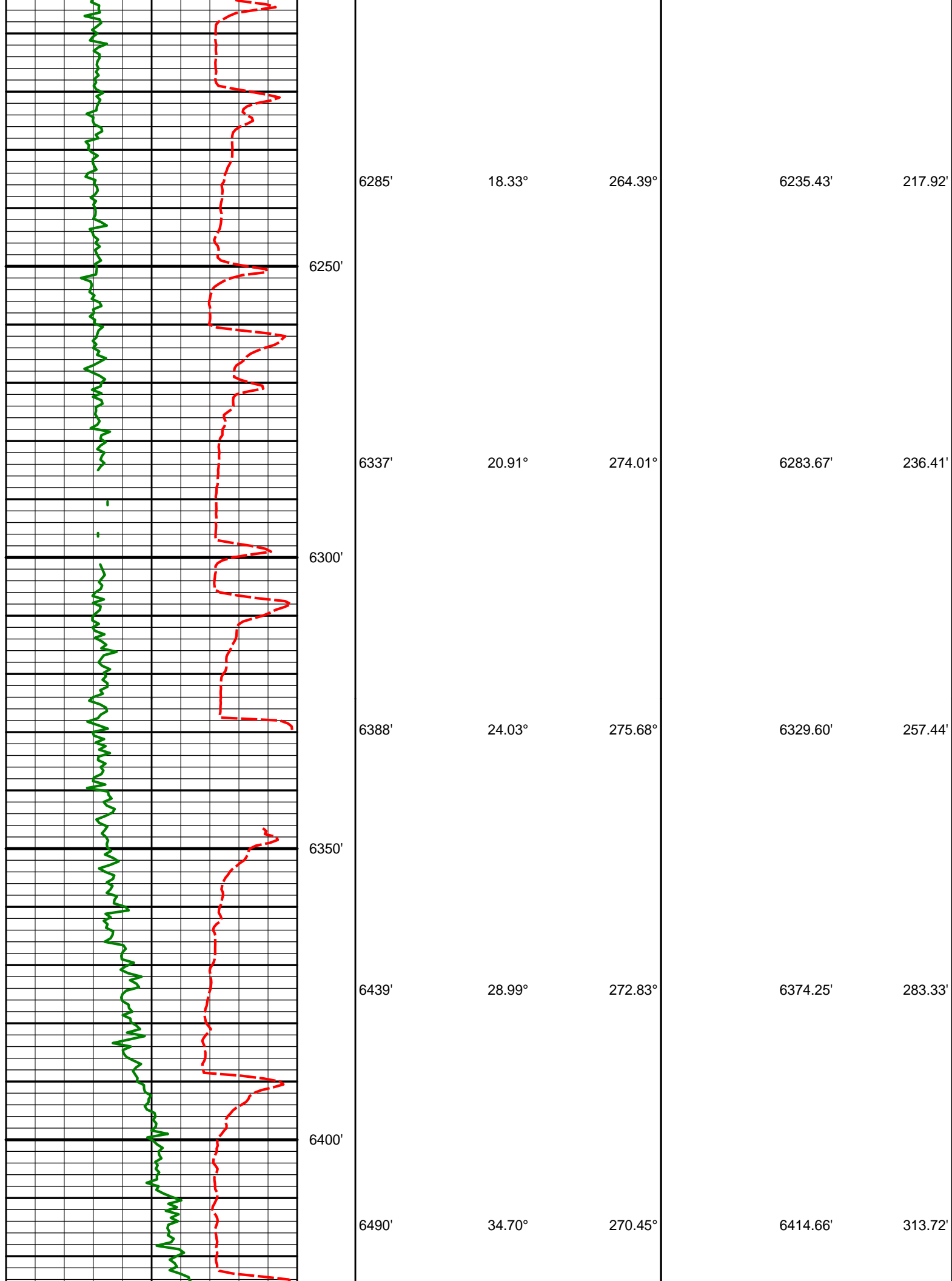
TVD Detail Log 1:600

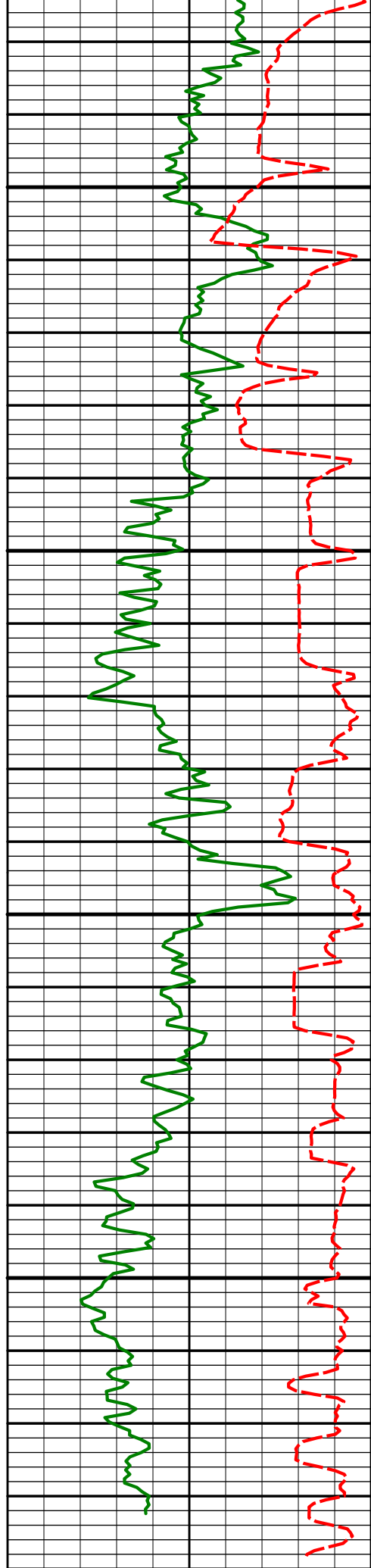
Gamma CG Cor (PGXC) (Api)						
0300						
Avg Rate of Penetration feet per hr	Feet					
6000						
		Depth	Inc	Azm	TVD	Vsec
	5900'	5935'	1.20°	58.06°	5890.96'	173.27'
		6030'	1.11°	53.55°	5985.70'	171.64'
	6000'	6080'	2.58°	258.59°	6036.33'	172.96'
	6050'	6132'	8.04°	259.46°	6087.70'	178.92'



Run 200







6450'	6542'	42.21°	268.96°	6451.65'	349.77'
	6592'	47.85°	269.69°	6484.25'	388.39'
6500'					
	6644'	52.38°	270.53°	6514.81'	429.94'
	6695'	55.01°	271.02°	6542.48'	472.17'
6550'					
	6746'	58.05°	270.59°	6568.07'	516.98'
	6797'	61.34°	269.85°	6589.87'	562.60'
6600'					
	6849'	65.36°	268.59°	6607.48'	611.16'
	6900'	71.00°	268.12°	6620.24'	660.12'
	6951'	75.93°	267.95°	6629.92'	710.87'
	7002'	79.31°	268.03°	6636.90'	760.96'
	7041'	81.24°	268.48°	6640.64'	799.49'

4701.00	1.37	175.80	4657.21	435.94 S	158.33 W	192.79	2.33
4796.00	1.37	152.92	4752.18	438.08 S	157.73 W	192.36	0.57
4890.00	1.49	144.32	4846.15	440.08 S	156.51 W	191.30	0.26
4986.00	0.30	103.95	4942.14	441.15 S	155.54 W	190.42	1.33
5081.00	0.26	113.49	5037.14	441.30 S	155.10 W	189.99	0.06
5176.00	0.75	105.38	5132.14	441.55 S	154.30 W	189.22	0.52
5271.00	1.12	90.63	5227.12	441.72 S	152.77 W	187.71	0.46
5366.00	1.12	92.40	5322.10	441.77 S	150.92 W	185.86	0.04
5460.00	1.57	92.64	5416.08	441.87 S	148.71 W	183.67	0.48
5555.00	1.43	70.99	5511.05	441.54 S	146.29 W	181.23	0.61
5650.00	1.17	66.24	5606.02	440.77 S	144.28 W	179.17	0.30
5745.00	1.38	79.30	5701.00	440.16 S	142.27 W	177.11	0.38
5840.00	1.15	68.68	5795.98	439.61 S	140.26 W	175.06	0.34
5935.00	1.20	58.06	5890.96	438.73 S	138.53 W	173.27	0.23
6023.00	1.11	53.55	5978.94	437.74 S	137.06 W	171.73	0.15
6070.00	2.58	258.59	6025.93	437.68 S	137.73 W	172.39	7.69
6118.00	8.04	259.46	6073.70	438.51 S	142.09 W	176.80	11.38
6165.00	11.87	259.39	6119.99	440.00 S	150.08 W	184.88	8.15
6213.00	15.40	259.79	6166.63	442.04 S	161.21 W	196.14	7.36
6260.00	18.33	264.39	6211.60	443.87 S	174.71 W	209.74	6.85
6308.00	20.91	274.01	6256.82	444.00 S	190.77 W	225.77	8.60
6355.00	24.03	275.68	6300.25	442.47 S	208.66 W	243.48	6.78
6403.00	28.99	272.83	6343.19	440.93 S	230.02 W	264.64	10.67
6450.00	34.70	270.45	6383.10	440.26 S	254.80 W	289.28	12.44
6498.00	42.21	268.96	6420.66	440.45 S	284.62 W	319.03	15.76
6545.00	47.85	269.69	6453.87	440.83 S	317.86 W	352.19	12.05
6593.00	52.38	270.53	6484.64	440.75 S	354.68 W	388.89	9.53
6640.00	55.01	271.02	6512.46	440.23 S	392.55 W	426.59	5.66
6688.00	58.05	270.59	6538.93	439.67 S	432.58 W	466.45	6.38
6735.00	61.34	269.85	6562.65	439.52 S	473.15 W	506.88	7.13
6783.00	65.36	268.59	6584.17	440.11 S	516.04 W	549.67	8.70
6830.00	71.00	268.12	6601.64	441.37 S	559.64 W	593.23	12.04
6878.00	75.93	267.95	6615.29	442.95 S	605.61 W	639.18	10.28
6925.00	79.31	268.03	6625.37	444.56 S	651.48 W	685.04	7.19
6961.00	81.24	268.48	6631.45	445.64 S	686.95 W	720.47	5.50

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 265.40 DEGREES (GRID)
A TOTAL CORRECTION OF 7.67 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 6961.00 FEET
IS 818.83 FEET ALONG 237.03 DEGREES (GRID)**

Tie-In @ Surface

Surveys at 286 ft, 488 ft, 742 ft and 930 ft were taken and provided by HP 322 while they were drilling the surface hole.