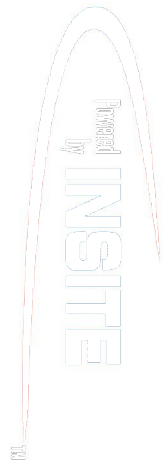


**PCDC - Pressure Case Directional**  
**PCGK - Pressure Case Gamma**

**1 : 240**

Country		: USA			
Field		: Wattenburg			
Location		: Lat: 40° 30' 37.37" North Long: 104° 27' 3.10" West			
Well		: NCLP AA06-62-1HNA			
Company		: Noble Energy			
Rig		: H&P 322			
LOCATION					
		Latitude : 40° 30' 37.37" North Longitude : 104° 27' 3.10" West		Other Services Directional Drilling	
		UTM Easting = 3,291,713.793 ft UTM Northing = 1,430,497.690 ft			
Permanent Datum		: Ground Level		Elev. KB N/A	
Log Measured From		: Drill Floor		24.00 ft Above Permanent Datum DF 4732.00 ft GL 4708.00 ft WD N/A	
Drilling Measured From		: Drill Floor		TVD LOG	
Depth Logged		: 846.00 ft To 7,004.00 ft		Unit No. : 11210425	
Date Logged		: 20-Jun-14 To 23-Jun-14		Job No. : CA-XX-0901287551	
Total Depth MD		: 7,004.00 ft TVD: 6,650.41 ft		Plot Type : Final	
Spud Date		: 20-Jun-14		Plot Date : 23-Jun-14	
Run No.		Borehole Record (TVD)		Borehole Record (TVD)	
		Size	From	To	Run No.
0100		8.750 in	845.98 ft	5,956.33 ft	
0200		8.750 in	5,956.33 ft	6,650.41 ft	

**WELL INFORMATION**

MWD Run Number	100	200		
Date run completed	22-Jun-14	23-Jun-14		
Rig Bit Number	0100	0200		
Bit Size (in)	8.750	8.750		
Tool Nominal OD (in)	6.750	6.750		
Log Start Depth (MD, ft)	846.00	5,991.00		
Log End Depth (MD, ft)	5,991.00	7,004.00		
Drill or Wipe	Drill	Drill		
Drill/Wipe Start Date and Time	21-Jun-14 21:57	22-Jun-14 20:59		
Drill/Wipe End Date and Time	22-Jun-14 12:12	23-Jun-14 08:00		
Min Inc (deg) @ Depth (MD, ft)	0.14 @ 4,984.00	0.19 @ 5,927.00		
Max Inc (deg) @ Depth (MD, ft)	12.88 @ 3,942.00	79.65 @ 6,946.00		
Bit TFA(in2) / Bit Type	0.74 / PDC	1.37 / PDC		
Flow Rate (gpm)	571.00	566.00		
Max AV (fpm) / CV (fpm) @ MWD	451.4 / 451.4	458.7 / 458.7		
Fluid Type	Fresh Water Gel	Fresh Water Gel		
Density (ppg) / Viscosity (spqt)	8.85 / 30.00	10.80 / 36.00		
Filtrate CL (ppm)	2,000.00	2,000.00		
pH / Fluid Loss (mptm)	9.80 / N/A	10.80 / N/A		
PV (cP) / YP (lbf/ft2)	2 / 3.00	8 / 10.00		
% Solids / % Sand	4.20 / 0.10	11.60 / 0.35		
% 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	154.30 / PCM	167.00 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A			
Lead MWD Engineer	Garry Igunbor	Garry Igunbor			
Customer Representative	Jeremy Stolz	Jeremy Stolz			

## SENSOR INFORMATION

### Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.84	5.84			
Sub Serial Number	11342299	11342299			
Insert Serial Number	11145513	11145513			
Date and Time Initialized	19-Jun-14 17:33	19-Jun-14 17:33			
Date and Time Read	23-Jun-14 14:08	23-Jun-14 14:07			
ECMB SW Version	N/A	N/A			

### Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	59.00	58.00			
Software Version	6.21	6.21			
Sub Serial Number	11342299	11342299			
Sonde Serial Number	11638605	11638605			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	251.94	347.31			

### Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	51.53	50.68			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	11342299	11342299			
Insert/Sonde Serial Number	11680902	11680902			

## 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):

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

## WARRANTY

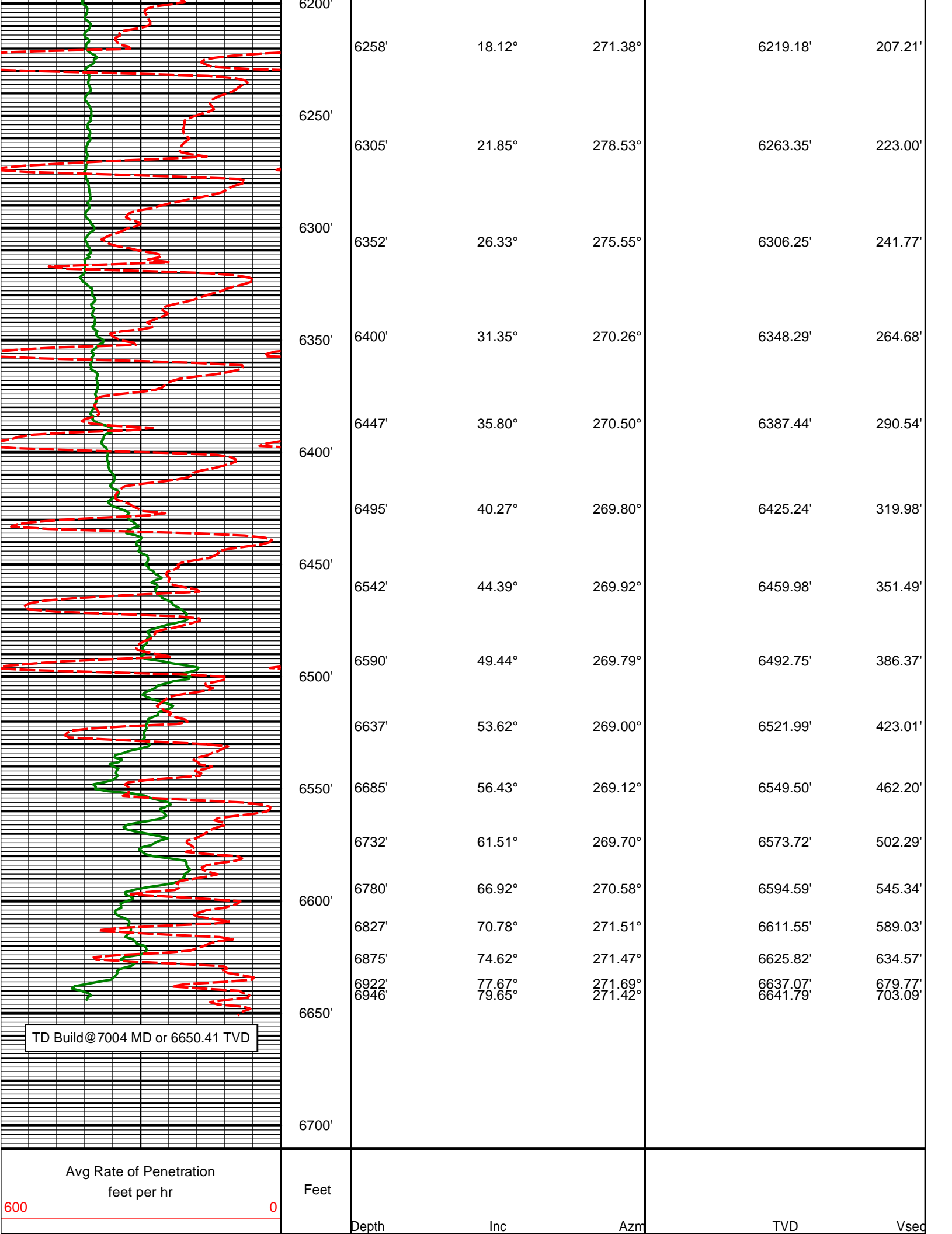
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## TVD Detail Log 1:600

Gamma Ray (PGXC) (Api)						
0300						
Avg Rate of Penetration feet per hr		Feet				
6000						
	Depth	Inc	Azm	TVD	Vsec	
	5950'					
	Run 200 6000'	6022'	0.56°	292.10°	5987.33'	168.84'
		6069'	3.40°	262.27°	6034.29'	170.44'
	6050' KOP	6116'	8.17°	267.43°	6081.04'	175.17'
	6100'	6163'	11.23°	266.78°	6127.36'	183.09'
	6150'	6211'	14.86°	265.59°	6174.12'	193.92'
	6200'					
	6250'					
	6300'					



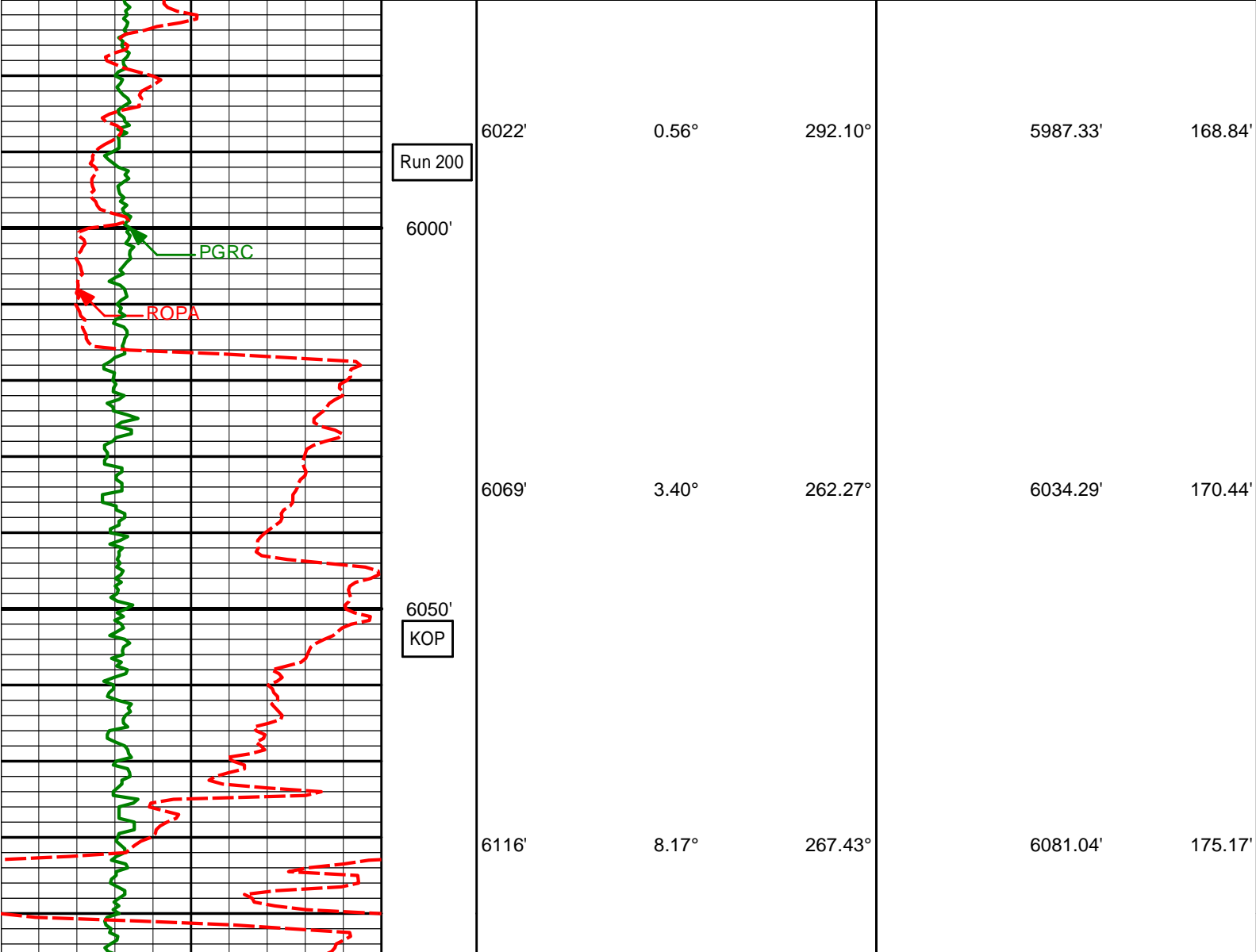
Gamma Ray (PGXC) (Api)		
0	300	

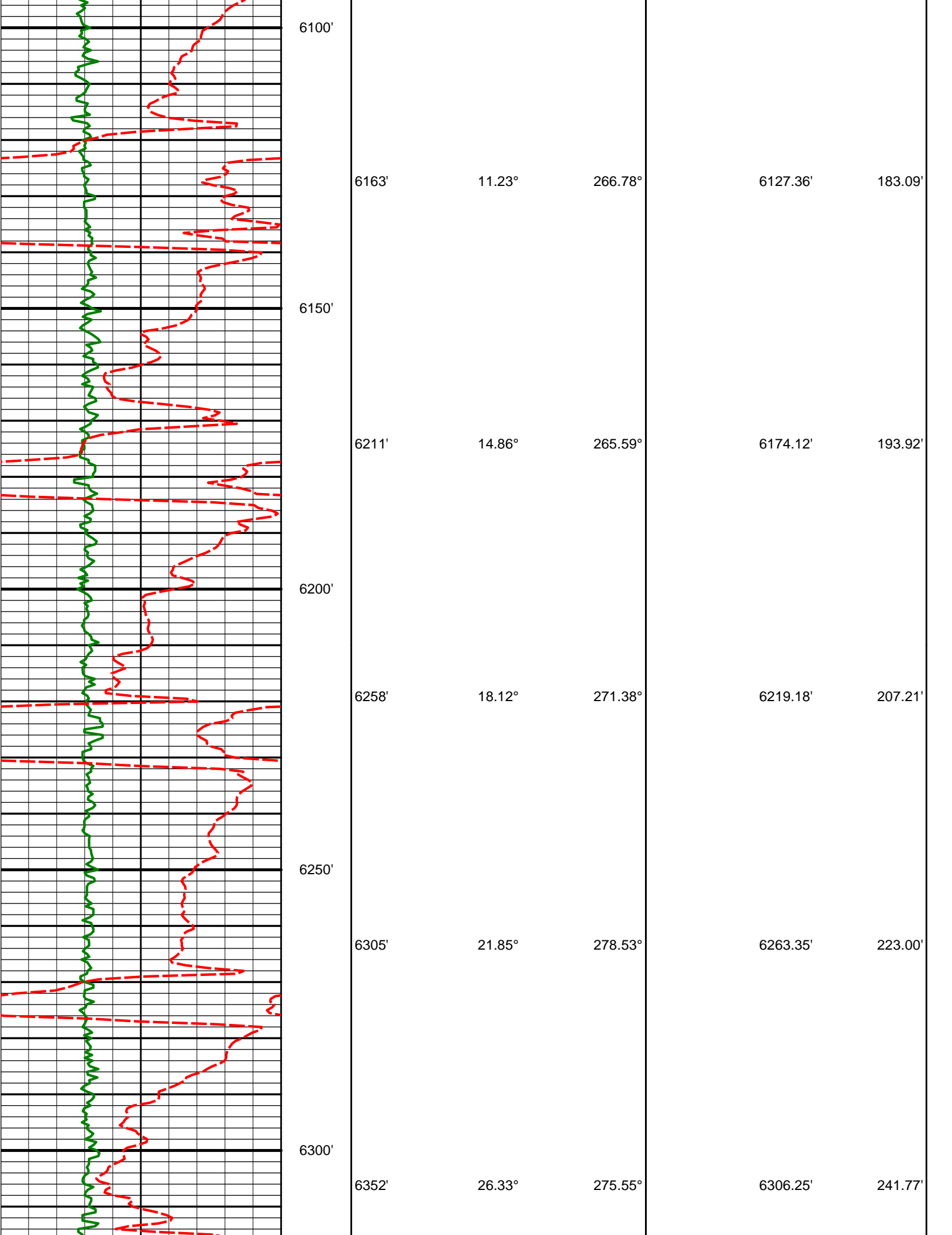
HALLIBURTON

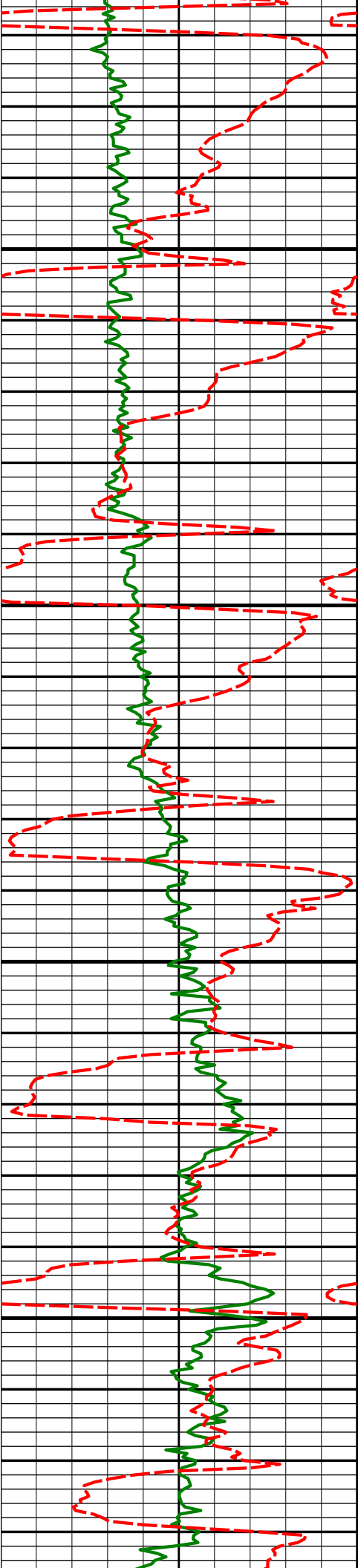
TVD Detail Log 1:240

Gamma Ray (PGXC) (Api)		
0	300	

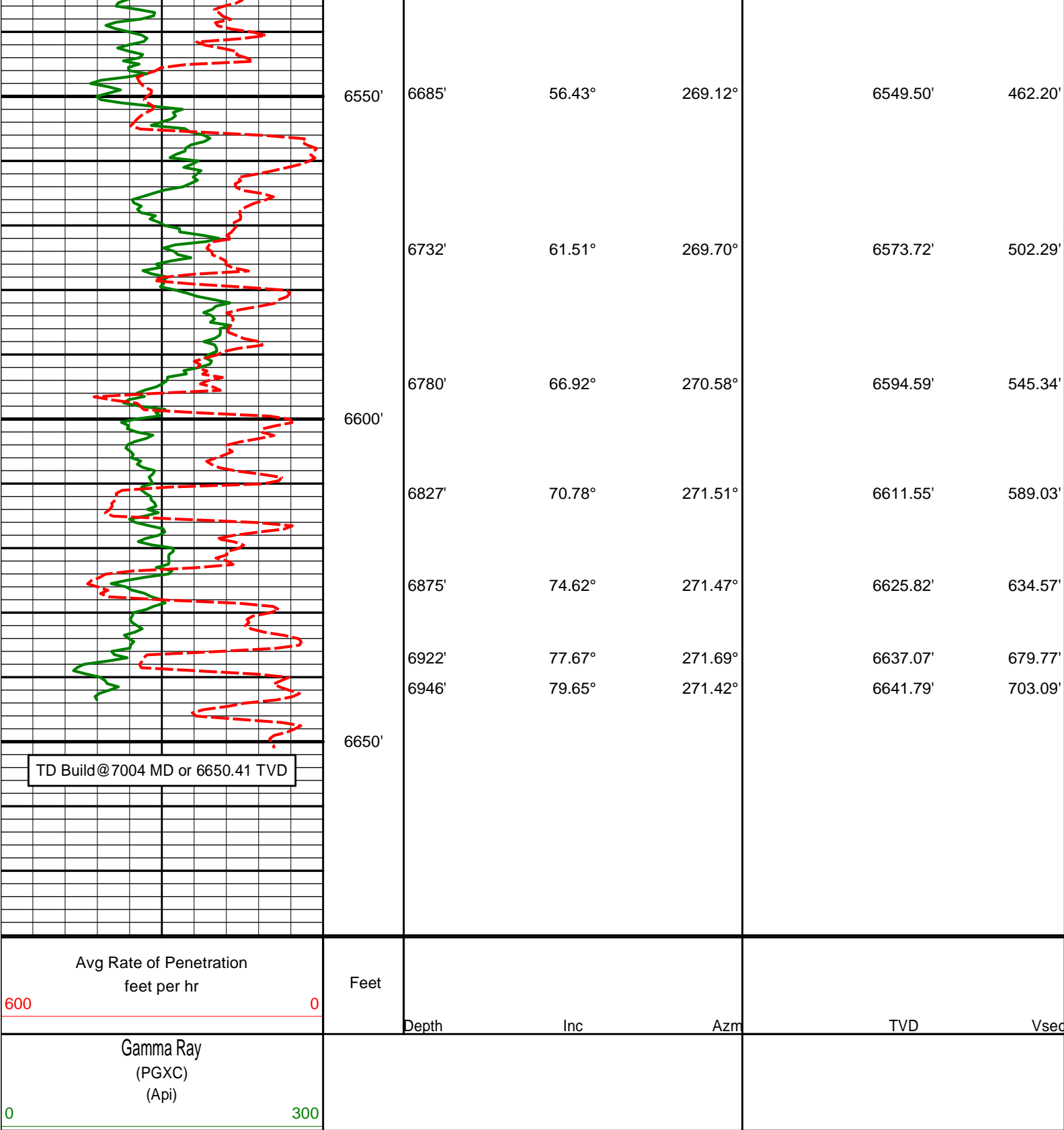
Avg Rate of Penetration feet per hr	Feet				
600	0	Depth	Inc	Azm	TVD
					Vsec







6350'	6400'	31.35°	270.26°	6348.29'	264.68'
	6447'	35.80°	270.50°	6387.44'	290.54'
6400'					
	6495'	40.27°	269.80°	6425.24'	319.98'
	6450'				
	6542'	44.39°	269.92°	6459.98'	351.49'
	6590'	49.44°	269.79°	6492.75'	386.37'
6500'					
	6637'	53.62°	269.00°	6521.99'	423.01'



**DIRECTIONAL SURVEY REPORT**

Noble Energy  
NCLP AA06-62-1HNA  
Wattenburg  
Weld Colorado  
USA  
CA-XX-0901287551

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
-----------------------------	--------------------------	------------------------	-----------------------------	--------------------	---------------------	-------------------------------	-----------------------



0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
261.00	0.20	32.98	261.00	0.38 N	0.25 E	-0.27	0.08
515.00	0.10	107.88	515.00	0.69 N	0.70 E	-0.75	0.08
802.00	0.50	158.88	801.99	0.56 S	1.39 E	-1.35	0.15
921.00	0.70	166.88	920.99	1.75 S	1.74 E	-1.61	0.18
1014.00	0.84	147.46	1013.98	2.88 S	2.24 E	-2.03	0.32
1107.00	0.88	159.05	1106.97	4.12 S	2.86 E	-2.56	0.19
1200.00	0.67	145.61	1199.96	5.24 S	3.42 E	-3.05	0.30
1386.00	0.70	161.24	1385.95	7.21 S	4.40 E	-3.88	0.10
1574.00	0.55	154.84	1573.94	9.11 S	5.15 E	-4.50	0.09
1763.00	0.60	151.66	1762.93	10.81 S	6.01 E	-5.24	0.03
1857.00	0.33	164.63	1856.92	11.50 S	6.32 E	-5.49	0.31
2047.00	0.25	222.35	2046.92	12.33 S	6.18 E	-5.30	0.15
2142.00	2.35	250.26	2141.89	13.15 S	4.21 E	-3.27	2.24
2237.00	4.42	260.21	2236.72	14.43 S	1.23 W	2.24	2.26
2332.00	6.36	247.01	2331.30	17.10 S	9.69 W	10.86	2.41
2426.00	7.32	231.31	2424.64	22.88 S	19.15 W	20.71	2.23
2521.00	7.91	207.90	2518.82	32.44 S	26.94 W	29.15	3.30
2615.00	9.32	198.34	2611.77	45.39 S	32.36 W	35.47	2.13
2710.00	9.36	201.42	2705.51	59.88 S	37.60 W	41.72	0.53
2804.00	10.18	202.65	2798.14	74.66 S	43.59 W	48.73	0.90
2899.00	11.02	200.71	2891.52	90.90 S	50.04 W	56.30	0.96
2994.00	11.31	201.41	2984.72	108.07 S	56.65 W	64.10	0.34
3088.00	10.79	201.32	3076.98	124.85 S	63.21 W	71.83	0.55
3183.00	10.38	200.14	3170.36	141.17 S	69.39 W	79.14	0.49
3278.00	9.27	198.35	3263.97	156.46 S	74.75 W	85.56	1.21
3373.00	9.31	203.72	3357.72	170.76 S	80.25 W	92.05	0.91
3468.00	10.21	206.11	3451.35	185.36 S	87.04 W	99.86	1.04
3563.00	8.27	200.85	3545.11	199.31 S	93.18 W	106.96	2.23
3658.00	9.92	200.36	3638.92	213.36 S	98.46 W	113.21	1.74
3753.00	11.20	203.76	3732.31	229.48 S	105.03 W	120.89	1.50
3847.00	11.80	207.23	3824.42	246.38 S	113.10 W	130.14	0.97
3942.00	12.88	207.07	3917.22	264.45 S	122.37 W	140.65	1.14
4037.00	11.39	205.31	4010.10	282.36 S	131.20 W	150.71	1.62
4132.00	10.95	201.87	4103.30	299.21 S	138.57 W	159.25	0.84
4227.00	10.04	199.37	4196.71	315.40 S	144.67 W	166.48	1.07
4416.00	8.10	187.03	4383.35	344.16 S	151.77 W	175.58	1.45
4511.00	6.72	176.13	4477.56	356.35 S	152.21 W	176.88	2.07
4606.00	5.52	179.74	4572.02	366.46 S	151.82 W	177.20	1.33
4700.00	3.92	192.22	4665.70	374.13 S	152.48 W	178.39	2.01
4795.00	2.19	235.05	4760.57	378.34 S	154.65 W	180.86	2.90
4890.00	0.37	175.38	4855.55	379.69 S	156.12 W	182.41	2.14
4984.00	0.14	212.56	4949.55	380.09 S	156.15 W	182.48	0.29
5079.00	1.89	105.33	5044.53	380.60 S	154.70 W	181.07	2.04
5174.00	1.66	102.57	5139.48	381.31 S	151.85 W	178.27	0.26
5363.00	1.70	94.11	5328.40	382.11 S	146.38 W	172.88	0.13
5552.00	1.17	40.56	5517.35	380.84 S	142.33 W	168.74	0.73
5647.00	0.34	41.81	5612.34	379.90 S	141.51 W	167.86	0.87
5742.00	0.28	38.35	5707.34	379.50 S	141.18 W	167.50	0.07
5837.00	0.16	6.21	5802.34	379.19 S	141.02 W	167.32	0.18
5927.00	0.19	351.58	5892.34	378.92 S	141.03 W	167.31	0.06
6022.00	0.56	292.10	5987.34	378.59 S	141.48 W	167.74	0.52
6069.00	3.40	262.27	6034.31	378.69 S	143.08 W	169.34	6.23
6116.00	8.17	267.43	6081.05	379.02 S	147.80 W	174.07	10.20
6163.00	11.23	266.78	6127.38	379.43 S	155.71 W	181.99	6.51
6211.00	14.86	265.59	6174.13	380.17 S	166.51 W	192.82	7.58
6258.00	18.12	271.38	6219.19	380.46 S	179.83 W	206.13	7.76
6305.00	21.85	278.53	6263.36	378.98 S	195.80 W	221.95	9.47
6352.00	26.33	275.55	6306.26	376.67 S	214.83 W	240.77	9.87
6400.00	31.35	270.26	6348.30	375.59 S	237.93 W	263.74	11.72
6447.00	35.80	270.50	6387.45	375.41 S	263.92 W	289.65	9.47
6495.00	40.27	269.80	6425.25	375.34 S	293.48 W	319.14	9.36
6542.00	44.39	269.92	6459.98	375.42 S	325.13 W	350.71	8.77
6590.00	49.44	269.79	6492.76	375.51 S	360.17 W	385.67	10.52
6637.00	53.62	269.00	6521.99	375.91 S	396.96 W	422.39	8.99
6685.00	56.43	269.12	6549.51	376.55 S	436.28 W	461.66	5.86
6732.00	61.51	269.70	6573.73	376.96 S	476.54 W	501.85	10.86
6780.00	66.92	270.58	6594.60	376.85 S	519.74 W	544.94	11.39
6827.00	70.78	271.51	6611.55	376.04 S	563.56 W	588.59	8.42
6875.00	74.62	271.47	6625.82	374.85 S	609.36 W	634.20	8.00
6922.00	77.67	271.69	6637.08	373.59 S	654.97 W	679.61	6.51

6946.00

79.65

271.42

6641.80

372.95 S

678.50 W

703.03

8.32

**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 265.97 DEGREES (GRID)  
A TOTAL CORRECTION OF 7.48 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.  
HORIZONTAL DISPLACEMENT(CLOSURE) AT 6946.00 FEET  
IS 774.24 FEET ALONG 241.20 DEGREES (GRID)**

**Tie-In @ Surface**

**Surveys at 261 ft, 515ft and 802 ft were taken and provided by HP 322 while they were drilling the surface hole and have been converted from magnetic north to grid north.**

**Date Printed:27 June 2014**