HALLIBURTON | Sperry Drilling

PCGK: Pressure Case Gamma
PCDC: Pressure Case Directional

Powered by INSITE™

Company	**Noble Energy**
Rig	**H&P 315**
Well	**Jenkins B11-79-1HCM**
Field	**Wattenberg**
Country	**USA**
API Number	**05-123-37194**

Country	**USA**
Field	**Wattenberg**
Location	**Lat: 40°24' 42.08" North Long: 104°31' 34.54" West**
Well	**Jenkins B11-79-1HCM**
Company	**Noble Energy**
Rig	**H&P 315**

LOCATION

Latitude : **40°24' 42.08" North**
Longitude : **104°31' 34.54" West**

UTM Easting = **3,271,144.156 ft**
UTM Northing = **1,394,307.354 ft**

Other Services
Directional Drilling

Permanent Datum : **Ground Level** Elevation : **4603.00 ft**
Log Measured From : **Drill Floor** **26.00 ft** Above Permanent Datum
Drilling Measured From : **Drill Floor**

TVD LOG

Elev. KB **N/A**
DF **4629.00 ft**
GL **4603.00 ft**
WD **N/A**

Depth Logged : **794.98 ft** To **6,727.75 ft**
Date Logged : **31-May-13** To **01-Jun-13**
Total Depth MD : **7,126.00 ft** TVD : **6,727.75 ft**
Spud Date : **30-May-13**

Unit No. : **11610113** Job No. : **CA-XX-0900343457**

Plot Type : **Final**
Plot Date : **08-Jun-13**

Run No.	Borehole Record (TVD) Size	From	To
2	8.750 in	794.98 ft	6,026.09 ft
3	8.750 in	6,026.09 ft	6,727.75 ft

Run No.	Borehole Record (TVD) Size	From	To

Casing Record (TVD)

Size	Weight	From	To
7.000 in	26.00 lbpf	SURFACE	6,727.34 ft

WELL INFORMATION

MWD Run Number	100	200
Date run completed	01-Jun-13	02-Jun-13
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)	794.98	6,026.09
Log End Depth (TVD, ft)	6,026.09	6,727.75
Drill or Wipe	Drill	Drill
Drill/Wipe Start Date and Time	31-May-13 03:00	01-Jun-13 05:30
Drill/Wipe End Date and Time	31-May-13 22:00	01-Jun-13 22:30
Min Inc (deg) @ Depth (TVD, ft)	.37 @ 1,084.97	.65 @ 6,021.09
Max Inc (deg) @ Depth (TVD, ft)	15.66 @ 3,699.55	81.64 @ 6,721.67
Bit TFA(in2) / Bit Type	.78 / PDC	.75 / PDC
Flow Rate (gpm)	634.23	586.22
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)	8.70 / 28.00	10.40 / 34.00
Filtrate CL (ppm)	1,000.00	1,000.00
pH / Fluid Loss (mptm)	11.50 / 0	8.70 / 0
PV (cP) / YP (lhf2)	2 / 4.00	10 / 9.00
% Solids / % Sand	3.00 / 0.30	11.5 / .3
% 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	177.64 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A			
Lead MWD Engineer	Paul Kock	Paul Kock			
Customer Representative	Bryant Dear	Bryant Dear			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.84	5.84			
Sub Serial Number	11341333	11341333			
Insert Serial Number	11400829	11400829			
Date and Time Initialized	30-May-13 14:45	30-May-13 14:45			
Date and Time Read	02-Jun-13 04:37	02-Jun-13 04:51			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	56.63	52.11			
Software Version	6.21	6.21			
Sub Serial Number	11341333	11341333			
Sonde Serial Number	11638536	11638536			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	53.22	312.53			

Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	51.63	47.11			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	11341333	11341333			
Insert/Sonde Serial Number	11681009	11681009			

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 2" (1:600) logs - 1 ft. interval, 3 ft. coercion distance.
- All 5" (1:240) logs - .5 ft. interval, .6 ft. coercion distance.

5. INSITE version 7.4.20

WARRANTY

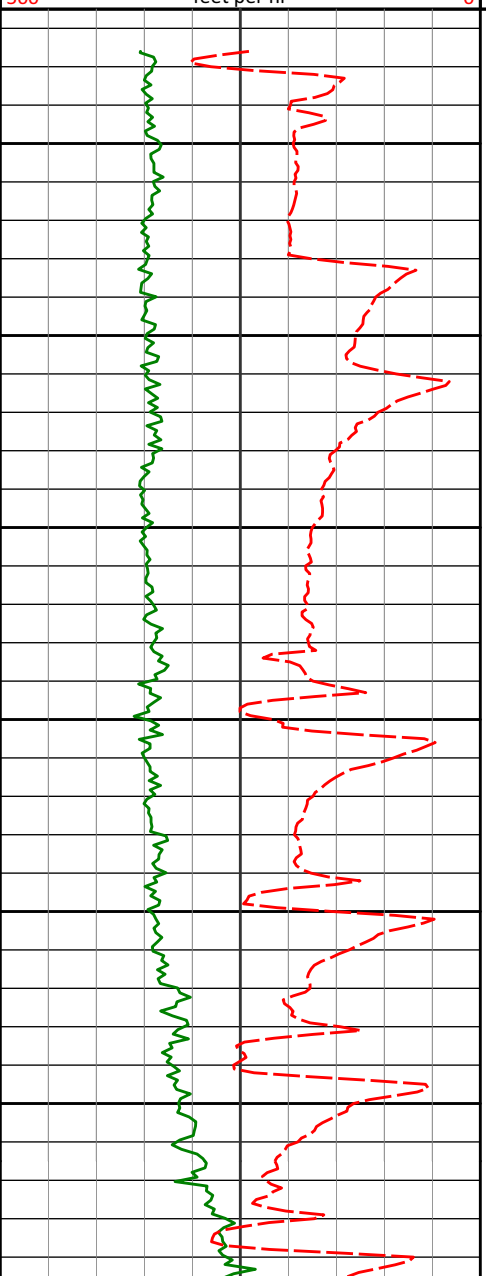
HALLIBURTON
Sperry Drilling Services

TVD Detail Log 1:600

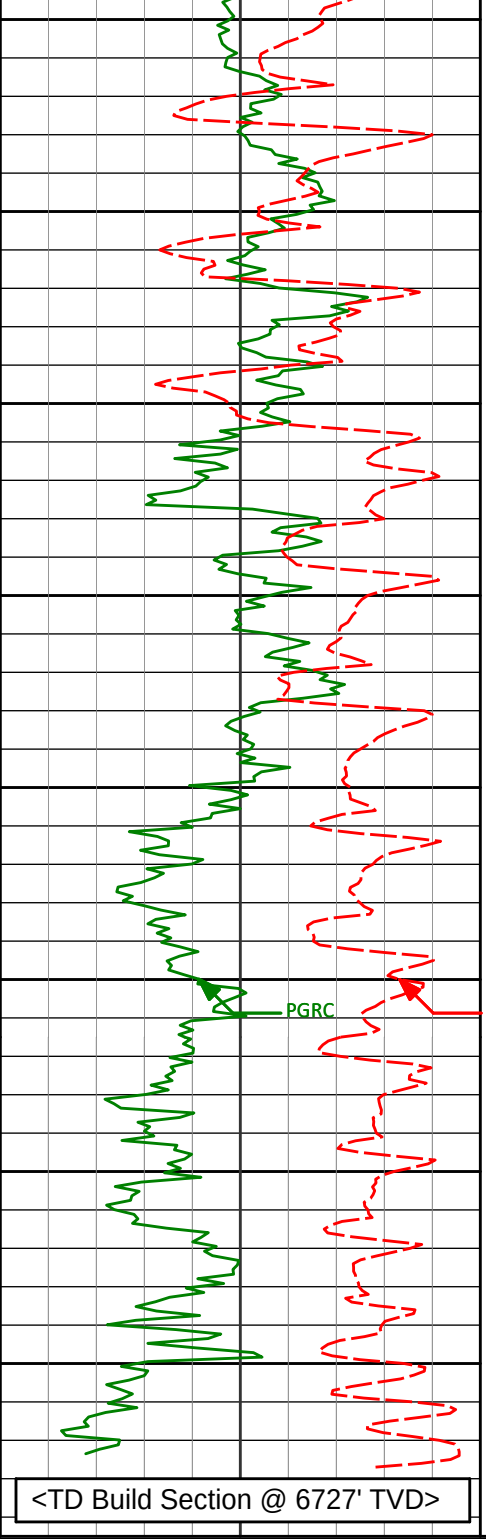
Noble Energy, Inc
Jenkins B11-79-1HCM
H&P 315
T5N R64W

PCG Gamma Ray
PGRC
0 api 300

Avg Rate of Penetration
ROP Avg
500 feet per hr 0



Depth ft	*Depth*	*Inc.*	*Azi.*	*TVD*	*V.S.*
<Run 200>	6067'	0.65°	352.21°	6021.09'	492.62'
6050					
<KOP>					
6100					
6150	6200'	10.00°	356.95°	6153.37'	504.91'
6200	6248'	14.60°	359.01°	6200.25'	515.12'
6250	6295'	18.50°	357.66°	6245.30'	528.50'
6300	6343'	22.32°	356.45°	6290.28'	545.20'
	6390'	26.55°	356.18°	6333.06'	564.58'



Depth	Inc.	Azi.	TVD	V.S.
6438'	31.26°	358.33°	6375.07'	587.73'
6484'	33.92°	0.52°	6413.82'	612.50'
6532'	36.06°	359.60°	6453.14'	640.02'
6579'	39.33°	0.41°	6490.33'	668.75'
6627'	43.06°	359.96°	6526.44'	700.36'
6674'	47.55°	359.97°	6559.49'	733.76'
6722'	51.32°	359.51°	6590.70'	770.21'
6769'	55.42°	358.58°	6618.73'	807.91'
6817'	60.30°	357.45°	6644.26'	848.49'
6864'	64.83°	357.84°	6665.91'	890.14'
6912'	70.63°	358.39°	6684.10'	934.50'
6959'	74.41°	358.73°	6698.21'	979.29'
7007'	78.02°	358.40°	6709.65'	1025.87'
7054'	79.65°	359.21°	6718.75'	1071.95'
7072'	81.64°	359.00°	6721.67'	1089.71'

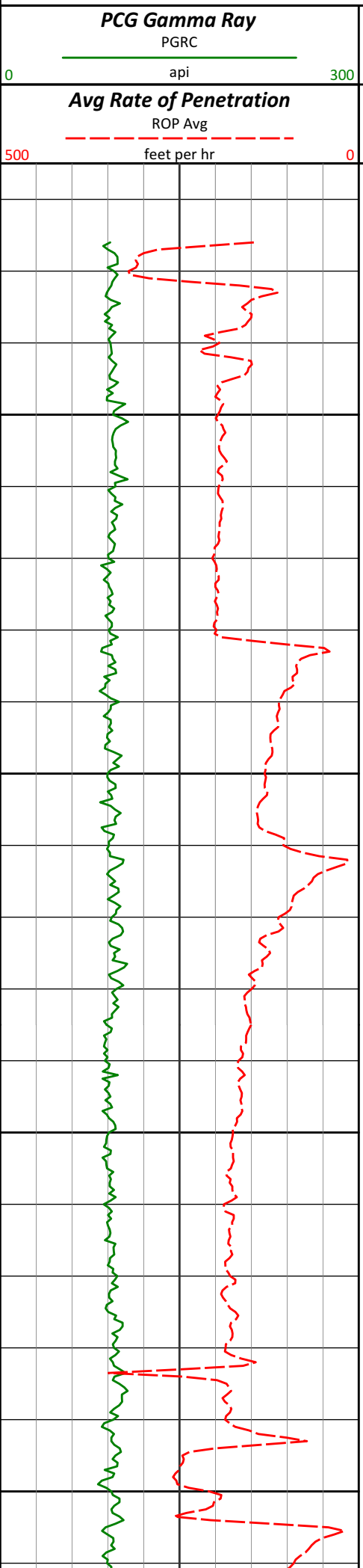
Avg Rate of Penetration
ROP Avg
500 feet per hr 0

PCG Gamma Ray
PGRC
0 api 300

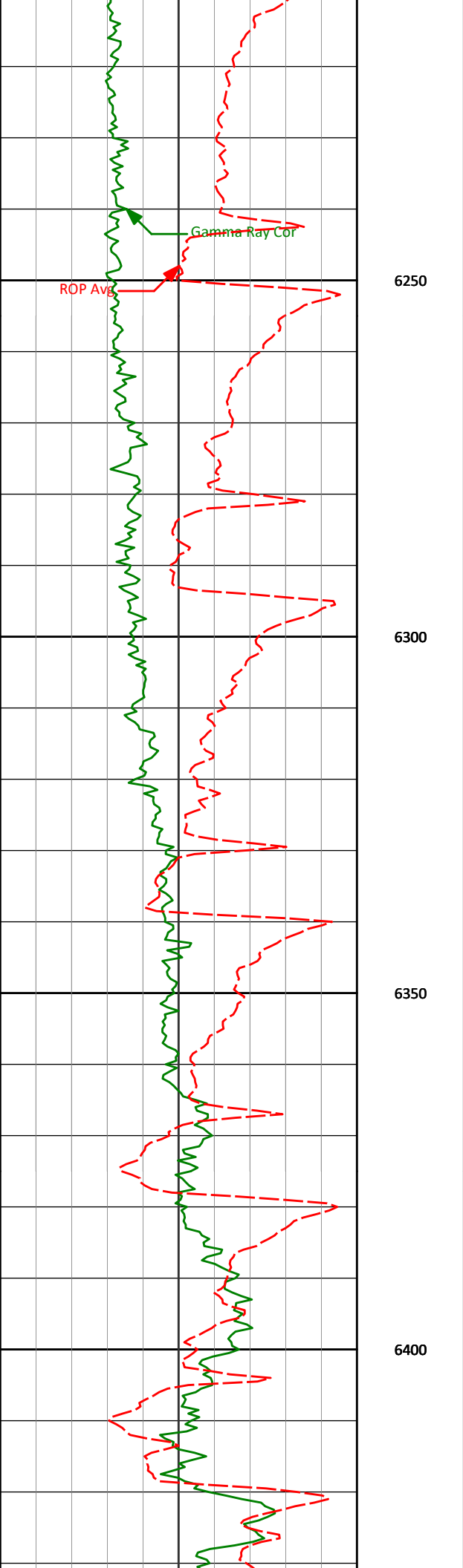
Depth ft

HALLIBURTON
Sperry Drilling Services
TVD Detail Log 1:240

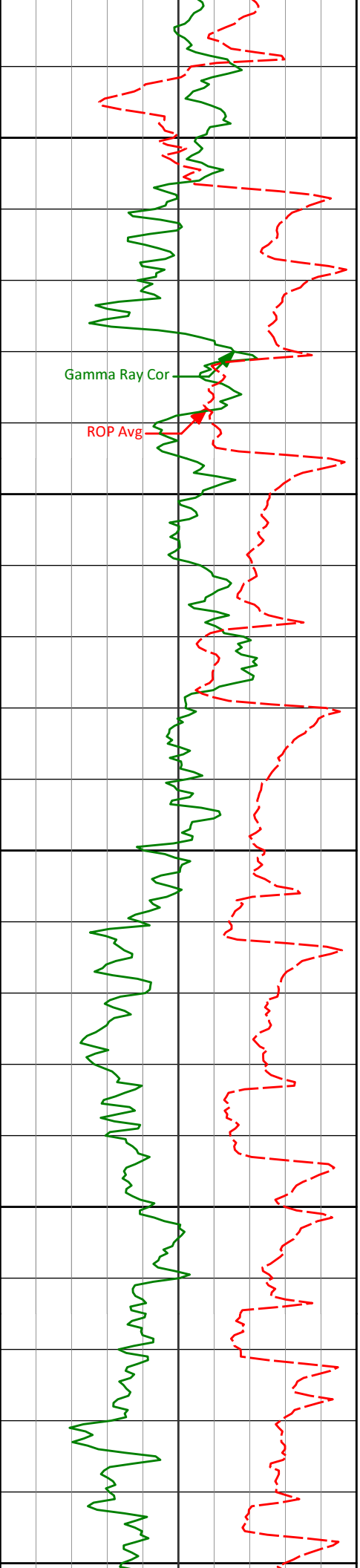
Noble Energy, Inc
Jenkins B11-79-1HCM
H&P 315
T5N R64W



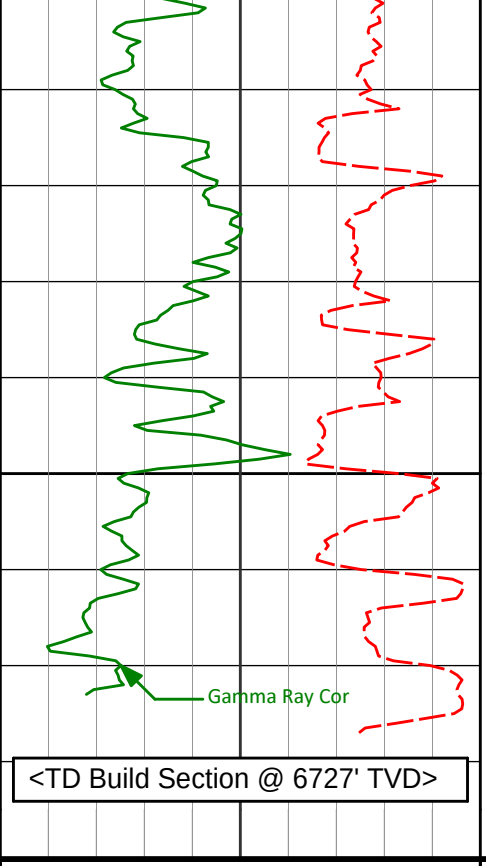
Depth ft	Depth	Inc.	Azi.	TVD	V.S.
	6067'	0.65°	352.21°	6021.09'	492.62'
<Run 200>					
<KOP>					
	6200'	10.00°	356.95°	6153.37'	504.91'
	6248'	14.60°	359.01°	6200.25'	515.12'



6295'	18.50°	357.66°	6245.30'	528.50'
6343'	22.32°	356.45°	6290.28'	545.20'
6390'	26.55°	356.18°	6333.06'	564.58'
6438'	31.26°	358.33°	6375.07'	587.73'
6484'	33.92°	0.52°	6413.82'	612.50'



6532'	36.06°	359.60°	6453.14'	640.02'
6579'	39.33°	0.41°	6490.33'	668.75'
6627'	43.06°	359.96°	6526.44'	700.36'
6674'	47.55°	359.97°	6559.49'	733.76'
6722'	51.32°	359.51°	6590.70'	770.21'
6769'	55.42°	358.58°	6618.73'	807.91'
6817'	60.30°	357.45°	6644.26'	848.49'



6864'	64.83°	357.84°	6665.91'	890.14'
6912'	70.63°	358.39°	6684.10'	934.50'
6959'	74.41°	358.73°	6698.21'	979.29'
7007'	78.02°	358.40°	6709.65'	1025.87'
7054'	79.65°	359.21°	6718.75'	1071.95'
7072'	81.64°	359.00°	6721.67'	1089.71'

6700

Avg Rate of Penetration
ROP Avg
500 feet per hr 0

PCG Gamma Ray
PGRC
0 api 300

Depth
ft

Depth	***Inc.***	***Azi.***	***TVD***	***V.S.***

HALLIBURTON

INSITE

DIRECTIONAL SURVEY REPORT

Noble Energy
Jenkins B11-79-1HCM
Wattenberg
Weld Colorado
USA
CA-XX-0900343457

Surface surveys at 250 ft, 550 ft and 722 ft have had azimuths corrected to grid north, but were not taken by Halliburton.

Last survey is a projection from 7072 ft MD to TD at 7126 ft MD.

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
250.00	0.70	110.10	249.99	0.52 S	1.43 E	-0.51	0.28
550.00	0.30	153.00	549.98	1.85 S	3.51 E	-1.82	0.17
722.00	0.40	146.10	721.98	2.75 S	4.05 E	-2.71	0.06
809.00	0.40	171.46	808.98	3.31 S	4.27 E	-3.26	0.20
1085.00	0.37	157.65	1084.97	5.08 S	4.75 E	-5.03	0.04
1178.00	0.83	106.19	1177.97	5.55 S	5.51 E	-5.49	0.72
1270.00	0.98	39.92	1269.96	5.13 S	6.65 E	-5.06	1.08
1457.00	1.01	41.74	1456.93	2.68 S	8.78 E	-2.58	0.02
1552.00	1.36	24.62	1551.91	1.03 S	9.80 E	-0.92	0.52
1646.00	1.26	22.54	1645.88	0.94 N	10.66 E	1.06	0.12
1741.00	0.99	42.38	1740.87	2.51 N	11.62 E	2.64	0.49
1836.00	2.02	27.49	1835.83	4.61 N	12.94 E	4.75	1.15
1931.00	4.55	24.13	1930.67	9.53 N	15.26 E	9.70	2.67
2026.00	5.07	11.82	2025.34	17.08 N	17.66 E	17.27	1.21

2121.00	6.21	9.15	2119.88	26.26 N	19.34 E	26.47	1.23
2216.00	6.06	18.51	2214.33	36.09 N	21.74 E	36.33	1.06
2311.00	7.05	13.54	2308.71	46.51 N	24.70 E	46.79	1.20
2406.00	8.54	7.73	2402.83	59.17 N	27.02 E	59.47	1.77
2501.00	9.92	3.63	2496.60	74.33 N	28.48 E	74.64	1.61
2596.00	11.23	0.93	2589.99	91.74 N	29.15 E	92.06	1.47
2691.00	13.34	2.63	2682.81	111.94 N	29.80 E	112.27	2.25
2786.00	13.39	5.60	2775.23	133.84 N	31.38 E	134.18	0.72
2881.00	12.87	7.65	2867.75	155.27 N	33.86 E	155.64	0.73
2976.00	12.97	12.61	2960.35	176.16 N	37.60 E	176.57	1.17
3071.00	13.83	14.24	3052.76	197.57 N	42.72 E	198.04	0.99
3166.00	12.16	16.95	3145.33	218.15 N	48.43 E	218.68	1.87
3261.00	10.76	17.61	3238.43	236.18 N	54.03 E	236.76	1.48
3355.00	12.00	11.00	3330.58	254.13 N	58.55 E	254.77	1.91
3450.00	12.85	14.47	3423.36	274.06 N	63.07 E	274.74	1.19
3545.00	13.40	12.75	3515.88	295.02 N	68.14 E	295.77	0.71
3640.00	15.11	11.52	3607.95	317.89 N	73.04 E	318.69	1.83
3735.00	15.66	11.32	3699.55	342.60 N	78.03 E	343.45	0.58
3830.00	14.08	11.97	3791.36	366.48 N	82.95 E	367.38	1.67
3925.00	11.11	13.91	3884.06	386.67 N	87.55 E	387.62	3.16
4020.00	8.72	12.48	3977.64	402.59 N	91.30 E	403.58	2.53
4115.00	6.66	17.78	4071.78	414.87 N	94.54 E	415.90	2.29
4210.00	4.91	17.79	4166.29	423.98 N	97.47 E	425.05	1.84
4305.00	4.61	9.60	4260.97	431.62 N	99.35 E	432.70	0.78
4400.00	5.45	7.63	4355.60	439.86 N	100.58 E	440.95	0.90
4495.00	3.84	11.73	4450.29	447.44 N	101.83 E	448.55	1.73
4590.00	2.44	8.05	4545.14	452.56 N	102.76 E	453.68	1.49
4685.00	3.93	4.91	4639.99	457.81 N	103.32 E	458.93	1.58
4780.00	4.89	19.43	4734.71	464.87 N	104.94 E	466.01	1.54
4875.00	4.08	24.24	4829.42	471.77 N	107.68 E	472.94	0.94
4969.00	2.34	31.70	4923.27	476.45 N	110.06 E	477.65	1.90
5064.00	1.66	20.36	5018.21	479.39 N	111.56 E	480.61	0.82
5159.00	0.90	37.56	5113.19	481.27 N	112.49 E	482.50	0.89
5444.00	1.42	56.53	5398.13	484.99 N	116.80 E	486.27	0.22
5539.00	0.66	16.98	5493.11	486.17 N	117.94 E	487.45	1.06
5823.00	0.57	8.86	5777.10	489.13 N	118.64 E	490.42	0.04
6013.00	0.45	5.10	5967.09	490.80 N	118.85 E	492.10	0.07
6067.00	0.65	352.21	6021.09	491.32 N	118.83 E	492.62	0.43
6200.00	10.00	356.95	6153.37	503.62 N	118.11 E	504.91	7.03
6248.00	14.60	359.01	6200.25	513.84 N	117.78 E	515.12	9.63
6295.00	18.50	357.66	6245.30	527.22 N	117.38 E	528.50	8.34
6343.00	22.32	356.45	6290.28	543.93 N	116.50 E	545.20	8.01
6390.00	26.55	356.18	6333.06	563.33 N	115.25 E	564.58	9.00
6438.00	31.26	358.33	6375.07	586.49 N	114.17 E	587.73	10.05
6484.00	33.92	0.52	6413.82	611.26 N	113.94 E	612.50	6.32
6532.00	36.06	359.60	6453.14	638.79 N	113.96 E	640.02	4.59
6579.00	39.33	0.41	6490.33	667.52 N	113.97 E	668.75	7.04
6627.00	43.06	359.96	6526.44	699.13 N	114.07 E	700.36	7.80
6674.00	47.55	359.97	6559.49	732.53 N	114.05 E	733.76	9.55
6722.00	51.32	359.51	6590.70	768.99 N	113.88 E	770.21	7.89
6769.00	55.42	358.58	6618.73	806.69 N	113.24 E	807.91	8.87
6817.00	60.30	357.45	6644.26	847.30 N	111.82 E	848.49	10.36
6864.00	64.83	357.84	6665.91	888.97 N	110.11 E	890.14	9.67
6912.00	70.63	358.39	6684.10	933.34 N	108.66 E	934.50	12.13
6959.00	74.41	358.73	6698.21	978.15 N	107.53 E	979.29	8.07
7007.00	78.02	358.40	6709.65	1024.74 N	106.36 E	1025.87	7.55
7054.00	79.65	359.21	6718.75	1070.84 N	105.40 E	1071.95	3.86
7072.00	81.64	359.00	6721.67	1088.60 N	105.13 E	1089.71	11.12
7126.00	85.43	359.00	6727.75	1142.24 N	104.19 E	1143.33	7.02

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 0.64 DEGREES (GRID)
A TOTAL CORRECTION OF 7.90 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 7126.00 FEET

HORIZONTAL DISPLACEMENT(CLOSURE) AT 7126.00 FEET
IS 1146.98 FEET ALONG 5.21 DEGREES (GRID)

Date Printed:07 June 2013