

SlimPulse - Gamma Ray

1 in / 100 ft True Vertical Depth

Recorded Mode, Composite Log

Schlumberger

Company:

Noble Energy

Well:

Heartland C30-79HN

Field:

Wattenburg

County:

Weld

State:

Colorado

Country:

USA

Section:	25	APIN:	05-123-39556-00
Township:	04N	Rig Name:	Precision 828
Range:	65W	Rig Type:	Top Drive

FL:

NAD83 Colorado State Plane, Northern Zone, US Feet

FL1:

Latitude: 40° 16' 36.228" N, Northing: 1344918.351 ftUS

FL2:

Longitude: 104° 36' 12.816" W, Easting: 3250117.534 ftUS



Acquisition Dates:	30-Jul-2014 -- 20-Aug-2014	Other Services:	Surveys / Continuous D&I
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Log Interval:	674.99(ft)TVD -- 7077.39(ft)TVD		Downhole Shocks
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Index Types:	True Vertical Depth		Downhole Temperature
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Index Scales:	1:1200 1" / 100'		Directional Drilling
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Depth Source:	Driller's Depth		
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Depth Sensor:	PASON		
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Print Type:	Final		
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Spud Date:	09-Aug-2014		
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Disclaimer

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Contents

- Header
- Disclaimer
- Contents
- UDComposite1
  - Integration Summary
  - Software Version
  - Composite Summary
  - Log ( TVD )
  - Parameter Listing
- Survey Record
- Calibration Report
- Tail



# UDComposite 1

## Software Version

Acquisition System				Version			
MaxWell				4.0.9163.3000			
Application Patch				Patch-SP-10767_18214-4.0.9163.3001			
				Patch-Hotfix_SADN8-21106-4.0.9434.3002			
Tool Elements		Description		Software Version		Firmware Version	
DRILLING_SURFACE		DRILLING_SURFACE		4.0.9433.3000			
SPEC		SlimPulse Electronics Cartridge		4.0.9360.3000			

## Composite Summary

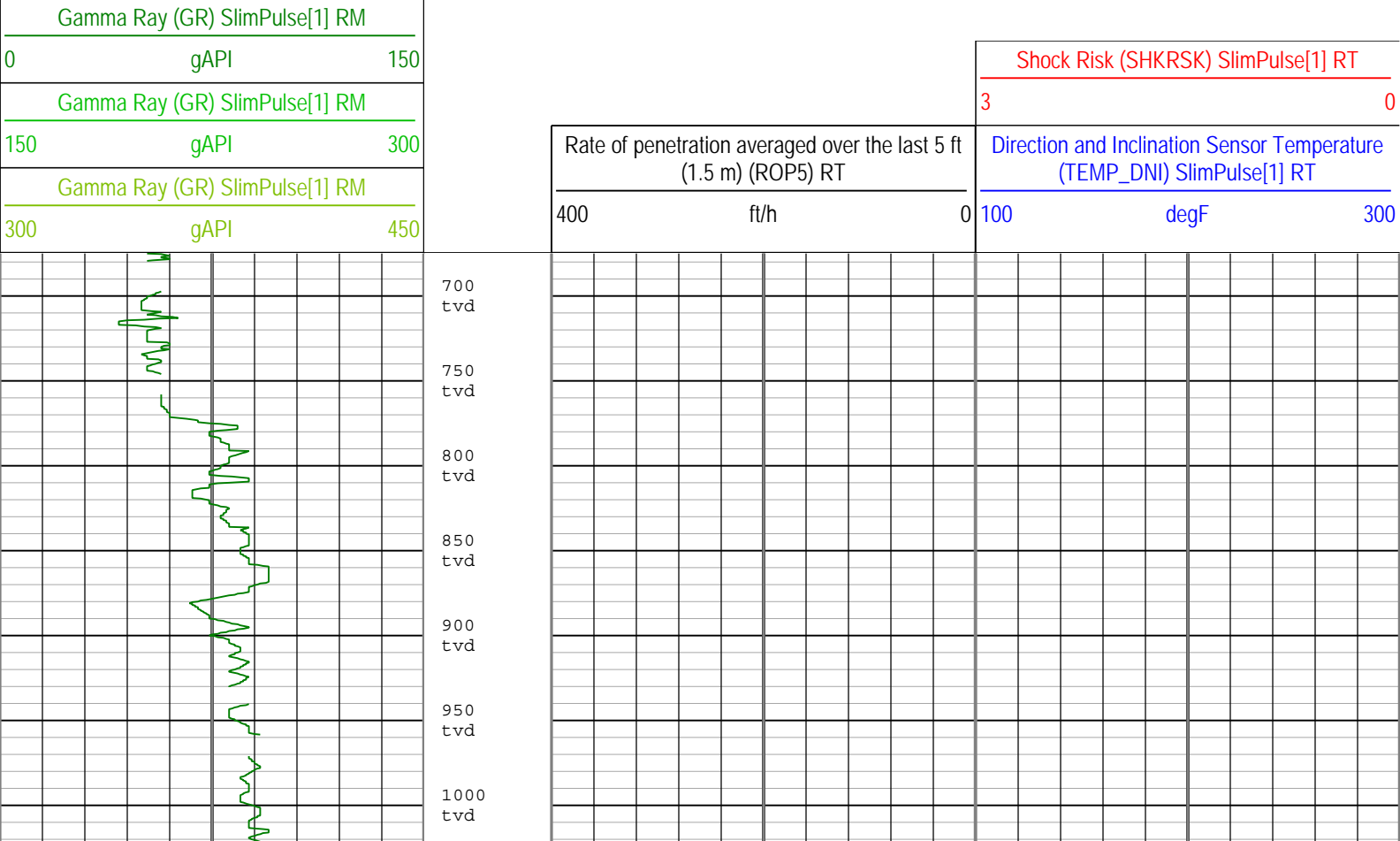
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Include Parallel Data
Run001	Drilling	Down	7423.25 ft	16939.33 ft	30-Jul-2014 11:33:30 PM	05-Aug-2014 3:45:29 AM	No
Run 2	Drilling	Down	7303.00 ft	16299.58 ft	14-Aug-2014 2:25:24 PM	20-Aug-2014 4:19:01 AM	No

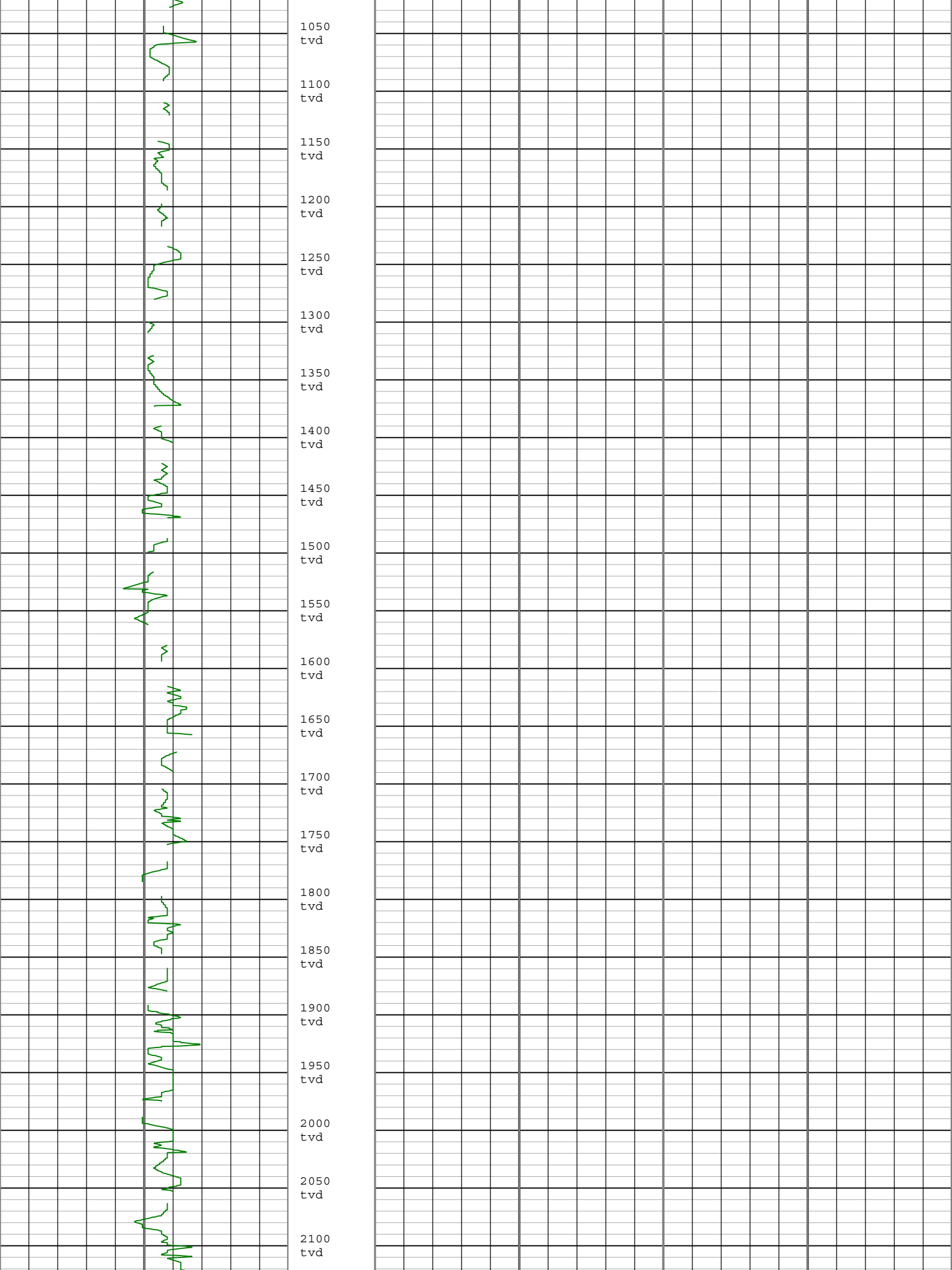
All depths are referenced to toolstring zero

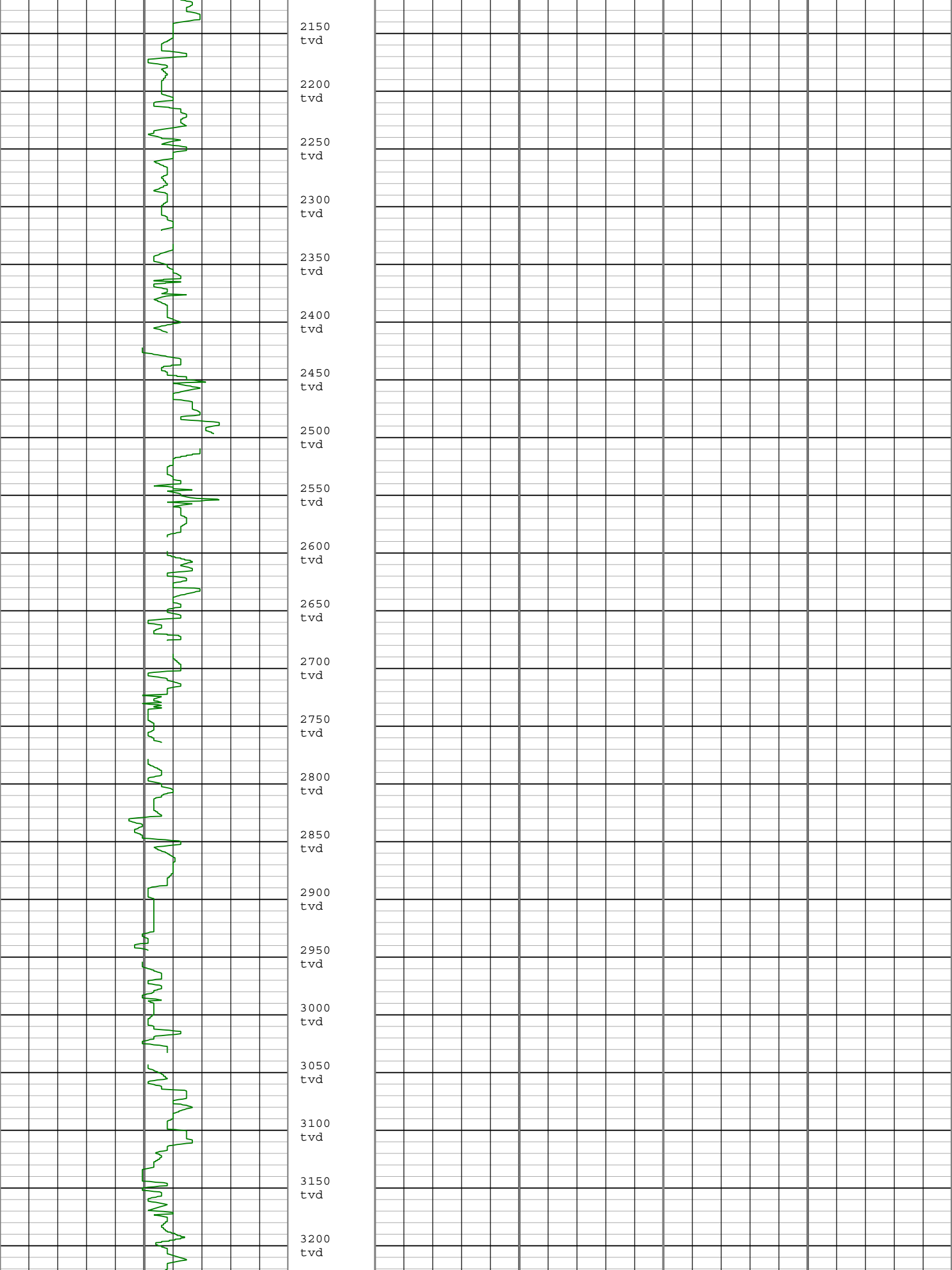
## Log

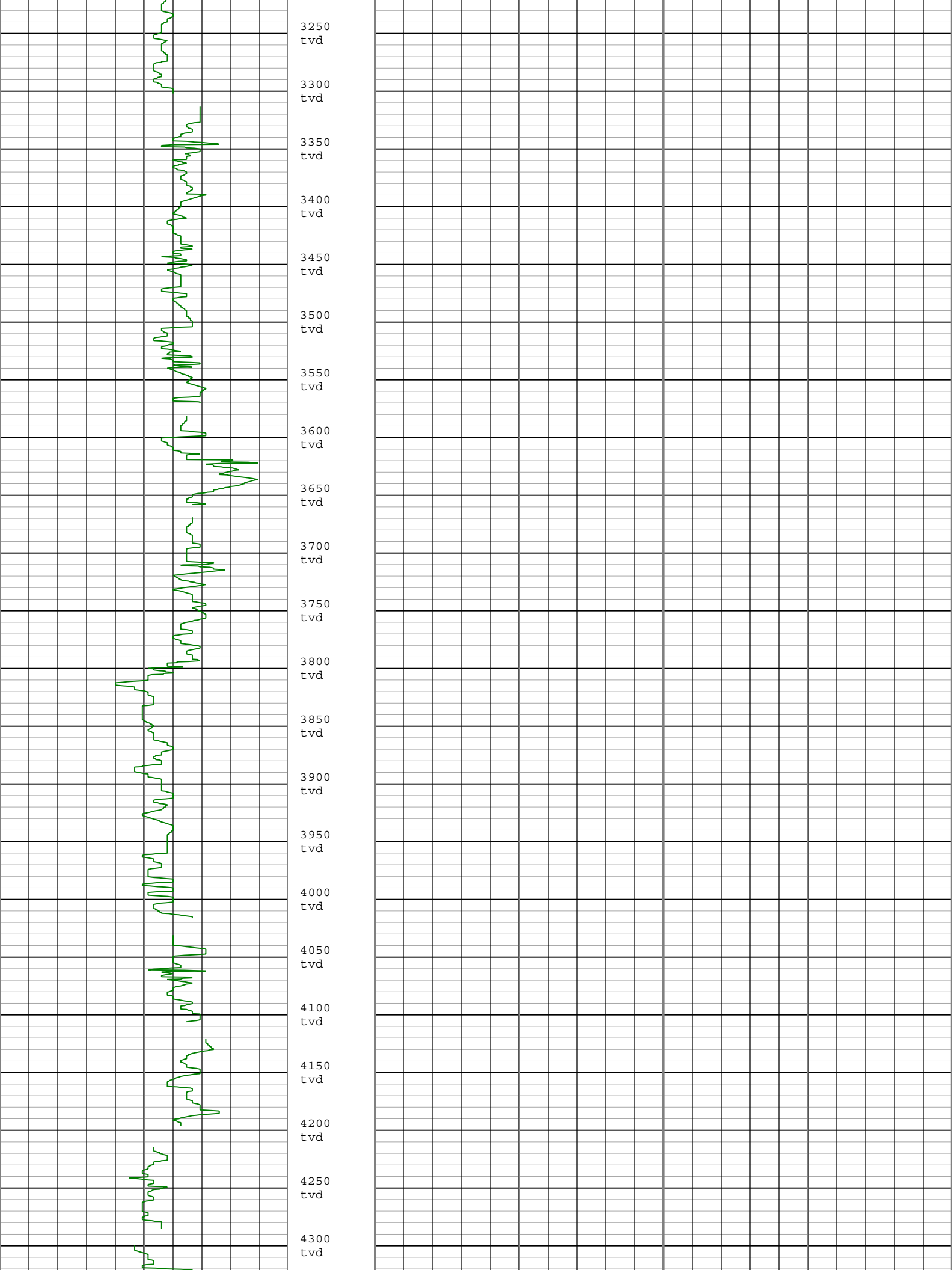
Company:Noble Energy      Well:Heartland C30-79HN  
UDComposite 1:S002

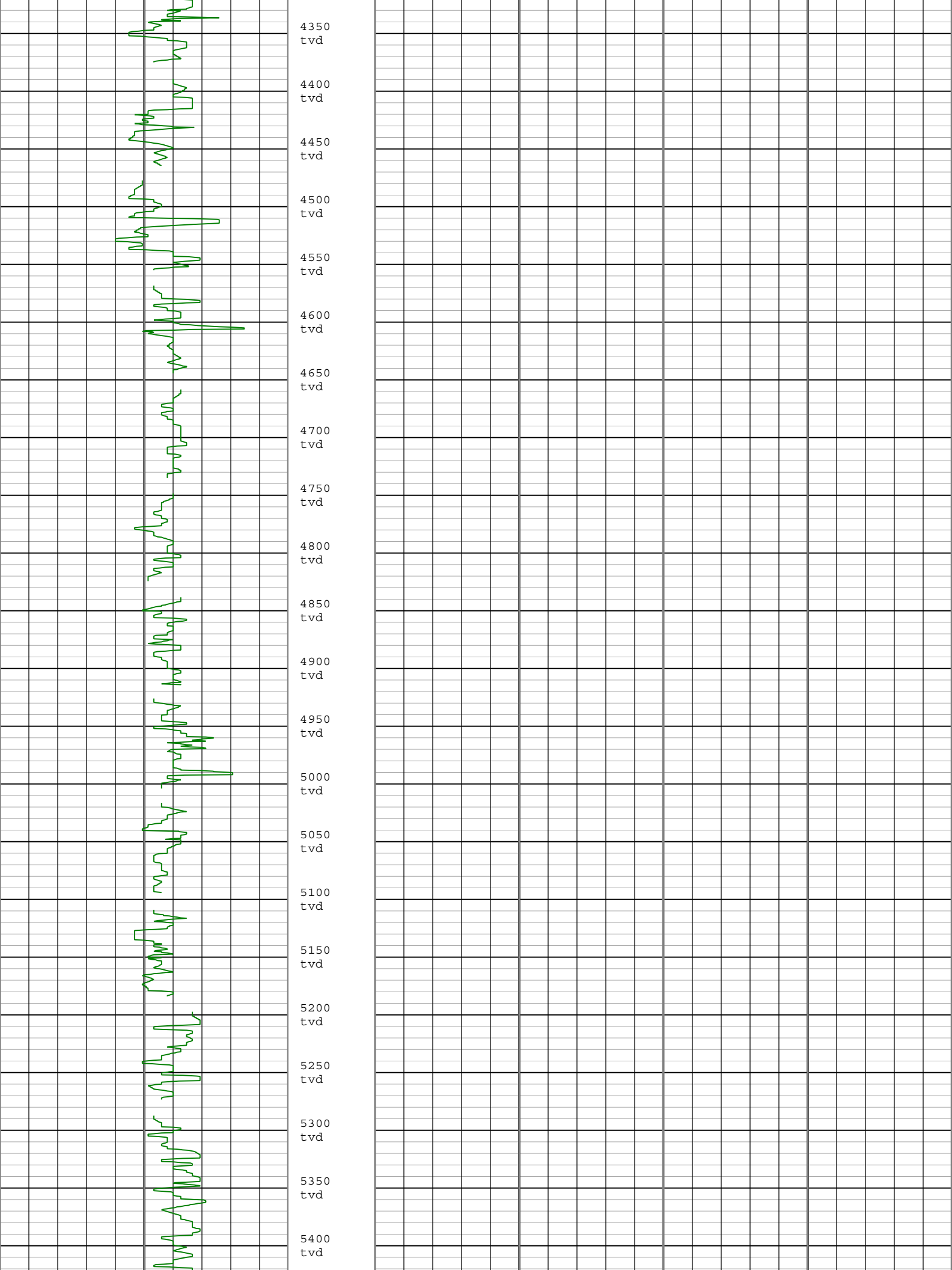
Description:    Format: Log ( TVD )    Index Scale: 1 in per 100 ft    Index Unit: ft    Index Type: TVD    Creation Date: 19-Jan-2015 15:32:32

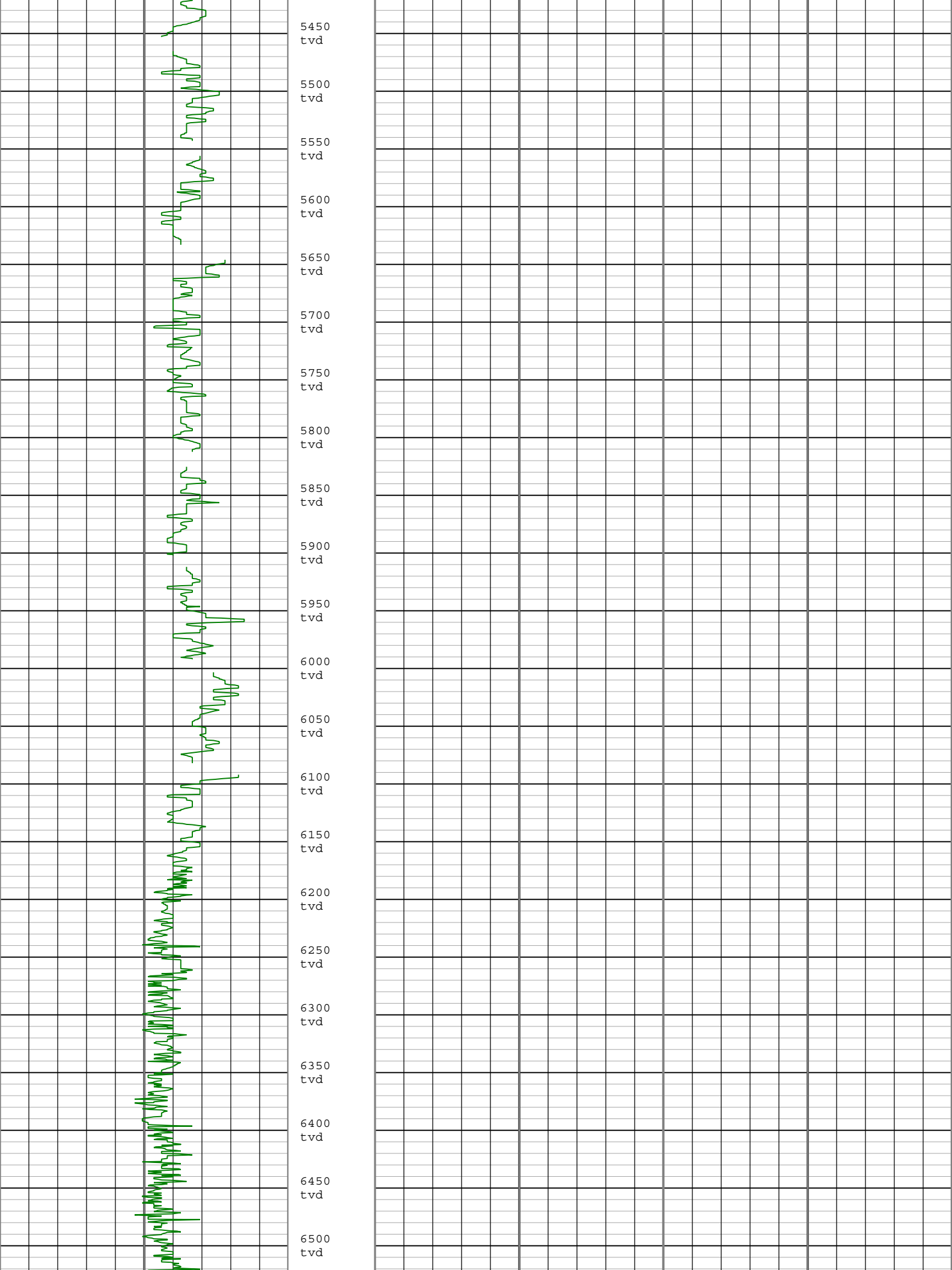


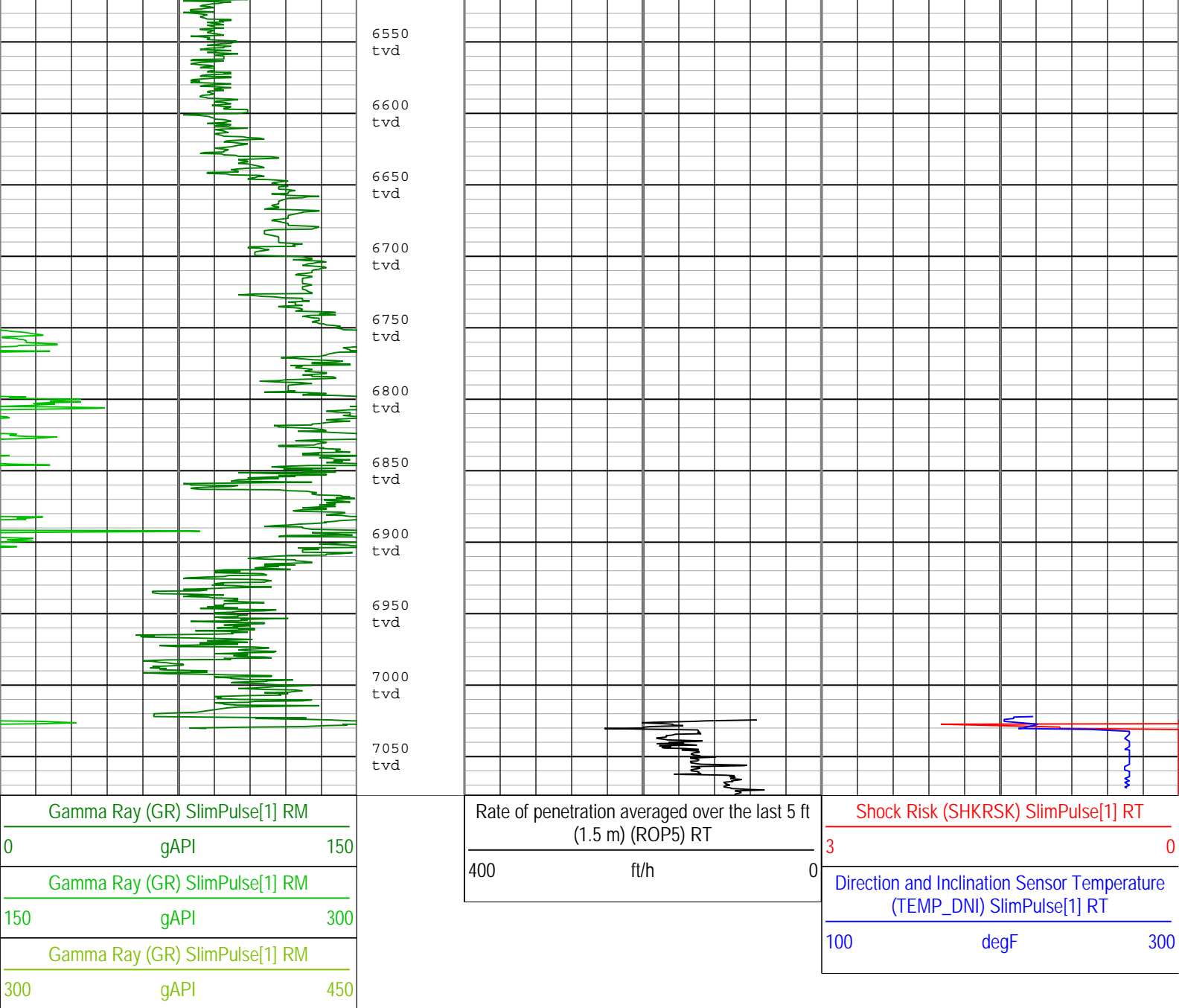












Description: Format: Log ( TVD ) Index Scale: 1 in per 100 ft Index Unit: ft Index Type: TVD Creation Date: 19-Jan-2015 15:32:32

## Channel Processing Parameters

### Run 2: Parameters

Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	6.125	in
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

## Tool Control Parameters

## Survey Record

### Survey Calculation

Method :	Minimum Radius of Curvature	DLS Method :	Lubinski
North Reference :	Grid North	Total Correction Formula :	Magnetic Dec - Grid Convergence
Grid Convergence :	0.58 deg		

### Rig Location

Latitude :	40° 16' 36.228" N	Longitude :	104° 36' 12.816" W
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### Tie In Point

Measured Depth:	0.00 ft	Inclination:	0.00 deg	Azimuth:	0.00 deg
True Vertical Depth:	0.00 ft	North Displacement:	0.00 ft	East Displacement:	0.00 ft



N/-S VSec Origin:		0.00 ft		E/-W VSec Origin:		0.00 ft		Vertical Section Azimuth:		1.22 deg					
D&I Inits Computed and Values Used - Run001															
Geomagnetic Model :		BGGM 2013				Geomagnetic Date :		12-Aug-2014							
Computed Location B :		52661.03 nT +/- 300.00nT				Used Location B :		52572.00 nT +/- 300.00nT							
Computed Location G :		999.53 mgn +/- 2.50mgn				Used Location G :		999.53 mgn +/- 2.50mgn							
Computed Magnetic Dip :		66.85 deg +/- 0.45deg				Used Magnetic Dip :		66.84 deg +/- 0.45deg							
Computed Magnetic Dec :		8.39 deg				Used Magnetic Dec :		8.45 deg							
Computed Total Correction :		7.81 deg				Used Total Correction :		7.87 deg							
Survey Quality Index															
9 : Manual				28 : Tie-In Point											
Survey Correction Index															
0 : No correction															
Survey Description Index															
0 : Not Flagged Survey				7 : Projection to Bit											
Seq	MD (ft)	Incl (deg)	Azim (deg)	Course (ft)	TVD (ft)	V Sec (ft)	N/ -S (ft)	E/ -W (ft)	Closure (ft)	at Azim (deg)	DLS deg/100ft	Tool Type	QI	CI	DI
1	0.00	0.00	0.00	- - - -	0.00	0.00	0.00	0.00	0.00	90.00	0.00	TIP	28	0	0
2	320.00	0.20	220.76	320.00	320.00	-0.43	-0.42	-0.36	0.56	220.76	0.06	Other	9	0	0
3	713.00	0.60	277.76	393.00	712.99	-0.73	-0.66	-2.85	2.92	256.88	0.13	Other	9	0	0
4	793.00	0.50	235.10	80.00	792.99	-0.88	-0.81	-3.55	3.64	257.19	0.51	Other	9	0	0
5	884.00	0.50	231.00	91.00	883.98	-1.37	-1.28	-4.19	4.36	252.94	0.04	Other	9	0	0
6	973.00	0.50	241.50	89.00	972.98	-1.82	-1.71	-4.83	5.12	250.46	0.10	Other	9	0	0
7	1063.00	0.60	240.50	90.00	1062.98	-2.25	-2.13	-5.59	5.97	249.09	0.11	Other	9	0	0
8	1158.00	0.50	235.70	95.00	1157.97	-2.75	-2.61	-6.36	6.89	247.67	0.12	Other	9	0	0
9	1251.00	0.40	237.80	93.00	1250.97	-3.16	-3.01	-6.97	7.58	246.61	0.11	Other	9	0	0
10	1346.00	0.60	238.70	95.00	1345.96	-3.61	-3.45	-7.68	8.43	245.80	0.21	Other	9	0	0
11	1440.00	0.70	256.70	94.00	1439.96	-4.02	-3.84	-8.66	9.48	246.09	0.24	Other	9	0	0
12	1534.00	0.60	221.90	94.00	1533.95	-4.54	-4.34	-9.54	10.47	245.57	0.43	Other	9	0	0
13	1628.00	1.30	118.90	94.00	1627.94	-5.41	-5.22	-8.94	10.33	239.73	1.65	Other	9	0	0
14	1723.00	1.80	90.40	95.00	1722.91	-5.89	-5.75	-6.50	8.69	228.52	0.95	Other	9	0	0
15	1818.00	2.60	65.30	95.00	1817.84	-4.92	-4.86	-3.05	5.74	212.14	1.30	Other	9	0	0
16	1913.00	3.70	79.10	95.00	1912.70	-3.34	-3.38	1.91	3.87	150.45	1.40	Other	9	0	0
17	2008.00	5.10	82.60	95.00	2007.42	-2.06	-2.25	9.11	9.38	103.90	1.50	Other	9	0	0
18	2100.00	5.90	79.00	92.00	2098.99	-0.45	-0.83	17.81	17.81	92.66	0.95	Other	9	0	0
19	2190.00	7.20	79.50	90.00	2188.40	1.68	1.08	27.90	27.92	87.77	1.45	Other	9	0	0
20	2280.00	6.70	74.30	90.00	2277.74	4.35	3.53	38.50	38.65	84.76	0.89	Other	9	0	0
21	2370.00	6.20	70.60	90.00	2367.17	7.59	6.57	48.13	48.59	82.23	0.72	Other	9	0	0
22	2460.00	6.60	75.30	90.00	2456.61	10.72	9.49	57.72	58.50	80.66	0.73	Other	9	0	0
23	2550.00	6.20	70.60	90.00	2546.05	13.85	12.42	67.31	68.44	79.54	0.73	Other	9	0	0
24	2640.00	6.80	73.00	90.00	2635.47	17.23	15.59	76.99	78.54	78.55	0.73	Other	9	0	0
25	2730.00	6.60	68.60	90.00	2724.86	20.88	19.04	86.90	88.98	77.64	0.61	Other	9	0	0
26	2820.00	7.80	77.40	90.00	2814.15	24.33	22.26	97.68	100.16	77.16	1.81	Other	9	0	0
27	2910.00	7.40	74.60	90.00	2903.36	27.45	25.13	109.22	112.07	77.04	0.61	Other	9	0	0
28	3000.00	7.50	73.50	90.00	2992.60	30.90	28.34	120.44	123.72	76.76	0.19	Other	9	0	0
29	3090.00	6.70	73.50	90.00	3081.91	34.28	31.50	131.11	134.84	76.49	0.89	Other	9	0	0
30	3180.00	6.20	74.60	90.00	3171.34	37.27	34.28	140.83	144.95	76.32	0.57	Other	9	0	0
31	3269.00	6.50	73.40	89.00	3259.79	40.19	36.99	150.29	154.79	76.17	0.37	Other	9	0	0
32	3359.00	5.90	66.60	90.00	3349.27	43.67	40.29	159.42	164.44	75.82	1.05	Other	9	0	0
33	3449.00	6.50	70.20	90.00	3438.74	47.43	43.85	168.46	174.08	75.41	0.79	Other	9	0	0
34	3539.00	6.20	75.60	90.00	3528.19	50.56	46.78	177.96	183.99	75.27	0.74	Other	9	0	0
35	3629.00	6.00	78.20	90.00	3617.68	52.93	48.95	187.27	193.57	75.35	0.38	Other	9	0	0
36	3719.00	6.10	74.90	90.00	3707.18	55.33	51.16	196.49	203.05	75.41	0.40	Other	9	0	0
37	3808.00	5.70	75.70	89.00	3795.71	57.84	53.48	205.34	212.17	75.40	0.46	Other	9	0	0
38	3898.00	6.90	80.80	90.00	3885.16	60.02	55.45	215.00	222.05	75.54	1.47	Other	9	0	0
39	3988.00	6.70	79.40	90.00	3974.53	62.07	57.28	225.50	232.68	75.75	0.29	Other	9	0	0


40	4078.00	6.50	79.00	90.00	4063.93	64.23	59.22	235.66	242.98	75.89	0.23	Other	9	0	0
41	4168.00	4.80	84.30	90.00	4153.49	65.76	60.57	244.41	251.80	76.08	1.97	Other	9	0	0
42	4258.00	4.60	85.00	90.00	4243.19	66.60	61.26	251.75	259.09	76.32	0.23	Other	9	0	0
43	4348.00	3.60	82.60	90.00	4332.96	67.42	61.93	258.15	265.49	76.51	1.13	Other	9	0	0
44	4438.00	2.20	82.10	90.00	4422.84	68.11	62.54	262.66	270.01	76.61	1.56	Other	9	0	0
45	4527.00	1.10	87.40	89.00	4511.80	68.44	62.81	265.21	272.54	76.68	1.25	Other	9	0	0
46	4617.00	1.30	86.90	90.00	4601.78	68.58	62.90	267.09	274.41	76.75	0.22	Other	9	0	0
47	4707.00	0.50	127.40	90.00	4691.77	68.42	62.72	268.42	275.66	76.85	1.08	Other	9	0	0
48	4797.00	0.70	78.90	90.00	4781.77	68.31	62.59	269.27	276.44	76.92	0.58	Other	9	0	0
49	4887.00	1.10	42.10	90.00	4871.76	69.08	63.33	270.39	277.72	76.82	0.76	Other	9	0	0
50	4977.00	2.00	9.50	90.00	4961.73	71.28	65.52	271.23	279.04	76.42	1.36	Other	9	0	0
51	5067.00	1.60	335.40	90.00	5051.68	73.97	68.22	270.97	279.43	75.87	1.25	Other	9	0	0
52	5157.00	1.50	339.20	90.00	5141.65	76.19	70.46	270.03	279.07	75.38	0.16	Other	9	0	0
53	5246.00	0.40	305.00	89.00	5230.64	77.45	71.73	269.36	278.74	75.09	1.34	Other	9	0	0
54	5336.00	0.60	357.90	90.00	5320.63	78.09	72.38	269.08	278.64	74.94	0.53	Other	9	0	0
55	5426.00	0.70	292.30	90.00	5410.63	78.76	73.06	268.56	278.31	74.78	0.79	Other	9	0	0
56	5516.00	0.70	259.90	90.00	5500.62	78.85	73.17	267.51	277.33	74.70	0.43	Other	9	0	0
57	5606.00	1.20	246.60	90.00	5590.61	78.35	72.70	266.10	275.85	74.72	0.60	Other	9	0	0
58	5695.00	2.00	245.30	89.00	5679.58	77.28	71.68	263.84	273.39	74.80	0.90	Other	9	0	0
59	5785.00	1.90	238.00	90.00	5769.52	75.78	70.23	261.14	270.41	74.95	0.30	Other	9	0	0
60	5875.00	1.90	223.80	90.00	5859.47	73.86	68.37	258.85	267.72	75.21	0.52	Other	9	0	0
61	5965.00	1.50	231.80	90.00	5949.43	72.01	66.56	256.89	265.35	75.47	0.52	Other	9	0	0
62	6055.00	1.20	235.50	90.00	6039.41	70.72	65.30	255.18	263.42	75.65	0.35	Other	9	0	0
63	6145.00	1.50	222.00	90.00	6129.38	69.27	63.89	253.62	261.55	75.86	0.48	Other	9	0	0
64	6190.00	1.60	220.50	45.00	6174.37	68.34	62.97	252.82	260.53	76.01	0.24	Other	9	0	0
65	6235.00	1.50	222.40	45.00	6219.35	67.41	62.06	252.01	259.55	76.17	0.25	Other	9	0	0
66	6280.00	2.10	345.50	45.00	6264.34	67.76	62.42	251.41	259.06	76.06	7.06	Other	9	0	0
67	6325.00	5.00	2.40	45.00	6309.25	70.52	65.18	251.28	259.61	75.46	6.78	Other	9	0	0
68	6370.00	7.20	4.20	45.00	6353.99	75.30	69.95	251.57	261.12	74.46	4.91	Other	9	0	0
69	6414.00	9.80	3.70	44.00	6397.51	81.79	76.44	252.02	263.35	73.13	5.91	Other	9	0	0
70	6459.00	12.40	2.90	45.00	6441.66	90.45	85.09	252.51	266.47	71.38	5.79	Other	9	0	0
71	6504.00	14.90	1.10	45.00	6485.39	101.06	95.70	252.86	270.37	69.27	5.63	Other	9	0	0
72	6549.00	16.90	6.40	45.00	6528.66	113.37	107.99	253.70	275.72	66.94	5.49	Other	9	0	0
73	6594.00	20.00	6.10	45.00	6571.35	127.55	122.14	255.25	282.97	64.43	6.89	Other	9	0	0
74	6639.00	22.80	6.10	45.00	6613.24	143.91	138.47	257.00	291.93	61.68	6.22	Other	9	0	0
75	6684.00	25.50	5.10	45.00	6654.30	162.26	156.79	258.78	302.59	58.79	6.07	Other	9	0	0
76	6729.00	28.20	3.20	45.00	6694.44	182.56	177.06	260.24	314.76	55.77	6.30	Other	9	0	0
77	6774.00	31.30	1.20	45.00	6733.51	204.88	199.37	261.08	328.51	52.63	7.23	Other	9	0	0
78	6819.00	34.40	0.50	45.00	6771.31	229.29	223.77	261.43	344.13	49.44	6.94	Other	9	0	0
79	6864.00	37.60	358.90	45.00	6807.71	255.72	250.22	261.28	361.78	46.24	7.41	Other	9	0	0
80	6909.00	41.10	357.40	45.00	6842.50	284.21	278.73	260.35	381.40	43.05	8.06	Other	9	0	0
81	6954.00	45.50	356.70	45.00	6875.25	314.98	309.54	258.75	403.44	39.89	9.84	Other	9	0	0
82	6999.00	48.60	357.20	45.00	6905.90	347.82	342.43	257.00	428.15	36.89	6.94	Other	9	0	0
83	7043.00	53.40	357.90	44.00	6933.58	381.93	376.58	255.55	455.09	34.16	10.98	Other	9	0	0
84	7088.00	58.10	358.30	45.00	6958.90	419.07	413.74	254.32	485.66	31.58	10.47	Other	9	0	0
85	7133.00	63.80	358.60	45.00	6980.75	458.34	453.05	253.26	519.03	29.21	12.68	Other	9	0	0
86	7178.00	70.00	358.20	45.00	6998.39	499.66	494.41	252.10	554.99	27.02	13.80	Other	9	0	0
87	7223.00	76.40	358.50	45.00	7011.39	542.67	537.45	250.86	593.11	25.02	14.24	Other	9	0	0
88	7249.00	80.10	358.40	26.00	7016.69	568.09	562.89	250.17	615.98	23.96	14.24	Other	9	0	0
89	7306.00	86.73	358.10	57.00	7023.22	624.60	619.45	248.44	667.42	21.85	11.64	SlimPulse	9	0	0
90	7396.00	88.28	358.88	90.00	7027.14	714.41	709.33	246.07	750.82	19.13	1.93	SlimPulse	9	0	0
91	7487.00	88.38	358.62	91.00	7029.79	805.29	800.27	244.09	836.68	16.96	0.31	SlimPulse	9	0	0
92	7577.00	90.17	0.65	90.00	7030.93	895.24	890.26	243.52	922.97	15.30	3.01	SlimPulse	9	0	0
93	7667.00	90.58	0.11	90.00	7030.34	985.23	980.25	244.11	1010.20	13.98	0.75	Other	9	0	0

94	7757.00	90.72	0.17	90.00	7029.32	1075.21	1070.25	244.33	1097.77	12.86	0.17	Other	9	0	0
95	7847.00	90.93	0.31	90.00	7028.02	1165.18	1160.24	244.71	1185.76	11.91	0.28	Other	9	0	0
96	7937.00	91.14	0.95	90.00	7026.40	1255.16	1250.22	245.70	1274.11	11.12	0.75	Other	9	0	0
97	8027.00	90.93	1.27	90.00	7024.77	1345.15	1340.18	247.44	1362.83	10.46	0.43	Other	9	0	0
98	8117.00	91.10	1.99	90.00	7023.18	1435.13	1430.13	250.00	1451.80	9.92	0.82	Other	9	0	0
99	8206.00	90.96	2.23	89.00	7021.58	1524.11	1519.06	253.28	1540.03	9.47	0.31	Other	9	0	0
100	8296.00	90.89	2.34	90.00	7020.12	1614.08	1608.97	256.87	1629.36	9.07	0.14	Other	9	0	0
101	8386.00	90.55	1.50	90.00	7018.99	1704.06	1698.92	259.88	1718.67	8.70	1.01	Other	9	0	0
102	8476.00	90.62	1.86	90.00	7018.07	1794.06	1788.87	262.52	1808.04	8.35	0.41	Other	9	0	0
103	8564.00	90.65	2.18	88.00	7017.10	1882.04	1876.81	265.62	1895.51	8.06	0.37	SlimPulse	9	0	0
104	8654.00	90.03	2.05	90.00	7016.56	1972.03	1966.75	268.94	1985.04	7.79	0.70	SlimPulse	9	0	0
105	8744.00	89.45	1.11	90.00	7016.97	2062.03	2056.71	271.43	2074.54	7.52	1.23	SlimPulse	9	0	0
106	8834.00	89.14	359.43	90.00	7018.08	2152.00	2146.70	271.85	2163.85	7.22	1.90	SlimPulse	9	0	0
107	8924.00	89.66	358.74	90.00	7019.02	2241.93	2236.68	270.41	2252.99	6.89	0.96	SlimPulse	9	0	0
108	9014.00	90.28	358.32	90.00	7019.07	2331.83	2326.65	268.10	2342.06	6.57	0.83	SlimPulse	9	0	0
109	9104.00	90.72	357.35	90.00	7018.28	2421.67	2416.58	264.70	2431.04	6.25	1.18	SlimPulse	9	0	0
110	9193.00	90.62	357.36	89.00	7017.24	2510.46	2505.48	260.60	2519.00	5.94	0.11	SlimPulse	9	0	0
111	9283.00	90.52	357.64	90.00	7016.35	2600.27	2595.39	256.67	2608.07	5.65	0.33	SlimPulse	9	0	0
112	9373.00	90.45	357.93	90.00	7015.59	2690.11	2685.32	253.19	2697.24	5.39	0.33	SlimPulse	9	0	0
113	9463.00	90.28	357.86	90.00	7015.01	2779.95	2775.26	249.89	2786.48	5.15	0.20	SlimPulse	9	0	0
114	9553.00	90.24	358.39	90.00	7014.60	2869.82	2865.21	246.94	2875.82	4.93	0.59	SlimPulse	9	0	0
115	9643.00	89.86	358.05	90.00	7014.53	2959.70	2955.17	244.15	2965.22	4.72	0.57	SlimPulse	9	0	0
116	9732.00	89.52	357.87	89.00	7015.01	3048.55	3044.11	240.98	3053.64	4.53	0.43	Other	9	0	0
117	9822.00	89.69	357.31	90.00	7015.63	3138.37	3134.03	237.19	3142.98	4.33	0.65	Other	9	0	0
118	9912.00	90.27	358.48	90.00	7015.66	3228.21	3223.96	233.89	3232.45	4.15	1.45	Other	9	0	0
119	10002.00	90.10	359.08	90.00	7015.37	3318.13	3313.94	231.97	3322.05	4.00	0.69	Other	9	0	0
120	10092.00	90.24	359.43	90.00	7015.10	3408.08	3403.94	230.80	3411.75	3.88	0.42	Other	9	0	0
121	10181.00	89.66	358.95	89.00	7015.18	3497.02	3492.93	229.54	3500.46	3.76	0.85	Other	9	0	0
122	10271.00	89.59	358.99	90.00	7015.77	3586.95	3582.91	227.93	3590.16	3.64	0.09	Other	9	0	0
123	10361.00	89.86	359.56	90.00	7016.20	3676.90	3672.90	226.79	3679.89	3.53	0.70	Other	9	0	0
124	10451.00	89.83	0.33	90.00	7016.44	3766.87	3762.90	226.70	3769.72	3.45	0.86	Other	9	0	0
125	10540.00	89.76	359.91	89.00	7016.76	3855.86	3851.90	226.89	3858.56	3.37	0.48	Other	9	0	0
126	10630.00	89.55	0.01	90.00	7017.30	3945.83	3941.90	226.82	3948.43	3.29	0.26	Other	9	0	0
127	10739.00	89.42	0.20	109.00	7018.28	4054.81	4050.89	227.02	4057.25	3.21	0.21	Other	9	0	0
128	10831.00	89.93	0.97	92.00	7018.81	4146.80	4142.88	227.96	4149.15	3.15	1.00	Other	9	0	0
129	10924.00	89.42	1.25	93.00	7019.33	4239.80	4235.87	229.77	4242.09	3.10	0.63	Other	9	0	0
130	11017.00	90.52	2.02	93.00	7019.38	4332.79	4328.83	232.42	4335.07	3.07	1.44	Other	9	0	0
131	11110.00	90.34	1.72	93.00	7018.68	4425.78	4421.77	235.45	4428.05	3.05	0.38	Other	9	0	0
132	11203.00	89.93	1.13	93.00	7018.46	4518.78	4514.74	237.77	4521.00	3.01	0.77	Other	9	0	0
133	11297.00	90.00	0.46	94.00	7018.52	4612.78	4608.73	239.07	4614.93	2.97	0.72	SlimPulse	9	0	0
134	11391.00	89.55	359.40	94.00	7018.89	4706.75	4702.73	238.96	4708.79	2.91	1.23	SlimPulse	9	0	0
135	11485.00	88.87	359.17	94.00	7020.19	4800.69	4796.71	237.78	4802.59	2.84	0.76	SlimPulse	9	0	0
136	11578.00	89.59	359.36	93.00	7021.44	4893.63	4889.70	236.59	4895.41	2.77	0.80	SlimPulse	9	0	0
137	11672.00	90.07	0.36	94.00	7021.72	4987.60	4983.70	236.36	4989.30	2.72	1.18	SlimPulse	9	0	0
138	11765.00	89.66	359.66	93.00	7021.94	5080.58	5076.69	236.38	5082.19	2.67	0.87	SlimPulse	9	0	0
139	11858.00	89.72	359.68	93.00	7022.44	5173.54	5169.69	235.84	5175.07	2.61	0.07	SlimPulse	9	0	0
140	11952.00	89.62	359.35	94.00	7022.98	5267.50	5263.69	235.05	5268.93	2.56	0.37	SlimPulse	9	0	0
141	12045.00	89.69	359.71	93.00	7023.54	5360.46	5356.68	234.28	5361.81	2.50	0.39	SlimPulse	9	0	0
142	12139.00	90.17	359.70	94.00	7023.65	5454.42	5450.68	233.80	5455.68	2.46	0.51	SlimPulse	9	0	0
143	12260.00	90.14	0.11	121.00	7023.33	5575.39	5571.68	233.60	5576.57	2.40	0.34	SlimPulse	9	0	0
144	12350.00	90.31	0.31	90.00	7022.97	5665.38	5661.68	233.93	5666.50	2.37	0.29	SlimPulse	9	0	0
145	12440.00	89.83	359.51	90.00	7022.86	5755.35	5751.68	233.79	5756.43	2.33	1.04	SlimPulse	9	0	0
146	12529.00	90.48	359.65	89.00	7022.62	5844.31	5840.67	233.13	5845.31	2.29	0.75	SlimPulse	9	0	0
147	12619.00	90.76	0.62	90.00	7021.65	5934.29	5930.67	233.35	5935.27	2.25	1.12	SlimPulse	9	0	0

	12849.00	90.79	0.92	90.00	7027.93	6384.25	6388.51	233.95	6388.27	2.23	0.42	SlimPulse	9	0	0
148	12709.00	90.83	1.03	90.00	7020.40	6024.28	6020.65	234.64	6025.23	2.23	0.46	SlimPulse	9	0	0
149	12799.00	90.96	1.22	90.00	7018.99	6114.27	6110.62	236.41	6115.19	2.22	0.26	SlimPulse	9	0	0
150	12889.00	90.52	0.68	90.00	7017.83	6204.26	6200.60	237.90	6205.15	2.20	0.77	SlimPulse	9	0	0
151	12978.00	90.65	0.49	89.00	7016.92	6293.25	6289.59	238.81	6294.13	2.17	0.26	SlimPulse	9	0	0
152	13068.00	90.58	0.59	90.00	7015.96	6383.24	6379.58	239.66	6384.09	2.15	0.14	SlimPulse	9	0	0
153	13158.00	90.48	359.84	90.00	7015.13	6473.22	6469.58	240.00	6474.02	2.12	0.84	SlimPulse	9	0	0
154	13248.00	90.34	0.15	90.00	7014.48	6563.20	6559.57	239.99	6563.98	2.10	0.38	SlimPulse	9	0	0
155	13338.00	90.24	0.15	90.00	7014.03	6653.18	6649.57	240.22	6653.90	2.07	0.11	SlimPulse	9	0	0
156	13428.00	90.31	0.64	90.00	7013.59	6743.17	6739.57	240.84	6743.86	2.05	0.55	SlimPulse	9	0	0
157	13518.00	90.58	1.29	90.00	7012.89	6833.16	6829.55	242.36	6833.86	2.03	0.78	SlimPulse	9	0	0
158	13608.00	90.03	1.46	90.00	7012.42	6923.16	6919.53	244.52	6923.85	2.02	0.64	SlimPulse	9	0	0
159	13697.00	89.90	1.05	89.00	7012.47	7012.16	7008.50	246.47	7012.83	2.01	0.48	SlimPulse	9	0	0
160	13787.00	90.31	359.94	90.00	7012.30	7102.15	7098.50	247.25	7102.79	1.99	1.31	SlimPulse	9	0	0
161	13877.00	90.45	358.61	90.00	7011.71	7192.10	7188.49	246.11	7192.68	1.96	1.49	SlimPulse	9	0	0
162	13967.00	90.41	359.07	90.00	7011.03	7282.02	7278.47	244.28	7282.58	1.92	0.51	SlimPulse	9	0	0
163	14057.00	90.00	358.63	90.00	7010.71	7371.94	7368.45	242.48	7372.44	1.88	0.67	SlimPulse	9	0	0
164	14147.00	90.03	359.04	90.00	7010.69	7461.86	7458.43	240.65	7462.30	1.85	0.46	SlimPulse	9	0	0
165	14236.00	90.38	359.72	89.00	7010.37	7550.81	7547.42	239.69	7551.21	1.82	0.86	SlimPulse	9	0	0
166	14326.00	90.24	358.51	90.00	7009.88	7640.75	7637.41	238.30	7641.11	1.79	1.35	SlimPulse	9	0	0
167	14416.00	90.28	358.21	90.00	7009.47	7730.64	7727.37	235.72	7730.97	1.75	0.34	SlimPulse	9	0	0
168	14506.00	90.14	359.53	90.00	7009.14	7820.56	7817.35	233.94	7820.87	1.71	1.47	SlimPulse	9	0	0
169	14596.00	89.52	359.08	90.00	7009.41	7910.51	7907.34	232.85	7910.76	1.69	0.85	SlimPulse	9	0	0
170	14686.00	89.76	359.09	90.00	7009.98	8000.44	7997.33	231.42	8000.69	1.66	0.27	SlimPulse	9	0	0
171	14775.00	89.83	358.73	89.00	7010.29	8089.37	8086.31	229.72	8089.57	1.63	0.41	SlimPulse	9	0	0
172	14865.00	89.79	358.66	90.00	7010.59	8179.28	8176.29	227.67	8179.46	1.60	0.09	SlimPulse	9	0	0
173	14954.00	89.76	1.03	89.00	7010.94	8268.25	8265.28	227.43	8268.41	1.58	2.66	SlimPulse	9	0	0
174	15044.00	89.79	1.34	90.00	7011.30	8358.25	8355.26	229.29	8358.40	1.57	0.35	SlimPulse	9	0	0
175	15134.00	89.79	0.42	90.00	7011.63	8448.25	8445.25	230.68	8448.39	1.56	1.02	SlimPulse	9	0	0
176	15224.00	89.59	0.40	90.00	7012.11	8538.24	8535.25	231.32	8538.39	1.55	0.22	SlimPulse	9	0	0
177	15314.00	89.79	1.27	90.00	7012.60	8628.23	8625.23	232.63	8628.38	1.54	0.99	SlimPulse	9	0	0
178	15404.00	89.52	1.17	90.00	7013.14	8718.23	8715.21	234.55	8718.37	1.54	0.32	SlimPulse	9	0	0
179	15494.00	89.86	1.19	90.00	7013.63	8808.23	8805.19	236.40	8808.37	1.54	0.38	SlimPulse	9	0	0
180	15584.00	89.72	0.87	90.00	7013.96	8898.23	8895.18	238.02	8898.36	1.53	0.39	SlimPulse	9	0	0
181	15674.00	89.59	359.57	90.00	7014.50	8988.21	8985.17	238.36	8988.32	1.52	1.45	SlimPulse	9	0	0
182	15763.00	89.62	358.46	89.00	7015.11	9077.14	9074.15	236.83	9077.23	1.50	1.25	SlimPulse	9	0	0
183	15853.00	89.79	359.77	90.00	7015.58	9167.08	9164.14	235.44	9167.16	1.47	1.47	SlimPulse	9	0	0
184	15943.00	88.97	0.85	90.00	7016.55	9257.06	9254.13	235.93	9257.15	1.46	1.51	SlimPulse	9	0	0
185	16033.00	91.82	0.12	90.00	7015.93	9347.04	9344.12	236.69	9347.11	1.45	3.27	SlimPulse	9	0	0
186	16123.00	92.30	1.87	90.00	7012.70	9436.98	9434.04	238.25	9437.04	1.45	2.02	SlimPulse	9	0	0
187	16213.00	88.83	1.38	90.00	7011.81	9526.95	9523.99	240.81	9527.03	1.45	3.89	SlimPulse	9	0	0
188	16302.00	88.73	1.25	89.00	7013.70	9615.93	9612.94	242.85	9616.01	1.45	0.18	SlimPulse	9	0	0
189	16392.00	85.56	358.01	90.00	7018.19	9705.76	9702.81	242.27	9705.84	1.43	5.03	SlimPulse	9	0	0
190	16482.00	85.49	358.69	90.00	7025.21	9795.38	9792.49	239.69	9795.44	1.40	0.76	SlimPulse	9	0	0
191	16572.00	85.60	1.38	90.00	7032.20	9885.08	9882.21	239.74	9885.10	1.39	2.98	SlimPulse	9	0	0
192	16617.00	82.76	0.37	45.00	7036.76	9929.84	9926.97	240.43	9929.89	1.39	6.69	SlimPulse	9	0	0
193	16660.00	82.76	0.37	43.00	7042.18	9972.49	9969.63	240.70	9972.54	1.38	0.00	Other	9	0	7

Calibration Report									
SPULSE-GEN (SlimPulse with Generic Collar) Calibration - Run 2									
Primary Equipment :									
Elec. cartridge, 150C max with GR					SPEC				
GRGain - Gamma Ray: Blanket									
Master (Time Frame File):		12:00:00 18-Apr-2014							
Measurement		Unit	Phase	Nominal	Low Limit	Actual	High Limit		

Company:	Noble Energy
Well:	Heartland C30-79HN
Field:	Wattenburg
County:	Weld
State:	Colorado
Country:	USA



**Schlumberger**

SlimPulse - Gamma Ray  
1 in / 100 ft True Vertical Depth  
Recorded Mode, Composite Log