


LWD Composite Log												
<div></div>			Gamma Ray Propagation Resistivity									
Scale:			Company: ConocoPhillips									
1:1200 TVD			Well: B&D Land 4-64-4-5-4BH									
Depth Reference:			Field: Arapahoe County (NAD83/TN)									
Driller's Depth			County: Arapahoe CountyCountry: United States									
Status:			State: Colorado						Other Services:			
Final Print			Surface Location:			Latitude: Longitude:						
API No: 05005072450000			SEC: 4			TWN: 4S			RGE: 64W			
Job ID: 8618762			Permanent Datum (P.D.):			Ground Level			Elevation: 5617.00 ft			
Log Measured From:			Rig Floor			Above P.D.			Elev. DF: 24.00 ft			
Dates			Interval Logged			Magnetic Field Reference						
Date From: 2017-06-30			Top: (ft) 1965.00			Azi Reference North: True			Dip Angle: (deg) 66.49			
Date To: 2017-07-05			Bottom: (ft) 15283.00			Total Magnetic Field Strength: (nT)			51803			
Spud Date: 2017-06-28						Mag to Reference North Correction: (deg)			8.61 N/A			
Borehole Record												
Casing Record												
Hole Size (in)			From (ft)		To (ft)		Size (in)		Weight (lb/ft)		From (ft)	
12.250			24.00		1980.00		9.625		36.00		24.00	
8.500			1980.00		15341.00							

		(ft)	(degF)	(ohm.m)	(ohm.m)	(ohm.m)	(degF)	(ohm.m)	(ohm.m)	(ohm.m)
2017-06-30 07:52	1	1980.00	78.0	100.000	N/A	N/A	78.0	100.000	N/A	N/A

Equipment and Service Data

Run No.	Tool	Serial Number	Measurement	Sensor Offset (ft)	Bit Offset (ft)	Max O.D. (in)	Min I.D. (in)
1	OnTrak	11748284	Pressure	1.15	38.60	6.750	0.000
1	OnTrak	11748284	Gamma (double)	2.04	39.49	6.750	0.000
1	OnTrak	11748284	Resistivity (4tx)	6.08	43.53	6.750	0.000
1	OnTrak	11748284	Directional (mag)	11.87	49.32	6.750	0.000
2	NaviGamma	13191958	Gamma (single)	6.10	59.73	6.750	3.250
2	NaviGamma	13191958	Directional (mag)	9.60	63.23	6.750	3.250
2	NaviGamma	13191958	VSS	9.60	63.23	6.750	3.250
3	NaviGamma	13191958	Gamma (single)	6.10	57.28	6.750	3.250
3	NaviGamma	13191958	Directional (mag)	9.60	60.78	6.750	3.250
3	NaviGamma	13191958	VSS	9.60	60.78	6.750	3.250

Service and Tool Mnemonics

Mnemonic	Name	Description
OTK	OnTrak	Sensor Sub (Inc, Azi, Temp, Azimuthal GR, Res, AP, VSS), OnTrak Platform
BCPM	BCPM	Bi-Directional Communication and Power Module, OnTrak Platform
GAM	NaviGamma	Probe Based Gamma Module, NaviTrak Platform

Comments

1	Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes Drilling Services. Due to the lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified and the unverified depths as supplied to Baker Hughes are being used to present logging data.
2	A sliding indicator is shown on the right side of track 2 as a heavy line. This indicator has been shifted to the Resistivity sensor offset to correspond with Resistivity data acquired while sliding
3	Baker Hughes LWD runs 1 utilized 6.750 inch OnTrak services (Multiple Propagation Resistivity, Gamma Ray and Directional) behind an 8.500 inch bit and steerable assembly from 1980 to 6823 feet MD (1980 to 6821 feet TVD).
4	Baker Hughes LWD runs 2 and 3 utilized 6.750 inch NaviGamma services (Gamma Ray and Directional) behind an 8.500 inch bit and steerable assembly from 6823 to 15341 feet MD (6821 to 7603 feet TVD).

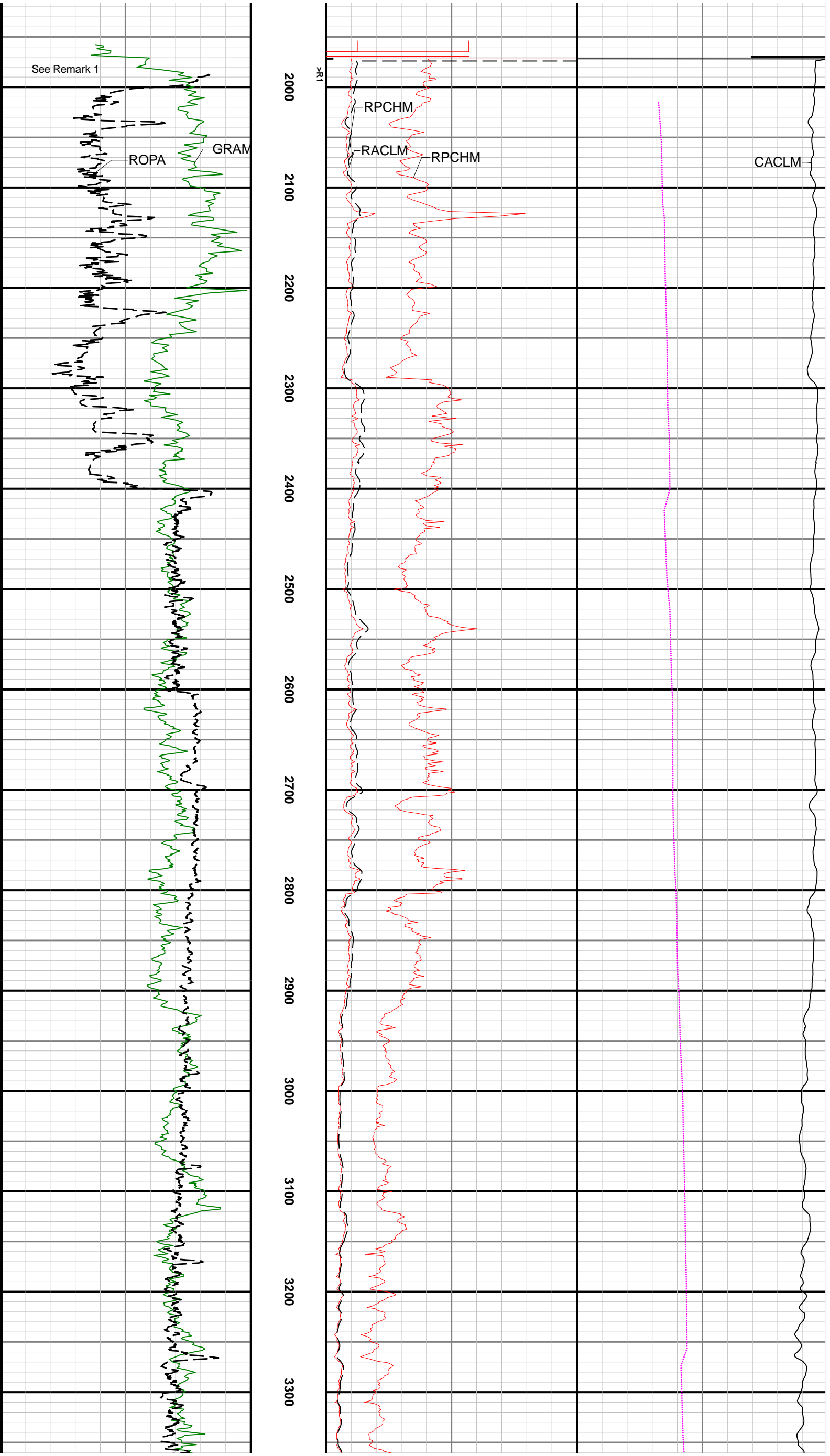
Remarks

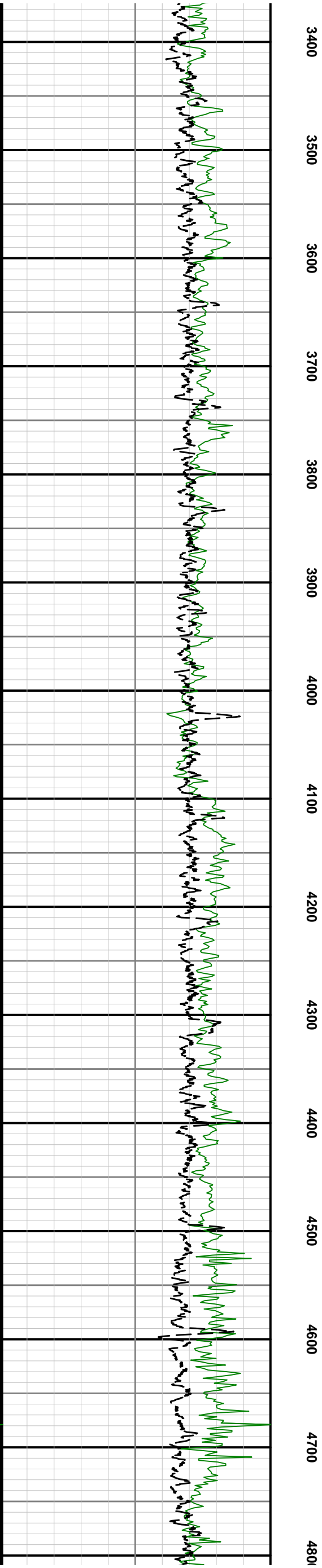
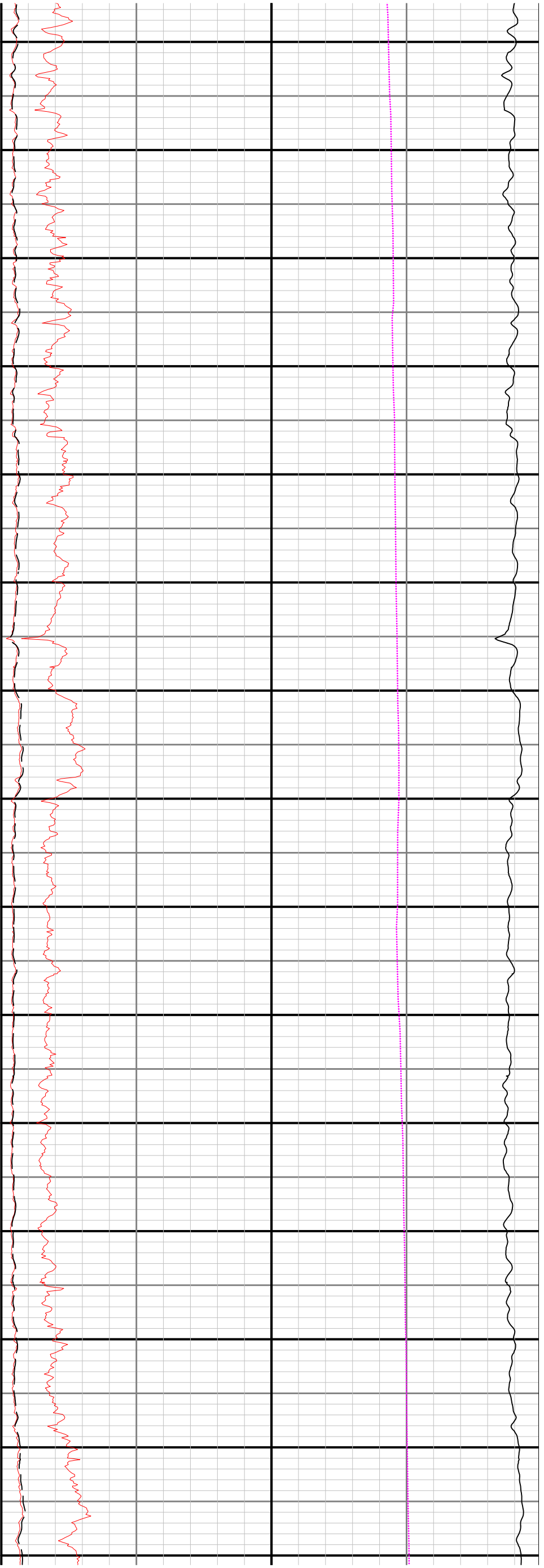
Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	1965.00	8.500	1	Baker Hughes LWD logging services began at 1965 feet MD (1965 feet TVD) per customer request.
2	15283.00	8.500	3	The interval from 15283 to 15341 feet MD (7602 to 7603 feet TVD) was not logged due to the sensor to bit offset at well TD.

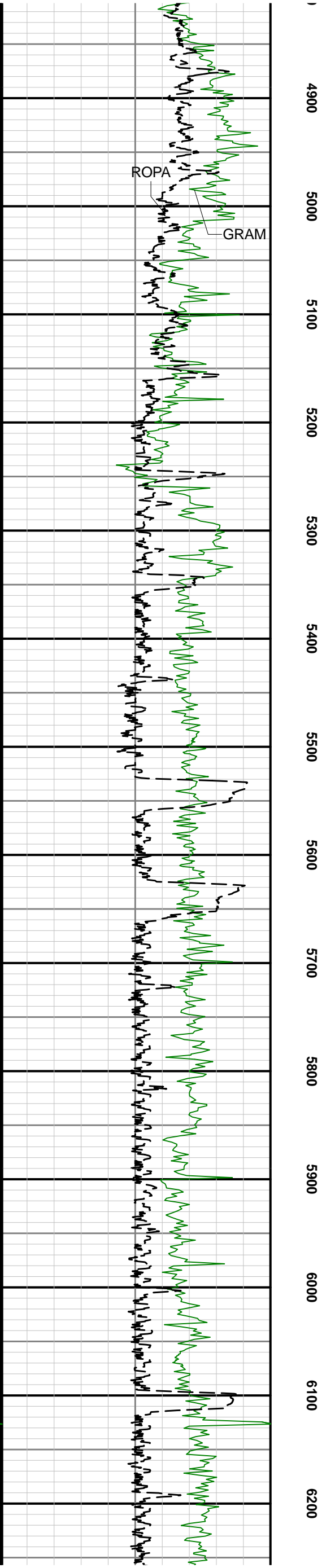
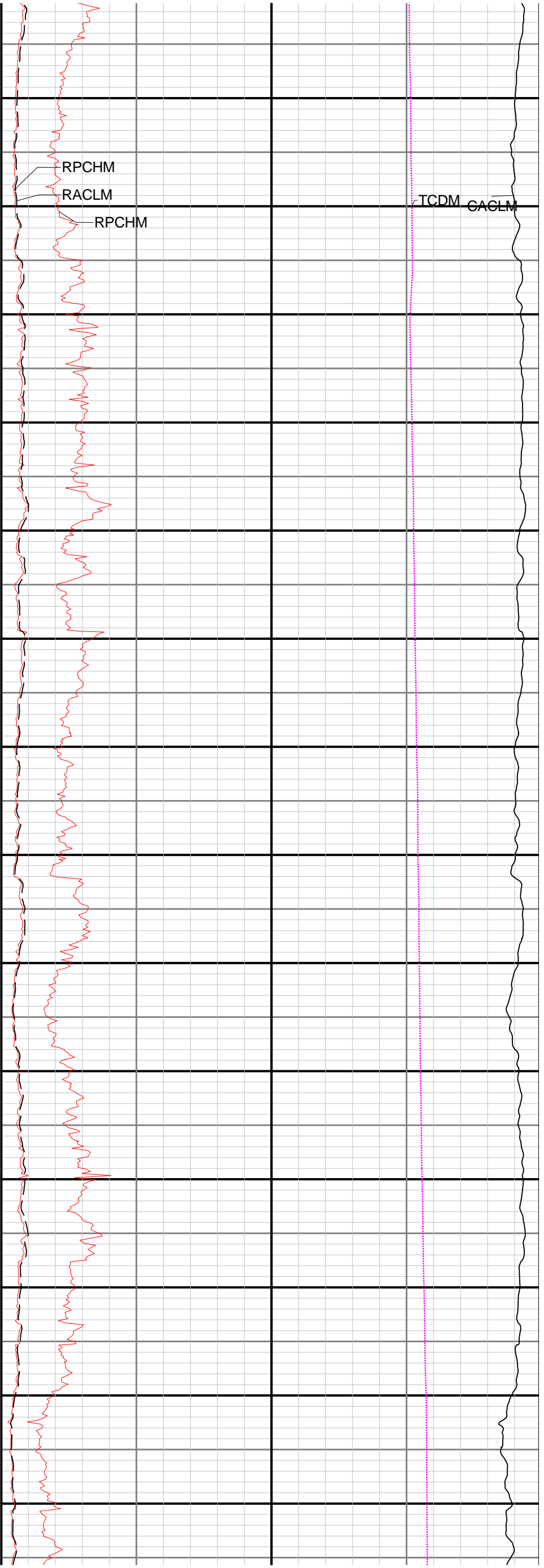
Curve Mnemonics

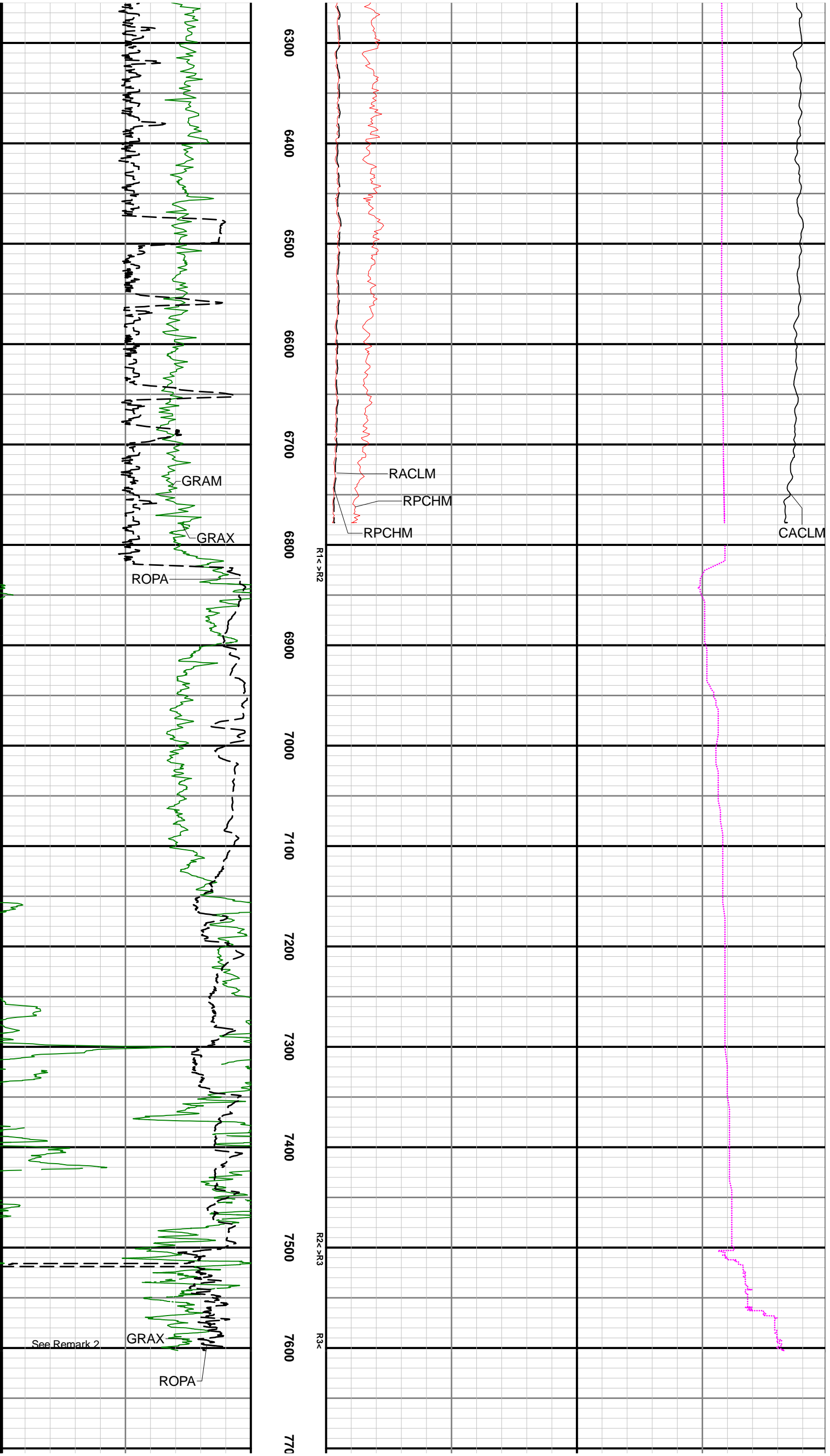
Presented Curves	Description	Units
CACLM	Conductivity Attenuation - Corrected - 400kHz	mmho/m
RACLM	Resistivity Attenuation - Corrected - 400kHz	ohm.m
RPCHM	Resistivity Phase - Corrected - 2MHz	ohm.m
TCDX	Downhole Temperature	degF
ROPA	Depth Averaged ROP 3 ft Average	ft/h
GRAM	Gamma Ray - Apparent - Memory 3 ft Average	API
GRAX	Gamma Ray - Apparent - Real-Time 3 ft Average	API
TCDM	Downhole Temperature	degF

Gamma Ray - Apparent 3 ft Average [GRAM]				TVD 1:1200 feet	Resistivity Phase - Corrected - 2MHz [RPCHM]				Conductivity Attenuation - Corrected - 400kHz [CACLM]			
0150					0.240				40000			
API					ohm.m				mmho/m			
Gamma Ray Apparent 3 ft Average [GRAX]					Resistivity Attenuation - Corrected - 400kHz [RACLM]				Downhole Temperature [TCDM]			
0150					0.240				0300			
API					ohm.m				degF			
Depth Averaged ROP 3 ft Average [ROPA]				1800	Resistivity Phase - Corrected - 2MHz [RPCHM]				Tool Temperature [TCDX]			
15000					0.210				0300			
ft/h					ohm.m				degF			
				1900								









Directional Survey Summary			
Latitude:	61° 41' 11" N	Longitude:	131° 03' 11" W
North Reference:	True	Drill Depth Zero:	Rig Floor
Vertical Datum is:	Ground Level	Vertical Datum to DDZ: (ft)	24.00
Vertical Section North: (m)	N/A	Vertical Section East: (m)	N/A
Vertical Section Azimuth: (deg)	N/A		
Grid Convergence: (deg)	N/A	Magnetic Declination: (deg)	N/A
Total Correction: (deg)	8.61	TVD Calculation Method:	Minimum Curvature
Magnetic Correction:	N/A	Local Magnetic Field: (nT)	51803
Local Magnetic Dip Angle: (deg)	66.49	Local Gravity Field: (m/s²)	N/A

	7219.00	36.46	275.45	177.0	33.61	-48.08	7193.81	49.09	95.00	10.05	9.75	4.68
	7313.00	44.39	274.66	177.0	38.94	-108.75	7265.31	109.89	94.00	8.45	8.44	-0.84
	7407.00	50.98	274.45	293.3	44.45	-178.00	7328.56	179.28	94.00	7.01	7.01	-0.22
	7502.00	55.58	274.23	182.5	50.21	-253.91	7385.35	255.33	95.00	4.85	4.84	-0.23
	7596.00	60.25	273.37	182.5	55.47	-333.36	7435.26	334.90	94.00	5.03	4.97	-0.91
	7691.00	68.40	271.42	325.7	58.99	-418.83	7476.39	420.44	95.00	8.78	8.58	-2.05
	7785.00	83.27	271.01	187.9	60.91	-509.69	7499.33	511.32	94.00	15.82	15.82	-0.44
	7848.00	90.12	274.07	187.9	63.70	-572.48	7502.96	574.17	63.00	11.90	10.87	4.86
	7928.00	90.93	273.69	160.8	69.11	-652.29	7502.23	654.11	80.00	1.12	1.01	-0.47
	8023.00	89.35	274.59	168.9	75.97	-747.04	7502.00	749.02	95.00	1.91	-1.66	0.95
	8117.00	89.02	274.87	174.3	83.72	-840.71	7503.33	842.89	94.00	0.46	-0.35	0.30
	8211.00	88.71	275.01	177.0	91.81	-934.34	7505.20	936.72	94.00	0.36	-0.33	0.15
	8306.00	88.24	273.85	177.0	99.15	-1029.02	7507.73	1031.58	95.00	1.32	-0.49	-1.22
	8400.00	88.83	273.70	179.7	105.34	-1122.79	7510.13	1125.49	94.00	0.65	0.63	-0.16
	8494.00	89.32	273.25	179.7	111.03	-1216.60	7511.65	1219.44	94.00	0.71	0.52	-0.48
	8589.00	90.22	274.19	182.5	117.20	-1311.40	7512.03	1314.38	95.00	1.37	0.95	0.99
	8683.00	90.40	274.93	160.8	124.67	-1405.10	7511.52	1408.27	94.00	0.81	0.19	0.79
	8774.00	90.55	274.27	182.5	131.97	-1495.80	7510.76	1499.15	91.00	0.74	0.16	-0.73
	8866.00	89.57	273.25	187.9	138.00	-1587.60	7510.67	1591.09	92.00	1.54	-1.07	-1.11
	8957.00	89.11	272.91	190.6	142.89	-1678.47	7511.72	1682.06	91.00	0.63	-0.51	-0.37
	9049.00	89.38	272.27	190.6	147.05	-1770.36	7512.93	1774.04	92.00	0.75	0.29	-0.70
	9141.00	88.98	272.07	52.7	150.53	-1862.29	7514.24	1866.03	92.00	0.49	-0.43	-0.22
	9232.00	88.83	272.74	196.0	154.35	-1953.19	7515.98	1957.01	91.00	0.75	-0.16	0.74
	9323.00	88.74	272.69	198.7	158.66	-2044.07	7517.91	2047.98	91.00	0.11	-0.10	-0.05
	9414.00	88.09	273.42	198.7	163.50	-2134.90	7520.43	2138.92	91.00	1.07	-0.71	0.80
	9506.00	88.98	272.95	198.7	168.61	-2226.73	7522.78	2230.86	92.00	1.09	0.97	-0.51
	9598.00	89.97	273.30	201.4	173.63	-2318.59	7523.63	2322.83	92.00	1.14	1.08	0.38
	9689.00	90.28	273.61	74.3	179.11	-2409.42	7523.43	2413.79	91.00	0.48	0.34	0.34
	9781.00	89.63	273.72	201.4	184.99	-2501.23	7523.50	2505.74	92.00	0.72	-0.71	0.12
	9873.00	88.28	272.84	344.6	190.26	-2593.06	7525.18	2597.68	92.00	1.75	-1.47	-0.96
	9963.00	87.44	272.40	201.4	194.37	-2682.91	7528.54	2687.61	90.00	1.05	-0.93	-0.49
	10054.00	86.92	271.65	201.4	197.58	-2773.74	7533.02	2778.50	91.00	1.00	-0.57	-0.82
	10149.00	86.70	271.29	204.1	200.01	-2868.56	7538.30	2873.35	95.00	0.44	-0.23	-0.38
	10243.00	86.74	270.84	204.1	201.76	-2962.39	7543.68	2967.19	94.00	0.48	0.04	-0.48
	10338.00	86.92	270.24	204.1	202.65	-3057.24	7548.93	3062.02	95.00	0.66	0.19	-0.63
	10382.00	86.89	270.06	204.1	202.77	-3101.18	7551.31	3105.94	44.00	0.41	-0.07	-0.41
	10432.00	86.55	270.16	204.1	202.86	-3151.09	7554.17	3155.84	50.00	0.71	-0.68	0.20
	10482.00	87.23	268.68	204.1	202.36	-3201.02	7556.88	3205.72	50.00	3.25	1.36	-2.96
	10526.00	88.80	267.16	339.2	200.76	-3244.96	7558.41	3249.59	44.00	4.96	3.57	-3.45
	10575.00	89.23	266.48	204.1	198.04	-3293.87	7559.25	3298.40	49.00	1.64	0.88	-1.39
	10621.00	88.80	266.47	209.5	195.22	-3339.78	7560.04	3344.20	46.00	0.94	-0.93	-0.02
	10715.00	88.95	266.90	209.5	189.78	-3433.60	7561.89	3437.81	94.00	0.48	0.16	0.46
	10810.00	89.91	267.10	209.5	184.81	-3528.47	7562.83	3532.48	95.00	1.03	1.01	0.21
	10905.00	91.54	268.70	212.2	181.33	-3623.39	7561.63	3627.25	95.00	2.40	1.72	1.68
	10999.00	92.71	269.10	214.9	179.52	-3717.31	7558.14	3721.07	94.00	1.32	1.24	0.43
	11093.00	92.06	268.97	214.9	177.94	-3811.21	7554.23	3814.88	94.00	0.71	-0.69	-0.14
	11188.00	92.22	268.66	214.9	175.98	-3906.12	7550.68	3909.69	95.00	0.37	0.17	-0.33
	11282.00	91.72	270.20	214.9	175.05	-4000.06	7547.45	4003.55	94.00	1.72	-0.53	1.64
	11376.00	90.80	270.85	217.6	175.91	-4094.03	7545.39	4097.50	94.00	1.20	-0.98	0.69
	11471.00	90.18	271.01	217.6	177.45	-4189.02	7544.57	4192.49	95.00	0.67	-0.65	0.17
	11565.00	88.58	272.19	285.2	180.07	-4282.97	7545.59	4286.48	94.00	2.11	-1.70	1.26
	11659.00	87.72	272.56	217.6	183.97	-4376.84	7548.62	4380.42	94.00	1.00	-0.91	0.39
	11754.00	87.81	272.38	214.9	188.06	-4471.68	7552.33	4475.34	95.00	0.21	0.09	-0.19
	11848.00	89.08	271.15	217.6	190.95	-4565.60	7554.88	4569.31	94.00	1.88	1.35	-1.31
	11943.00	89.42	271.62	220.3	193.25	-4660.56	7556.12	4664.30	95.00	0.61	0.36	0.49
	12037.00	89.08	272.04	223.0	196.25	-4754.50	7557.35	4758.29	94.00	0.57	-0.36	0.45
	12132.00	88.49	272.07	223.0	199.65	-4849.42	7559.37	4853.26	95.00	0.62	-0.62	0.03
	12226.00	88.92	271.37	223.0	202.47	-4943.35	7561.49	4947.24	94.00	0.87	0.46	-0.74
	12320.00	89.78	270.06	371.7	203.65	-5037.34	7562.56	5041.22	94.00	1.67	0.91	-1.39
	12415.00	88.40	269.61	225.7	203.37	-5132.32	7564.07	5136.15	95.00	1.53	-1.45	-0.47
	12510.00	88.77	270.05	390.6	203.09	-5227.29	7566.41	5231.06	95.00	0.61	0.39	0.46
	12604.00	89.63	269.52	225.7	202.74	-5321.28	7567.73	5325.00	94.00	1.07	0.91	-0.56
	12699.00	90.55	269.97	228.4	202.32	-5416.28	7567.58	5419.94	95.00	1.08	0.97	0.47
	12794.00	90.74	269.61	231.1	201.97	-5511.27	7566.51	5514.88	95.00	0.43	0.20	-0.38
	12888.00	90.92	270.25	233.8	201.85	-5605.26	7565.15	5608.82	94.00	0.71	0.19	0.68
	12982.00	90.92	270.31	233.8	202.31	-5699.25	7563.64	5702.77	94.00	0.06	0.00	0.06
	13076.00	91.05	270.53	233.8	203.00	-5793.23	7562.02	5796.73	94.00	0.27	0.14	0.23
	13171.00	90.92	270.56	233.8	203.91	-5888.21	7560.39	5891.70	95.00	0.14	-0.14	0.03
	13266.00	90.80	270.92	233.8	205.13	-5983.19	7558.96	5986.67	95.00	0.40	-0.13	0.38
	13360.00	89.54	270.69	236.5	206.45	-6077.18	7558.68	6080.66	94.00	1.36	-1.34	-0.24
	13455.00	88.89	271.15	236.5	207.98	-6172.16	7559.98	6175.64	95.00	0.84	-0.68	0.48
	13549.00	89.88	272.85	233.8	211.26	-6266.09	7560.99	6269.63	94.00	2.09	1.05	1.81
	13644.00	89.75	273.06	236.5	216.16	-6360.97	7561.30	6364.60	95.00	0.26	-0.14	0.22
	13738.00	89.23	273.21	236.5	221.30	-6454.82	7562.14	6458.57	94.00	0.58	-0.55	0.16
	13833.00	89.32	275.24	236.5	228.29	-6549.55	7563.34	6553.47	95.00	2.14	0.09	2.14
	13927.00	90.34	277.49	236.5	238.71	-6642.96	7563.62	6647.16	94.00	2.63	1.09	2.39
	14021.00	89.45	276.62	236.5	250.26	-6736.25	7563.79	6740.76	94.00	1.32	-0.95	-0.93
	14116.00	88.71	275.73	247.3	260.48	-6830.69	7565.32	6835.46	95.00	1.22	-0.78	-0.94
	14210.00	88.34	276.13	239.2	270.18	-6924.15	7567.74	6929.18	94.00	0.58	-0.39	0.43
	14305.00	87.23	275.25	236.5	279.60	-7018.61	7571.41	7023.89	95.00	1.49	-1.17	-0.93
	14399.00	87.13	274.81	236.5	287.83	-7112.13	7576.03	7117.62	94.00	0.48	-0.11	-0.47
	14494.00	87.45	272.74	239.2	294.08	-7206.82	7580.52	7212.45	95.00	2.20	0.34	-2.18
	14588.00	86.86	272.82	239.2	298.63	-7300.59	7585.19	7306.32	94.00	0.63	-0.63	0.09
	14682.00	88.52	272.76	239.2	303.20	-7394.40	7588.98	7400.22	94.00	1.77	1.77	-0.06
	14777.00	88.65	272.89	244.6	307.88	-7489.25	7591.32	7495.18	95.00	0.19	0.14	0.14
	14871.00	88.77	271.92	382.5	311.82	-7583.15	7593.44	7589.15	94.00	1.04	0.13	-1.03
	14966.00	88.49	271.49	244.6	314.65	-7678.08	7595.71	7684.12	95.00	0.54	-0.29	-0.45
	15060.00	87.72	271.80	241.9	317.35	-7771.99	7598.82	7778.07	94.00	0.88	-0.82	0.33
	15154.00	89.48	274.25	244.6	322.31	-7865.82	7601.12	7872.01	94.00	3.21	1.87	2.61
	15249.00	89.35	274.35	247.3	329.43	-7960.54	7602.09	7966.91	95.00	0.17	-0.14	0.11
	15278.00	89.42	274.50	241.9	331.67	-7989.46	7602.40	7995.87	29.00	0.57	0.24	0.52
Projection	15341.00	89.42	274.50	N/A								