



LWD COMPOSITE LOG

Gamma Ray
Azimuthal Gamma Ray

Scale:	Company: Bonanza Creek Oil Company
1:240 TVD	Well: North Platte 11-14-28HNC
Depth Reference:	Field: Weld County
Driller's Depth	County: WeldCountry: United States
Status:	State: Colorado

API No:	05-123-47010-00	Latitude:	040° 22' 54.023" N	Other Services:
Job ID:	109387961	Longitude:	104° 26' 43.678" W	Directional
Permanent Datum (P.D.):	Mean Sea Level	Elevation:	0.00 ft	Elev. KB: N/A
Log Measured From:	Rig Floor	Above P.D.	4570.00 ft	Elev. DF: 4570.00 ft
			Elev. GL: 4553.00 ft	

Dates	Interval Drilled	Magnetic Field Reference
Date From: 2018-09-05	Top: (ft) 17.00	Azi Reference North: True
Date To: 2018-09-25	Bottom: (ft) 11690.00	Total Magnetic Field Strength: (nT) 52305
Spud Date: 2018-09-05		Mag to Reference North Correction: (deg) 8.10

Borehole Record				Casing Record			
Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)	
13.500	17.00	1640.00	11.875	36.00	17.00	1629.00	
8.500	1640.00	11690.00					

Mud Record				Deviation Record			
Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Inc Az (Start)	Inc Az (End)	
Water Based Mud	17.00	1640.00	13.500	1623.00	0.14 41.59	0.87 28.73	
Diesel-Oil Based Mud	1640.00	11690.00	8.500	10050.00	0.87 28.73	90.00 179.40	

Acquisition System	Software Version	Other
Baker Hughes Cadence	RT 4.2	Rig: Aktia 519
Plot Studio	4.2.8155.1	Contractor: Xtreme Drilling
		District: RMA
		Unit: D&E

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Log Run Summary

Run No	Bit Run No.	Bit Size (in)	Bit Type	Bit Gauge Length (in)	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time		Circ. Hours (h)
						Top (ft)	Bottom (ft)	From (ft)	To (ft)	Start Logging	End Logging	
1	1	13.500	PDC	4.00	Steerable	0.00	0.00	17.00	1640.00	N/A	N/A	4.79
2	2	8.500	PDC	2.00	Rotary Steerable	5000.00	6181.00	1640.00	6194.00	2018-09-23 12:49	2018-09-23 16:26	17.96
3	2	8.500	PDC	2.00	Rotary Steerable	6181.00	11677.00	6194.00	11690.00	2018-09-24 04:21	2018-09-25 03:34	21.57

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Steve Bueghly	2018-09-04	2018-09-25						

Mud Properties Record

Date / Time	Run No.	Measured Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
2018-09-04 19:44	1	17.00	Water Based Mud	8.8	1	8.2	0.0	0/97	Active Pit	400	0.00
2018-09-22 16:44	2	1640.00	Diesel-Oil Based Mud	8.9	13	N/A	0.0	88/12	Active Pit	13000	0.00
2018-09-23 20:00	3	6192.00	Diesel-Oil Based Mud	9.1	10	N/A	0.0	75.5/14	Active Pit	14000	0.00
2018-09-24 19:00	3	9305.00	Diesel-Oil Based Mud	9.2	10	N/A	0.0	76/14	Active Pit	18000	0.00

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	NaviTrak	13225711	VSS	16.02	52.03	8.000	0.000
1	NaviTrak	13225711	Directional (mag)	16.02	52.03	8.000	0.000
2	ATC_SU	14186737	Near Bit Inclination	5.93	6.93	7.000	4.330
2	ATC_SU	14186737	Near Bit VSS	5.93	6.93	7.000	4.330
2	ATC_MWD	14179564	Gamma (single)	2.75	13.10	7.000	3.250
2	ATC_MWD	14179564	Directional (mag)	12.27	22.62	7.000	3.250
3	ATC_SU	14382369	Near Bit VSS	5.93	6.93	7.000	4.330
3	ATC_SU	14382369	Near Bit Inclination	5.93	6.93	7.000	4.330
3	ATC_MWD	14256850	Gamma (single)	2.75	13.09	7.000	3.250
3	ATC_MWD	14256850	Directional (mag)	12.27	22.61	7.000	3.250



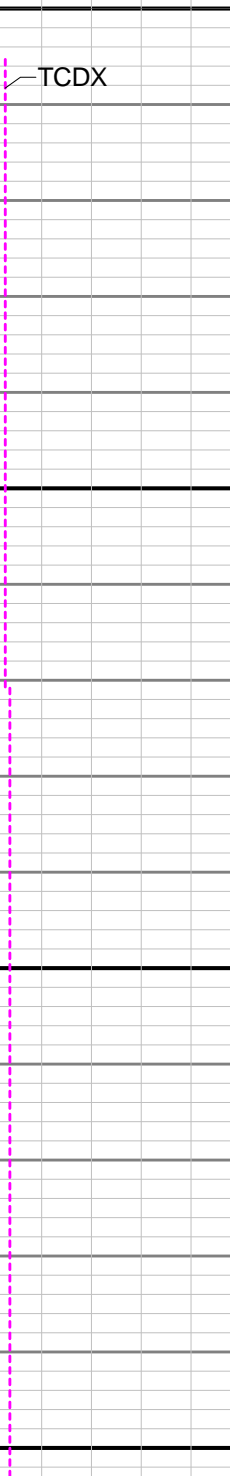
Service and Tool Mnemonics

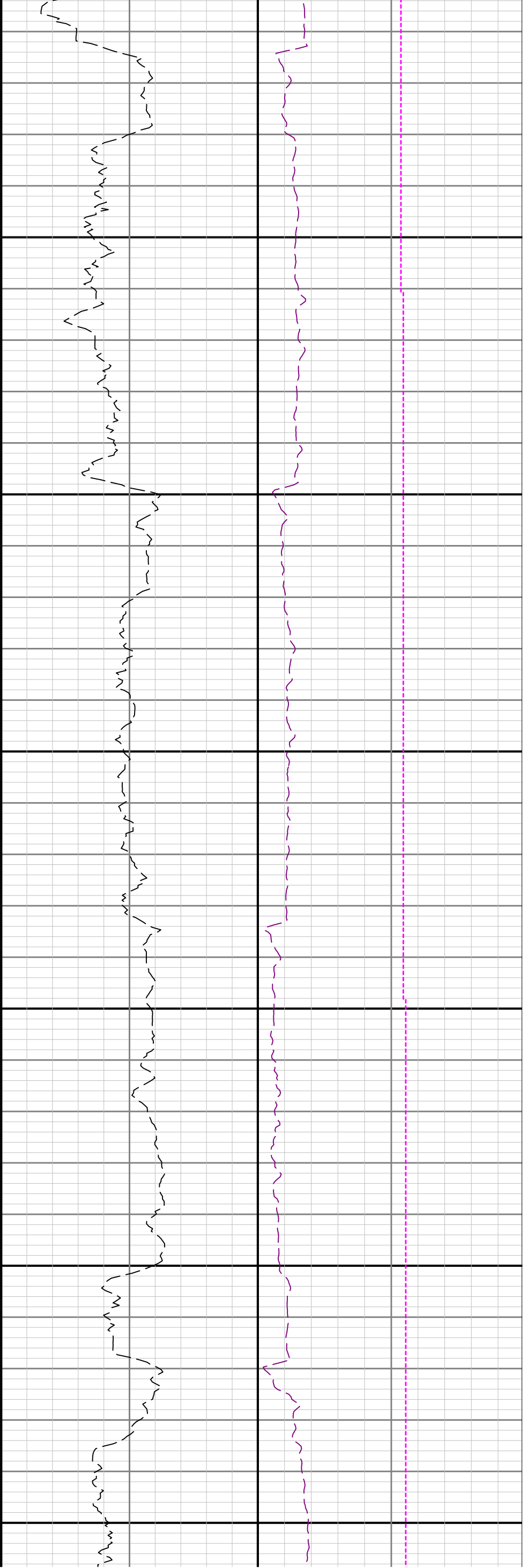
Mnemonic	Name	Description
NTK	NaviTrak	Probe Based Directional Module, NaviTrak Platform
ATC_SU	ATC_SU	Auto Trak Curve Steering Unit
ATC_MWD	ATC_MWD	Auto Trak Curve MWD
ATC_LCPM	ATC_LCPM	Auto Trak Curve LCPM

Comments

- 1 Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to the lack of control by Baker Hughes, depth calibrations and measurements could not be independently verified.
- 2 Baker Hughes LWD Run 1 used the 8 inch NaviTrak service (Directional) behind a 13 1/2 inch bit and steerable assembly to drill from 17 to 1640 feet MD (17 to

4 The Gamma Ray Apparent (GRAM) data is presented from 0 to 200 API, per customer's request.

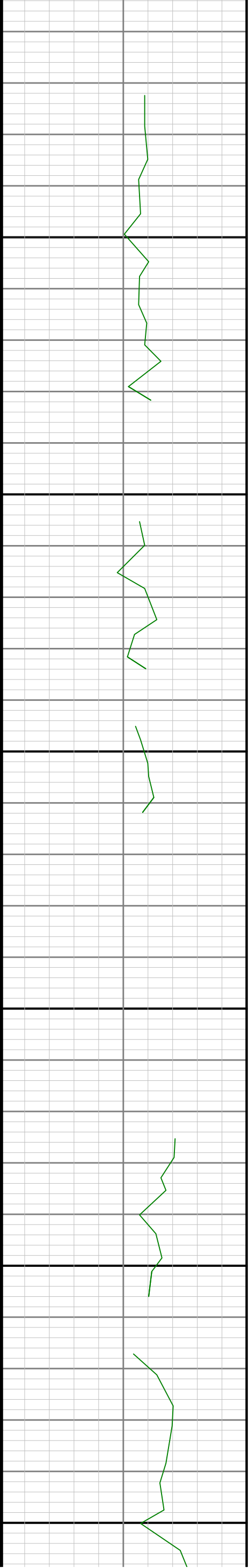
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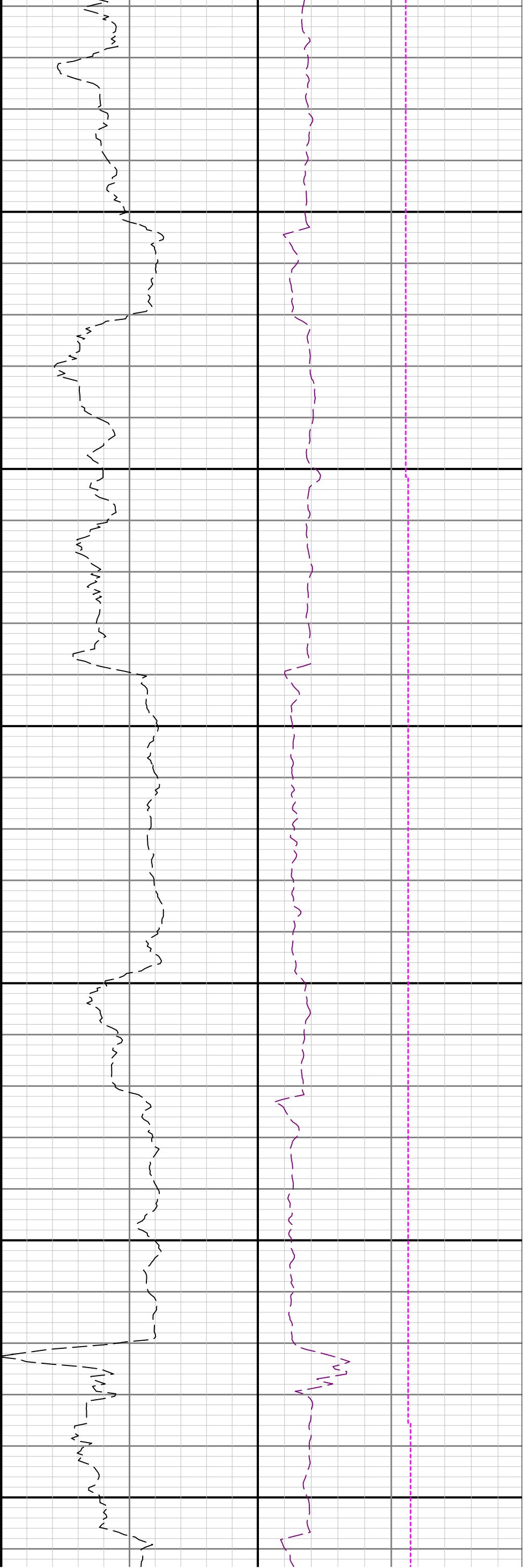


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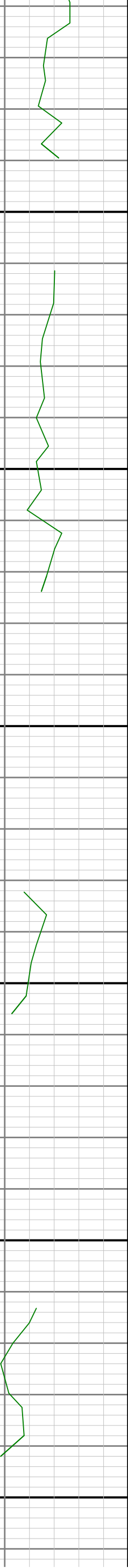


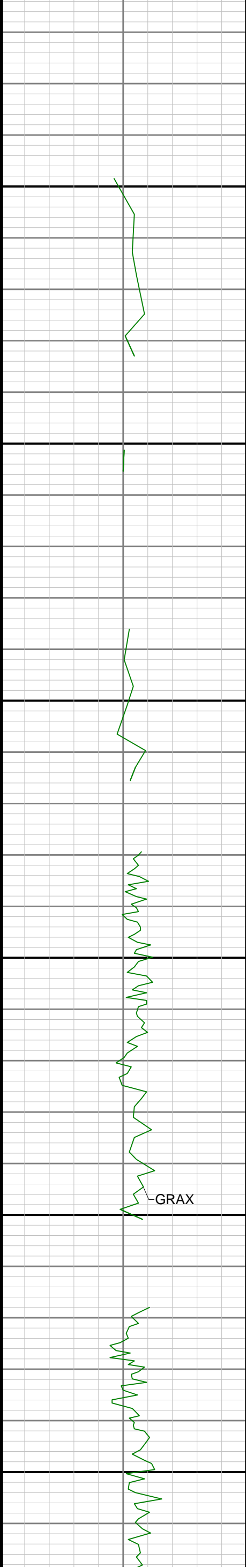


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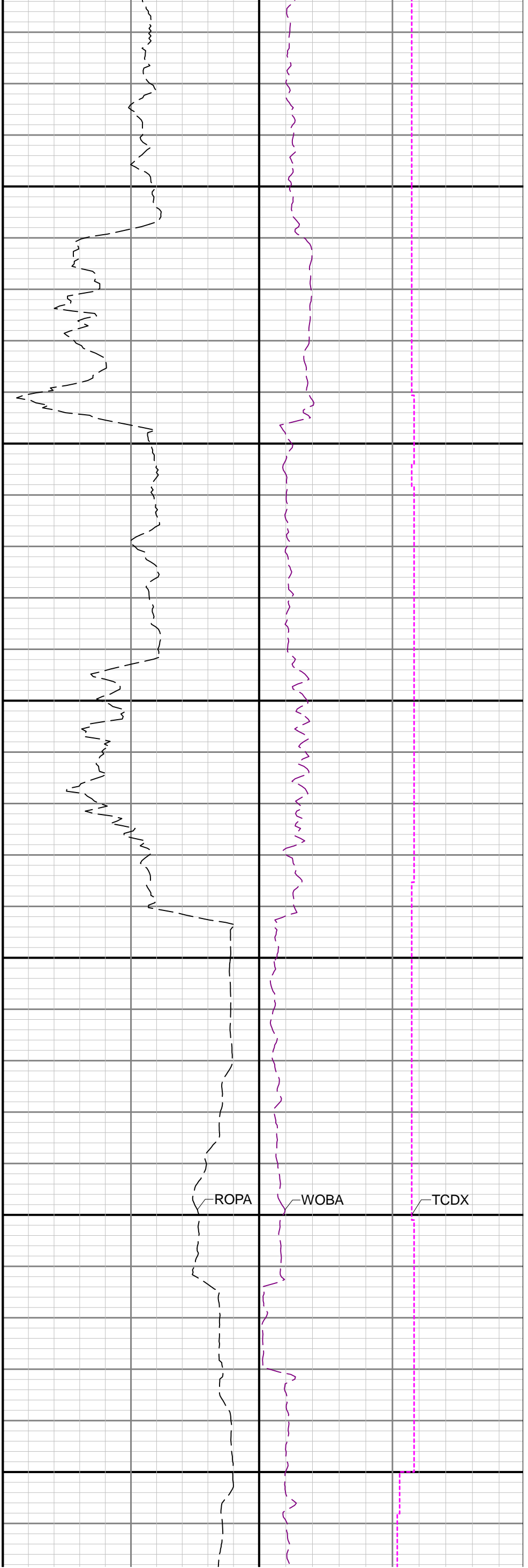


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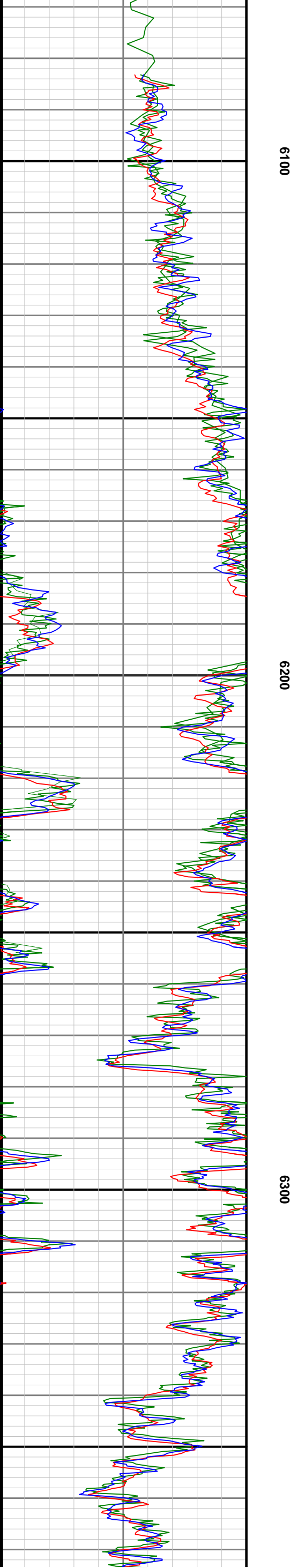
R2<R3



ROPA

WOBA

TCDX



	3775.00	15.32	204.70	139.2	-383.06	-259.08	3702.42	-867.58	410.41	88.00	0.81	-0.77	0.89
	3864.00	15.79	211.40	58.1	-404.07	-270.30	3788.17	-781.83	432.58	89.00	2.09	0.53	7.53
	3952.00	15.84	216.63	141.9	-423.93	-283.71	3872.84	-697.16	453.85	88.00	1.62	0.06	5.94
	4039.00	14.65	226.89	144.6	-440.98	-298.83	3956.79	-613.21	472.54	87.00	3.38	-1.37	11.79
	4127.00	15.84	237.55	144.6	-455.04	-317.09	4041.71	-528.29	488.60	88.00	3.45	1.35	12.11
	4214.00	15.85	237.07	63.5	-467.87	-337.08	4125.41	-444.59	503.66	87.00	0.15	0.01	-0.55
	4302.00	15.54	236.54	147.3	-480.90	-357.00	4210.13	-359.87	518.90	88.00	0.39	-0.35	-0.60
	4390.00	15.77	233.94	147.3	-494.44	-376.50	4294.86	-275.14	534.60	88.00	0.84	0.26	-2.95
	4477.00	15.69	235.38	158.1	-508.08	-395.74	4378.60	-191.40	550.37	87.00	0.46	-0.09	1.66
	4566.00	16.12	232.36	152.7	-522.46	-415.43	4464.20	-105.80	566.93	89.00	1.05	0.48	-3.39
	4655.00	16.01	227.45	152.7	-538.31	-434.26	4549.73	-20.27	584.85	89.00	1.53	-0.12	-5.52
	4742.00	16.14	222.54	152.7	-555.33	-451.27	4633.33	63.33	603.72	87.00	1.57	0.15	-5.64
	4831.00	16.15	217.02	155.4	-574.33	-467.09	4718.82	148.82	624.42	89.00	1.72	0.01	-6.20
	4919.00	15.89	210.49	158.1	-594.48	-480.57	4803.41	233.41	645.99	88.00	2.07	-0.30	-7.42
	5008.00	15.58	210.81	152.7	-615.25	-492.87	4889.08	319.08	668.04	89.00	0.36	-0.35	0.36
	5096.00	15.03	213.78	155.4	-634.88	-505.27	4973.96	403.96	688.97	88.00	1.09	-0.62	3.37
	5183.00	15.93	213.59	160.8	-654.20	-518.15	5057.80	487.80	709.65	87.00	1.04	1.03	-0.22
	5270.00	15.36	213.77	160.8	-673.73	-531.16	5141.58	571.58	730.55	87.00	0.66	-0.66	0.21
	5358.00	15.26	216.88	163.5	-692.68	-544.59	5226.46	656.46	750.93	88.00	0.94	-0.11	3.53
	5446.00	16.23	218.03	163.5	-711.63	-559.11	5311.15	741.15	771.43	88.00	1.16	1.10	1.31
	5534.00	16.09	210.29	166.2	-731.85	-572.84	5395.69	825.69	793.10	88.00	2.45	-0.16	-8.80
	5622.00	15.66	205.32	166.2	-753.12	-584.07	5480.33	910.33	815.52	88.00	1.62	-0.49	-5.65
	5711.00	15.06	202.45	168.9	-774.66	-593.63	5566.16	996.16	838.02	89.00	1.09	-0.67	-3.22
	5798.00	15.79	199.21	168.9	-796.29	-601.84	5650.02	1080.02	860.45	87.00	1.30	0.84	-3.72
	5886.00	16.05	195.38	171.6	-819.32	-609.00	5734.65	1164.65	884.16	88.00	1.23	0.30	-4.35
	5975.00	15.24	193.51	174.3	-842.56	-615.00	5820.35	1250.35	907.93	89.00	1.07	-0.91	-2.10
	6063.00	14.02	198.64	174.3	-863.91	-621.11	5905.50	1335.50	929.84	88.00	2.02	-1.39	5.83
	6152.00	19.92	203.90	174.3	-888.01	-630.71	5990.59	1420.59	954.89	89.00	6.84	6.63	5.91
	6238.00	26.83	204.43	155.4	-919.11	-644.69	6069.49	1499.49	987.40	86.00	8.04	8.03	0.62
	6325.00	35.88	204.14	160.8	-960.34	-663.27	6143.70	1573.70	1030.49	87.00	10.40	10.40	-0.33
	6413.00	44.99	199.35	163.5	-1013.34	-684.17	6210.63	1640.63	1085.56	88.00	10.93	10.35	-5.44
	6501.00	53.10	195.25	166.2	-1076.76	-703.77	6268.28	1698.28	1150.82	88.00	9.86	9.22	-4.66
	6589.00	61.76	187.07	168.9	-1149.40	-717.84	6315.66	1745.66	1224.60	88.00	12.57	9.84	-9.30
	6677.00	70.45	178.11	174.3	-1229.60	-721.26	6351.33	1781.33	1304.65	88.00	13.56	9.87	-10.18
	6763.00	74.32	176.96	177.0	-1311.48	-717.72	6377.36	1807.36	1385.57	86.00	4.68	4.50	-1.34
	6851.00	78.66	179.11	174.3	-1396.96	-714.81	6397.91	1827.91	1470.15	88.00	5.47	4.93	2.44
	6940.00	86.96	180.31	179.7	-1485.18	-714.37	6409.04	1839.04	1557.73	89.00	9.42	9.33	1.35
	7026.00	90.43	180.90	179.7	-1571.14	-715.28	6411.00	1841.00	1643.22	86.00	4.09	4.03	0.69
	7113.00	90.25	181.70	182.5	-1658.12	-717.25	6410.48	1840.48	1729.84	87.00	0.94	-0.21	0.92
	7202.00	90.15	180.41	187.9	-1747.10	-718.89	6410.17	1840.17	1818.42	89.00	1.45	-0.11	-1.45
	7290.00	90.22	178.77	190.6	-1835.10	-718.26	6409.89	1839.89	1905.75	88.00	1.87	0.08	-1.86
	7378.00	90.34	178.10	193.3	-1923.06	-715.86	6409.46	1839.46	1992.85	88.00	0.77	0.14	-0.76
	7465.00	90.03	178.38	196.0	-2010.02	-713.18	6409.18	1839.18	2078.92	87.00	0.48	-0.36	0.32
	7554.00	90.15	179.97	196.0	-2099.01	-711.90	6409.04	1839.04	2167.17	89.00	1.79	0.13	1.79
	7641.00	90.25	183.46	196.0	-2185.96	-714.51	6408.73	1838.73	2253.83	87.00	4.01	0.11	4.01
	7728.00	90.06	182.70	198.7	-2272.83	-719.18	6408.50	1838.50	2340.66	87.00	0.90	-0.22	-0.87
	7817.00	90.18	182.48	201.4	-2361.74	-723.20	6408.31	1838.31	2429.44	89.00	0.28	0.13	-0.25
	7905.00	90.18	182.03	204.1	-2449.67	-726.66	6408.04	1838.04	2517.18	88.00	0.51	0.00	-0.51
	7994.00	89.88	181.28	204.1	-2538.63	-729.23	6407.99	1837.99	2605.85	89.00	0.91	-0.34	-0.84
	8083.00	90.00	179.41	206.8	-2627.62	-729.77	6408.08	1838.08	2694.31	89.00	2.11	0.13	-2.10
	8171.00	89.91	178.02	206.8	-2715.60	-727.80	6408.15	1838.15	2781.47	88.00	1.58	-0.10	-1.58
	8259.00	89.85	177.67	209.5	-2803.54	-724.49	6408.34	1838.34	2868.44	88.00	0.40	-0.07	-0.40
	8348.00	90.03	178.30	209.5	-2892.48	-721.36	6408.43	1838.43	2956.43	89.00	0.74	0.20	0.71
	8435.00	90.12	181.49	212.2	-2979.47	-721.20	6408.32	1838.32	3042.81	87.00	3.67	0.10	3.67
	8523.00	90.09	183.88	212.2	-3067.37	-725.32	6408.15	1838.15	3130.60	88.00	2.72	-0.03	2.72
	8610.00	90.03	184.62	209.5	-3154.13	-731.77	6408.06	1838.06	3217.52	87.00	0.85	-0.07	0.85
	8699.00	90.03	179.43	212.2	-3243.04	-734.91	6408.02	1838.02	3306.21	89.00	5.83	0.00	-5.83
	8788.00	90.15	177.96	212.2	-3332.02	-732.89	6407.88	1837.88	3394.35	89.00	1.66	0.13	-1.65
	8876.00	89.94	178.58	214.9	-3419.98	-730.23	6407.81	1837.81	3481.41	88.00	0.74	-0.24	0.70
	8964.00	90.00	179.02	217.6	-3507.96	-728.39	6407.85	1837.85	3568.59	88.00	0.50	0.07	0.50
	9051.00	90.06	179.30	217.6	-3594.95	-727.11	6407.81	1837.81	3654.86	87.00	0.33	0.07	0.32
	9139.00	90.06	179.78	217.6	-3682.94	-726.40	6407.72	1837.72	3742.18	88.00	0.55	0.00	0.55
	9227.00	90.15	179.95	217.6	-3770.94	-726.20	6407.55	1837.55	3829.57	88.00	0.22	0.10	0.19
	9314.00	89.85	178.97	220.3	-3857.94	-725.38	6407.55	1837.55	3915.89	87.00	1.18	-0.34	-1.13
	9403.00	89.94	178.76	220.3	-3946.92	-723.61	6407.72	1837.72	4004.07	89.00	0.26	0.10	-0.24
	9491.00	90.03	178.65	220.3	-4034.90	-721.63	6407.74	1837.74	4091.23	88.00	0.16	0.10	-0.12
	9578.00	89.78	178.22	220.3	-4121.87	-719.25	6407.88	1837.88	4177.34	87.00	0.57	-0.29	-0.49
	9665.00	90.12	178.49	223.0	-4208.83	-716.75	6407.96	1837.96	4263.44	87.00	0.50	0.39	0.31
	9753.00	89.97	178.55	220.3	-4296.80	-714.48	6407.89	1837.89	4350.56	88.00	0.18	-0.17	0.07
	9841.00	89.97	178.26	223.0	-4384.77	-712.03	6407.94	1837.94	4437.65	88.00	0.33	0.00	-0.33
	9929.00	89.97	178.23	225.7	-4472.72	-709.33	6407.98	1837.98	4524.71	88.00	0.03	0.00	-0.03
	10017.00	90.18	178.91	225.7	-4560.70	-707.14	6407.87	1837.87	4611.84	88.00	0.81	0.24	0.77
	10104.00	90.00	179.37	225.7	-4647.69	-705.83	6407.73	1837.73	4698.10	87.00	0.57	-0.21	0.53
	10192.00	90.03	179.93	228.4	-4735.68	-705.30	6407.71	1837.71	4785.45	88.00	0.64	0.03	0.64
	10278.00	90.06	180.29	228.4	-4821.68	-705.46	6407.64	1837.64	4870.89	86.00	0.42	0.03	0.42
	10366.00	90.06	181.09	228.4	-4909.68	-706.52	6407.55	1837.55	4958.42	88.00	0.91	0.00	0.91
	10453.00	90.00	180.77	231.1	-4996.66	-707.93	6407.50	1837.50	5044.99	87.00	0.37	-0.07	-0.37
	10541.00	89.69	180.85	231.1	-5084.66	-709.18	6407.74	1837.74	5132.53	88.00	0.36	-0.35	0.09
	10628.00	89.88	180.88	231.1	-5171.65	-710.49	6408.07	1838.07	5219.09	87.00	0.22	0.22	0.03
	10717.00	89.82	181.12	233.8	-5260.63	-712.04	6408.30	1838.30	5307.66	89.00	0.28	-0.07	0.27
	10805.00	89.78	180.81	233.8	-5348.62	-713.52	6408.61	1838.61	5395.23	88.00	0.36	-0.05	-0.35
	10893.00	89.78	180.81	233.8	-5436.61	-714.77	6408.95	1838.95	5482.78	88.00	0.00	0.00	0.00
	10981.00	89.75	181.62	233.8	-5524.59	-716.63	6409.31	1839.31	5570.38	88.00	0.92	-0.03	0.92
	11069.00	89.79	181.54	236.5	-5612.55	-719.06	6409.66	1839.66	5658.04	88.00	0.10	0.05	-0.09
	11157.00	90.31	181.27	231.1	-5700.53	-721.22							