

BAKER HUGHES			Natural Formation Evaluation Gamma Ray			
Scale:  1:240  True Vertical Depth			Company: Kerr-McGee Oil & Gas Onshore LP			
Status:  Final Print			Well:  Ziemer 35C-5HZ		Weld County (Kerr McGee)	
API Number:  05-123-37828-00			Region:  Continental US		Country: United States	
Permanent Datum (P.D.): Ground Level			Surface Location: Latitude: 40° 5' 11.920" N Longitude: 104° 41' 17.930" W		Other Services:  Directional VSS	
Log Measured From: Kelly Bushing			Elevation: 13.00 ft.		Above P.D.	
Depth Reference: Driller's Depth			Section: 5 TWN: 1N		Range 65E	
Interval Logged			Dates		Magnetic Field Reference	
Top: 6600 ft.			Date From: 10/Oct/13		Dip Angle: 66.67 °	
Bottom: 7698 ft.			Date To: 14/Oct/13		Total Mag to Reference	
Spud Date: 10/Oct/13			Field Strength: 52908.0 nT		North Correction: 8.20 °	
Borehole Record			Casing Record			
Hole Size	From	To	Size	Weight	From	To
8.750 in.	1040 ft.	7750 ft.	9.625 in.	36.00 lb/ft	Surface	1000 ft.
			7.000 in.	26.00 lb/ft	Surface	7747 ft.
Type	From	To	Hole Size	Interval	Inc / Az (Start)	Inc / Az (End)
Water Based Mud	1009 ft.	7750 ft.	8.750 in.	6750 ft.	0.2 ° / 79.7 °	89.3 ° / 181.1 °
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					/	/
Acquisition System			Software Version		Other	
Advantage	2.20U4	Rig / Contractor:	Ensign 138 / Kerr-McGee Oil & Gas Onshore LP			
PATS	6.4.1.34	Job No:	5828562			
		District / Unit:	RMD / D & E			

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Log Run Summary															
LWD	BHA	Bit	Bit	Bit	Bit	Assembly	Logged Interval		Bit Depth Interval		Date / Time				Circ.
Run	Run	Run	Size	Type	Gauge	Type	Top	Bottom	From	To	Start		End		Time
No.	No.	No.	(in.)		Length		(ft.)	(ft.)	(ft.)	(ft.)					(hrs.)
1	1	1	8.750	PDC	3.000	Steerable	6600	6893	1040	6950	10/Oct/2013	10:05	10/Oct/2013	10:05	23.25
2	2	2	8.750	PDC	2.000	Steerable	6893	7698	6950	7750	13/Oct/2013	14:57	13/Oct/2013	14:57	12.86

Crew										
Name	Arrive	Depart		Name	Arrive	Depart		Name	Arrive	Depart
	Wellsite	Wellsite			Wellsite	Wellsite			Wellsite	Wellsite
Robert Bartlett	09/Oct/2013	19/Oct/2013		Will Drake	09/Oct/2013	19/Oct/2013		Edward Beaty	09/Oct/2013	19/Oct/2013
Tyler Wall	09/Oct/2013	19/Oct/2013		Andrew Overbey	09/Oct/2013	19/Oct/2013				

Mud Properties Record

Date / Time		LWD Run No.	Measured Depth (ft.)	Mud Type	Density (ppg)	Viscosity (cp)	pH	Fluid Loss (cc)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
12/Oct/2013	21:00	1	1009	Water Based Mud	8.4	1	9.0	35.0	0 / 99	Active Mud Pit	800	0.0
13/Oct/2013	21:00	2	6960	Water Based Mud	9.9	10	9.0	9.0	0 / 92	Active Mud Pit	1600	0.0

Mnemonics

Curve	Description	Units
GRAX	Gamma Ray Apparent, 0.5 ft. Avg.	API
ROPA	Rate of Penetration, 3.0 ft. Avg.	ft/hr
TCDX	Downhole Temperature	degF
WOBA	Surface Weight on Bit, 1.0 ft. Avg.	klbf

Equipment and Service Data

LWD Run No.	Tool	Serial Number	Measurement	Bit Offset (ft.)	Max O.D. (in.)	Min I.D. (in.)
1	DIR	12373466	Directional	58.81	6.750	3.313
1	SRIG	12376001	Gamma	55.43	6.750	3.313
2	DIR	12373466	Directional	55.69	6.750	3.313
2	SRIG	12376001	Gamma	52.31	6.750	3.313

Service and Tool Mnemonics

Mnemonic	Name	Description
DIR	Directional	Wellbore directional survey
SRIG	Inclination and Gamma	Probe based gamma ray and inclination module

Comments

<p>1.) Depth measurements obtained from a depth control system not supplied or operated by Baker Hughes. Due to the lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.</p> <p>2.) Baker Hughes run 1 utilized 6 3/4 inch NaviTrak services (Directional only) behind an 8 3/4 inch bit and steerable assembly from 1000 to 6722 feet MD (1000 to 6690 feet TVD).</p> <p>3.) Baker Hughes runs 1 and 2 utilized 6 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 8 3/4 inch bit and steerable assembly from 6722 to 7750 feet MD (6690 to 7325 feet TVD).</p> <p>4.) The interval from 1000 to 6722 feet MD (1000 to 6690 feet TVD) was not logged due to directional only services being provided through the straight-hole and nudge section for Baker Hughes run 1.</p>
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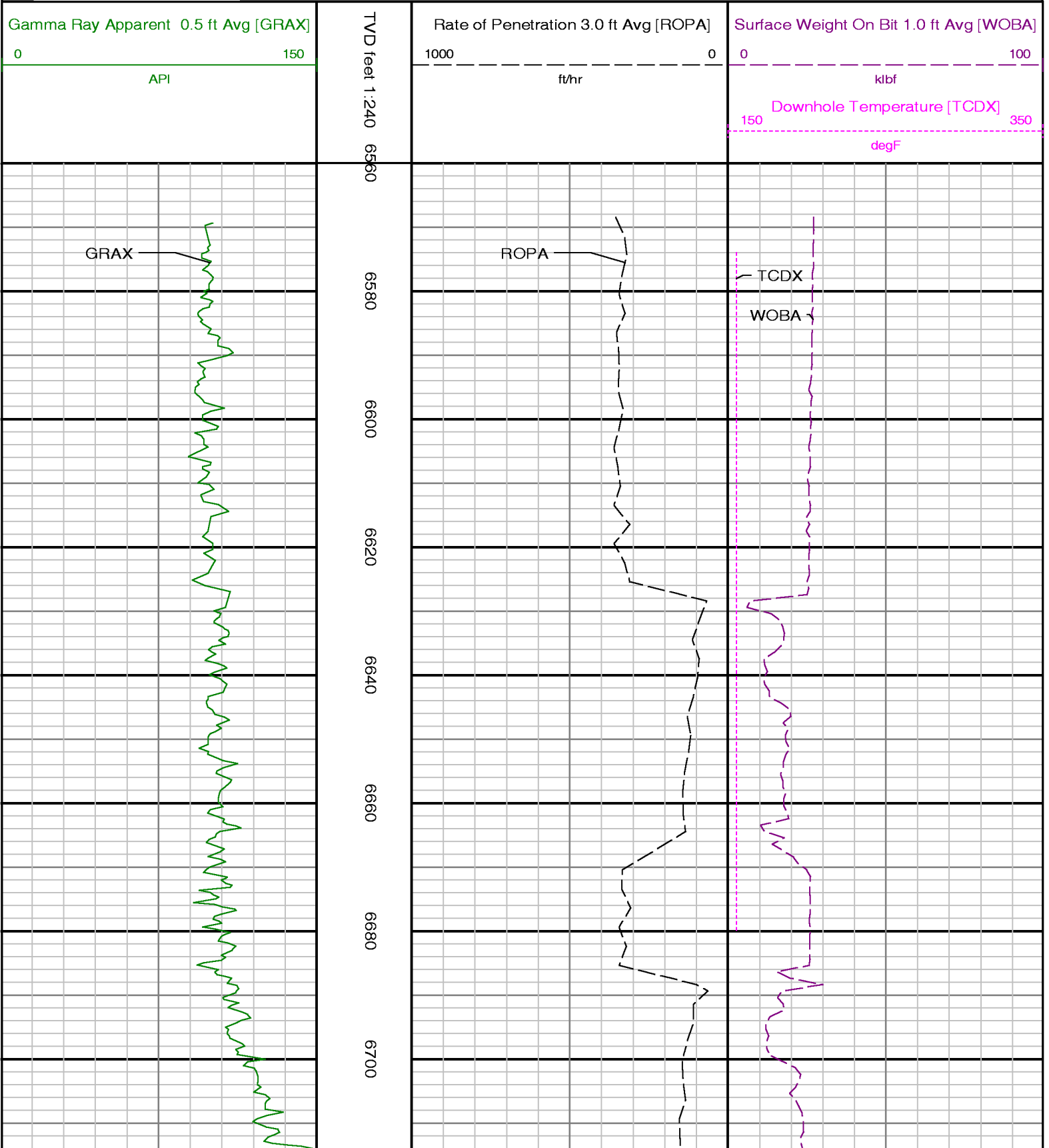
Curve Mnemonics

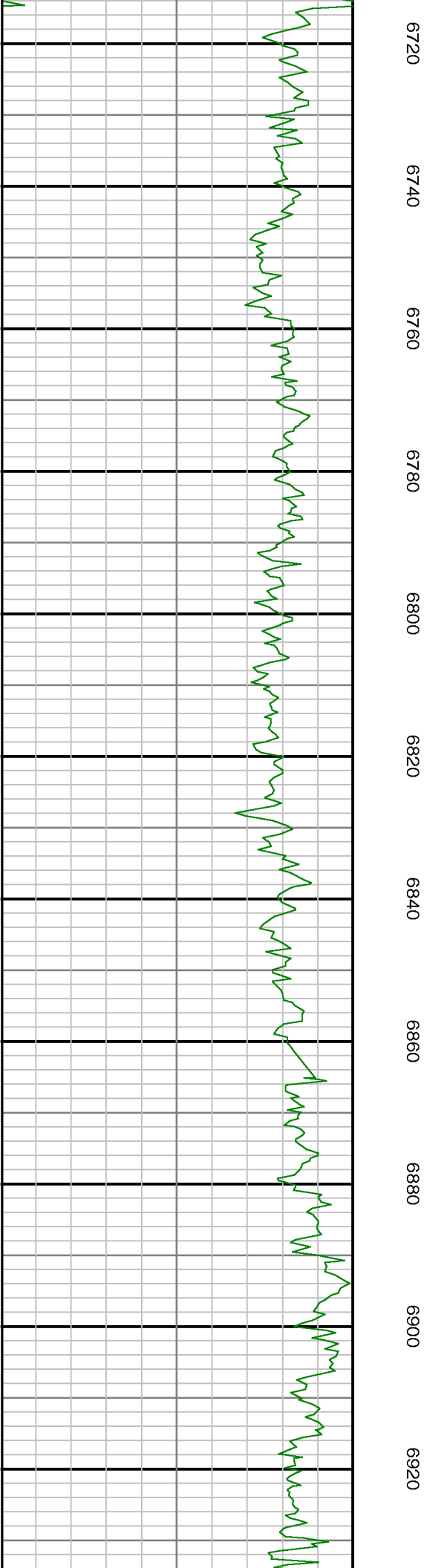
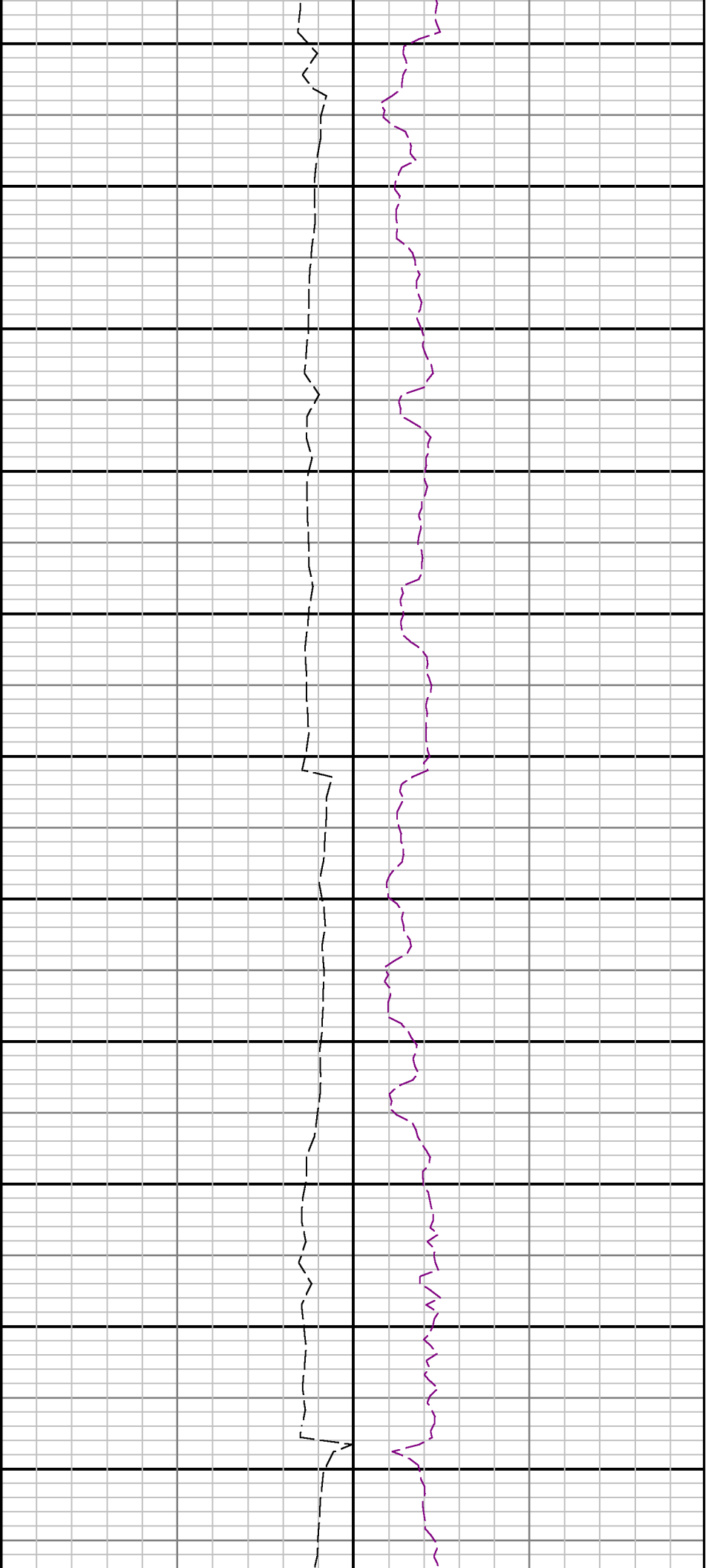
Curve	Description	Units
GRAX	Gamma Ray - Apparent	API

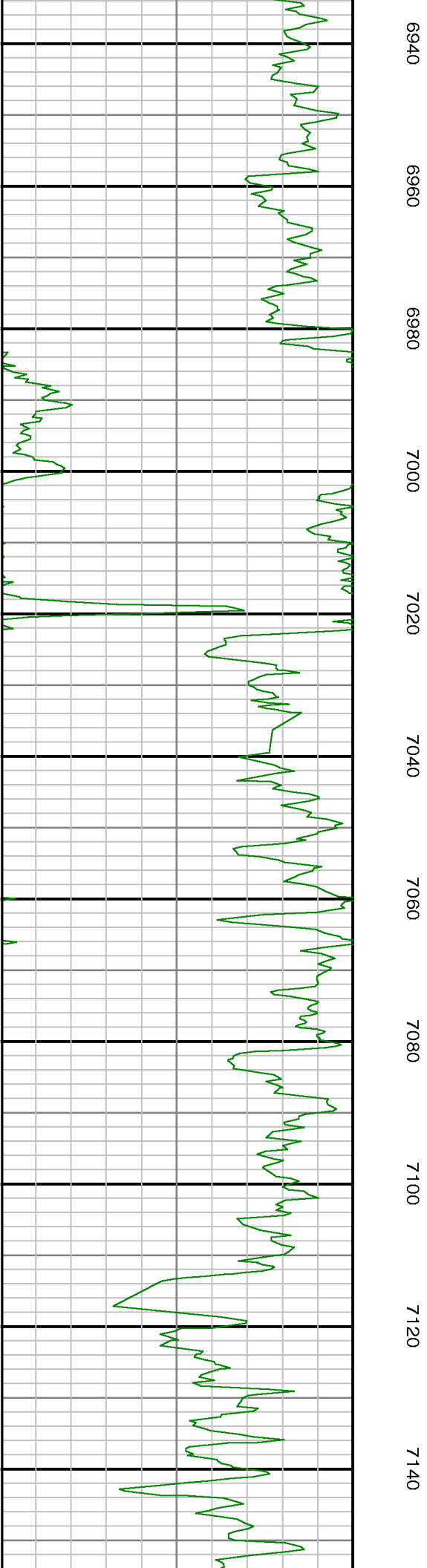
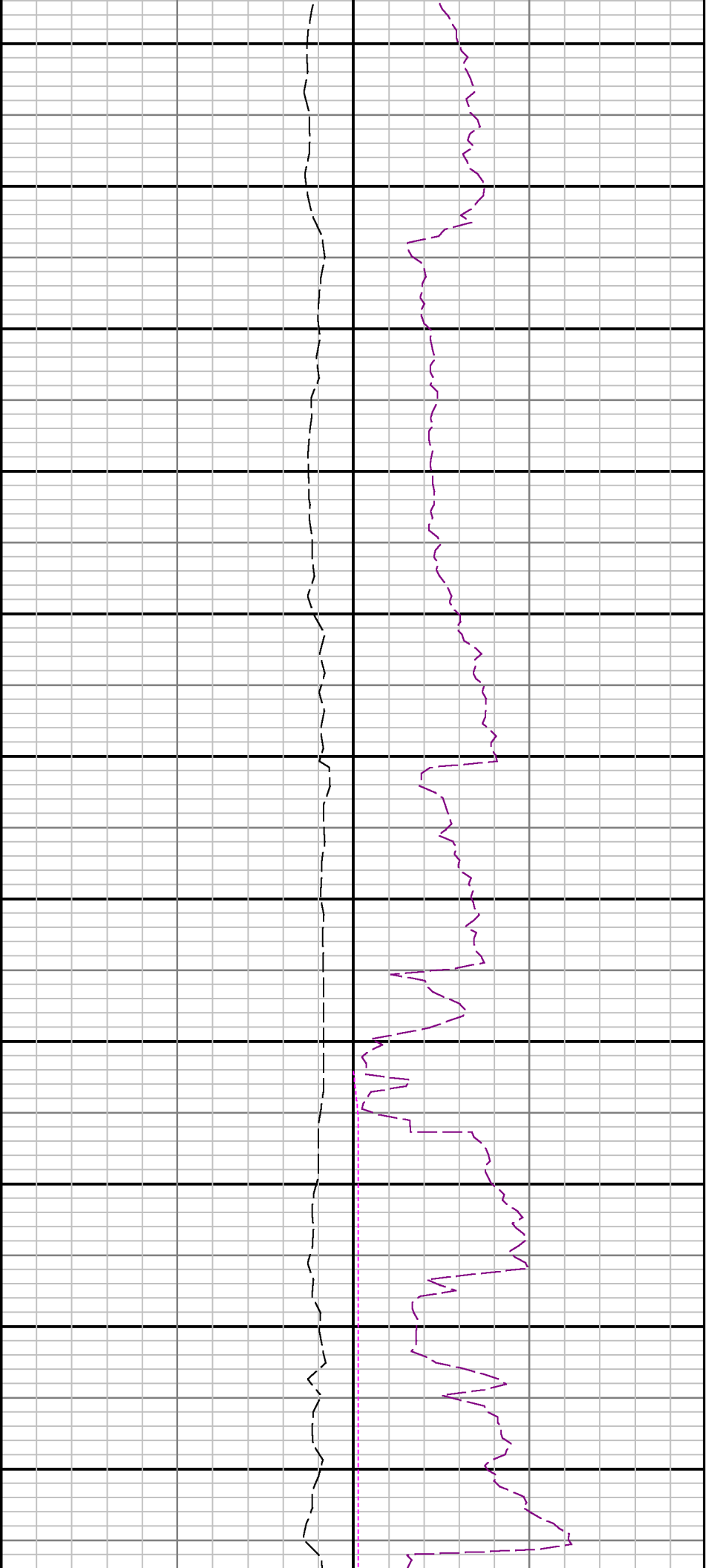
ROPA	AVERAGE Instantaneous ROP - 5 second ROP	ft/hr
TCDX	Downhole Temperature	degF
WOBA	AVERAGE Weight On Bit	klbf

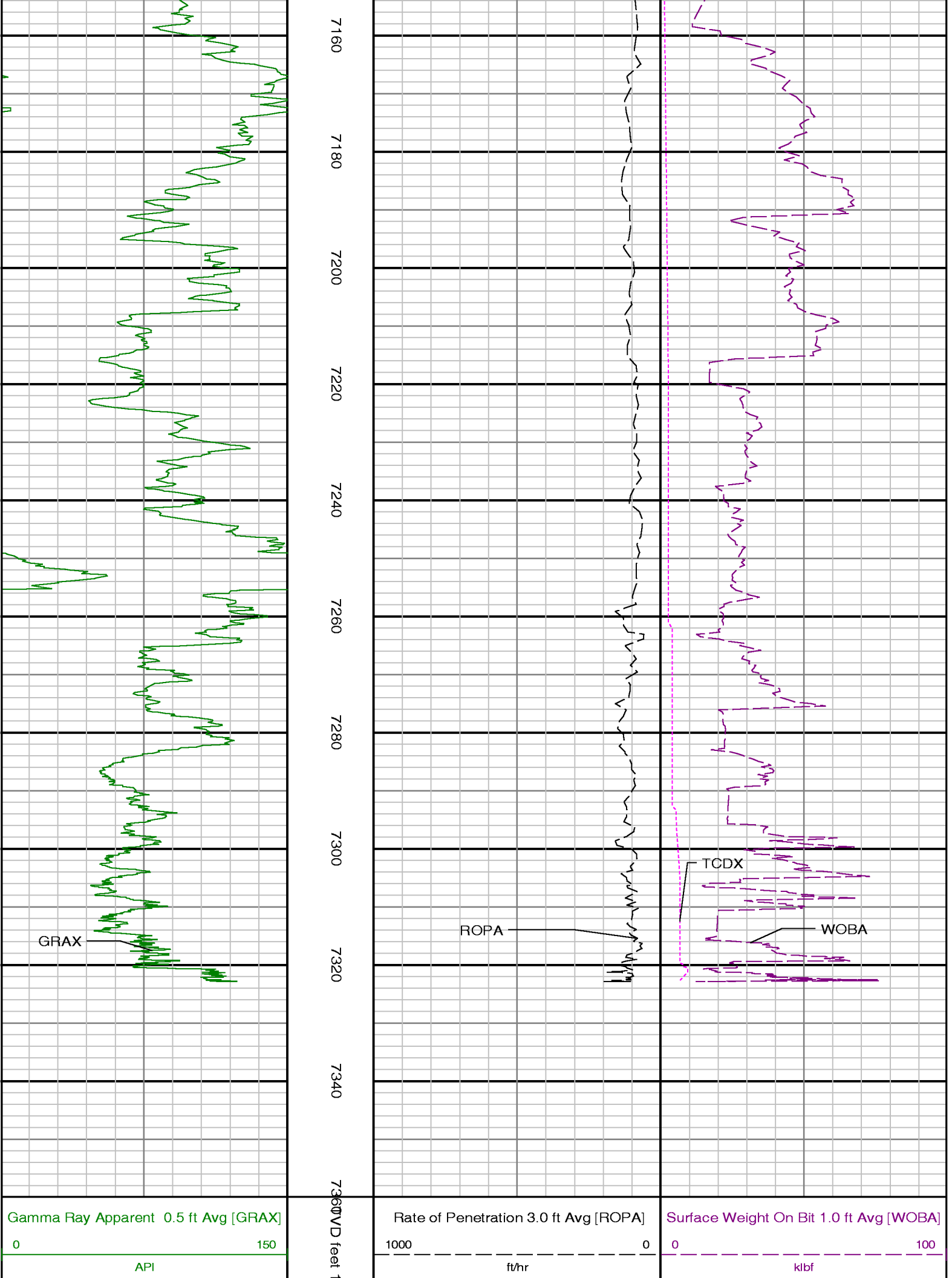


Company : Kerr-McGee Oil & Gas Onshore LP  
 Well : Ziemer 35C-5HZ  
 Interval : 6560.00 - 7360.00 feet  
 Created : 14/Oct/2013 4:51:41 PM









7160 7180 7200 7220 7240 7260 7280 7300 7320 7340 7360

GRAX

ROPA

TCDX

WOBA

Gamma Ray Apparent 0.5 ft Avg [GRAX]

0 150  
API

Rate of Penetration 3.0 ft Avg [ROPA]

1000 0  
ft/hr

Surface Weight On Bit 1.0 ft Avg [WOBA]

0 100  
klbf

Downhole Temperature [TCDX]

150 350

degF

ADVANTAGE Final Survey Listing												
<div>Operator : Kerr-McGee Oil &amp; Gas Onshore LPField : Weld County (Kerr McGee)API No : 051233782800</div> <div>Well : Ziemer 35C-5HZRig : Ensign 138Job : 5828562</div> <div>Wellbore : Ziemer 35C-5HZ Orig Hole</div>												
Well Origin												
Latitude		40.0866 deg			Longitude		-104.6883 deg					
North Reference		True			Drill Depth Zero		NULL					
Vertical Datum is		Ground Level			Vertical Datum to DDZ		4944.00 ft					
Vertical Section North		0.00 ft			Vertical Section East		0.00 ft					
Vertical Section Azimuth		182.1900 deg			Vertical Section Depth		0.00ft					
Grid Convergence		0.0000 deg			Magnetic Declination		8.1800 deg					
Total Correction		8.1800 deg			TVD Calculation Method		Minimal Curvature					
D-Raw Calculation		Magcorr1			Local Magnetic Field		52923 nT					
Local Magnetic Dip Angle		66.6300 deg			Local Gravity Field		9.798 m/s^2					
Tie	MD ft	Incl deg	Azim deg	North ft	East ft	TVD ft	VS ft	Incr VS ft	Crs Len ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft
	0.00	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00				
	13.00	0.0000	192.2400	0.00	0.00	13.00	0.00	0.00	13.00	0.00	0.00	-1290.46
	113.00	0.0800	192.2400	-0.07	-0.01	113.00	0.07	0.07	100.00	0.08	0.08	0.00
	213.00	0.1100	76.7400	-0.11	0.06	213.00	0.11	0.16	100.00	0.16	0.03	-115.50
	313.00	0.2400	82.2500	-0.06	0.36	313.00	0.05	0.47	100.00	0.13	0.13	5.51
	413.00	0.3800	90.1600	-0.04	0.90	413.00	0.00	1.01	100.00	0.15	0.14	7.91
	513.00	0.5600	97.7900	-0.10	1.72	512.99	0.04	1.82	100.00	0.19	0.18	7.63
	613.00	0.3400	98.2400	-0.21	2.50	612.99	0.12	2.61	100.00	0.22	-0.22	0.45
	713.00	0.3100	75.2700	-0.19	3.05	712.99	0.07	3.17	100.00	0.13	-0.03	-22.97
	813.00	0.4400	97.4100	-0.17	3.70	812.99	0.03	3.81	100.00	0.19	0.13	22.14
U	913.00	0.3200	65.9900	-0.10	4.33	912.99	-0.06	4.45	100.00	0.24	-0.12	-31.42
	963.00	0.1700	79.6900	-0.03	4.53	962.99	-0.14	-0.14	50.00	0.32	-0.30	27.40
	1082.00	0.4000	61.9000	0.19	5.07	1081.98	-0.39	0.45	119.00	0.20	0.19	-14.95
	1173.00	0.7000	265.4000	0.30	4.80	1172.98	-0.48	0.74	91.00	1.19	0.33	-171.98
	1264.00	2.3000	256.3000	-0.18	2.47	1263.95	0.08	3.12	91.00	1.77	1.76	-10.00
	1356.00	3.5000	261.7000	-1.02	-2.10	1355.83	1.10	7.77	92.00	1.34	1.30	5.87
	1447.00	5.0000	266.1000	-1.69	-8.81	1446.58	2.03	14.50	91.00	1.69	1.65	4.84
	1539.00	6.7000	263.7000	-2.55	-18.14	1538.09	3.24	23.88	92.00	1.87	1.85	-2.61
	1631.00	8.8000	261.9000	-4.13	-30.45	1629.25	5.29	36.28	92.00	2.30	2.28	-1.96
	1738.00	10.0000	258.6000	-7.12	-47.66	1734.81	8.94	53.75	107.00	1.23	1.12	-3.08
	1829.00	10.9000	255.1000	-10.90	-63.72	1824.30	13.32	70.25	91.00	1.21	0.99	-3.85
	1921.00	11.0000	255.9000	-15.27	-80.64	1914.63	18.34	87.72	92.00	0.20	0.11	0.87
	2012.00	11.3000	254.4000	-19.78	-97.64	2003.91	23.50	105.32	91.00	0.46	0.33	-1.65
	2104.00	11.8000	254.8000	-24.68	-115.40	2094.05	29.07	123.74	92.00	0.55	0.54	0.43
	2195.00	11.9000	257.8000	-29.10	-133.55	2183.11	34.18	142.42	91.00	0.69	0.11	3.30
	2287.00	11.8000	258.2000	-33.03	-152.03	2273.15	38.81	161.31	92.00	0.14	-0.11	0.43

	3292.00	7.9000	266.8000	-88.71	-318.12	3262.25	100.80	337.46	91.00	1.08	-0.77	5.27
	3386.00	6.6000	273.0000	-88.79	-329.96	3355.49	101.33	349.31	94.00	1.61	-1.38	6.60
	3480.00	5.0000	279.0000	-87.86	-339.40	3449.01	100.77	358.79	94.00	1.82	-1.70	6.38
	3574.00	3.1000	272.2000	-87.13	-345.99	3542.77	100.28	365.42	94.00	2.08	-2.02	-7.23
	3669.00	1.5000	274.6000	-86.93	-349.80	3637.69	100.23	369.23	95.00	1.69	-1.68	2.53
	3763.00	0.5000	355.9000	-86.42	-351.05	3731.68	99.77	370.59	94.00	1.60	-1.06	86.49
	4141.00	1.4000	325.7000	-80.96	-353.77	4109.63	94.42	376.69	378.00	0.26	0.24	-7.99
	4237.00	0.5000	245.2000	-80.17	-354.81	4205.61	93.67	378.00	96.00	1.47	-0.94	-83.85
	4615.00	1.2000	221.0000	-83.85	-358.91	4583.57	97.50	383.50	378.00	0.20	0.19	-6.40
	4709.00	1.3000	239.8000	-85.13	-360.48	4677.55	98.84	385.52	94.00	0.45	0.11	20.00
	4803.00	0.3000	343.6000	-85.43	-361.47	4771.54	99.18	386.56	94.00	1.49	-1.06	110.43
	4994.00	0.4000	247.5000	-85.20	-362.22	4962.54	98.98	387.35	191.00	0.27	0.05	-50.31
	5184.00	0.7000	69.2000	-85.04	-361.75	5152.54	98.80	387.85	190.00	0.58	0.16	-93.84
	5373.00	0.4000	17.7000	-84.00	-360.47	5341.53	97.72	389.50	189.00	0.29	-0.16	-27.25
Tie	MD ft	Incl deg	Azim deg	North ft	East ft	TVD ft	VS ft	Incr VS ft	Crs Len ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft
	5752.00	1.0000	322.8000	-80.11	-362.07	5720.50	93.89	393.71	379.00	0.22	0.16	-14.49
	5847.00	0.4000	327.2000	-79.17	-362.75	5815.49	92.97	394.87	95.00	0.63	-0.63	4.63
	6129.00	1.0000	2.6000	-75.88	-363.17	6097.47	89.71	398.18	282.00	0.25	0.21	12.55
	6223.00	0.7000	135.0000	-75.47	-362.73	6191.47	89.28	398.78	94.00	1.66	-0.32	140.85
	6606.00	0.7000	330.5000	-75.09	-362.23	6574.46	88.88	399.42	383.00	0.36	0.00	-42.95
	6701.00	1.2000	188.2000	-75.57	-362.65	6669.45	89.37	400.06	95.00	1.90	0.53	-149.79
	6796.00	5.0000	190.4000	-80.63	-363.54	6764.29	94.46	405.19	95.00	4.00	4.00	2.32
	6890.00	9.2000	183.4000	-92.16	-364.73	6857.55	106.03	416.79	94.00	4.55	4.47	-7.45
	6948.00	11.0000	181.5000	-102.32	-365.15	6914.65	116.20	426.96	58.00	3.16	3.10	-3.28
	6985.00	14.8000	178.4000	-110.58	-365.11	6950.71	124.45	435.22	37.00	10.44	10.27	-8.38
	7031.00	20.9000	174.6000	-124.63	-364.17	6994.48	138.46	449.30	46.00	13.49	13.26	-8.26
	7079.00	28.3000	173.3000	-144.49	-362.04	7038.09	158.22	469.27	48.00	15.46	15.42	-2.71
	7126.00	34.8000	175.6000	-168.95	-359.71	7078.13	182.57	493.84	47.00	14.06	13.83	4.89
	7174.00	38.7000	179.6000	-197.63	-358.55	7116.58	211.19	522.54	48.00	9.53	8.13	8.33
	7221.00	43.2000	182.5000	-228.41	-359.15	7152.08	241.97	553.33	47.00	10.39	9.57	6.17
	7269.00	48.7000	181.9000	-262.87	-360.46	7185.44	276.45	587.82	48.00	11.49	11.46	-1.25
	7316.00	54.6000	182.0000	-299.69	-361.72	7214.59	313.30	624.66	47.00	12.55	12.55	0.21
	7363.00	60.9000	180.8000	-339.41	-362.67	7239.65	353.02	664.39	47.00	13.58	13.40	-2.55
	7410.00	66.7000	179.0000	-381.56	-362.58	7260.40	395.14	706.54	47.00	12.81	12.34	-3.83
	7458.00	69.6000	176.6000	-426.07	-360.87	7278.26	439.55	751.08	48.00	7.62	6.04	-5.00
	7505.00	72.8000	177.6000	-470.50	-358.62	7293.41	483.86	795.57	47.00	7.10	6.81	2.13
	7554.00	78.3000	178.6000	-517.90	-357.05	7305.63	531.17	843.00	49.00	11.40	11.22	2.04
	7601.00	80.4000	180.8000	-564.09	-356.81	7314.32	577.31	889.19	47.00	6.41	4.47	4.68
	7649.00	84.7000	180.6000	-611.67	-357.39	7320.54	624.88	936.77	48.00	8.97	8.96	-0.42
	7676.00	87.6000	181.1000	-638.60	-357.79	7322.35	651.81	963.71	27.00	10.90	10.74	1.85
	7694.00	89.3000	181.1000	-656.59	-358.14	7322.84	669.80	981.70	18.00	9.44	9.44	0.00
	7791.00	91.5000	180.8000	-753.57	-359.75	7322.16	766.77	1078.69	97.00	2.29	2.27	-0.31
	7886.00	91.0000	180.5000	-848.54	-360.82	7320.09	861.71	1173.67	95.00	0.61	-0.53	-0.32
	7979.00	90.5000	180.4000	-941.53	-361.55	7318.87	954.66	1266.66	93.00	0.55	-0.54	-0.11
	8074.00	90.0000	180.6000	-1036.52	-362.38	7318.46	1049.62	1361.66	95.00	0.57	-0.53	0.21
	8170.00	89.5000	180.4000	-1132.52	-363.22	7318.88	1145.57	1457.66	96.00	0.56	-0.52	-0.21
	8266.00	88.6000	180.3000	-1228.50	-363.81	7320.47	1241.51	1553.64	96.00	0.94	-0.94	-0.10
	8361.00	88.6000	180.2000	-1323.47	-364.22	7322.79	1336.43	1648.61	95.00	0.11	0.00	-0.11
	8455.00	89.7000	180.4000	-1417.46	-364.71	7324.18	1430.36	1742.60	94.00	1.19	1.17	0.21
	8550.00	90.2000	181.0000	-1512.45	-365.87	7324.27	1525.33	1837.60	95.00	0.82	0.53	0.63
	8644.00	91.3000	181.3000	-1606.42	-367.76	7323.04	1619.30	1931.59	94.00	1.21	1.17	0.32
	8739.00	92.4000	181.0000	-1701.35	-369.67	7319.97	1714.24	2026.54	95.00	1.20	1.16	-0.32
	8834.00	90.3000	180.0000	-1796.32	-370.50	7317.73	1809.16	2121.51	95.00	2.45	-2.21	-1.05
	8928.00	89.2000	179.3000	-1890.31	-369.92	7318.14	1903.07	2215.50	94.00	1.39	-1.17	-0.74
	9023.00	89.7000	181.5000	-1985.30	-370.58	7319.05	1998.01	2310.49	95.00	2.37	0.53	2.32
	9117.00	89.1000	182.8000	-2079.23	-374.11	7320.04	2092.00	2404.49	94.00	1.52	-0.64	1.38
	9212.00	88.3000	182.8000	-2174.09	-378.75	7322.19	2186.97	2499.46	95.00	0.84	-0.84	0.00
	9306.00	88.8000	182.8000	-2267.95	-383.34	7324.57	2280.94	2593.43	94.00	0.53	0.53	0.00
	9400.00	90.4000	185.0000	-2361.72	-389.73	7325.23	2374.88	2687.42	94.00	2.89	1.70	2.34
	9496.00	90.1000	185.2000	-2457.34	-398.27	7324.81	2470.76	2783.42	96.00	0.38	-0.31	0.21
	9591.00	89.4000	185.0000	-2551.96	-406.71	7325.22	2565.64	2878.42	95.00	0.77	-0.74	-0.21
	9688.00	90.8000	186.0000	-2648.51	-416.01	7325.05	2662.47	2975.41	97.00	1.77	1.44	1.03



	9783.00	89.8000	185.7000	-2743.01	-425.69	7324.56	2757.27	3070.41	95.00	1.10	-1.05	-0.32
	9877.00	89.9000	183.8000	-2836.68	-433.47	7324.80	2851.18	3164.41	94.00	2.02	0.11	-2.02
	9972.00	89.9000	183.5000	-2931.49	-439.52	7324.97	2946.14	3259.41	95.00	0.32	0.00	-0.32
Tie	MD ft	Incl deg	Azim deg	North ft	East ft	TVD ft	VS ft	Incr VS ft	Crs Len ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft
	10066.00	91.1000	182.7000	-3025.35	-444.61	7324.15	3040.13	3353.40	94.00	1.53	1.28	-0.85
	10161.00	92.0000	183.2000	-3120.18	-449.49	7321.58	3135.08	3448.36	95.00	1.08	0.95	0.53
	10256.00	90.6000	182.0000	-3215.06	-453.80	7319.42	3230.05	3543.33	95.00	1.94	-1.47	-1.26
	10350.00	91.0000	181.4000	-3309.01	-456.59	7318.11	3324.04	3637.32	94.00	0.77	0.43	-0.64
	10445.00	90.6000	181.0000	-3403.98	-458.58	7316.78	3419.01	3732.32	95.00	0.60	-0.42	-0.42
	10635.00	86.9000	180.8000	-3593.87	-461.56	7320.93	3608.89	3922.24	190.00	1.95	-1.95	-0.11
	10731.00	89.2000	180.5000	-3689.81	-462.65	7324.19	3704.79	4018.17	96.00	2.42	2.40	-0.31
	10825.00	90.3000	180.9000	-3783.80	-463.80	7324.61	3798.76	4112.17	94.00	1.25	1.17	0.43
	10921.00	90.1000	180.6000	-3879.79	-465.05	7324.27	3894.73	4208.17	96.00	0.38	-0.21	-0.31
	11015.00	89.6000	180.0000	-3973.79	-465.55	7324.52	3988.67	4302.17	94.00	0.83	-0.53	-0.64
	11110.00	89.3000	180.2000	-4068.78	-465.71	7325.43	4083.61	4397.17	95.00	0.38	-0.32	0.21
	11299.00	91.7000	182.2000	-4257.71	-469.67	7323.78	4272.55	4586.14	189.00	1.65	1.27	1.06
	11353.00	90.7000	181.9000	-4311.66	-471.60	7322.65	4326.53	4640.12	54.00	1.93	-1.85	-0.56
Projection to TD:												
	11408.00	90.7000	181.9000	-4366.63	-473.42	7321.98	4381.53	4695.12	55.00	0.00	0.00	0.00