



Weatherford®

6 3/4 in. & 4 3/4 in. WeatherfordM/LWD™
Gamma Ray
1 in. & 5 in. TRUE VERTICAL DEPTH
RECORDED DATA
FINAL PRINT

Company: Anadarko
Well: Cannon 14C-10HZ
Field: Wattenburg
Rig: Xtreme 23
County: Weld

Location		Other Services: Spectral Azimuthal Gamma Ray, Directional, and Temperature	
COMPANY	<u>Anadarko</u>		
WELL	<u>Cannon 14C-10HZ</u>		
FIELD	<u>Wattenburg</u>		
RIG	<u>Xtreme 23</u>		
COUNTY	<u>Weld</u>	STATE	<u>Colorado</u>
API #	<u>05-123-36696-00</u>		
Latitude: 40.158633° N	X = 3,204,555 ft	Mag Decl: 8.60°	
Longitude: 104.768138° W	Y = 1,301,477 ft	Mag Dip: 66.78°	
Other Services: Spectral Azimuthal Gamma Ray, Directional, and Temperature			

Permanent Datum: <u>Mean Sea Level</u>			
Log Measured From: <u>Drill Floor</u>	Elev: <u>4965 ft</u>	above perm. datum	
Depth Reference: <u>Drillers Tally</u>	Total Depth: <u>12035 ft</u>		
Depth Logged: 6760 ft	to 12035 ft	Runs: 2	
Date Logged: 24-Jun-13	to 28-Jun-13	Spud Date: 22-Jun-13	

Borehole Record			Casing Record			
Hole Size	From	To	Size	Weight	From	To
8.750 in.	895 ft	7885 ft	9.625 in.		Surface	967 ft
6.125 in.	7885 ft	12035 ft	7.000 in.	26.0 lb/ft	Surface	7875 ft
Borehole Deviation Record			Mud Record			
Hole Size	Min. Inc.	Max. Inc.	Type	Weight	From	To
8.750 in.	0.30°	82.07°	WBM	8.50 - 10.25 ppg	895 ft	12035 ft
6.125 in.	88.58°	92.47°				

All interpretations of log data are opinions based on inferences from electrical or other measurements. Weatherford International does not guarantee the accuracy or correctness of any interpretation or recommendation and we shall not be liable or responsible for any loss, cost, damages or expenses incurred or sustained by anyone resulting from any interpretation or recommendation made by any of our employees or agents.

RUN SUMMARY							
M/LWD Run Number		1	2				
Bit Size	in.	8.750	6.125				
Bit Type		PDC	PDC				
Bit TFA	sq.in.	1.610	1.856				
Bit Start Depth	ft	895	7885				
Bit End Depth	ft	7885	12035				
Top Log Interval	ft	6760	7840				
Bottom Log Interval	ft	7885	12035				
Begin Log Time	hrs	02:29	17:18				
Begin Log Date	DD-MMM-YY	24-Jun-13	26-Jun-13				
End Log Time	hrs	23:14	15:15				
End Log Date	DD-MMM-YY	24-Jun-13	28-Jun-13				
Drill or Wipe		Drill	Drill				
Flow Rate	gal/min	562	297				
Max AV / CV @ MWD	ft/min	444 / 339	487 / 343				
Min Inc @ Depth	deg @ ft	0.30 @ 5999	88.58 @ 9317				
Max Inc @ Depth	deg @ ft	82.07 @ 7825	92.47 @ 8206				
MUD DATA							
Depth	ft	7885	12035				
Fluid Type		WBM	WBM				
Mud Weight	ppg	10.25	10.10				
Plastic Viscosity	cP	10	11				
Solids / Sand	%	8.70 / 0.50	8.70 / 0.75				
NaCl Equiv. Chlorides	ppm	1700	1700				
pH		8.8	9.4				
Oil:Water Ratio	% Vol	1.1 : 98.9	3.3 : 96.7				
Rm @ Temperature	ohm-m @ deg F	na	1.930 @ 64				
Rmc @ Temperature	ohm-m @ deg F	na	1.623 @ 64				
Rmf @ Temperature	ohm-m @ deg F	na	1.712 @ 64				
KCl	% Vol	0	0				
Client Representative		J. Tettleton	J. Tettleton				
WeatherfordLWD Engineer		J. Jackson	J. Evers				

EQUIPMENT SUMMARY

M/LWD Run Number	1	2			
BTR / CDS Serial Number	44702 / 44736	na			
Battery Serial Number	403716787	na			
Gamma Ray Serial Number	2978	na			
CMS Serial Number	1592	na			
Pulser Serial Number	18705	na			
SAGR Serial Number	na	NW131111JB4.75-M2			
HEL Serial Number	na	NW131377PDBBI4.75-M1			
MFR Serial Number	na	NW131378RBBK4.75-M1			
Sensor to Bit Offsets / Acquisition Rates					
Directional	ft / sec	56.64 / RT	56.06 / RT		
Gamma Ray	ft / sec	42.43 / 16	41.38 / 5		
Resistivity	ft / sec	na	84.29 / 5		
Other Information					
Total BHA Length	ft	3335.03	6801.00		
BHA Assembly Type		Steerable	Steerable		
Stabilizer Location	ft	na	33.48		
Stabilizer Location	ft	na	102.09		
Run Circulating Time	hr	57.96	40.57		
Run Drilling Time	hr	37.98	18.26		

MUD SUMMARY

Date and Time	Run	Bit Depth	Mud Weight	% K	Rm @ Temp	Rmf @ Temp	Rmc @ Temp	BHCT
24 June 13 @ 23:14	01	7885 ft	10.25 ppg	0	na	na	na	178 F
28 June 13 @ 15:15	02	12035 ft	10.1 ppg	0	1.930 @ 64	1.712 @ 64	1.623 @ 64	223 F

M/LWD RUN REMARKS

Run Number: 1 :: REAL-TIME DATA LOG

WFT Services Provided:

Recorded and Real Time Logging: Gamma Ray and Temperature.

Directional Services: On demand Inclination and Azimuth.

Borehole and Environmental Correction:

Hole Size: 8.750 in.

Gamma Ray: Hole size, mudweight, Collar O.D., Collar I.D. and K1 factor.

Mud Weight: 8.50 ppg

Collar O.D.: 6.750 in.

K1 Factor: 3.179

Collar I.D.: 3.250 in.

Run Number: 2 :: RECORDED DATA LOG

WFT Services Provided:

Recorded and Real Time Logging: Spectral Gamma Ray, Resistivity, and Temperature.

Directional Services: On demand Inclination and Azimuth.

Borehole and Environmental Correction:

Hole Size: 6.125 in.

Gamma Ray: Corrected for mud weight, hole size and KCl concentration.

Mud Weight: 9.80 ppg

Resistivities: Corrected for borehole temperature, hole size, drilling fluid resistivity
and dielectric correction.

Borehole Temperature: 214° F

Drilling Fluid Resistivity: 0.619 ohm-m @ 214° F

KCl Concentration: 0%

M/LWD LOG COMMENTS

Comment No. 1-1

RECORDED DATA LOG

Start of MWD Drilling Run 01

Weatherford International provided 6 3/4 in. Directional, Gamma Ray, and Temperature for Run 01.

Run 01 started formation logging June 24, 2013 at 02:29 at 6760 MD / 6625 TVD. Weatherford International logged the 8.750 in. borehole.

The WBM at the start of drilling was 8.50 ppg.

Comment No. 1-2

End of MWD Drilling Run 01

Run 01 ended drilling formation June 24, 2013 at 23:14 at 7885 MD / 7415 TVD.

The WBM at the end of drilling was 10.25 ppg.

Comment No. 2-1

RECORDED DATA LOG

Start of LWD Drilling Run 02

Weatherford International provided 4 3/4 in. Directional, Resistivity, Spectral Azimuthal Gamma Ray, and Temperature for Run 02.

Run 02 started formation drilling June 26, 2013 at 17:18 at 7885 MD / 7415 TVD. Weatherford International logged the 6.125 in. borehole.

The WBM at the start of drilling was 9.70 ppg.

Comment No. 2-2

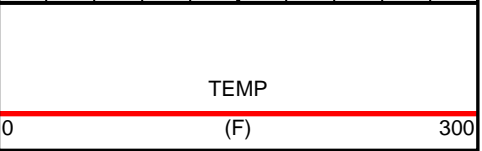
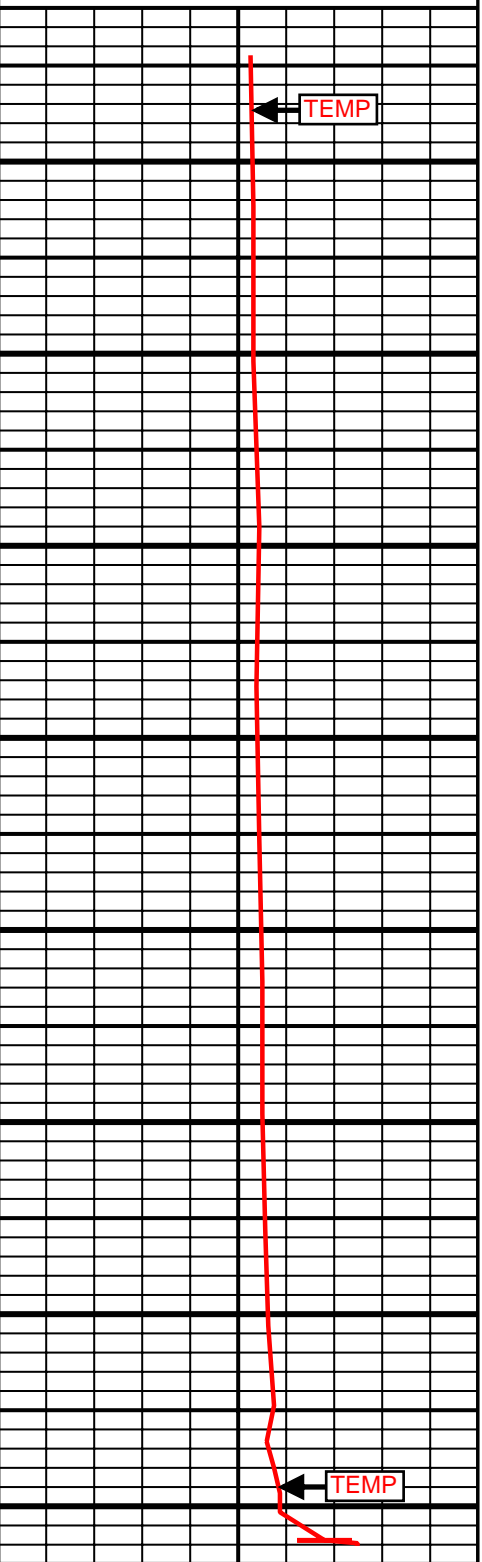
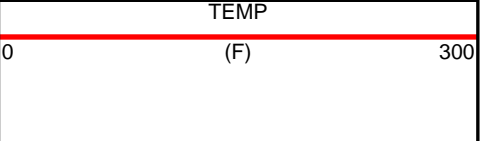
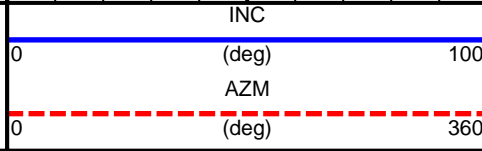
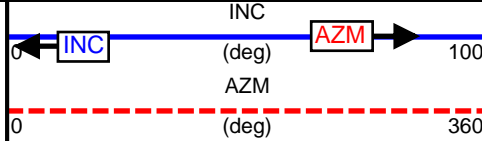
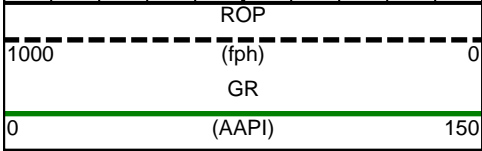
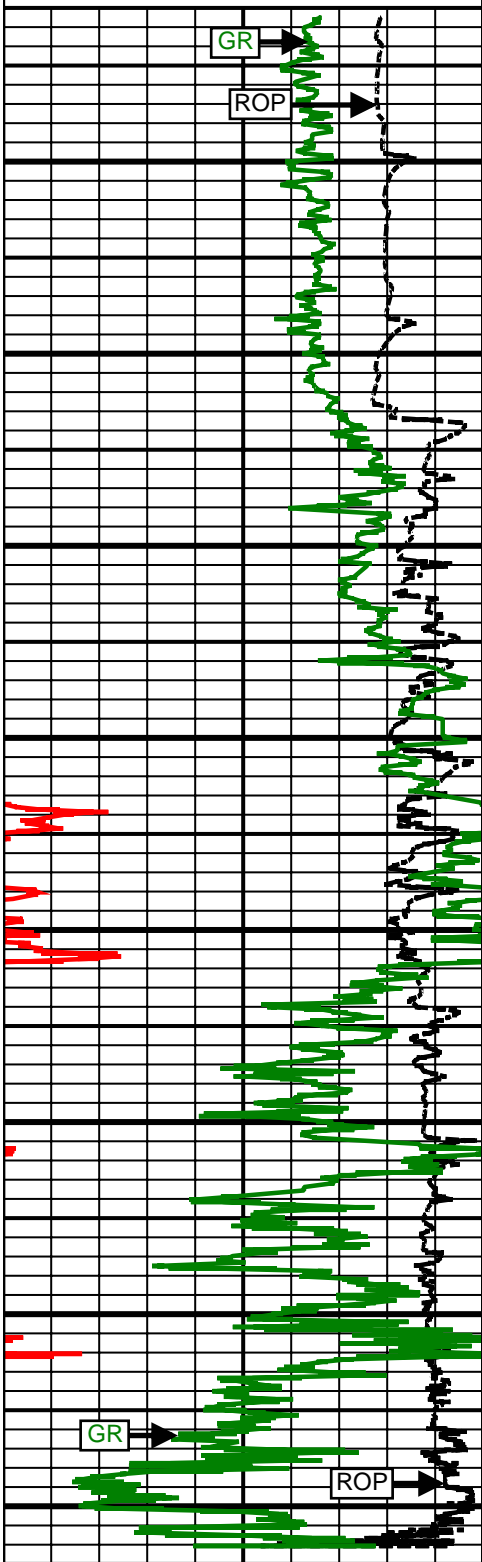
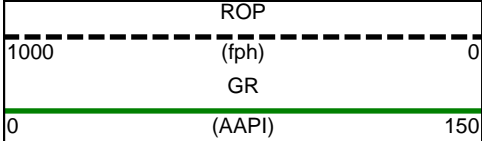
End of LWD Drilling Run 02

Run 02 ended drilling formation June 28, 2013 at 15:15 at 12035 MD / 7412 TVD.

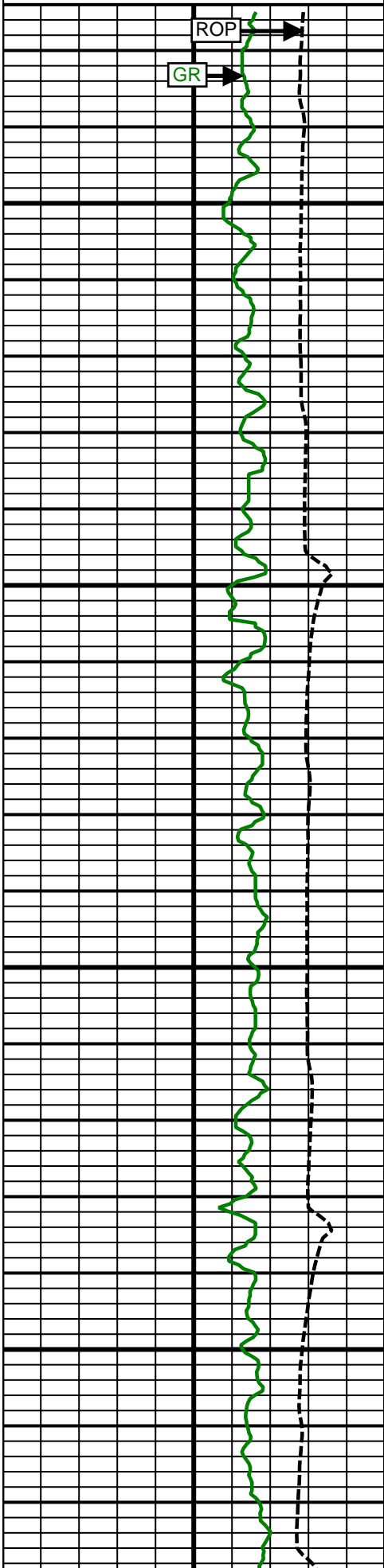
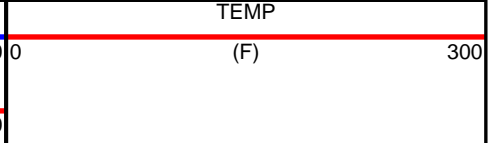
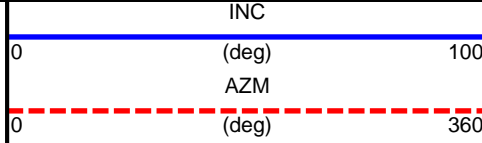
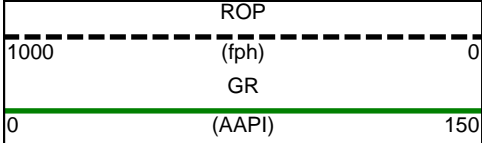
The WBM at the end of drilling was 10.10 ppg.

CURVE SPECIFICATIONS				
CURVE TYPE	MNEMONIC	UNITS	COMMENTS	CORRECTIONS
Rate of Penetration	ROP	fph	Rate of Penetration 3.0 ft window 0.5 ft Exponential Smoothing	None
Gamma Ray	GR	AAPI	Gamma Ray 3.0 ft window 0.5 ft Exponential Smoothing	See M/LWD Run Remarks
Inclination	INC	deg	Survey Inclination No Smoothing	None
Azimuth	AZM	deg	Survey Azimuth No Smoothing	
Temperature	TEMP	F	Borehole Temperature 3.0 ft window 0.5 ft Exponential Smoothing	

1 Inch - True Vertical Depth

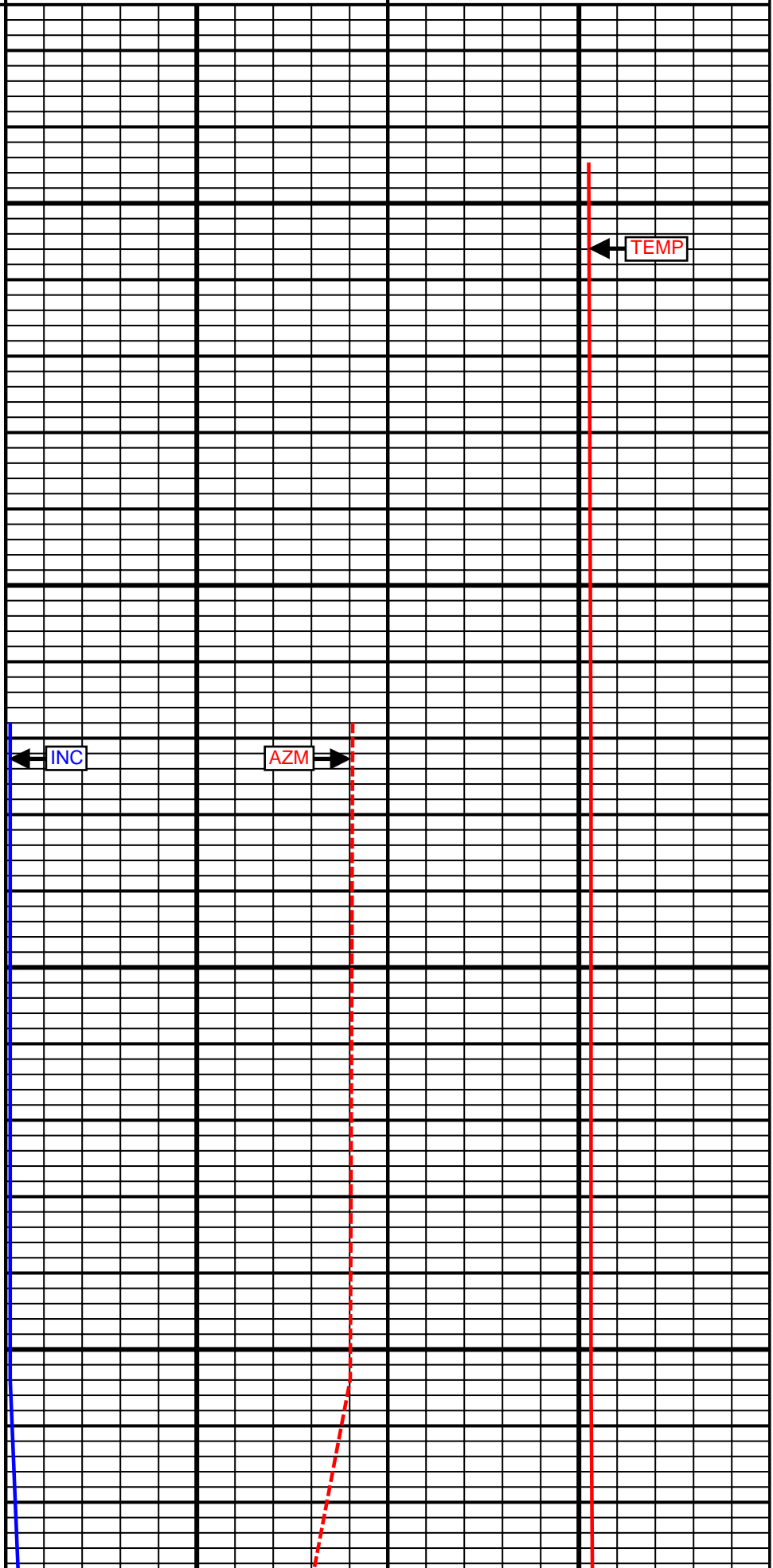


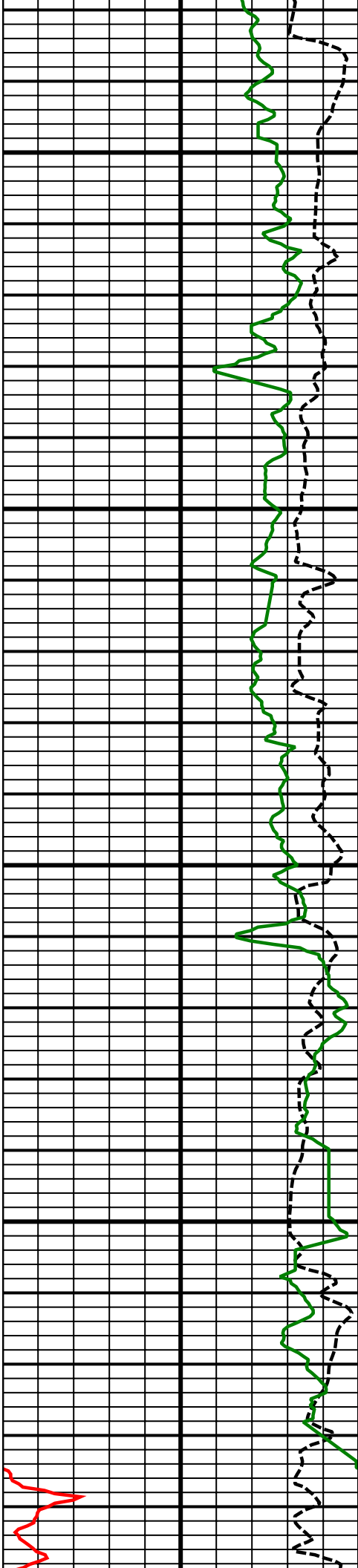
5 Inch - True Vertical Depth



6700
TVD

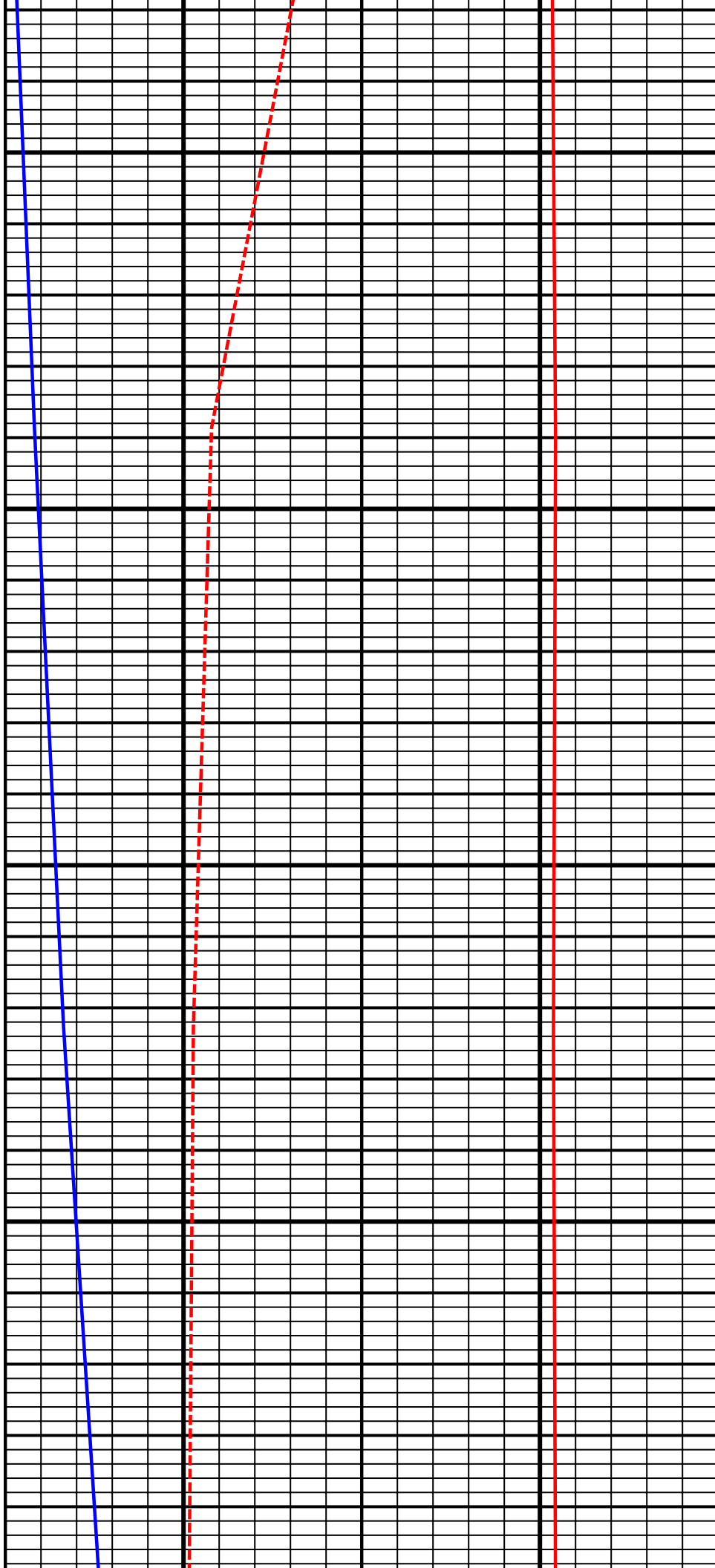
6800
TVD

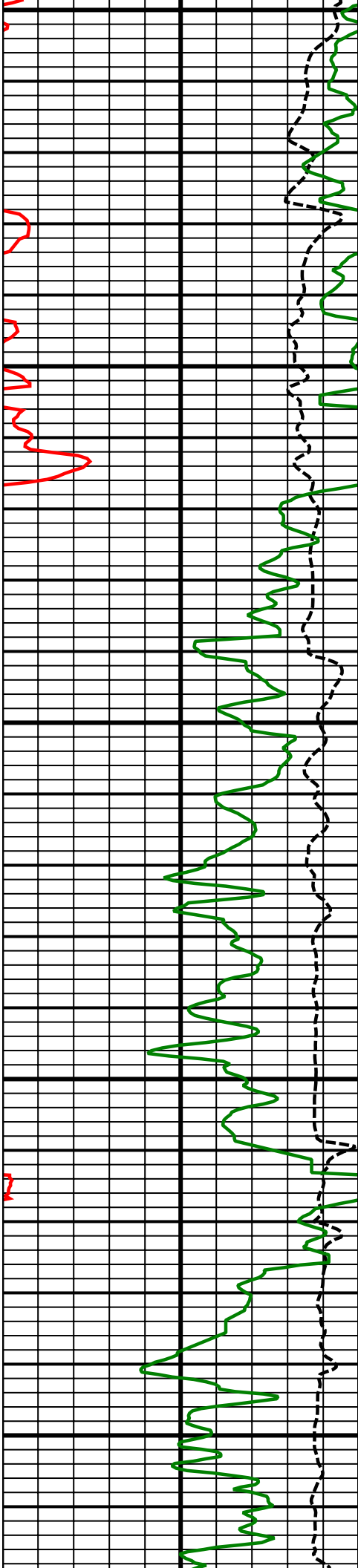




6900
TVD

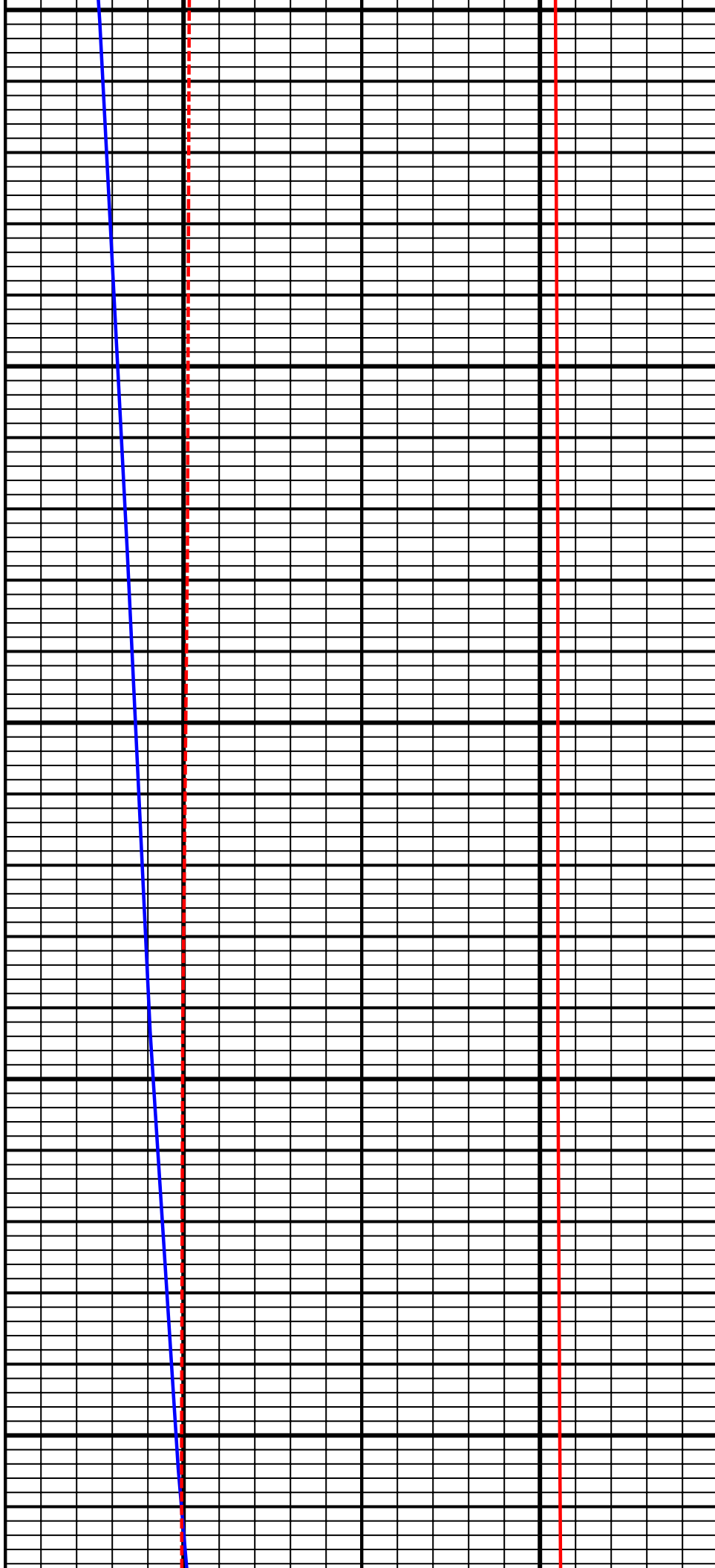
7000
TVD

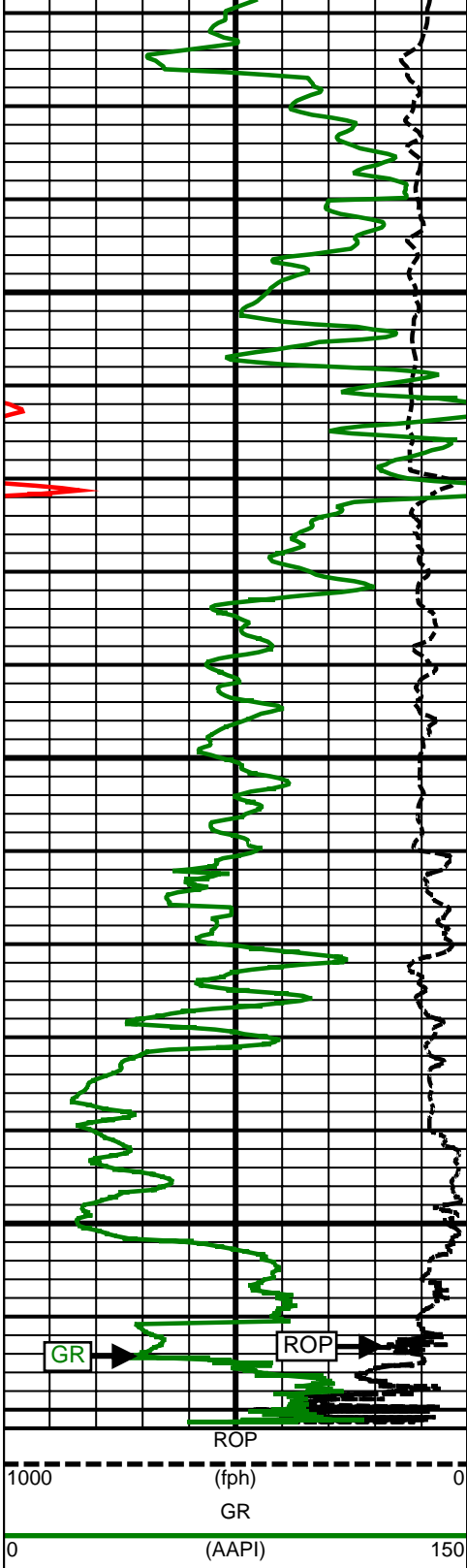




7100
TVD

7200
TVD

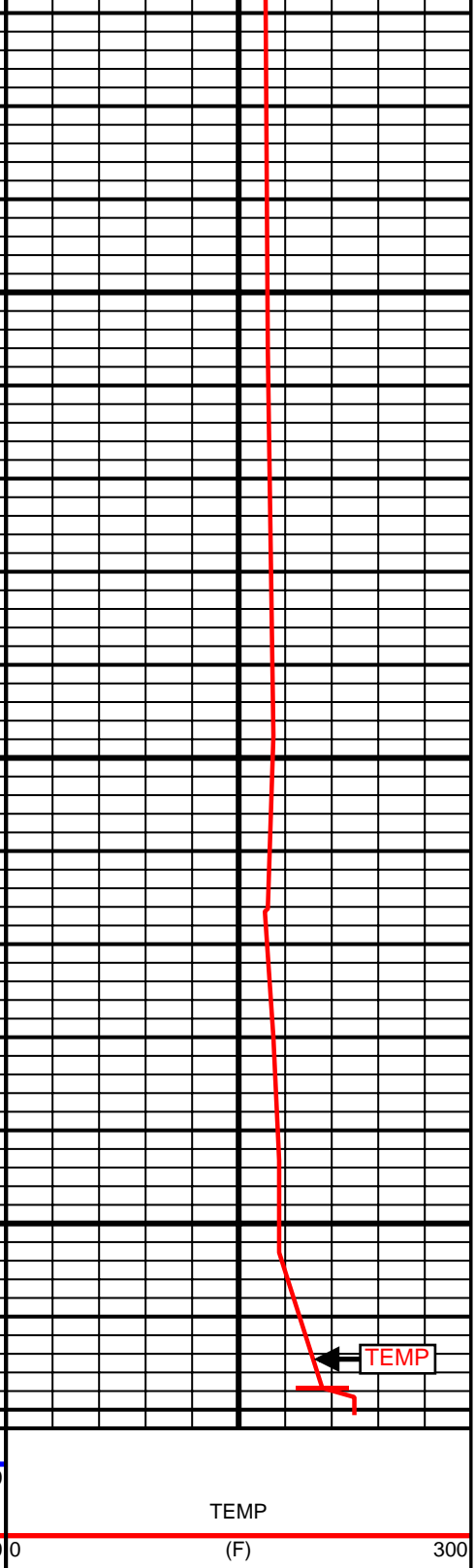
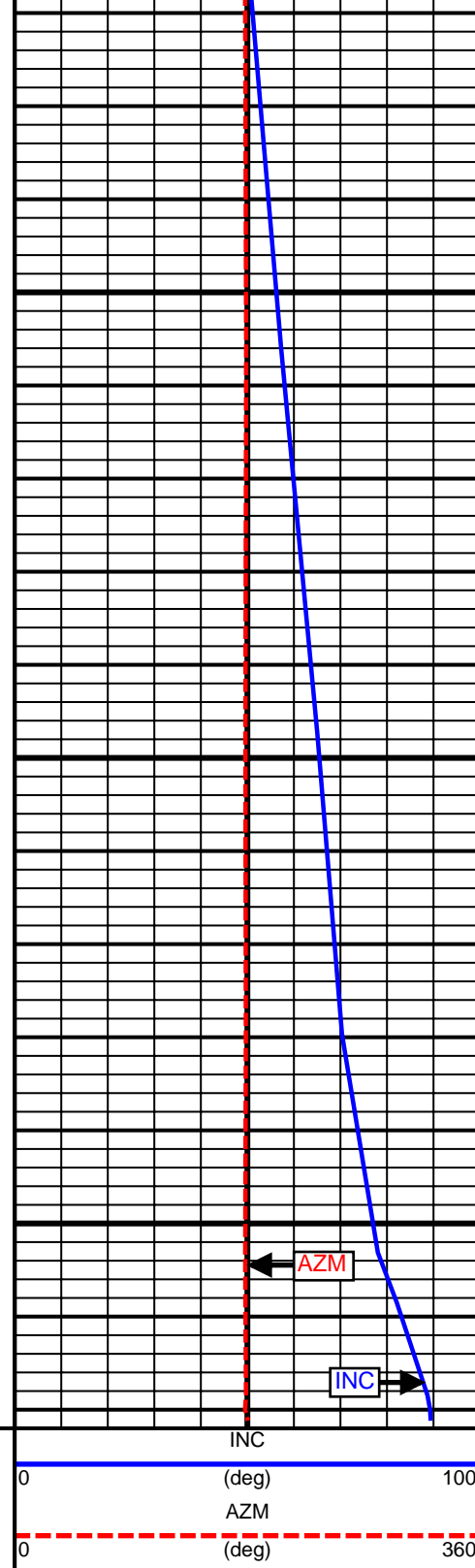




7300 TVD

7400 TVD

Logged Behind Casing



SURVEY						
Survey Calculation Method: Minimum Curvature						
Magnetic Reference	Target Direction	Total Magnetic Field	Magnetic Dip Angle	Magnetic Declination	Grid Convergence	Total Correction
True North	179.66 deg	52724 nT	66.78 deg	8.60 deg	0.00 deg	8.60 deg
Survey Tie-On	Depth	INC	AZ	TVD	NS	EW
	895.00 ft	0.27 deg	324.33 deg	895.00 ft	0.89 ft	-1.43 ft

Well Head							
Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	NS (ft)	EW (ft)	VSect (ft)	Dogleg (deg/100ft)
1070.00	0.31	329.50	1070.00	1.63	-1.91	-1.64	0.03
1163.00	2.60	70.00	1162.97	2.57	-0.06	-2.57	2.88
1255.00	3.68	66.28	1254.83	4.47	4.61	-4.45	1.19
1349.00	5.95	64.54	1348.49	7.78	11.77	-7.71	2.42
1441.00	7.22	70.22	1439.88	11.79	21.52	-11.66	1.55
1534.00	8.66	76.27	1531.99	15.43	33.82	-15.23	1.79
1627.00	10.30	82.61	1623.72	18.16	48.87	-17.87	2.09
1719.00	10.82	71.62	1714.17	21.94	65.22	-21.55	2.26
1812.00	11.56	67.19	1805.40	28.31	82.09	-27.82	1.22
1904.00	12.87	59.38	1895.32	37.10	99.41	-36.51	2.29
1999.00	14.15	58.04	1987.69	48.63	118.37	-47.93	1.39
2089.00	14.46	58.06	2074.90	60.40	137.24	-59.59	0.34
2180.00	14.94	58.52	2162.92	72.54	156.88	-71.61	0.54
2271.00	15.76	58.99	2250.68	85.03	177.48	-83.98	0.91
2362.00	16.76	58.94	2338.04	98.17	199.31	-96.98	1.10
2452.00	16.30	56.00	2424.32	111.93	220.90	-110.61	1.06
2543.00	16.54	60.29	2511.61	125.49	242.73	-124.04	1.36
2634.00	17.00	63.97	2598.74	137.74	265.94	-136.16	1.27
2725.00	17.49	68.16	2685.65	148.67	290.59	-146.94	1.47
2816.00	16.87	65.96	2772.59	159.14	315.34	-157.26	0.99
2906.00	17.29	70.49	2858.63	168.92	339.87	-166.90	1.55
2997.00	19.25	74.43	2945.04	177.47	367.07	-175.29	2.54
3058.00	19.81	73.64	3002.53	183.08	386.68	-180.78	1.01
3149.00	22.54	70.54	3087.38	193.23	417.93	-190.75	3.24
3268.00	21.98	69.67	3197.51	208.57	460.31	-205.83	0.55
3354.00	20.77	70.38	3277.59	219.28	489.77	-216.37	1.44
3439.00	22.59	69.05	3356.58	230.18	519.22	-227.10	2.22
3525.00	22.39	63.90	3436.05	243.29	549.35	-240.03	2.30
3610.00	20.48	60.55	3515.17	257.73	576.84	-254.30	2.67
3695.00	20.08	60.65	3594.90	272.19	602.51	-268.61	0.47
3781.00	20.25	58.64	3675.63	287.17	628.09	-283.44	0.83
3866.00	18.88	56.38	3755.72	302.44	652.10	-298.57	1.84
3952.00	17.30	54.73	3837.47	317.53	674.13	-313.53	1.93
4037.00	16.89	57.86	3918.71	331.40	694.91	-327.27	1.18
4122.00	15.73	59.31	4000.29	343.85	715.27	-339.60	1.45
4208.00	14.81	57.94	4083.25	355.63	734.61	-351.27	1.15
4293.00	14.36	58.36	4165.51	366.93	752.79	-362.46	0.54
4379.00	13.23	60.64	4249.03	377.35	770.45	-372.77	1.46
4464.00	10.07	59.75	4332.27	385.87	785.35	-381.20	3.72
4550.00	7.58	54.91	4417.25	392.91	796.49	-388.18	3.02
4635.00	6.53	51.97	4501.60	399.12	804.88	-394.33	1.31
4720.00	5.79	57.77	4586.11	404.38	812.32	-399.55	1.14

4806.00	5.50	58.47	4671.69	408.85	819.50	-403.98	0.35
4891.00	4.35	62.44	4756.38	412.47	825.83	-407.56	1.41
4977.00	2.26	69.62	4842.23	414.57	830.31	-409.64	2.47
5062.00	1.55	99.98	4927.19	414.95	833.01	-410.00	1.42
5148.00	1.01	183.04	5013.17	414.00	834.12	-409.04	2.03
5233.00	0.66	178.64	5098.16	412.76	834.09	-407.80	0.42
5318.00	0.84	167.34	5183.15	411.66	834.24	-406.70	0.27
5403.00	0.70	153.76	5268.15	410.59	834.60	-405.63	0.27
5489.00	0.49	166.35	5354.14	409.76	834.92	-404.80	0.29
5574.00	0.49	217.89	5439.14	409.12	834.79	-404.16	0.50
5659.00	1.05	244.77	5524.13	408.50	833.86	-403.54	0.77
5829.00	1.41	238.53	5694.09	406.74	830.67	-401.81	0.23
5999.00	0.30	266.87	5864.07	405.63	828.44	-400.70	0.68
6170.00	0.99	278.63	6035.06	405.83	826.53	-400.91	0.41
6341.00	0.97	281.33	6206.03	406.33	823.65	-401.44	0.03
6512.00	0.98	304.14	6377.01	407.44	821.02	-402.56	0.23
6683.00	1.19	307.92	6547.98	409.35	818.41	-404.48	0.13
6853.00	1.16	326.86	6717.94	411.87	816.08	-407.02	0.23
6939.00	1.14	324.55	6803.93	413.30	815.10	-408.46	0.06
7024.00	8.14	208.25	6888.65	408.68	811.76	-403.85	10.24
7110.00	16.32	189.96	6972.66	391.38	806.78	-386.59	10.41
7195.00	26.49	185.57	7051.70	360.67	802.86	-355.90	12.10
7281.00	34.19	183.91	7125.86	317.40	799.35	-312.66	9.01
7366.00	40.61	179.05	7193.37	265.85	798.17	-261.11	8.31
7452.00	48.49	177.94	7254.61	205.59	799.80	-200.84	9.21
7537.00	57.22	179.00	7305.89	137.93	801.57	-133.17	10.32
7623.00	65.02	178.42	7347.39	62.70	803.28	-57.93	9.09
7708.00	70.32	178.74	7379.67	-15.87	805.22	20.65	6.25
7794.00	78.01	178.23	7403.12	-98.52	807.41	103.31	8.96
7825.00	82.07	178.44	7408.48	-129.03	808.30	133.82	13.11
7949.00	88.70	178.88	7418.45	-252.53	811.19	257.33	5.36
8035.00	89.26	178.09	7419.99	-338.48	813.46	343.30	1.13
8120.00	91.29	178.67	7419.58	-423.44	815.86	428.27	2.48
8206.00	92.47	179.31	7416.76	-509.38	817.38	514.22	1.56
8291.00	89.69	178.59	7415.15	-594.34	818.94	599.19	3.38
8377.00	90.55	177.50	7414.97	-680.29	821.87	685.15	1.61
8462.00	90.49	177.45	7414.20	-765.20	825.61	770.09	0.09
8548.00	90.12	176.72	7413.74	-851.09	829.99	856.00	0.95
8633.00	89.94	179.38	7413.70	-936.03	832.88	940.96	3.14
8719.00	90.25	180.15	7413.56	-1022.03	833.23	1026.96	0.97
8804.00	90.12	179.85	7413.28	-1107.03	833.23	1111.96	0.38
8889.00	90.06	179.94	7413.15	-1192.03	833.39	1196.95	0.13
8975.00	90.18	180.07	7412.97	-1278.03	833.38	1282.95	0.21
9060.00	89.94	179.56	7412.88	-1363.03	833.66	1367.95	0.66
9146.00	89.82	179.25	7413.06	-1449.02	834.55	1453.95	0.39
9231.00	89.51	179.68	7413.56	-1534.02	835.34	1538.95	0.62
9317.00	88.58	179.41	7414.99	-1620.00	836.02	1624.94	1.13
9402.00	89.75	179.49	7416.23	-1704.99	836.84	1709.92	1.38
9488.00	90.49	181.20	7416.05	-1790.98	836.32	1795.91	2.17
9573.00	89.82	181.06	7415.82	-1875.97	834.65	1880.89	0.81
9658.00	89.38	181.90	7416.41	-1960.93	832.45	1965.84	1.12
9744.00	89.82	180.74	7417.01	-2046.91	830.47	2051.80	1.44
9829.00	91.11	180.19	7416.32	-2131.90	829.78	2136.79	1.65
9915.00	89.32	178.85	7416.00	-2217.89	830.50	2222.78	2.60
10000.00	89.45	177.78	7416.91	-2302.85	833.00	2307.75	1.27
10086.00	90.49	177.41	7416.96	-2388.77	836.61	2393.69	1.28
10171.00	89.57	179.45	7416.91	-2473.73	838.94	2478.67	2.63
10257.00	89.63	181.02	7417.51	-2559.73	838.58	2564.66	1.83
10342.00	89.20	180.72	7418.38	-2644.71	837.29	2649.64	0.62
10427.00	88.83	181.43	7419.84	-2729.68	835.70	2734.60	0.94
10513.00	89.38	180.31	7421.19	-2815.66	834.39	2820.56	1.45

10598.00	91.11	180.59	7420.82	-2900.66	833.73	2905.55	2.06
10684.00	90.62	180.64	7419.52	-2986.64	832.80	2991.53	0.57
10769.00	90.55	182.40	7418.66	-3071.60	830.55	3076.48	2.07
10854.00	90.18	181.02	7418.12	-3156.56	828.01	3161.42	1.68
10940.00	89.44	180.94	7418.40	-3242.55	826.54	3247.40	0.87
11025.00	90.31	179.50	7418.59	-3327.54	826.22	3332.39	1.98
11111.00	89.45	180.26	7418.77	-3413.54	826.40	3418.39	1.33
11196.00	89.88	178.29	7419.26	-3498.53	827.47	3503.38	2.37
11281.00	89.32	177.71	7419.86	-3583.48	830.44	3588.34	0.95
11367.00	89.63	178.66	7420.64	-3669.43	833.16	3674.31	1.16
11452.00	91.97	178.21	7419.46	-3754.38	835.48	3759.27	2.80
11538.00	90.99	177.97	7417.24	-3840.30	838.35	3845.21	1.17
11623.00	89.57	177.56	7416.82	-3925.24	841.66	3930.16	1.74
11708.00	89.57	178.58	7417.46	-4010.18	844.53	4015.12	1.20
11794.00	90.86	179.06	7417.14	-4096.16	846.30	4101.11	1.60
11879.00	91.59	178.20	7415.32	-4181.12	848.33	4186.08	1.33
11977.00	90.88	178.20	7413.21	-4279.05	851.41	4284.02	0.72
Projected to Total Depth:							
12035.00	90.88	178.20	7412.32	-4337.01	853.23	4342.00	0.00

Weatherford surveys from 1070 ft MD to 11977 ft MD.

TD at 12035 ft MD.

The total correction is 8.60 deg relative to True North.



Weatherford[®]

Field Print

COMPANY	<u>Anadarko</u>		
WELL	<u>Cannon 14C-10HZ</u>		
FIELD	<u>Wattenburg</u>		
RIG	<u>Xtreme 23</u>		
LOC.	<u>Colorado</u>	COUNTY	<u>Weld</u>