



Weatherford®

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

Company:	<u>Anadarko</u>
Well:	<u>Cannon 37C-3HZ</u>
Field:	<u>Wattenberg</u>
Rig:	<u>H&P 307</u>
County:	<u>Weld</u>

Location	Latitude: <u>40.17378° N</u>	X = <u>3,239,877.08 ft</u>	Mag Decl: <u>8.67°</u>
	Longitude: <u>104.64157° W</u>	Y = <u>1,307,311.69 ft</u>	Mag Dip: <u>66.83°</u>
Other Services:	<u>Directional and Temperature</u>		

COMPANY	<u>Anadarko</u>
WELL	<u>Cannon 37C-3HZ</u>
FIELD	<u>Wattenberg</u>
RIG	<u>H&P 307</u>
COUNTY	<u>Weld</u>
STATE	<u>Colorado</u>
API #	<u>05-123-35790-0000</u>

Permanent Datum:	<u>Mean Sea Level</u>
Log Measured From:	<u>Drill Floor</u> Elev: <u>4867.0 ft</u> above perm. datum
Depth Reference:	<u>Drillers Tally</u> Total Depth: <u>11477 ft</u>
Depth Logged:	<u>6500 ft</u> to <u>11477 ft</u> Runs: <u>3</u>
Date Logged:	<u>6-Sep-12</u> to <u>11-Sep-12</u> Spud Date: <u>4-Sep-12</u>

Elevation	K.B. Top Drive
	G.L. 4840.0 ft
	D.F. 4865.0 ft
	W.D. Land

Borehole Record		Casing Record				
Hole Size	From	To	Size	Weight	From	To
13.500 in.	0 ft	825 ft	9.625 in.	36.0 lb/ft	Surface	825 ft
8.750 in.	825 ft	7502 ft	7.000 in.	26.0 lb/ft	Surface	7502 ft
6.125 in.	7502 ft	11477 ft				

Borehole Deviation Record		Mud Record				
Hole Size	Min. Inc.	Max. Inc.	Type	Weight	From	To
8.750 in.	0.20°	82.63°	WBM	8.40 - 9.50 ppg	825 ft	7502 ft
6.125 in.	86.05°	93.57°	WBM	9.50 - 10.00 ppg	7502 ft	11477 ft

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	3				
Bit Size	in.	8.750	8.750	6.125				
Bit Type		PDC	PDC	PDC				
Bit TFA	sq.in.	0.648	0.648	0.648				
Bit Start Depth	ft	825	6517	7502				
Bit End Depth	ft	6517	7502	6262				
Top Log Interval	ft	No Logging	6500	7459				
Bottom Log Interval	ft	No Logging	7502	11477				
Begin Log Time	hrs	No Logging	11:08	4:37				
Begin Log Date	DD-MMM-YY	No Logging	6-Sep-12	9-Sep-12				
End Log Time	hrs	No Logging	8:22	14:34				
End Log Date	DD-MMM-YY	No Logging	7-Sep-12	11-Sep-12				
Drill or Wipe		Drill	Drill	Drill				
Flow Rate	gal/min	507	595	300				
Max AV / CV @ MWD	ft/min	401 / 166	487 / 106	492 / 370				
Min Inc @ Depth	deg @ ft	0.20 @ 4157	0.22 @ 4061	86.05 @ 11425				
Max Inc @ Depth	deg @ ft	6.99 @ 2545	82.63 @ 7444	93.57 @ 10693				

MUD DATA

Depth	ft	6517	7502	11477				
Fluid Type		WBM	WBM	WBM				
Mud Weight	ppg	8.60	9.50	10.00				
Plastic Viscosity	cP	2	13	14				
Solids / Sand	%	1.9 / 0.2	6.2 / 0.5	8.7 / 0.6				
NaCl Equiv. Chlorides	ppm	1320	1320	1320				
pH		8.2	8.7	9.2				
Oil:Water Ratio	% Vol	2.2 : 97.8	7.5 : 92.5	11.0 : 89.0				
Rm @ Temperature	ohm-m @ deg F	N/A	N/A	2.20 @ 80				
Rmc @ Temperature	ohm-m @ deg F	N/A	N/A	3.50 @ 78				
Rmf @ Temperature	ohm-m @ deg F	N/A	N/A	1.99 @ 78				
KCl	% Vol	0	0	0				
Client Representative		C. Jones	C. Jones	C. Jones				
WeatherfordM/LWD Engineer		R. Komrs	R. Komrs	L. Howse				

EQUIPMENT SUMMARY

MWD/LWD Run Number	1	2	3		
PP Serial Number	CP20595YHRDP-01	CP20595YHRDP-01	N/A		
HEL Serial Number	N/A	N/A	NW21491PDSS4.75		
MFR Serial Number	N/A	N/A	NW21690RBBK4.75-M2		
IDS Serial Number	N/A	N/A	NW21691BI4.75		
SAGR Serial Number	N/A	N/A	NW21692JB4.75		
NDT Serial Number	N/A	N/A	NW21930NZBB4.75		
Density Source Serial Number	N/A	N/A	06955B		
Sensor to Bit Offsets / Acquisition Rates					
Directional	ft / sec	57.86 / RT	57.86 / RT	49.34 / RT	
Gamma Ray	ft / sec	43.65 / RT	43.65 / RT	39.23 / 5	
Resistivity	ft / sec	N/A	N/A	75.19 / 5	
Density	ft / sec	N/A	N/A	102.09 / 5	
Other Information					
Total BHA Length	ft	96.32	96.32	162.73	
BHA Assembly Type		Steerable	Steerable	Steerable	
Stabilizer Location	ft	N/A	N/A	29.26	
Stabilizer Location	ft	N/A	N/A	100.04	
Stabilizer Location	ft	N/A	N/A	162.73	
Run Circulating Time	hr	25.85	23.75	62.86	
Run Drilling Time	hr	16.39	12.90	26.04	

MUD SUMMARY

Date and Time	Run	Bit Depth	Mud Weight	% K	Rm @ Temp	Rmf @ Temp	Rmc @ Temp	BHCT
5 Sept 12 @ 23:59	01	6517 ft	8.60 ppg	0	N/A	N/A	N/A	94 F
7 Sept 12 @ 08:22	02	7502 ft	9.50 ppg	0	N/A	N/A	N/A	150 F
11 Sept 12 @ 14:34	03	11477 ft	10.00 ppg	0	2.20 @ 80	1.99 @ 78	3.50 @ 78	231 F

M/LWD RUN REMARKS

Run Number: 1 :: REAL TIME LOG

WFT Services Provided:

Real Time Logging: Temperature.

Directional Services: On demand Inclination and Azimuth.

Run Number: 2 :: REAL TIME LOG

WFT Services Provided:

Real Time Logging: Gamma Ray and Temperature.

Directional Services: On demand Inclination and Azimuth.

Borehole and Environmental Correction:

Collar O.D.: 6.75 in.

Gamma Ray: Collar O.D., collar I.D. and K1 factor.

Collar I.D.: 3.25

K1 Factor: 3.012

Run Number: 3 :: RECORDED DATA LOG

WFT Services Provided:

Recorded and Real Time Logging: Gamma Ray, Deep, Medium and Shallow Resistivity, Bulk Density 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: 10.00 ppg

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

Borehole Temperature: 231° F

Drilling Fluid Resistivity: 2.20 ohm-m

Bulk Density: No corrections.

KCl Concentration: 0%

M/LWD LOG COMMENTS

Comment No. 1-1

REAL TIME DATA LOG

Start of MWD Drilling Run 01

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

Run 01 started formation drilling September 4, 2012 at 17:10 at 825 MD / 825 TVD. Weatherford International logged the 8.750 in. borehole.

The WBM at the start of logging was 8.40 ppg.

Comment No. 1-2

End of MWD Drilling Run 01

Run 02 ended drilling formation September 5, 2012 at 23:59 at 6517 MD / 6504 TVD.

The WBM at the end of drilling was 8.60 ppg.

Comment No. 2-1

REAL TIME DATA LOG

Start of LWD Drilling Run 02

Weatherford International provided 6 3/4 in. Directional, Gamma Ray, and Temperature for Run 02.

Run 02 started formation drilling September 6, 2012 at 11:08 at 6517 MD / 6504 TVD. Weatherford International logged the 8.750 in. borehole.

The WBM at the start of drilling was 9.50 ppg.

Comment No. 2-2

End of LWD Drilling Run 02

Run 02 ended drilling formation September 7, 2012 at 08:22 at 7502 MD / 7156 TVD.

The WBM at the end of drilling was 9.50 ppg.

Comment No. 3-1

RECORDED DATA LOG

Start of LWD Drilling Run 03

Weatherford International provided 4 3/4 in. Directional, Resistivity, Spectral Gamma Ray, Bulk Density and Temperature for Run 03.

Run 03 started formation drilling September 09, 2012 at 4:37 at 7502 MD / 7156 TVD. Weatherford International logged the 6.125 in. borehole.

The WBM at the start of drilling was 10.70 ppg.

Comment No. 3-2

End of LWD Drilling Run 03

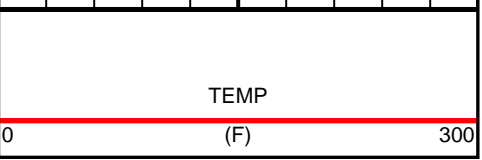
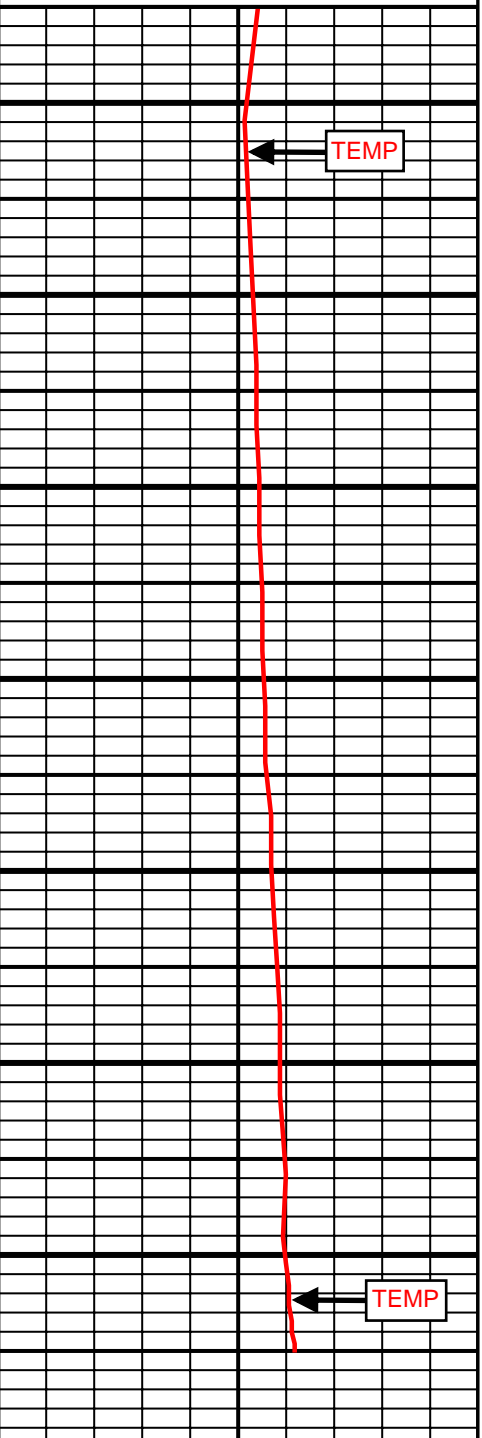
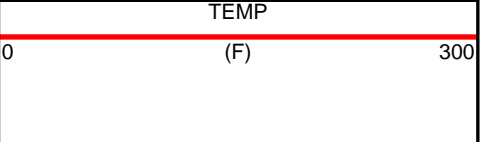
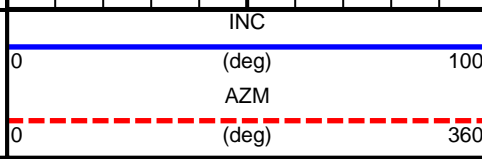
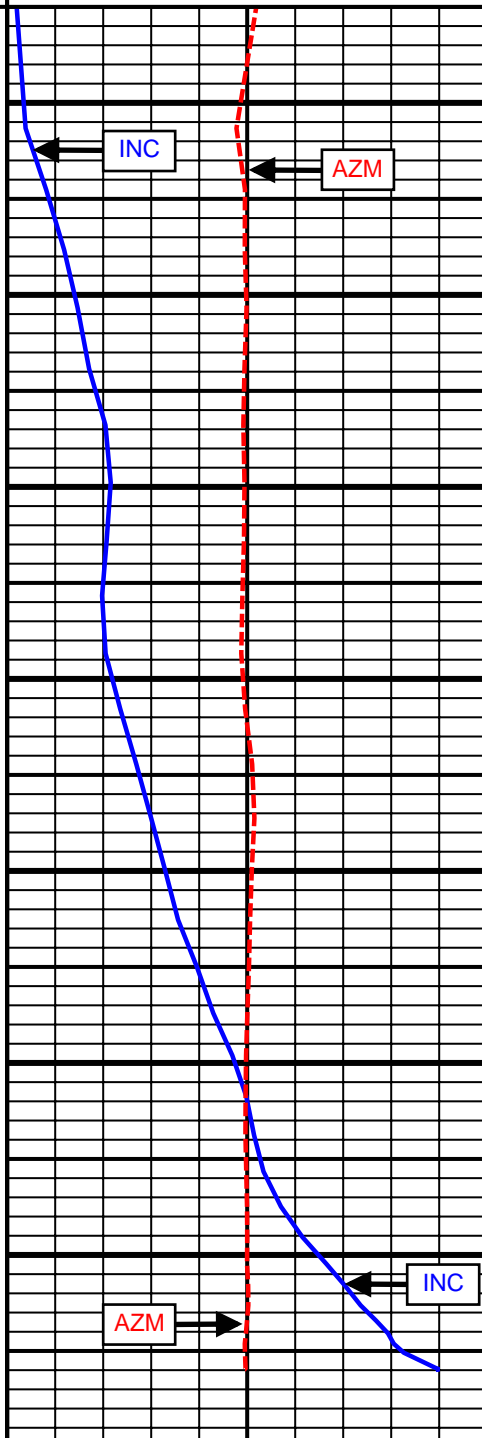
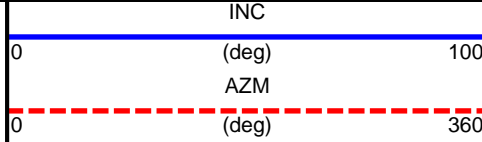
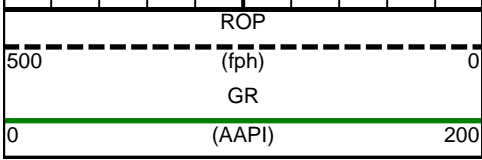
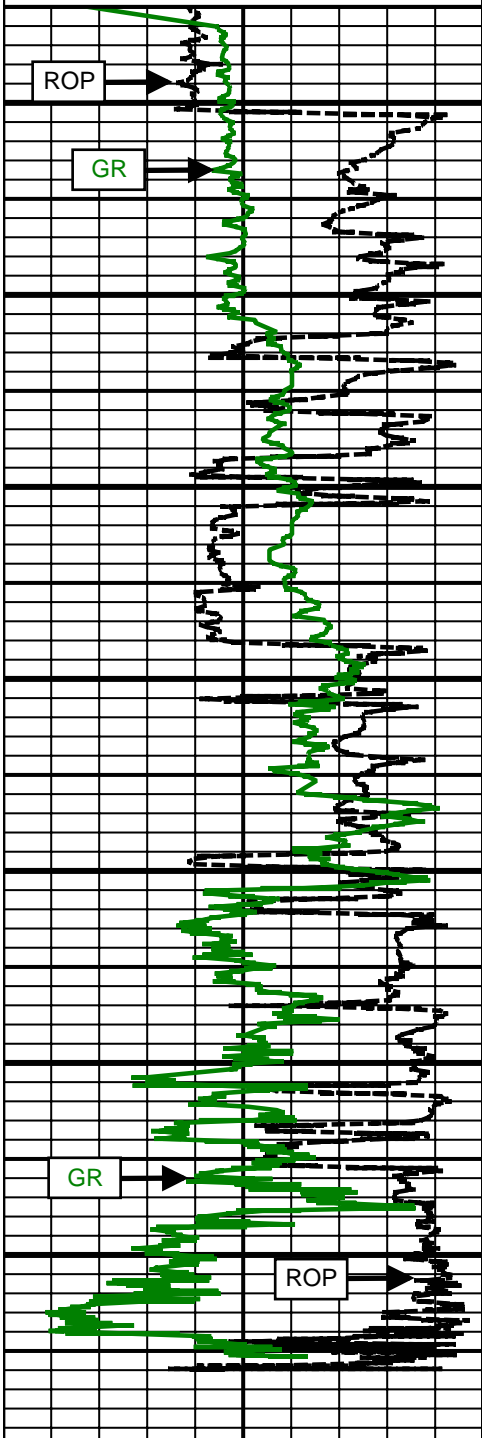
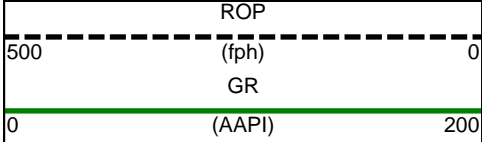
Run 03 ended drilling formation September 11, 2012 at 14:34 at 11477 MD / 7124 TVD.

The WBM at the end of drilling was 10.00 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	Temperature 3.0 ft window 0.5 ft Exponential Smoothing	

1 Inch - True Vertical Depth



6500 TVD
 6600 TVD
 6700 TVD
 6800 TVD
 6900 TVD
 7000 TVD
 7100 TVD
 7200 TVD

INC

AZM

TEMP

AZM

INC

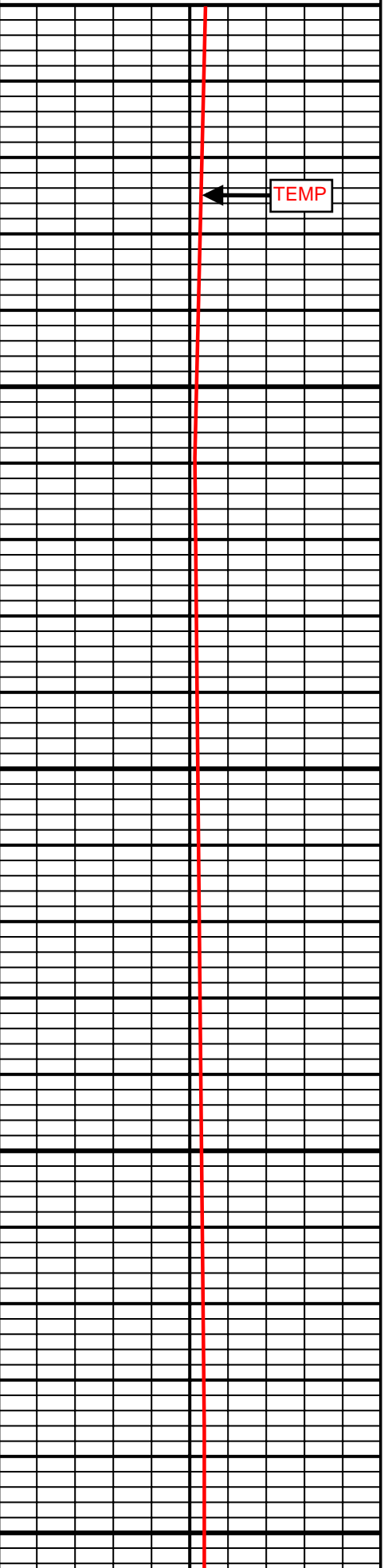
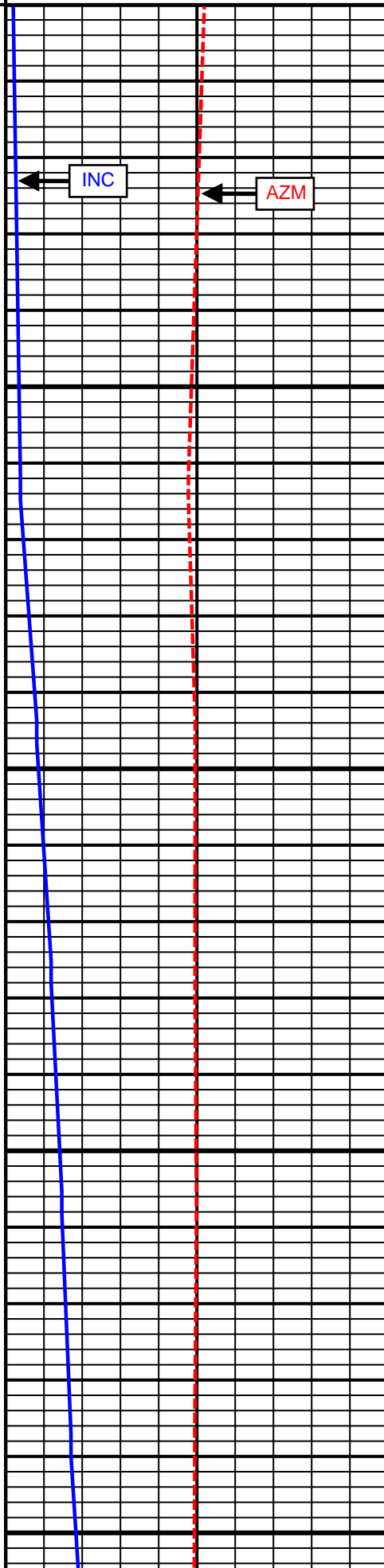
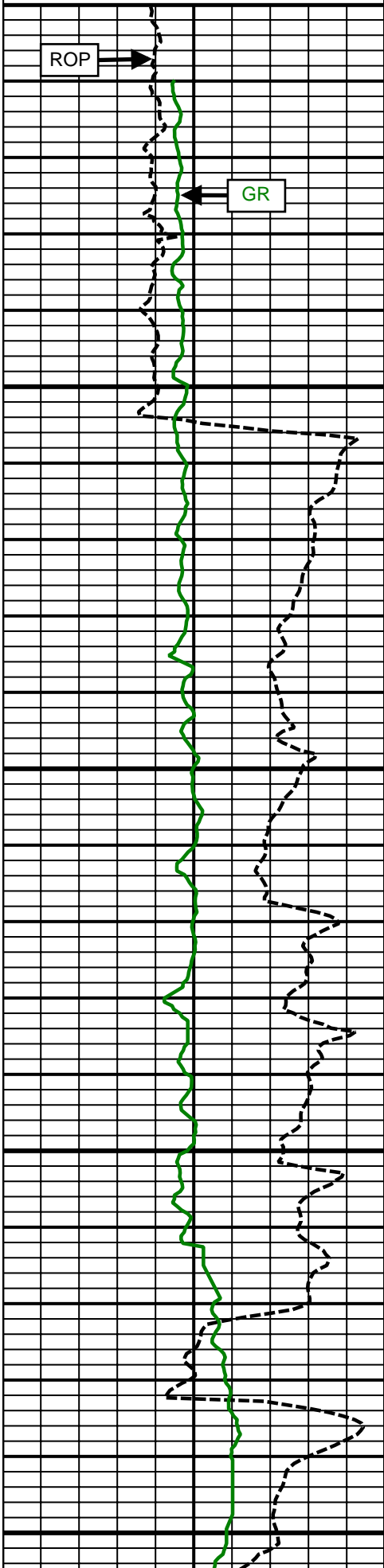
TEMP

5 Inch - True Vertical Depth

ROP (fph) 500 0
GR (AAPI) 0 200

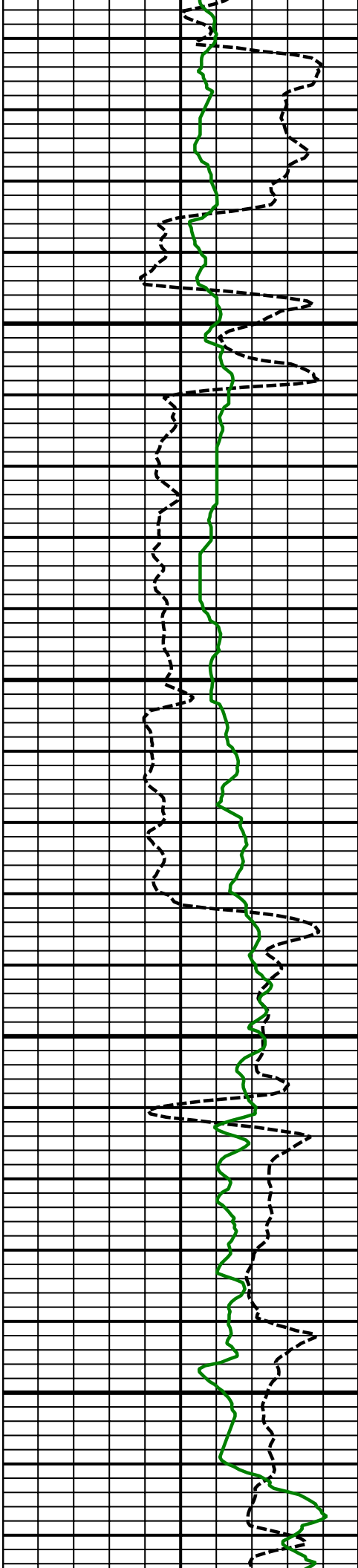
INC (deg) 0 100
AZM (deg) 0 360

TEMP (F) 0 300



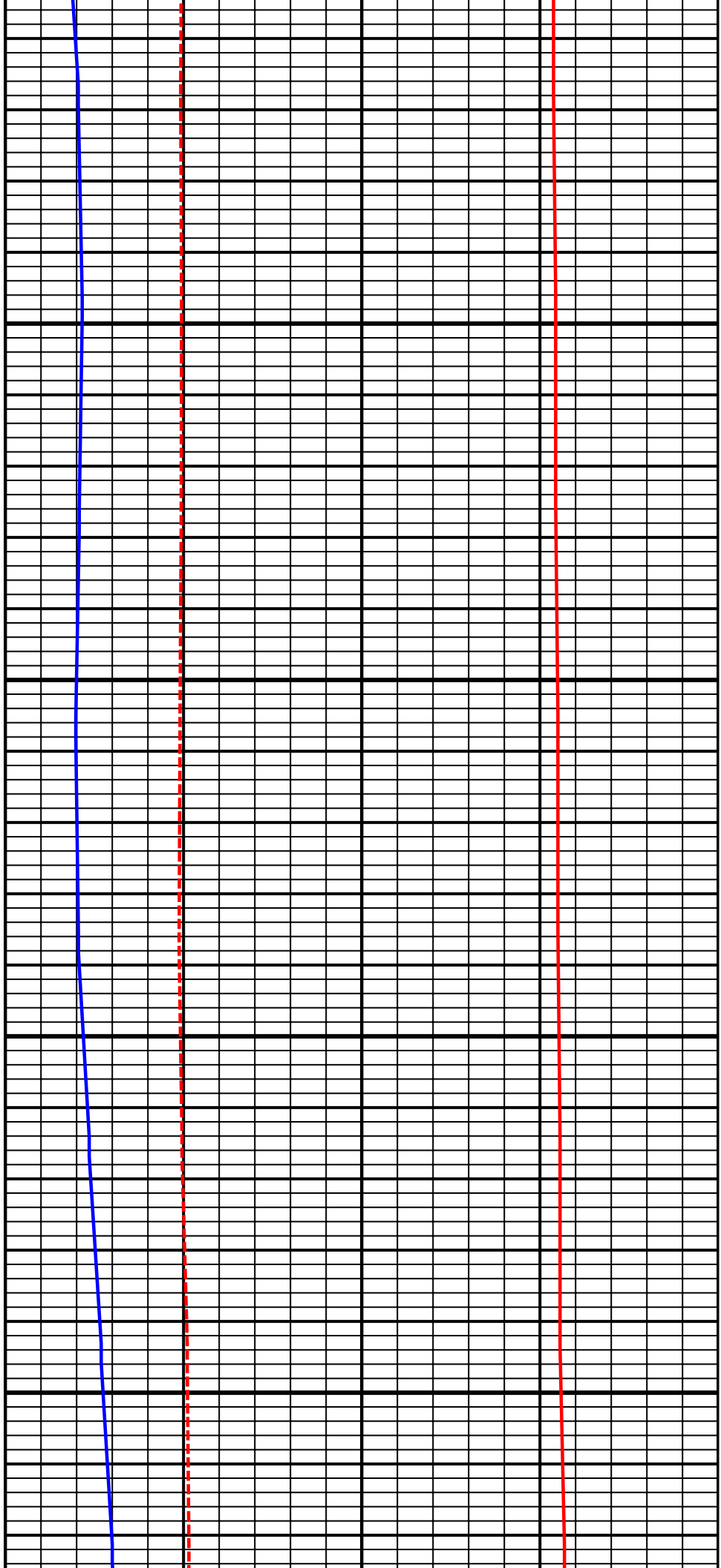
6500 TVD

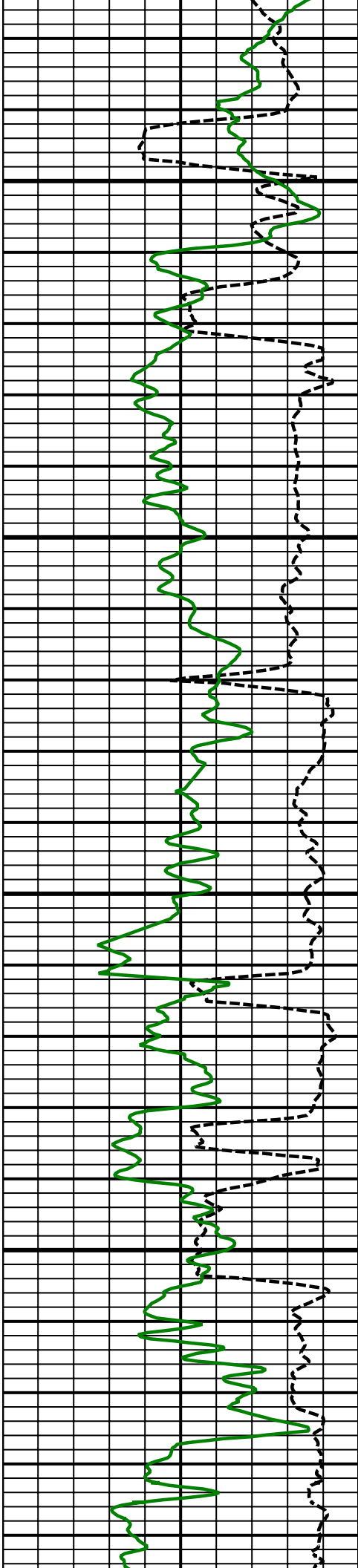
6600 TVD



6700
TVD

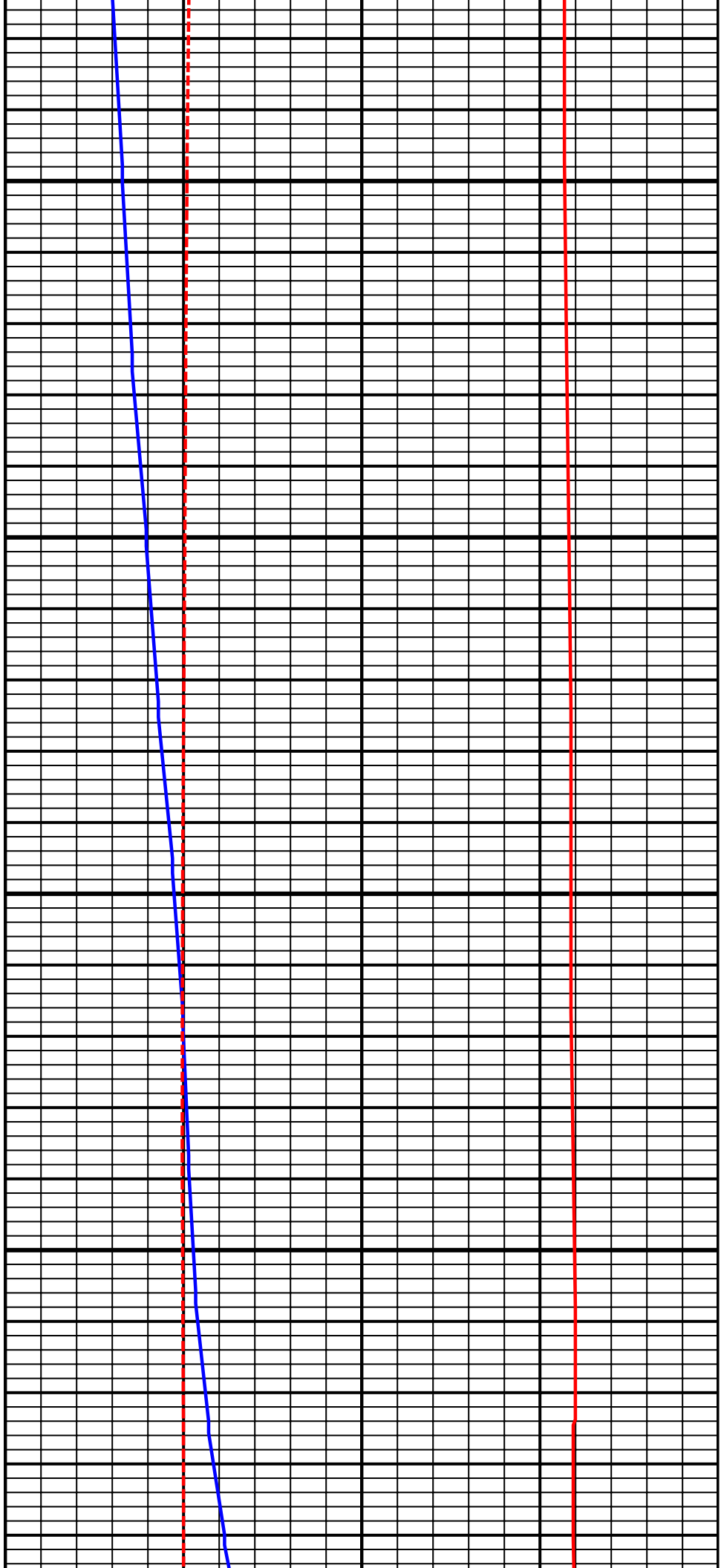
6800
TVD

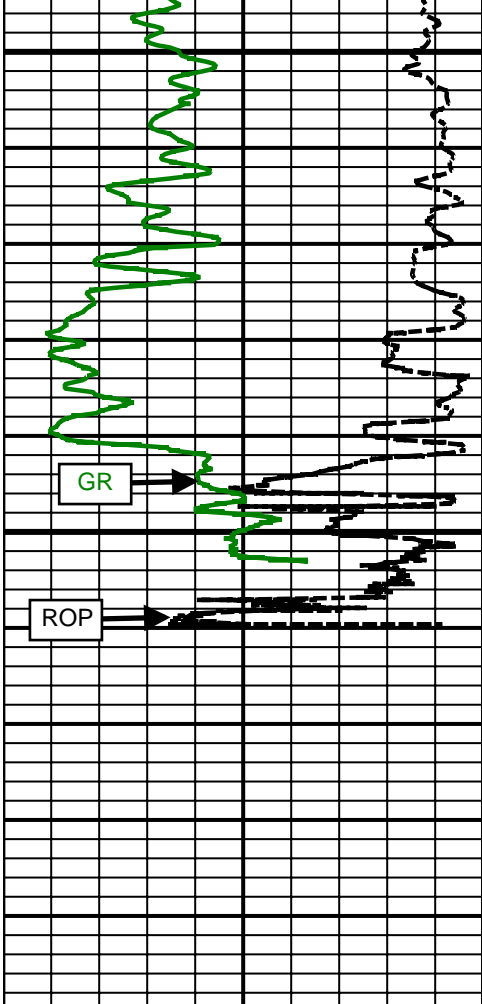




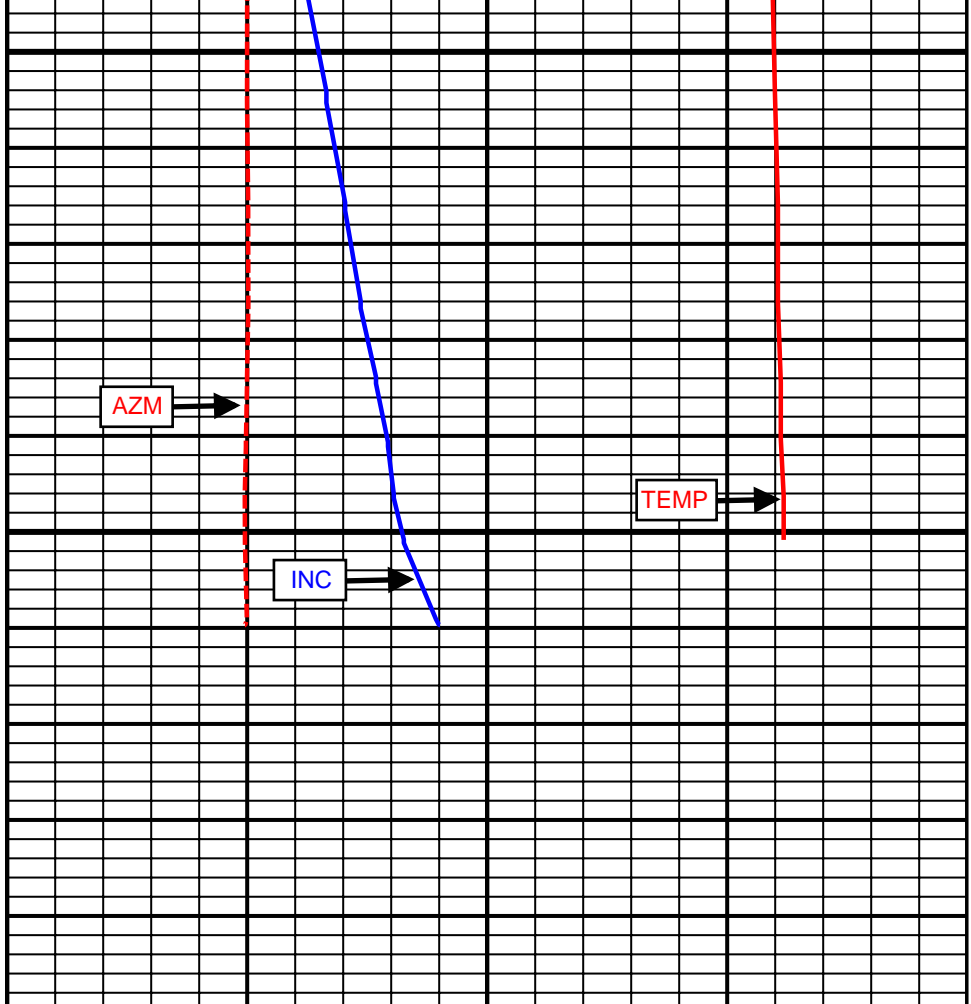
6900
TVD

7000
TVD

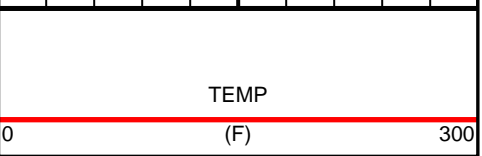
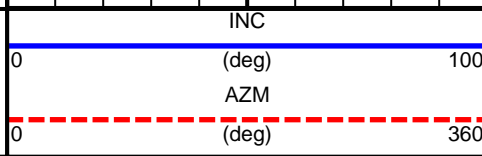
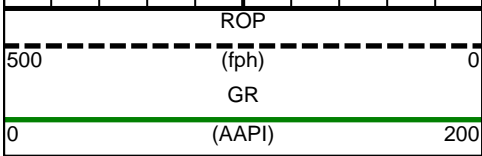




7100
TVD



7200



SURVEY

Survey Calculation Method: **Minimum Curvature**

Magnetic Reference	Target Direction	Total Magnetic Field	Magnetic Dip Angle	Magnetic Declination	Grid Convergence	Total Correction
True North	179.65 deg	52906 nT	66.94 deg	8.70 deg	0.00 deg	8.70 deg
Survey Tie-On	Depth	INC	AZ	TVD	NS	EW
	749.00 ft	0.12 deg	57.17 deg	749.00 ft	0.77 ft	-0.26 ft

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head		VSect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
949.00	0.25	292.61	949.00	1.05	-0.49	-1.05	0.17
1039.00	0.56	310.60	1039.00	1.41	-1.00	-1.42	0.37
1130.00	1.93	9.37	1129.98	3.21	-1.09	-3.22	1.88
1221.00	4.06	17.55	1220.85	7.80	0.13	-7.80	2.38
1314.00	6.03	16.38	1313.48	15.62	2.50	-15.61	2.12
1406.00	6.60	14.38	1404.92	25.38	5.18	-25.35	0.66
1501.00	6.56	14.05	1499.30	35.94	7.85	-35.89	0.06
1596.00	6.59	5.01	1593.68	46.63	9.64	-46.57	1.09
1691.00	6.13	1.30	1688.09	57.13	10.24	-57.07	0.65
1786.00	5.90	3.14	1782.57	67.08	10.62	-67.01	0.32
1881.00	5.97	13.19	1877.06	76.76	12.01	-76.69	1.09
1975.00	5.43	13.92	1970.60	85.84	14.20	-85.75	0.58
2070.00	4.87	10.40	2065.21	94.17	16.01	-94.07	0.68
2165.00	6.32	14.24	2159.76	103.20	18.02	-103.09	1.58
2260.00	5.36	12.02	2254.26	112.61	20.23	-112.49	1.04
2355.00	6.32	16.41	2348.77	121.97	22.63	-121.83	1.11
2449.00	5.40	14.73	2442.28	131.21	25.22	-131.05	1.00
2545.00	6.99	12.44	2537.71	141.28	27.63	-141.11	1.68
2640.00	5.60	10.21	2632.14	151.49	29.69	-151.31	1.49
2734.00	4.69	3.87	2725.76	159.84	30.77	-159.65	1.14
2829.00	6.31	10.97	2820.32	168.84	32.02	-168.64	1.85
2924.00	5.98	9.76	2914.77	178.84	33.85	-178.63	0.37
3018.00	5.45	7.70	3008.31	188.09	35.28	-187.87	0.60
3113.00	6.16	19.46	3102.82	197.37	37.58	-197.13	1.45
3208.00	4.69	21.42	3197.39	205.79	40.70	-205.54	1.56
3303.00	5.68	19.71	3292.01	213.83	43.71	-213.56	1.05
3399.00	6.32	11.49	3387.48	223.48	46.36	-223.19	1.11
3494.00	4.96	11.26	3482.02	232.63	48.20	-232.34	1.43
3589.00	3.65	356.56	3576.75	239.68	48.82	-239.38	1.79
3683.00	1.86	331.73	3670.64	244.01	47.92	-243.71	2.25
3777.00	0.80	261.11	3764.62	245.25	46.55	-244.97	1.88
3873.00	0.74	261.92	3860.61	245.06	45.28	-244.78	0.06
3967.00	0.90	267.49	3954.60	244.95	43.94	-244.67	0.19
4062.00	0.38	142.99	4049.60	244.66	43.38	-244.39	1.22
4157.00	0.20	1.16	4144.60	244.58	43.57	-244.30	0.58
4252.00	0.69	320.96	4239.59	245.19	43.22	-244.92	0.58
4346.00	1.09	328.14	4333.58	246.38	42.39	-246.12	0.44
4440.00	0.80	244.93	4427.57	246.87	41.32	-246.61	1.35
4535.00	1.09	268.83	4522.56	246.57	39.82	-246.32	0.51
4630.00	1.05	152.66	4617.55	245.77	39.31	-245.53	1.91
4724.00	0.97	145.03	4711.54	244.36	40.17	-244.11	0.17
4819.00	0.58	55.98	4806.53	243.97	41.03	-243.71	1.18

4913.00	0.73	23.83	4900.53	244.78	41.66	-244.52	0.42
5008.00	1.41	143.21	4995.52	244.40	42.61	-244.13	1.98
5103.00	1.00	164.58	5090.49	242.66	43.53	-242.39	0.63
5198.00	0.63	178.44	5185.49	241.34	43.76	-241.07	0.44
5292.00	0.49	213.29	5279.48	240.49	43.55	-240.22	0.38
5387.00	0.51	230.60	5374.48	239.88	43.00	-239.62	0.16
5482.00	0.29	215.02	5469.47	239.42	42.54	-239.15	0.26
5576.00	0.20	286.27	5563.47	239.27	42.25	-239.01	0.31
5672.00	0.22	241.79	5659.47	239.23	41.92	-238.97	0.17
5767.00	0.73	187.99	5754.47	238.54	41.68	-238.28	0.66
5863.00	0.97	200.01	5850.46	237.17	41.32	-236.92	0.31
5958.00	1.21	205.76	5945.44	235.51	40.60	-235.26	0.28
6052.00	0.56	185.90	6039.43	234.16	40.13	-233.91	0.75
6147.00	0.72	193.72	6134.42	233.12	39.94	-232.87	0.19
6242.00	0.91	191.80	6229.42	231.80	39.64	-231.56	0.20
6337.00	1.22	209.70	6324.40	230.19	38.98	-229.94	0.47
6432.00	1.06	194.02	6419.38	228.46	38.27	-228.22	0.37
6526.00	3.83	171.93	6513.29	224.50	38.50	-224.26	3.06
6558.00	8.07	178.32	6545.11	221.20	38.72	-220.96	13.39
6590.00	11.85	178.16	6576.62	215.67	38.89	-215.43	11.81
6621.00	14.64	179.45	6606.79	208.57	39.03	-208.32	9.05
6654.00	17.06	177.90	6638.54	199.56	39.25	-199.31	7.44
6685.00	20.44	177.11	6667.89	189.60	39.69	-189.36	10.93
6717.00	21.54	177.91	6697.76	178.15	40.18	-177.90	3.55
6749.00	20.72	177.59	6727.61	166.63	40.63	-166.38	2.59
6780.00	19.75	176.39	6756.70	155.92	41.19	-155.67	3.40
6812.00	20.49	175.45	6786.74	144.94	41.98	-144.68	2.52
6843.00	23.52	178.41	6815.48	133.35	42.58	-133.08	10.41
6875.00	26.88	183.72	6844.44	119.74	42.29	-119.48	12.65
6907.00	30.00	185.38	6872.57	104.55	41.07	-104.30	10.06
6938.00	32.82	183.45	6899.03	88.45	39.84	-88.20	9.66
6970.00	35.57	182.12	6925.49	70.49	38.97	-70.25	8.91
7001.00	39.53	181.32	6950.07	51.61	38.41	-51.37	12.87
7033.00	42.93	180.02	6974.13	30.52	38.17	-30.29	10.96
7064.00	46.89	179.14	6996.08	8.64	38.34	-8.41	12.93
7096.00	49.77	178.78	7017.35	-15.26	38.77	15.49	9.04
7128.00	51.42	178.64	7037.67	-39.98	39.33	40.22	5.17
7159.00	53.40	179.18	7056.57	-64.53	39.80	64.78	6.53
7191.00	57.02	179.81	7074.83	-90.81	40.02	91.05	11.43
7222.00	61.47	179.96	7090.68	-117.44	40.08	117.69	14.36
7254.00	66.47	179.77	7104.72	-146.19	40.14	146.43	15.63
7285.00	70.39	180.66	7116.11	-175.01	40.03	175.25	12.92
7318.00	73.62	180.75	7126.31	-206.39	39.65	206.63	9.79
7349.00	76.81	179.88	7134.22	-236.36	39.48	236.60	10.64
7381.00	79.31	178.95	7140.84	-267.66	39.81	267.90	8.31
7412.00	80.51	178.14	7146.27	-298.17	40.58	298.41	4.65
7444.00	82.63	178.26	7150.96	-329.81	41.57	330.06	6.64
7560.00	89.32	179.69	7159.10	-445.43	43.64	445.69	5.90
7655.00	89.94	178.49	7159.71	-540.42	45.15	540.68	1.42
7750.00	90.06	178.23	7159.71	-635.38	47.86	635.66	0.30
7844.00	91.23	178.00	7158.65	-729.32	50.96	729.62	1.27
7939.00	92.16	179.92	7155.84	-824.26	52.68	824.57	2.24
8034.00	91.48	179.59	7152.82	-919.21	53.09	919.52	0.80
8129.00	91.48	180.48	7150.37	-1014.18	53.03	1014.48	0.94
8224.00	90.74	180.71	7148.53	-1109.15	52.04	1109.45	0.82
8319.00	90.06	180.02	7147.87	-1204.15	51.44	1204.44	1.02
8414.00	91.66	180.17	7146.44	-1299.13	51.28	1299.42	1.69
8509.00	90.55	179.19	7144.61	-1394.11	51.81	1394.40	1.56
8604.00	90.86	180.02	7143.44	-1489.10	52.47	1489.39	0.93
8699.00	90.43	180.34	7142.37	-1584.09	52.17	1584.38	0.56
8794.00	91.97	181.22	7140.38	-1679.06	50.87	1679.34	1.87

8889.00	91.66	180.54	7137.37	-1774.00	49.42	1774.27	0.79
8983.00	92.46	182.96	7133.99	-1867.89	46.55	1868.14	2.71
9079.00	91.76	181.47	7130.46	-1963.75	42.84	1963.97	1.71
9174.00	91.36	181.51	7127.87	-2058.68	40.37	2058.89	0.42
9268.00	90.86	181.32	7126.05	-2152.63	38.05	2152.83	0.57
9363.00	90.43	182.45	7124.98	-2247.58	34.93	2247.75	1.27
9459.00	90.18	183.01	7124.47	-2343.46	30.35	2343.61	0.64
9553.00	90.06	180.68	7124.27	-2437.41	27.33	2437.53	2.48
9648.00	89.20	181.04	7124.89	-2532.40	25.90	2532.51	0.98
9743.00	90.12	179.56	7125.45	-2627.39	25.40	2627.50	1.83
9837.00	91.05	179.30	7124.49	-2721.38	26.34	2721.49	1.03
9933.00	90.74	178.73	7122.99	-2817.35	27.99	2817.47	0.68
10028.00	90.12	178.27	7122.28	-2912.32	30.48	2912.45	0.81
10123.00	91.66	177.80	7120.80	-3007.25	33.73	3007.40	1.69
10218.00	90.86	177.97	7118.71	-3102.16	37.24	3102.33	0.86
10314.00	87.59	174.29	7120.01	-3197.90	43.71	3198.11	5.13
10409.00	88.21	173.36	7123.49	-3292.28	53.93	3292.55	1.18
10504.00	90.43	173.48	7124.62	-3386.65	64.81	3386.98	2.34
10599.00	91.85	174.89	7122.73	-3481.13	74.43	3481.52	2.11
10693.00	93.57	176.40	7118.29	-3574.75	81.56	3575.18	2.43
10788.00	93.21	176.48	7112.67	-3669.40	87.45	3669.87	0.39
10883.00	91.66	175.30	7108.63	-3764.07	94.25	3764.57	2.05
10978.00	90.93	175.09	7106.49	-3858.71	102.21	3859.26	0.80
11074.00	89.69	174.13	7105.97	-3954.28	111.23	3954.88	1.63
11169.00	88.52	171.29	7107.45	-4048.49	123.28	4049.17	3.23
11264.00	87.28	171.05	7110.93	-4142.30	137.85	4143.06	1.33
11359.00	86.21	170.37	7116.33	-4235.90	153.16	4236.76	1.33
11425.00	86.05	170.64	7120.78	-4300.85	164.02	4301.77	0.47
11477.00	86.05	170.64	7124.36	-4352.03	172.46	4353.00	0.00

Weatherford M/LWD surveys from 949 ft MD to 11425 ft MD.

TD at 11477.00 ft MD.

The total correction is 8.70 deg relative to True North.



Weatherford[®]

Final Print

COMPANY	<u>Anadarko</u>		
WELL	<u>Cannon 37C-3HZ</u>		
FIELD	<u>Wattenberg</u>		
RIG	<u>H&P 307</u>		
LOC.	<u>Colorado</u>	COUNTY	<u>Weld</u>