



# Weatherford®

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

Company: Anadarko  
Well: Sarchet 15N-32HZ  
Field: Wattenberg  
Rig: H & P 307  
County: Weld

#### Location

Latitude: 40.18771° N      X = 3,195,525.19 ft      Mag Decl: 8.74°  
Longitude: 104.80014° W      Y = 1,311,997.72 ft      Mag Dip: 66.81°

Other Services:    Temperature and Directional

**COMPANY** Anadarko  
**WELL** Sarchet 15N-32HZ  
**FIELD** Wattenberg  
**RIG** H & P 307  
**COUNTY** Weld      **STATE** Colorado  
**API #** 05-123-35595-0000

Permanent Datum: Mean Sea Level

Log Measured From: Drill Floor      Elev: 4939.0 ft above perm. datum

Depth Reference: Drillers Tally      Total Depth: 11611 ft

Depth Logged: 6557 ft      to 11611 ft      Runs: 3

Date Logged: 20-Sep-12      to 24-Sep-12      Spud Date: 4-Sep-12

Elevation	
K.B.	Top Drive
G.L.	4919.0 ft
D.F.	4939.0 ft
W.D.	Land

#### Borehole Record

#### Casing Record

Hole Size	From	To	Size	Weight	From	To
8.750 in.	819 ft	7668 ft	9.625 in.	53.5 lb/ft	Surface	819 ft
6.125 in.	7668 ft	11611 ft	7.000 in.	39.0 lb/ft	Surface	7657 ft


#### Borehole Deviation Record

#### Mud Record

Hole Size	Min. Inc.	Max. Inc.	Type	Weight	From	To
8.750 in.	0.14°	87.62°	WBM	8.40 ppG	819 ft	6600 ft
6.125 in.	88.27°	92.04°	WBM	8.40 - 8.80 ppG	6600 ft	7668 ft

WBM	8.80 - 9.70 ppG	7668 ft	11611 ft
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**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.	0.650	0.650	0.650			
Bit Start Depth	ft	819	6600	7668			
Bit End Depth	ft	6600	7668	11611			
Top Log Interval	ft	No Logging	6557	7630			
Bottom Log Interval	ft	No Logging	7668	11611			
Begin Log Time	hrs	No Logging	7:11	5:42			
Begin Log Date	DD-MMM-YY	No Logging	20-Sep-12	23-Sep-12			
End Log Time	hrs	No Logging	5:20	20:36			
End Log Date	DD-MMM-YY	No Logging	21-Sep-12	24-Sep-12			
Drill or Wipe		Drill	Drill	Drill			
Flow Rate	gal/min	623	548	300			
Max AV / CV @ MWD	ft/min	492 / 166	433 / 234	431 / 375			
Min Inc @ Depth	deg @ ft	0.14 @ 1131	4.43 @ 6623	88.09 @ 9062			
Max Inc @ Depth	deg @ ft	10.25 @ 3969	87.62 @ 7610	92.04 @ 9814			
MUD DATA							
Depth	ft	6600	7668	11611			
Fluid Type		WBM	WBM	WBM			
Mud Weight	ppg	8.40	8.80	9.70			
Plastic Viscosity	cP	2	5	12			
Solids / Sand	%	1.2 / 0	3.2 / 0.50	7.6 / 0.50			
Total Chlorides	ppm	1000	900	1000			
pH		11.4	8.6	9.8			
Oil:Water Ratio	% Vol	100:0	96.5:3.5	91.2:8.8			
Rm @ Temperature	ohm-m @ deg F	N/A	N/A	1.98 @ 76			
Rmc @ Temperature	ohm-m @ deg F	N/A	N/A	2.90 @ 76			
Rmf @ Temperature	ohm-m @ deg F	N/A	N/A	1.95 @ 76			
KCl	% Vol	0	0	0			
Client Representative		C. Thibodeaux	C. Thibodeaux	C. Thibodeaux			
WeatherfordM/LWD Engineer		R. Komrs	R. Komrs	L. Howse			

EQUIPMENT SUMMARY					
M/LWD Run Number	1	2	3		
MWD Build Number	CP20622YHRDP-01	CP20622YHRDP-01	N/A		
HEL Serial Number	N/A	N/A	NW22010PDB4.75		
MFR Serial Number	N/A	N/A	NW22041RBBK4.75		
IDS Serial Number	N/A	N/A	NW22042BI4.75		
SAGR Serial Number	N/A	N/A	NW22043JB4.75		
Sensor to Bit Offsets / Acquisition Rates					
Directional	ft / sec	57.92 / RT	57.92 / RT	53.90 / RT	
Gamma Ray	ft / sec	43.71 / RT	43.71 / RT	38.98 / 5	
Resistivity	ft / sec	N/A	N/A	75.18 / 5	
Other Information					
Total BHA Length	ft	96.33	96.33	138.08	
BHA Assembly Type		Steerable	Steerable	Steerable	
Stabilizer Location	ft	N/A	N/A	34.41	
Stabilizer Location	ft	N/A	N/A	N/A	
Run Circulating Time	hr	37.00	21.66	51.35	
Run Drilling Time	hr	23.00	13.53	33.26	

## MUD SUMMARY

Date and Time	Run	Bit Depth	Mud Weight	% K	Rm @ Temp	Rmf @ Temp	Rmc @ Temp	BHCT
19 Sept 12 @ 20:16	01	6600 ft	8.40 ppg	0	N/A	N/A	N/A	101 F
21 Sept 12 @ 05:20	02	7668 ft	8.80 ppg	0	N/A	N/A	N/A	154 F
25 Sept 12 @ 20:39	03	11611 ft	9.70 ppg	0	1.98 @ 76	1.95 @ 76	2.90 @ 76	224 F

## M/LWD RUN REMARKS

**Run Number:** 1 :: REAL TIME DATA LOG

**WFT Services Provided:**

Real Time Logging: Temperature.

Directional Services: On demand Inclination and Azimuth.

**Run Number:** 2 :: REAL TIME DATA 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.: 3.250 in.

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, 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: 9.70 ppg

**Resistivities:** Corrected for borehole temperature, hole size, drilling fluid resistivity

Borehole Temperature: 224° F

and dielectric correction.

Drilling Fluid Resistivity: 1.98 ohm-m

KCl Concentration: 0%

## M/LWD LOG COMMENTS

**Comment No. 1-1**

No logging done during this run.

**Comment No. 2-1**

REAL TIME DATA LOG

Start of MWD Drilling Run 02

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

Run 02 started formation drilling September 20, 2012 at 7:11 at 6600 MD / 6565 TVD. Weatherford International logged the 8.75 in. borehole.

The WBM at the start of drilling was 8.8 ppg.

**Comment No. 2-2**

End of MWD Drilling Run 02

Run 02 ended drilling formation September 21, 2012 at 5:20 at 7668 MD / 7215 TVD.

The WBM at the end of drilling was 8.8 ppg.

**Comment No. 3-1**

RECORDED DATA LOG

Start of LWD Drilling Run 03

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

Run 03 started formation drilling September 23, 2012 at 5:42 at 7668 MD / 7215 TVD. Weatherford International logged the 6.125 in. borehole.

The WBM at the start of drilling was 8.80 ppg.

**Comment No. 3-2**

End of LWD Drilling Run 03

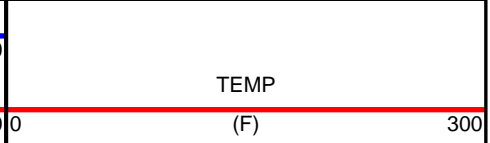
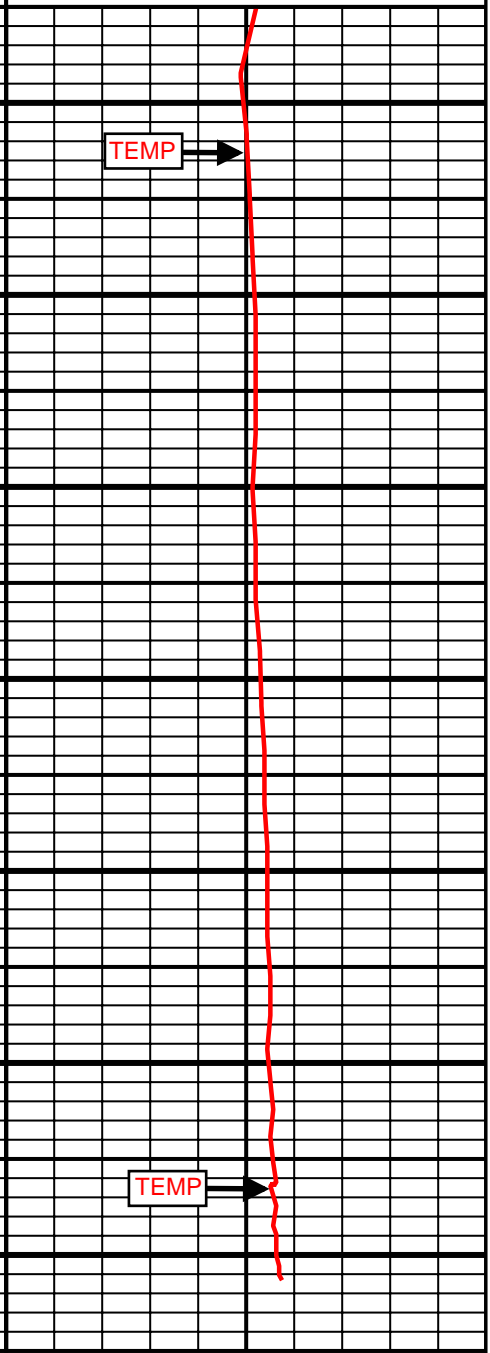
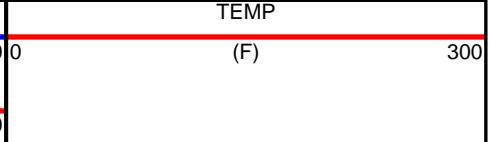
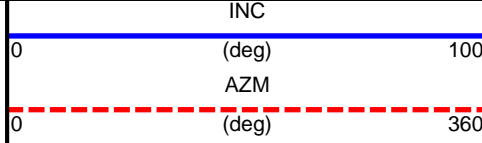
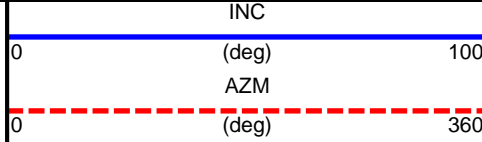
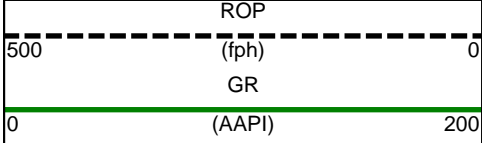
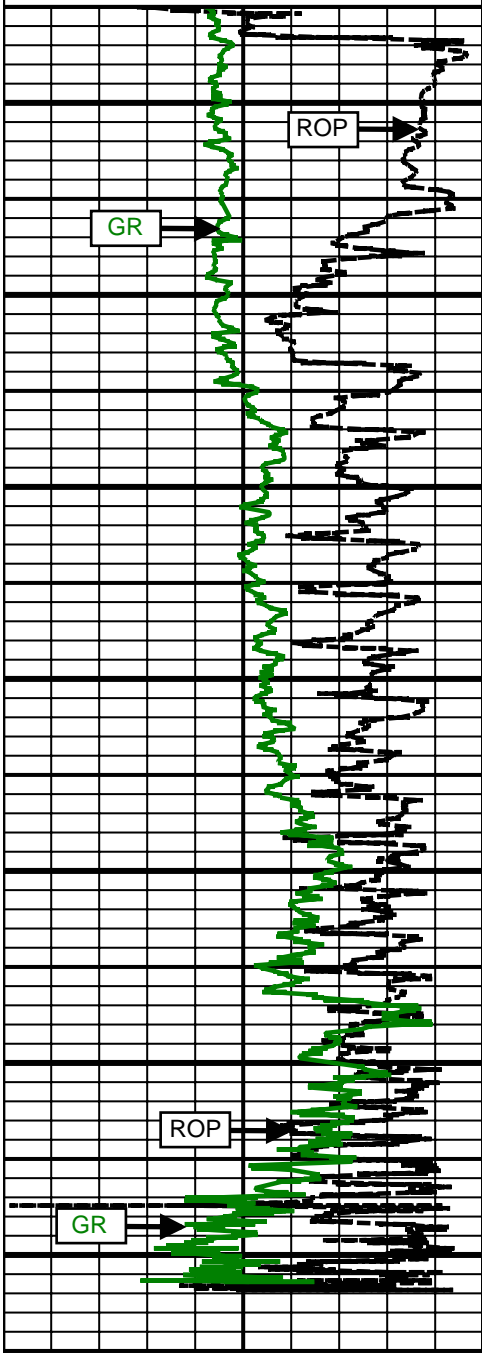
Run 03 ended drilling formation September 24, 2012 at 20:36 at 11611 MD / 7213 TVD.

The WBM at the end of drilling was 9.70 ppg.

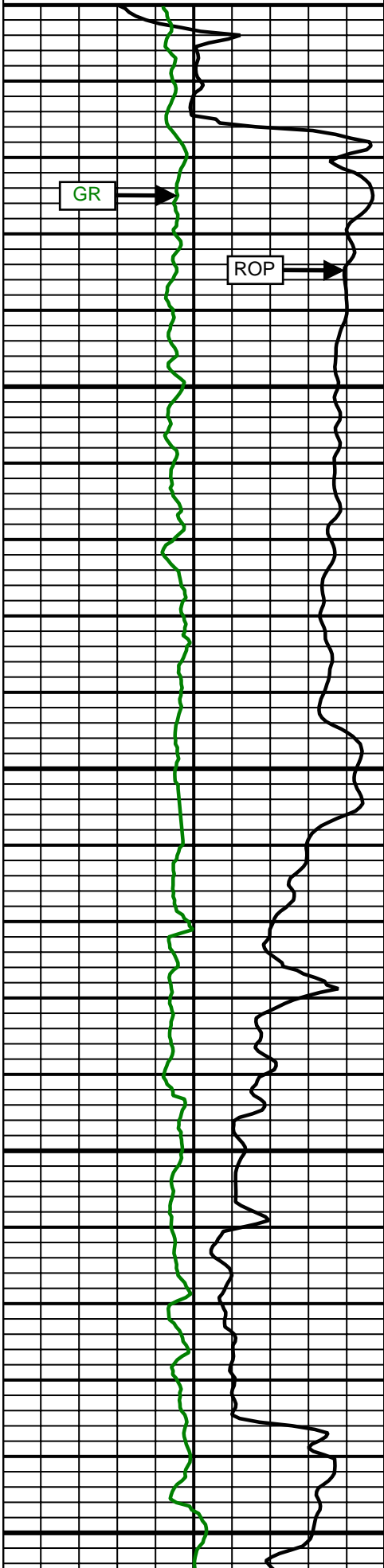
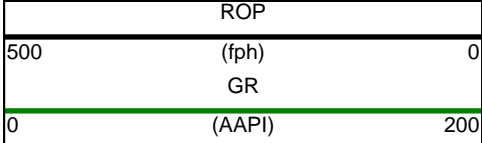
CURVE SPECIFICATIONS				
CURVE TYPE	MNEMONIC	UNITS	COMMENTS	CORRECTIONS
Rate of Penetration	ROP	fph	Rate of Penetration 3.0 ft window 0.5 ft Exponential Smoothing	None
Gamma Ray	GR	AAPI	Gamma Ray 3.0 ft window 0.5 ft Exponential Smoothing	See M/LWD Run Remarks
Inclination	INC	deg	Survey Inclination No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

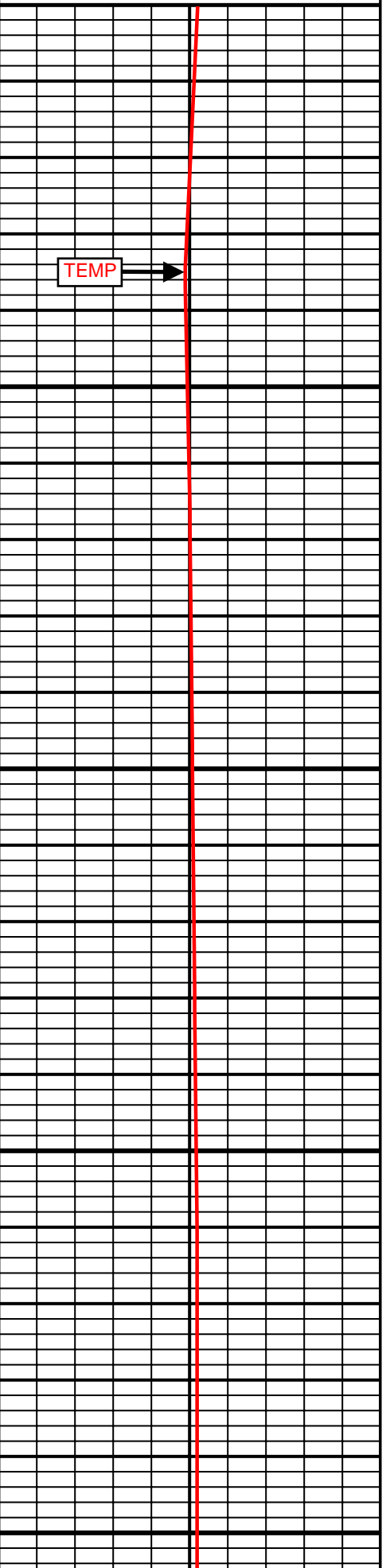
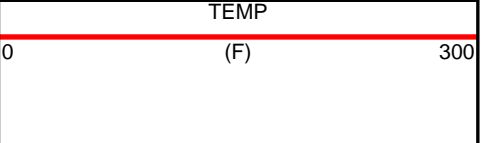
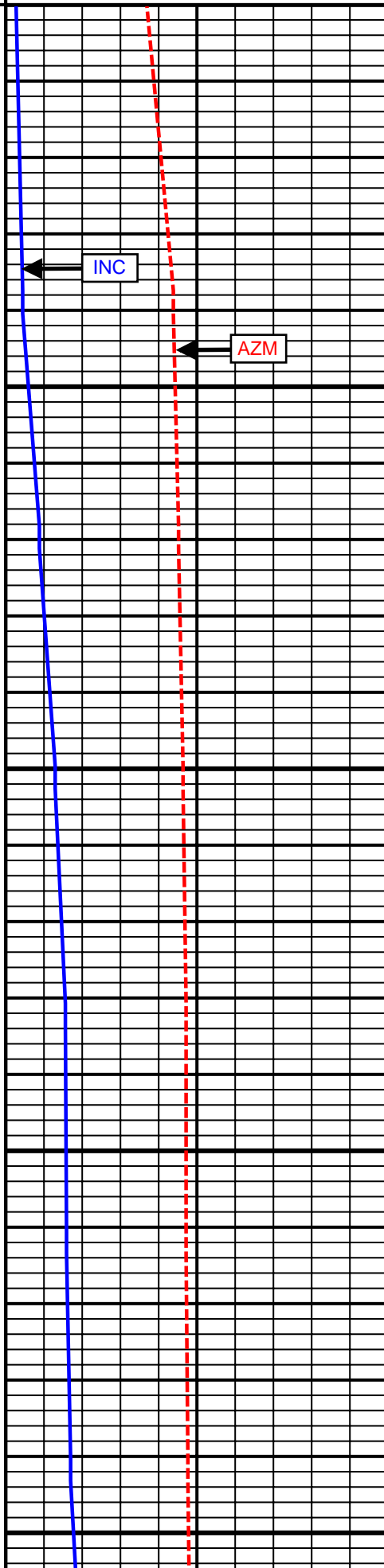
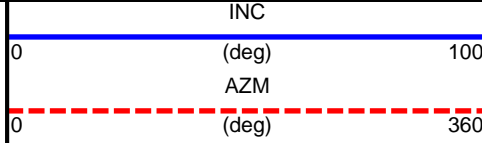


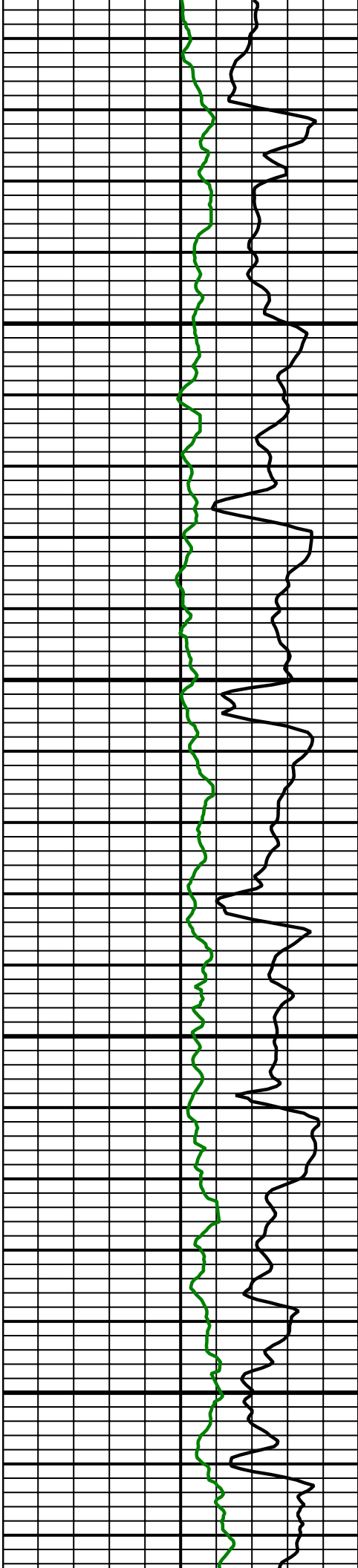
**5 Inch - True Vertical Depth**



6600  
TVD

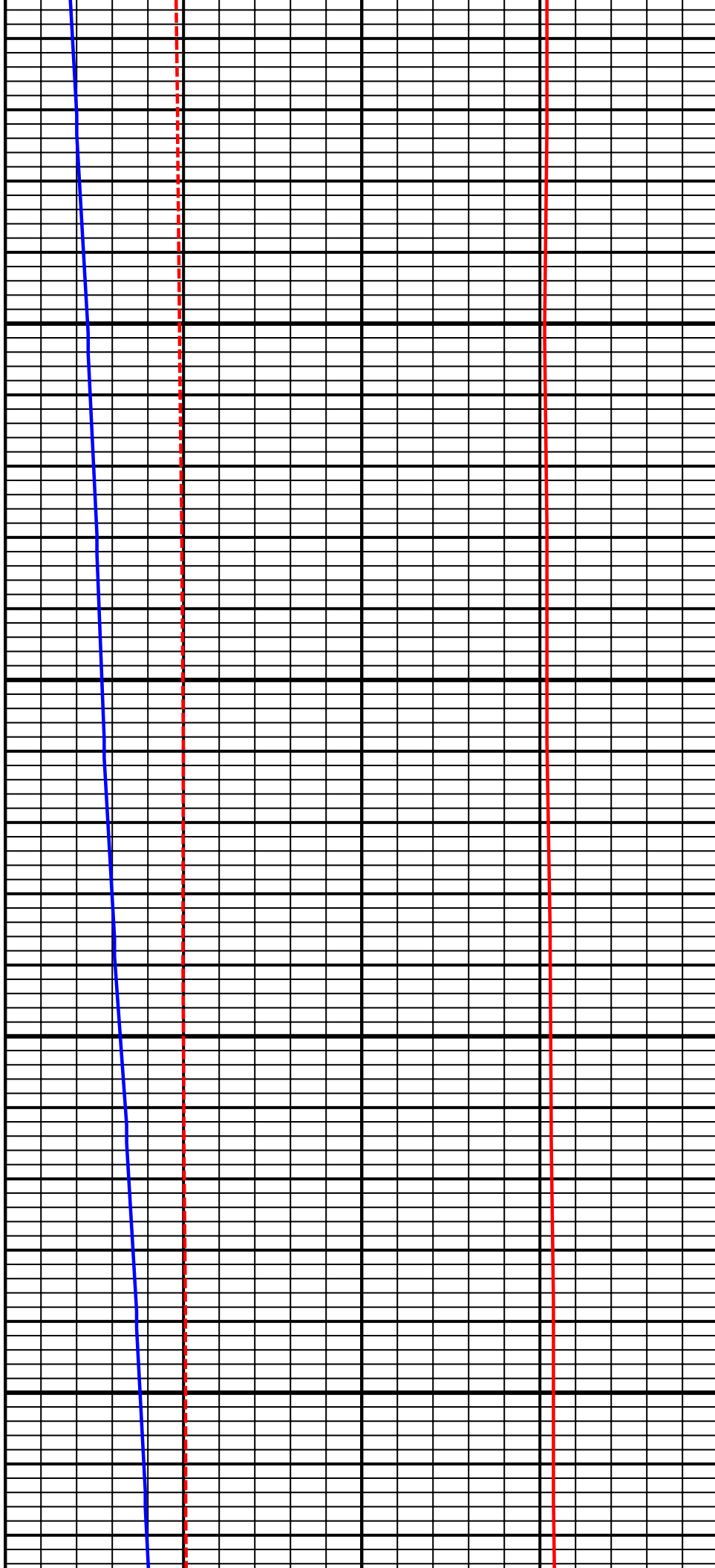
6700  
TVD

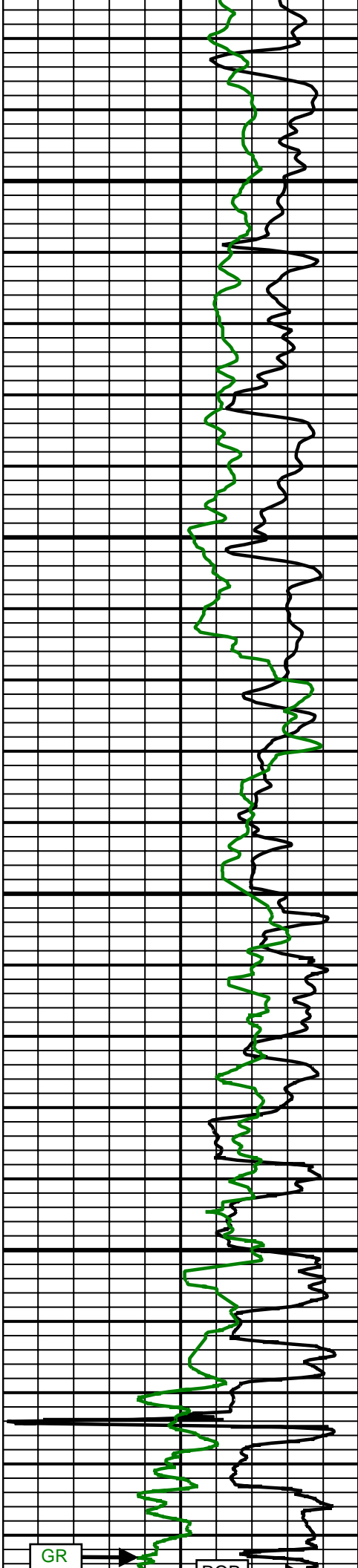




6800  
TVD

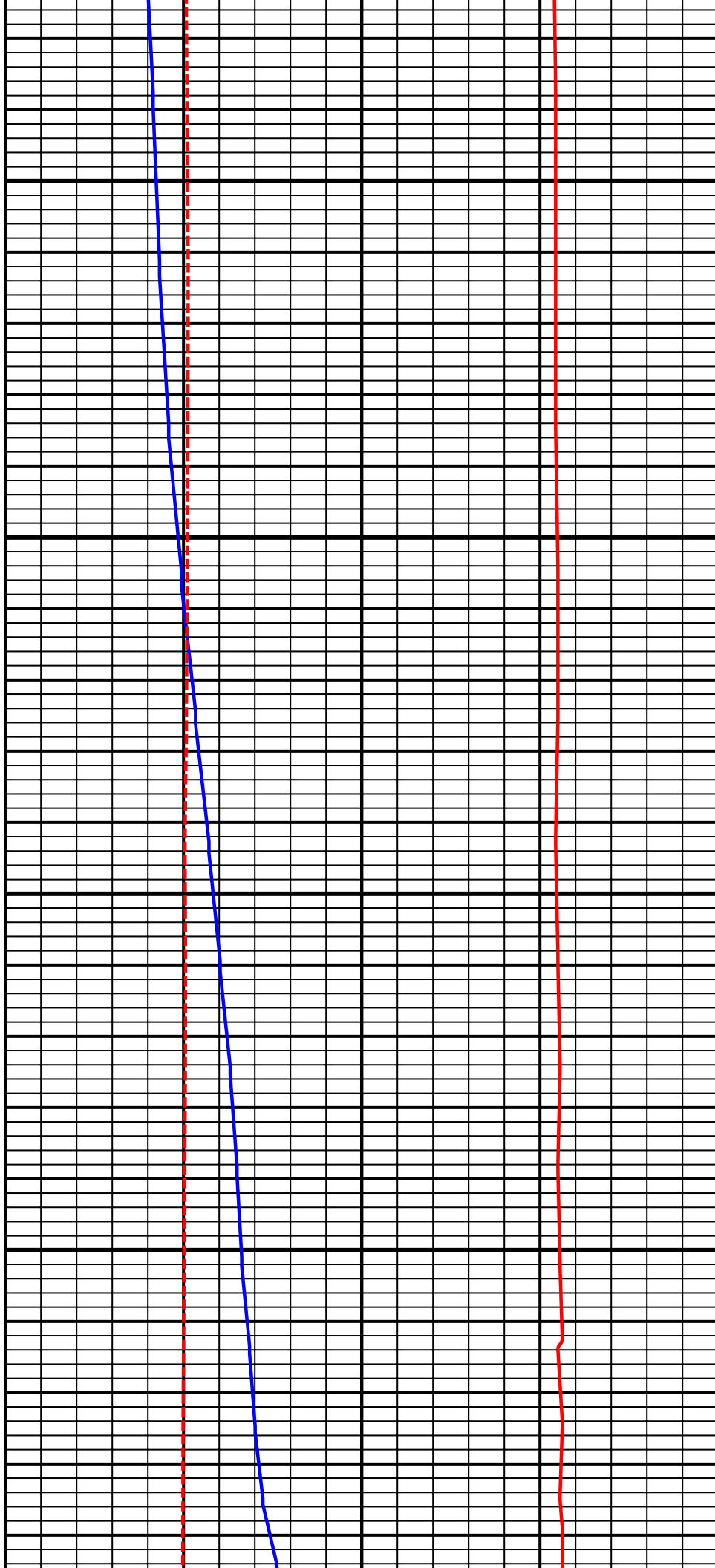
6900  
TVD

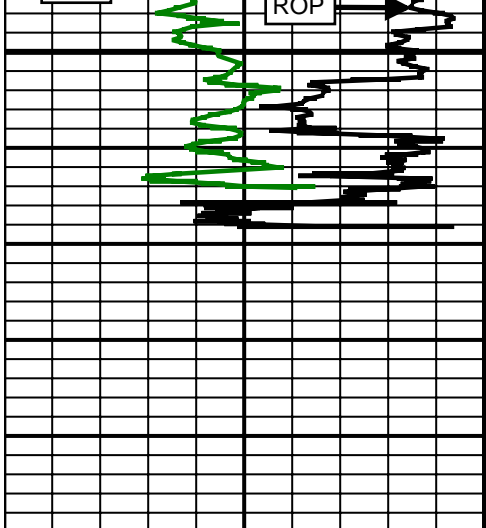




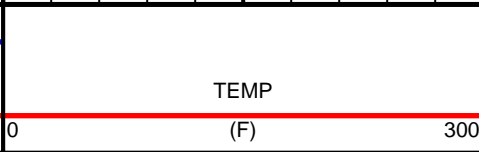
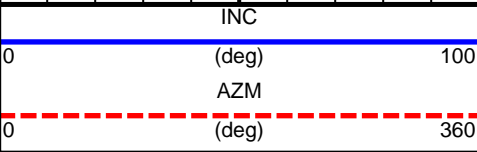
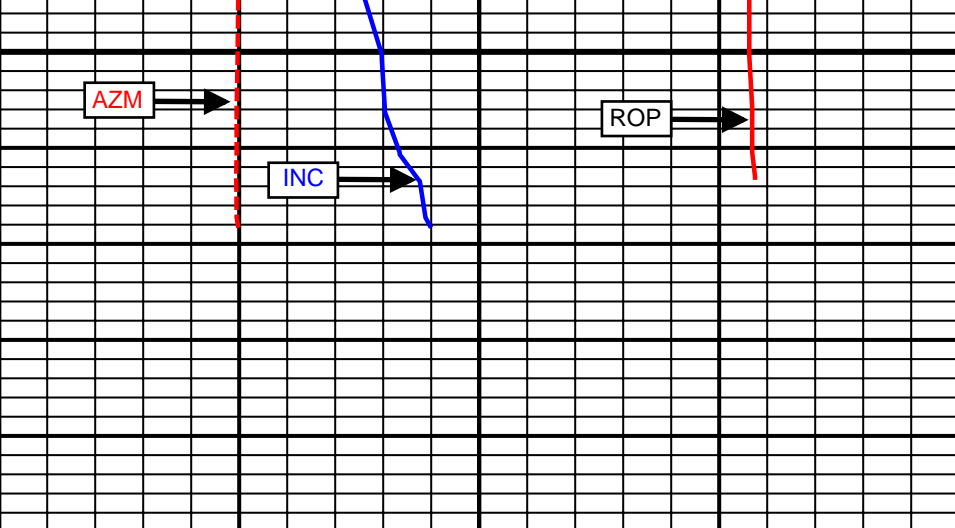
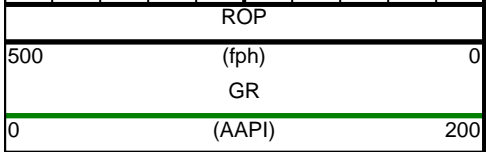
7000  
TVD

7100  
TVD





7200  
TVD



SURVEY						
Survey Calculation Method: <b>Minimum Curvature</b>						
Magnetic Reference	Target Direction	Total Magnetic Field	Magnetic Dip Angle	Magnetic Declination	Grid Convergence	Total Correction
<b>True North</b>	<b>174.34 deg</b>	<b>52831 nT</b>	<b>67.02 deg</b>	<b>8.65 deg</b>	<b>0.00 deg</b>	<b>8.65 deg</b>
<b>Survey Tie-On</b>	Depth	INC	AZ	TVD	NS	EW
	<b>725.00 ft</b>	<b>0.30 deg</b>	<b>243.97 deg</b>	<b>724.99 ft</b>	<b>0.47 ft</b>	<b>-1.42 ft</b>

Well Head							
Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	NS (ft)	EW (ft)	VSect (ft)	Dogleg (deg/100ft)
858.00	0.25	141.49	857.99	0.09	-1.55	-0.24	0.32
949.00	0.22	136.83	948.99	-0.19	-1.31	0.06	0.04
1040.00	0.29	167.18	1039.99	-0.54	-1.14	0.43	0.16
1131.00	0.14	154.26	1130.99	-0.87	-1.04	0.76	0.17
1223.00	0.29	180.85	1222.99	-1.20	-0.99	1.10	0.19
1316.00	0.49	199.17	1315.98	-1.81	-1.13	1.69	0.25
1407.00	0.55	210.55	1406.98	-2.56	-1.48	2.40	0.13
1502.00	0.66	223.70	1501.97	-3.35	-2.09	3.12	0.19
1596.00	0.79	236.62	1595.97	-4.09	-3.00	3.78	0.22
1691.00	0.56	274.17	1690.96	-4.42	-4.01	4.00	0.51
1786.00	0.58	272.01	1785.96	-4.37	-4.96	3.86	0.03
1881.00	0.78	259.21	1880.95	-4.47	-6.07	3.85	0.26
1976.00	0.84	265.45	1975.94	-4.65	-7.40	3.90	0.11
2072.00	0.84	298.98	2071.93	-4.37	-8.72	3.48	0.50
2167.00	0.95	293.94	2166.92	-3.71	-10.05	2.70	0.14
2262.00	1.07	273.92	2261.90	-3.33	-11.65	2.16	0.39
2357.00	0.56	299.84	2356.89	-3.04	-12.94	1.75	0.65
2452.00	0.82	287.29	2451.89	-2.60	-13.99	1.21	0.31
2547.00	0.56	107.06	2546.88	-2.54	-14.20	1.13	1.45
2642.00	2.67	90.96	2641.84	-2.71	-11.54	1.56	2.25
2737.00	3.97	77.53	2736.68	-2.04	-6.12	1.42	1.59
2831.00	4.92	63.03	2830.40	0.49	0.65	-0.43	1.56
2926.00	6.45	65.90	2924.93	4.52	9.16	-3.59	1.64
3021.00	7.73	65.64	3019.20	9.33	19.85	-7.33	1.35
3116.00	9.22	67.52	3113.16	14.88	32.70	-11.58	1.60
3211.00	9.56	61.03	3206.89	21.61	46.64	-16.91	1.17
3306.00	7.81	61.39	3300.80	28.52	59.20	-22.54	1.84
3401.00	8.83	60.71	3394.80	35.18	71.23	-27.98	1.08
3495.00	9.73	67.52	3487.57	41.75	84.86	-33.18	1.51
3590.00	7.73	66.02	3581.46	47.42	98.12	-37.51	2.12
3685.00	8.24	76.92	3675.55	51.55	110.59	-40.39	1.68
3780.00	8.29	70.24	3769.56	55.41	123.67	-42.94	1.01
3874.00	9.16	66.27	3862.48	60.71	136.89	-46.91	1.13
3969.00	10.25	66.60	3956.12	67.11	151.57	-51.83	1.15
4064.00	9.20	66.63	4049.75	73.48	166.30	-56.72	1.11
4159.00	8.89	68.12	4143.57	79.23	180.09	-61.08	0.41
4253.00	9.53	74.61	4236.36	84.00	194.33	-64.43	1.30
4348.00	7.58	70.86	4330.30	88.14	207.83	-67.22	2.13
4442.00	8.59	73.49	4423.36	92.17	220.42	-69.98	1.14
4537.00	9.54	73.66	4517.17	96.40	234.78	-72.78	1.00
4632.00	8.97	74.72	4610.94	100.57	249.48	-75.47	0.63
4727.00	8.47	73.83	4704.84	104.47	263.34	-77.99	0.55



4822.00	8.06	67.00	4798.85	109.02	276.19	-81.25	1.12
4918.00	7.32	69.13	4893.99	113.83	288.10	-84.86	0.83
5012.00	7.29	63.09	4987.23	118.66	299.01	-88.59	0.82
5107.00	8.51	65.88	5081.33	124.26	310.80	-93.00	1.35
5201.00	8.64	60.52	5174.28	130.58	323.30	-98.06	0.86
5296.00	7.86	55.16	5268.29	137.80	334.84	-104.10	1.15
5391.00	8.68	59.85	5362.31	145.11	346.37	-110.24	1.12
5486.00	9.49	59.90	5456.11	152.64	359.35	-116.46	0.85
5580.00	7.58	58.82	5549.07	159.74	371.36	-122.33	2.04
5675.00	7.99	60.75	5643.19	166.21	382.48	-127.67	0.51
5771.00	6.65	55.57	5738.41	172.61	392.89	-133.02	1.55
5865.00	5.27	50.78	5831.90	178.42	400.72	-138.03	1.56
5960.00	4.40	55.83	5926.56	183.22	407.11	-142.18	1.02
6054.00	3.61	59.37	6020.33	186.76	412.64	-145.15	0.88
6149.00	3.12	60.45	6115.17	189.55	417.47	-147.46	0.52
6244.00	1.98	73.73	6210.07	191.29	421.29	-148.81	1.34
6338.00	0.75	112.31	6304.05	191.51	423.42	-148.82	1.56
6433.00	0.60	111.02	6399.04	191.10	424.46	-148.30	0.16
6528.00	0.77	100.21	6494.03	190.81	425.55	-147.90	0.22
6542.00	0.82	105.66	6508.03	190.76	425.74	-147.84	0.65
6623.00	4.43	157.75	6588.94	187.71	427.48	-144.63	4.91
6654.00	8.79	162.63	6619.72	184.34	428.65	-141.16	14.17
6686.00	12.91	166.81	6651.15	178.52	430.19	-135.22	13.10
6718.00	15.60	169.78	6682.16	170.81	431.77	-127.39	8.71
6749.00	15.87	169.76	6712.00	162.53	433.26	-119.01	0.87
6780.00	16.94	171.44	6741.73	153.89	434.69	-110.27	3.78
6812.00	20.02	173.93	6772.08	143.84	435.96	-100.14	9.93
6845.00	23.22	175.98	6802.76	131.73	437.02	-87.98	9.96
6876.00	25.68	178.24	6830.97	118.91	437.65	-75.17	8.49
6908.00	27.73	179.72	6859.56	104.54	437.90	-60.84	6.73
6940.00	30.63	179.31	6887.50	88.94	438.04	-45.30	9.08
6971.00	34.01	180.28	6913.69	72.37	438.09	-28.81	11.03
7003.00	36.83	181.87	6939.77	53.83	437.73	-10.39	9.27
7035.00	39.24	182.05	6964.97	34.12	437.06	9.15	7.54
7066.00	41.46	183.44	6988.59	14.08	436.09	29.00	7.73
7098.00	43.24	184.59	7012.24	-7.42	434.58	50.25	6.07
7130.00	45.83	184.26	7035.05	-29.80	432.85	72.34	8.13
7161.00	49.45	183.66	7055.93	-52.65	431.27	94.92	11.76
7192.00	53.36	182.86	7075.27	-76.83	429.90	118.86	12.77
7224.00	57.12	181.36	7093.51	-103.10	428.94	144.90	12.36
7256.00	60.26	182.03	7110.14	-130.42	428.12	172.01	9.97
7287.00	63.07	181.69	7124.85	-157.69	427.24	199.06	9.12
7319.00	64.97	181.07	7138.87	-186.45	426.55	227.61	6.19
7350.00	66.33	180.53	7151.65	-214.69	426.15	255.67	4.67
7382.00	68.52	180.00	7163.93	-244.23	426.02	285.06	7.01
7414.00	70.10	179.50	7175.24	-274.17	426.15	314.86	5.15
7445.00	72.24	179.30	7185.24	-303.50	426.46	344.08	6.93
7477.00	76.02	179.21	7193.99	-334.28	426.86	374.75	11.82
7508.00	79.67	178.76	7200.52	-364.57	427.40	404.95	11.86
7540.00	80.31	178.01	7206.08	-396.07	428.28	436.38	3.05
7572.00	83.42	178.03	7210.61	-427.73	429.38	467.99	9.72
7604.00	87.20	177.69	7213.22	-459.59	430.57	499.82	11.86
7610.00	87.62	177.82	7213.49	-465.58	430.80	505.80	7.33
7729.00	88.77	178.07	7217.24	-584.44	435.07	624.50	0.99
7824.00	89.94	179.35	7218.31	-679.41	437.21	719.22	1.83
7919.00	91.15	180.89	7217.41	-774.40	437.01	813.72	2.06
8014.00	91.67	182.49	7215.07	-869.33	434.21	907.91	1.77
8109.00	90.99	182.98	7212.87	-964.19	429.68	1001.87	0.88
8204.00	91.11	184.37	7211.12	-1058.98	423.59	1095.59	1.47
8298.00	90.93	183.63	7209.45	-1152.73	417.03	1188.24	0.81
8393.00	90.12	185.39	7208.58	-1247.43	409.56	1281.74	2.04

8487.00	90.19	184.82	7208.33	-1341.06	401.20	1374.09	0.61
8582.00	89.81	184.68	7208.33	-1435.73	393.33	1467.52	0.43
8677.00	89.32	183.98	7209.05	-1530.46	386.16	1561.08	0.90
8772.00	89.94	183.24	7209.66	-1625.26	380.18	1654.84	1.02
8867.00	90.31	181.88	7209.45	-1720.17	375.94	1748.86	1.48
8961.00	90.19	179.60	7209.04	-1814.15	374.72	1842.26	2.43
9057.00	89.51	179.51	7209.30	-1910.15	375.47	1937.87	0.71
9151.00	89.88	177.69	7209.80	-2004.11	377.76	2031.60	1.98
9246.00	89.69	177.15	7210.15	-2099.02	382.04	2126.46	0.60
9340.00	89.01	177.27	7211.22	-2192.90	386.61	2220.34	0.73
9436.00	90.37	177.48	7211.74	-2288.79	391.01	2316.20	1.43
9530.00	91.36	178.44	7210.32	-2382.72	394.36	2410.00	1.47
9625.00	91.48	178.66	7207.96	-2477.66	396.76	2504.71	0.26
9720.00	91.73	179.39	7205.30	-2572.61	398.38	2599.36	0.81
9814.00	92.04	179.53	7202.21	-2666.56	399.26	2692.93	0.36
9910.00	90.74	178.78	7199.88	-2762.51	400.68	2788.56	1.56
10004.00	89.88	178.31	7199.37	-2856.48	403.06	2882.31	1.04
10099.00	89.32	177.76	7200.04	-2951.42	406.32	2977.11	0.83
10194.00	89.01	177.95	7201.42	-3046.35	409.88	3071.92	0.38
10288.00	88.83	177.44	7203.19	-3140.25	413.66	3165.74	0.58
10383.00	89.14	177.74	7204.88	-3235.15	417.65	3260.57	0.45
10478.00	89.07	177.46	7206.36	-3330.06	421.63	3355.41	0.30
10572.00	89.32	177.06	7207.68	-3423.94	426.12	3449.28	0.50
10667.00	88.27	178.46	7209.68	-3518.84	429.83	3544.08	1.84
10762.00	89.51	178.13	7211.52	-3613.78	432.66	3638.84	1.35
10857.00	90.31	179.17	7211.67	-3708.75	434.90	3733.56	1.38
10952.00	90.68	178.61	7210.85	-3803.73	436.74	3828.26	0.71
11047.00	90.49	178.83	7209.88	-3898.70	438.86	3922.98	0.31
11142.00	90.37	178.31	7209.17	-3993.67	441.23	4017.72	0.56
11237.00	89.88	177.95	7208.96	-4088.62	444.33	4112.51	0.64
11332.00	89.74	178.42	7209.27	-4183.57	447.34	4207.29	0.52
11426.00	88.89	178.31	7210.40	-4277.53	450.02	4301.05	0.91
11521.00	88.40	178.28	7212.64	-4372.46	452.85	4395.80	0.52
11556.00	88.09	178.15	7213.71	-4407.42	453.94	4430.70	0.96
11611.00	88.09	178.15	7215.55	-4462.36	455.71	4485.55	0.00

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\*Weatherford M/LWD surveys from 858.00 ft MD to 11556.00 ft MD\*

\*TD at 11611.00 ft MD.\*

The total correction is 8.65 deg relative to True North.

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**Weatherford®**

Final Print

COMPANY	<u>Anadarko</u>		
WELL	<u>Sarchet 15N-32HZ</u>		
FIELD	<u>Wattenberg</u>		
RIG	<u>H &amp; P 307</u>		
LOC.	<u>Colorado</u>	COUNTY	<u>Weld</u>