



Weatherford®

SURVEY REPORT

Report Date: **6/9/2013**
 Customer: **Anadarko**
 Job Name: **4028858**
 Well Name: **Thomsen 36N-18HZ**

Field: **Wattenburg**
 Rig: **H&P Flex # 307**
 Rig Loc: **Weld County, CO**

Survey Calculation Method: Minimum Curvature						
Magnetic Reference	Target Direction	Total Magnetic Field	Magnetic Dip Angle	Magnetic Declination	Grid Convergence	Total Correction
True North	180.08 deg	52889 nT	66.94 deg	8.50 deg	0.00 deg	8.50 deg
Survey Tie-On	Depth	INC	AZ	TVD	NS	EW
	918.00 ft	0.22 deg	104.52 deg	917.99 ft	0.07 ft	0.97 ft

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head			
				NS (ft)	EW (ft)	Vsect (ft)	Dogleg (deg/100ft)
1009.00	0.50	245.17	1008.99	-0.14	0.78	0.14	0.75
1375.00	0.30	232.97	1374.98	-1.39	-1.44	1.39	0.06
1833.00	0.43	338.21	1832.97	-0.51	-3.03	0.52	0.13
2200.00	0.56	311.15	2199.96	1.94	-4.89	-1.94	0.07
2569.00	1.44	130.16	2568.93	0.14	-2.71	-0.14	0.54
2661.00	3.52	130.70	2660.84	-2.45	0.32	2.45	2.26
2754.00	5.42	121.46	2753.55	-6.60	6.23	6.59	2.18
2850.00	7.04	122.57	2848.98	-12.13	15.06	12.11	1.69
2945.00	8.85	115.37	2943.07	-18.40	26.57	18.36	2.17
3040.00	9.33	106.87	3036.88	-23.77	40.54	23.71	1.50
3135.00	8.99	102.53	3130.67	-27.61	55.15	27.53	0.81
3230.00	7.92	98.79	3224.64	-30.22	68.87	30.13	1.27
3324.00	7.54	88.77	3317.79	-31.08	81.44	30.97	1.49
3419.00	7.50	89.68	3411.97	-30.91	93.87	30.78	0.13
3514.00	7.90	101.01	3506.12	-32.12	106.48	31.97	1.65
3609.00	8.79	101.62	3600.11	-34.83	119.99	34.67	0.94
3704.00	10.27	96.16	3693.80	-37.20	135.53	37.01	1.82
3799.00	10.16	88.71	3787.30	-37.92	152.32	37.71	1.39
3894.00	8.86	82.53	3880.99	-36.78	167.95	36.55	1.74
3988.00	9.01	87.84	3973.85	-35.57	182.49	35.31	0.89
4083.00	9.59	96.22	4067.61	-36.14	197.79	35.87	1.55
4178.00	11.17	87.79	4161.06	-36.64	214.85	36.34	2.30
4273.00	10.35	88.82	4254.39	-36.11	232.58	35.79	0.89
4367.00	8.98	84.52	4347.05	-35.24	248.33	34.89	1.65
4462.00	9.10	86.69	4440.87	-34.10	263.21	33.73	0.38
4556.00	8.42	89.43	4533.78	-33.60	277.51	33.21	0.85
4651.00	8.67	86.57	4627.72	-33.10	291.61	32.70	0.52
4746.00	10.17	90.18	4721.44	-32.70	307.15	32.27	1.70
4840.00	9.05	86.29	4814.12	-32.25	322.82	31.80	1.38
4935.00	9.28	94.09	4907.91	-32.31	337.92	31.84	1.33
5030.00	8.77	93.87	5001.73	-33.35	352.79	32.85	0.54
5125.00	9.50	95.21	5095.53	-34.55	367.82	34.03	0.80
5219.00	9.61	93.28	5188.22	-35.70	383.38	35.17	0.36
5314.00	10.06	91.58	5281.83	-36.38	399.59	35.82	0.56
5409.00	9.29	85.72	5375.48	-36.04	415.53	35.46	1.31

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head		VSect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
5503.00	8.85	87.71	5468.30	-35.18	430.32	34.58	0.57
5598.00	9.07	90.23	5562.14	-34.92	445.11	34.30	0.47
5693.00	8.41	92.77	5656.04	-35.29	459.54	34.65	0.80
5787.00	9.70	94.10	5748.87	-36.19	474.30	35.52	1.39
5882.00	9.40	94.00	5842.55	-37.30	490.03	36.62	0.32
5976.00	10.45	92.21	5935.14	-38.16	506.20	37.46	1.16
6070.00	11.83	91.28	6027.37	-38.71	524.36	37.98	1.48
6165.00	11.93	80.94	6120.34	-37.38	543.79	36.62	2.24
6260.00	10.44	77.43	6213.54	-33.96	561.89	33.18	1.72
6354.00	8.34	84.74	6306.28	-31.48	576.99	30.68	2.56
6449.00	8.36	98.61	6400.28	-31.88	590.68	31.06	2.12
6544.00	9.87	93.57	6494.08	-33.42	605.64	32.58	1.80
6575.00	9.38	91.95	6524.64	-33.68	610.81	32.82	1.81
6607.00	8.77	105.01	6556.25	-34.40	615.78	33.54	6.70
6638.00	10.19	125.88	6586.83	-36.62	620.28	35.75	11.91
6670.00	11.41	135.41	6618.27	-40.53	624.80	39.66	6.75
6701.00	12.41	139.99	6648.60	-45.26	629.09	44.39	4.44
6733.00	14.47	143.78	6679.72	-51.12	633.67	50.24	7.00
6764.00	16.47	145.79	6709.60	-57.88	638.43	56.99	6.68
6796.00	17.99	148.22	6740.16	-65.84	643.58	64.94	5.25
6827.00	19.13	149.97	6769.55	-74.30	648.64	73.40	4.09
6859.00	20.19	149.46	6799.68	-83.60	654.07	82.69	3.36
6891.00	21.72	151.51	6829.56	-93.56	659.71	92.64	5.30
6922.00	24.19	156.21	6858.11	-104.42	665.00	103.49	9.92
6954.00	26.87	160.91	6886.99	-117.25	670.02	116.32	10.49
6985.00	29.62	166.15	6914.30	-131.32	674.14	130.38	11.94
7017.00	32.23	168.57	6941.75	-147.36	677.73	146.42	9.03
7048.00	34.67	171.52	6967.61	-164.19	680.67	163.24	9.46
7080.00	37.11	172.92	6993.53	-182.77	683.20	181.82	8.04
7111.00	40.16	174.08	7017.75	-202.00	685.38	201.05	10.11
7143.00	43.73	175.09	7041.54	-223.29	687.39	222.33	11.35
7174.00	47.37	174.90	7063.25	-245.33	689.33	244.37	11.75
7206.00	49.95	174.38	7084.39	-269.25	691.57	268.29	8.15
7251.00	53.69	176.54	7112.20	-304.51	694.35	303.54	9.13
7301.00	58.68	178.97	7140.02	-346.00	695.96	345.03	10.76
7348.00	63.36	180.73	7162.78	-387.10	696.05	386.13	10.48
7395.00	69.04	182.21	7181.74	-430.07	694.93	429.10	12.42
7440.00	74.78	183.02	7195.71	-472.78	692.98	471.81	12.87
7490.00	78.16	181.36	7207.41	-521.35	691.13	520.39	7.49
7522.00	80.03	179.64	7213.46	-552.77	690.85	551.80	7.87
7553.00	83.06	177.40	7218.02	-583.42	691.65	582.45	12.11
7585.00	85.59	176.48	7221.18	-615.21	693.35	614.24	8.41
7672.00	91.96	176.07	7223.04	-701.96	699.00	700.99	7.34
7814.00	91.60	175.02	7218.63	-843.46	710.02	842.47	0.78
7907.00	90.43	175.08	7216.99	-936.10	718.04	935.10	1.26
7999.00	90.18	174.93	7216.50	-1027.75	726.05	1026.73	0.32
8090.00	89.56	176.16	7216.70	-1118.47	733.12	1117.45	1.51
8182.00	91.06	177.39	7216.20	-1210.32	738.30	1209.29	2.11
8273.00	90.62	177.92	7214.87	-1301.23	742.02	1300.20	0.76
8364.00	91.11	179.42	7213.50	-1392.20	744.13	1391.16	1.73

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head		VSect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
8456.00	90.92	180.03	7211.87	-1484.18	744.57	1483.14	0.69
8548.00	90.92	180.23	7210.39	-1576.17	744.37	1575.13	0.22
8640.00	90.62	180.87	7209.15	-1668.15	743.48	1667.11	0.77
8732.00	88.77	180.92	7209.64	-1760.14	742.05	1759.10	2.01
8824.00	89.57	181.61	7210.98	-1852.10	740.01	1851.07	1.15
8915.00	89.91	182.15	7211.39	-1943.05	737.03	1942.02	0.70
9005.00	90.00	181.87	7211.46	-2033.00	733.87	2031.97	0.33
9097.00	89.12	183.56	7212.17	-2124.89	729.51	2123.87	2.07
9189.00	89.51	182.63	7213.27	-2216.75	724.55	2215.73	1.10
9282.00	89.74	182.68	7213.87	-2309.64	720.24	2308.64	0.25
9374.00	90.35	182.86	7213.80	-2401.54	715.79	2400.53	0.69
9465.00	89.57	183.79	7213.87	-2492.38	710.52	2491.39	1.33
9558.00	89.69	183.45	7214.47	-2585.19	704.64	2584.21	0.39
9651.00	88.34	184.09	7216.06	-2677.98	698.53	2677.00	1.61
9743.00	88.06	184.45	7218.95	-2769.68	691.68	2768.71	0.50
9836.00	88.33	184.27	7221.88	-2862.36	684.62	2861.40	0.35
9899.00	88.15	184.27	7223.82	-2925.16	679.93	2924.20	0.29
9994.00	87.29	183.34	7227.60	-3019.87	673.63	3018.93	1.33
10089.00	88.94	183.03	7230.72	-3114.67	668.35	3113.73	1.77
10183.00	89.56	183.03	7231.95	-3208.53	663.39	3207.60	0.66
10278.00	91.60	182.77	7230.99	-3303.40	658.58	3302.47	2.16
10372.00	89.82	182.15	7229.83	-3397.30	654.55	3396.38	2.01
10467.00	90.18	181.46	7229.83	-3492.25	651.55	3491.34	0.82
10562.00	91.79	181.62	7228.19	-3587.20	649.00	3586.29	1.70
10656.00	90.92	182.37	7225.97	-3681.11	645.73	3680.21	1.22
10751.00	89.20	181.57	7225.87	-3776.05	642.46	3775.15	2.00
10845.00	89.51	181.92	7226.93	-3870.00	639.60	3869.11	0.50
10940.00	90.00	181.85	7227.34	-3964.95	636.48	3964.06	0.52
11035.00	91.05	180.78	7226.47	-4059.92	634.30	4059.03	1.58
11129.00	92.53	180.28	7223.53	-4153.87	633.43	4152.98	1.66
11224.00	92.10	179.72	7219.69	-4248.79	633.43	4247.90	0.74
11318.00	92.84	179.35	7215.64	-4342.70	634.19	4341.81	0.88
11413.00	92.77	179.14	7210.99	-4437.58	635.44	4436.68	0.23
11508.00	92.90	178.99	7206.29	-4532.45	636.99	4531.55	0.21
11602.00	90.68	179.62	7203.36	-4626.39	638.13	4625.49	2.45
11697.00	89.51	178.12	7203.20	-4721.36	640.00	4720.47	2.00
11791.00	87.10	178.19	7205.98	-4815.27	643.03	4814.36	2.56
11886.00	86.43	177.86	7211.34	-4910.06	646.30	4909.15	0.79
11980.00	87.16	177.96	7216.60	-5003.85	649.72	5002.94	0.78
12075.00	88.09	177.39	7220.53	-5098.69	653.57	5097.77	1.15
12170.00	87.47	176.65	7224.21	-5193.49	658.50	5192.56	1.02
12264.00	88.77	175.95	7227.30	-5287.24	664.57	5286.30	1.57
12359.00	88.89	176.20	7229.24	-5382.00	671.07	5381.05	0.29
12454.00	88.27	176.24	7231.59	-5476.76	677.33	5475.81	0.65
12548.00	87.47	177.34	7235.08	-5570.54	682.59	5569.59	1.45
12643.00	87.78	178.70	7239.02	-5665.40	685.87	5664.44	1.47
12737.00	88.52	176.85	7242.06	-5759.28	689.52	5758.31	2.12
12832.00	90.86	176.08	7242.57	-5854.09	695.37	5853.11	2.59
12927.00	91.32	177.75	7240.76	-5948.93	700.48	5947.95	1.82
13021.00	91.42	177.63	7238.52	-6042.83	704.27	6041.84	0.17

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head		VSect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
13116.00	90.80	181.12	7236.67	-6137.79	705.31	6136.80	3.73
13210.00	90.06	181.13	7235.97	-6231.77	703.46	6230.78	0.79
13305.00	89.26	177.03	7236.53	-6326.73	704.99	6325.74	4.40
13400.00	90.49	176.32	7236.74	-6421.57	710.50	6420.57	1.49
13494.00	89.57	176.15	7236.69	-6515.37	716.67	6514.36	1.00
13619.00	90.25	177.87	7236.89	-6640.19	723.19	6639.17	1.48
13714.00	90.62	178.60	7236.17	-6735.14	726.12	6734.12	0.86
13808.00	90.06	179.71	7235.61	-6829.13	727.50	6828.11	1.32
13903.00	91.79	178.87	7234.08	-6924.10	728.68	6923.08	2.02
13997.00	91.79	179.11	7231.14	-7018.04	730.33	7017.02	0.26
14092.00	91.35	179.01	7228.54	-7112.99	731.89	7111.97	0.47
14187.00	90.86	178.97	7226.70	-7207.96	733.57	7206.93	0.52
14281.00	91.42	180.09	7224.83	-7301.94	734.34	7300.91	1.33
14376.00	89.32	179.07	7224.22	-7396.93	735.03	7395.89	2.46
14470.00	89.63	179.04	7225.08	-7490.91	736.58	7489.87	0.33
14565.00	89.82	178.22	7225.54	-7585.88	738.86	7584.84	0.89
14639.00	89.45	177.42	7226.01	-7659.83	741.67	7658.78	1.19
Projection to Total Depth							
14693.00	89.45	177.42	7226.53	-7713.77	744.10	7712.72	0.00

Weatherford surveys from 1009 ft MD to 14639 ft MD.

TD called at 14693 ft MD.

The total correction is 8.50 deg relative to True North.