ENSIGN Directional

Well Name: **Cannon 27-33**

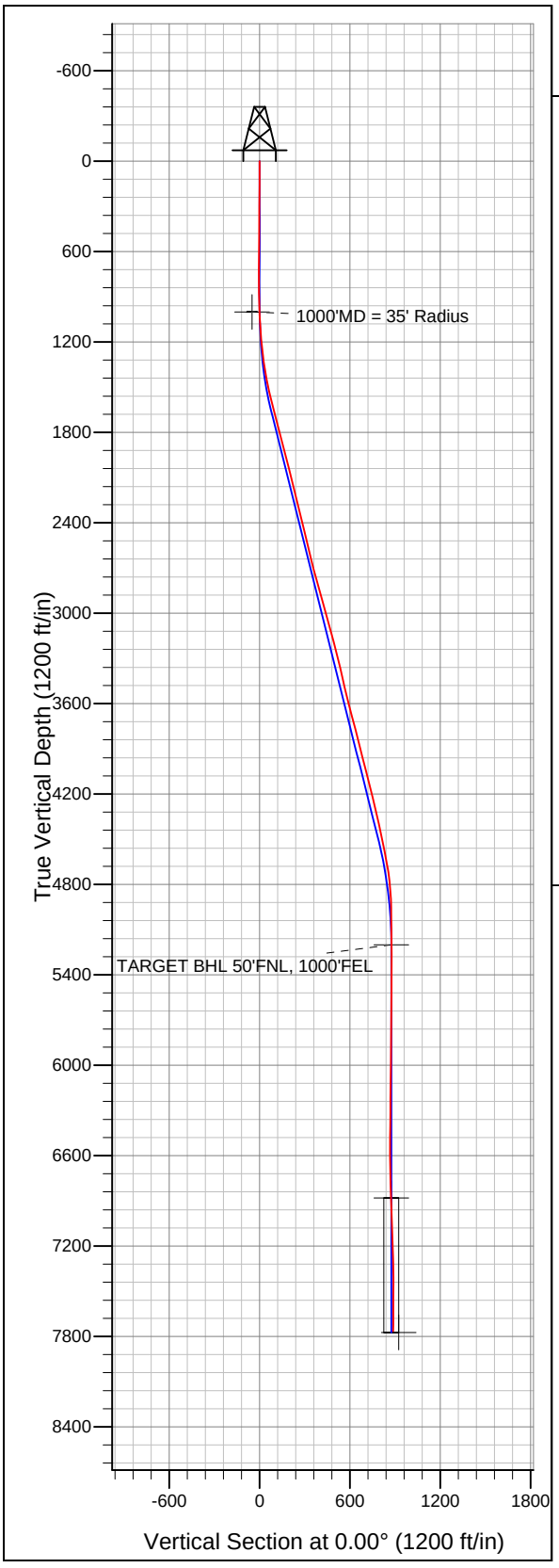
Surface Location: Cannon 17-33 Pad Sec.33-T3N-R65W

North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4840.0

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	1311936.52	3233938.36	40° 11' 11.868 N	104° 39' 45.576 W	

Original Well Elev WELL @ 4853.0ft (Original Well Elev)



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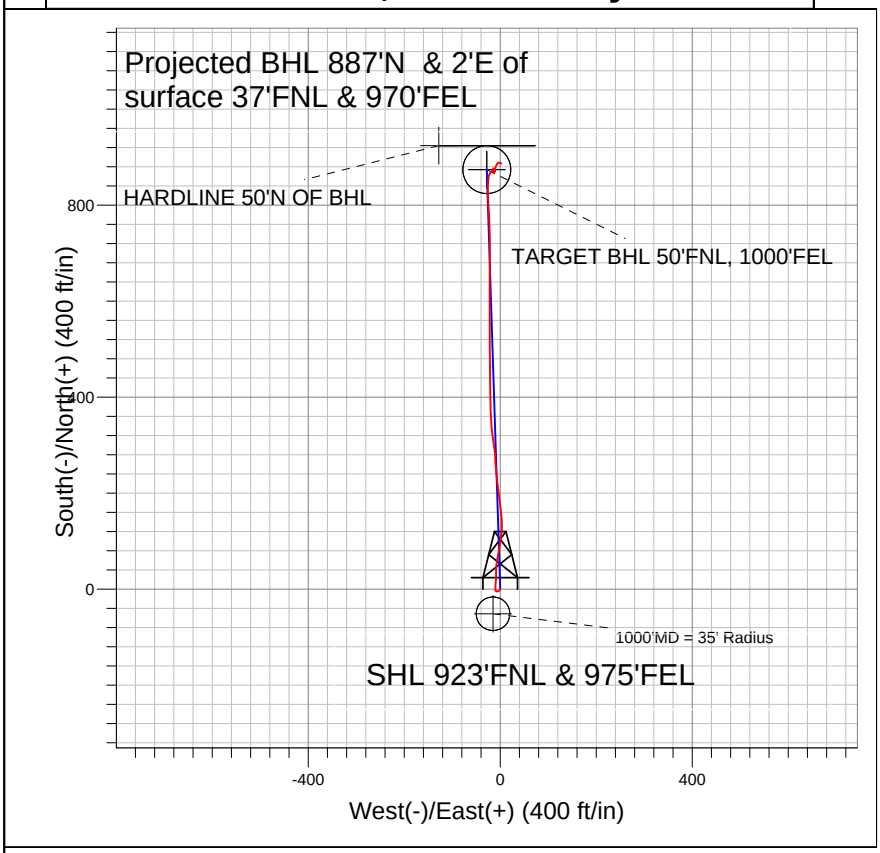

LEGEND

Cannon 27-33, Wellbore #1, Plan #1 (8-3-10) V0

Survey #1

Final Survey Plot

Projected Final Survey -
7870'MD & 7765'TVD @ 886' VS
0.7 deg Inc 117.0 deg AZ

Project: SEC.33-T3N-R65W
Site: Cannon 17-33 Pad Sec.33-T3N-R65W
Well: Cannon 27-33
Plan: Wellbore #1

Anadarko, Weld County CO

SEC.33-T3N-R65W
Cannon 17-33 Pad Sec.33-T3N-R65W
Cannon 27-33

Wellbore #1

Survey: Survey #1

Standard Survey Report

18 August, 2010

Ensign Directional
Survey Report

Company:	Anadarko, Weld County CO	**Local Co-ordinate Reference:**	Well Cannon 27-33
Project:	SEC.33-T3N-R65W	**TVD Reference:**	WELL @ 4853.0ft (Original Well Elev)
Site:	Cannon 17-33 Pad Sec.33-T3N-R65W	**MD Reference:**	WELL @ 4853.0ft (Original Well Elev)
Well:	Cannon 27-33	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	Landmark

Project SEC.33-T3N-R65W, Weld County, Colorado

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site Cannon 17-33 Pad Sec.33-T3N-R65W

Site Position:		**Northing:**	1,311,936.53 ft	**Latitude:**	40° 11' 11.868 N
From:	Lat/Long	**Easting:**	3,233,938.36 ft	**Longitude:**	104° 39' 45.576 W
Position Uncertainty:	0.0 ft	**Slot Radius:**	"	**Grid Convergence:**	0.54 °

Well Cannon 27-33

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,311,936.52 ft	**Latitude:**	40° 11' 11.868 N
	+E/-W	0.0 ft	**Easting:**	3,233,938.36 ft	**Longitude:**	104° 39' 45.576 W
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,840.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/3/2010	8.91	66.92	53,122

Design Wellbore #1

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	0.00

From ()	To ()	Date Survey (Wellbore)	Tool Name	Description
		()		

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
153.0	0.60	209.30	153.0	-0.7	-0.4	-0.7	0.39	0.39	0.00
245.0	0.70	205.90	245.0	-1.6	-0.9	-1.6	0.12	0.11	-3.70
337.0	1.00	236.20	337.0	-2.6	-1.8	-2.6	0.58	0.33	32.93
430.0	1.00	228.40	430.0	-3.6	-3.1	-3.6	0.15	0.00	-8.39
521.0	0.70	266.00	521.0	-4.1	-4.2	-4.1	0.68	-0.33	41.32
613.0	0.60	253.90	613.0	-4.3	-5.2	-4.3	0.18	-0.11	-13.15
705.0	0.80	275.70	704.9	-4.4	-6.3	-4.4	0.36	0.22	23.70
795.0	0.40	280.40	794.9	-4.3	-7.3	-4.3	0.45	-0.44	5.22
899.0	0.90	272.50	898.9	-4.2	-8.4	-4.2	0.49	0.48	-7.60
994.0	2.00	345.70	993.9	-2.5	-9.6	-2.5	2.04	1.16	77.05
997.8	2.06	346.77	997.7	-2.4	-9.6	-2.4	1.85	1.55	28.54

1000'MD = 35' Radius

Company:	Anadarko, Weld County CO	**Local Co-ordinate Reference:**	Well Cannon 27-33
Project:	SEC.33-T3N-R65W	**TVD Reference:**	WELL @ 4853.0ft (Original Well Elev)
Site:	Cannon 17-33 Pad Sec.33-T3N-R65W	**MD Reference:**	WELL @ 4853.0ft (Original Well Elev)
Well:	Cannon 27-33	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	Landmark

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,089.0	3.60	1.40	1,088.8	2.1	-9.9	2.1	1.85	1.69	16.03
1,184.0	5.60	2.70	1,183.5	9.7	-9.6	9.7	2.11	2.11	1.37
1,279.0	7.80	4.30	1,277.8	20.7	-8.9	20.7	2.32	2.32	1.68
1,374.0	9.10	358.60	1,371.8	34.7	-8.6	34.7	1.63	1.37	-6.00
1,470.0	10.90	6.50	1,466.3	51.3	-7.8	51.3	2.35	1.88	8.23
1,565.0	13.50	11.80	1,559.2	71.1	-4.5	71.1	2.98	2.74	5.58
1,660.0	14.40	9.00	1,651.4	93.6	-0.4	93.6	1.18	0.95	-2.95
1,755.0	14.70	5.70	1,743.3	117.3	2.6	117.3	0.93	0.32	-3.47
1,850.0	14.50	357.60	1,835.3	141.1	3.3	141.1	2.16	-0.21	-8.53
1,945.0	14.90	353.60	1,927.2	165.2	1.5	165.2	1.15	0.42	-4.21
2,041.0	14.00	350.00	2,020.1	188.9	-1.9	188.9	1.32	-0.94	-3.75
2,136.0	14.30	353.40	2,112.3	211.8	-5.3	211.8	0.93	0.32	3.58
2,231.0	14.10	355.00	2,204.4	235.0	-7.6	235.0	0.46	-0.21	1.68
2,326.0	14.50	357.00	2,296.4	258.4	-9.2	258.4	0.67	0.42	2.11
2,421.0	13.80	354.80	2,388.5	281.6	-10.9	281.6	0.93	-0.74	-2.32
2,516.0	13.40	351.80	2,480.9	303.8	-13.5	303.8	0.85	-0.42	-3.16
2,611.0	13.20	352.10	2,573.3	325.4	-16.6	325.4	0.22	-0.21	0.32
2,707.0	14.50	357.20	2,666.5	348.3	-18.6	348.3	1.86	1.35	5.31
2,802.0	15.50	357.00	2,758.3	372.8	-19.9	372.8	1.05	1.05	-0.21
2,897.0	15.60	358.90	2,849.8	398.3	-20.8	398.3	0.55	0.11	2.00
2,992.0	15.30	359.70	2,941.4	423.6	-21.1	423.6	0.39	-0.32	0.84
3,087.0	15.20	0.50	3,033.0	448.6	-21.1	448.6	0.25	-0.11	0.84
3,183.0	15.10	358.90	3,125.7	473.6	-21.2	473.6	0.45	-0.10	-1.67
3,278.0	15.40	357.30	3,217.4	498.6	-22.0	498.6	0.54	0.32	-1.68
3,373.0	13.90	2.20	3,309.3	522.6	-22.2	522.6	2.05	-1.58	5.16
3,468.0	12.40	359.80	3,401.8	544.2	-21.8	544.2	1.68	-1.58	-2.53
3,563.0	13.50	1.80	3,494.4	565.5	-21.5	565.5	1.25	1.16	2.11
3,658.0	14.30	358.00	3,586.6	588.3	-21.5	588.3	1.28	0.84	-4.00
3,754.0	14.70	359.30	3,679.5	612.3	-22.1	612.3	0.54	0.42	1.35
3,849.0	14.70	1.00	3,771.4	636.5	-22.0	636.5	0.45	0.00	1.79
3,944.0	13.90	359.90	3,863.5	659.9	-21.8	659.9	0.89	-0.84	-1.16
4,039.0	13.70	0.30	3,955.7	682.6	-21.8	682.6	0.23	-0.21	0.42
4,134.0	15.00	0.40	4,047.8	706.1	-21.7	706.1	1.37	1.37	0.11
4,229.0	14.00	359.50	4,139.7	729.9	-21.7	729.9	1.08	-1.05	-0.95
4,324.0	13.90	357.70	4,231.9	752.8	-22.2	752.8	0.47	-0.11	-1.89
4,420.0	12.90	357.20	4,325.3	775.0	-23.2	775.0	1.05	-1.04	-0.52
4,515.0	12.00	356.10	4,418.1	795.5	-24.4	795.5	0.98	-0.95	-1.16
4,610.0	12.00	357.10	4,511.0	815.2	-25.6	815.2	0.22	0.00	1.05
4,705.0	11.40	1.80	4,604.0	834.4	-25.8	834.4	1.19	-0.63	4.95
4,800.0	9.10	3.30	4,697.5	851.3	-25.1	851.3	2.44	-2.42	1.58
4,896.0	6.50	20.60	4,792.6	864.0	-22.7	864.0	3.62	-2.71	18.02
4,991.0	4.70	57.80	4,887.2	871.1	-17.5	871.1	4.16	-1.89	39.16
5,086.0	1.60	64.20	4,982.0	873.8	-13.0	873.8	3.28	-3.26	6.74
5,181.0	0.70	287.70	5,077.0	874.5	-12.4	874.5	2.28	-0.95	-143.68
5,276.0	0.80	320.20	5,172.0	875.2	-13.4	875.2	0.45	0.11	34.21
5,304.1	0.88	327.45	5,200.1	875.5	-13.6	875.5	0.46	0.27	25.84
TARGET BHL 50'FNL, 1000'FEL									
5,371.0	1.10	340.10	5,267.0	876.6	-14.1	876.6	0.46	0.33	18.90
5,466.0	0.60	206.70	5,362.0	877.0	-14.6	877.0	1.66	-0.53	-140.42
5,561.0	0.70	183.50	5,457.0	875.9	-14.9	875.9	0.29	0.11	-24.42
5,657.0	0.50	140.90	5,553.0	875.0	-14.7	875.0	0.49	-0.21	-44.38
5,752.0	0.50	98.30	5,648.0	874.7	-14.0	874.7	0.38	0.00	-44.84
5,847.0	1.00	112.40	5,743.0	874.3	-12.8	874.3	0.56	0.53	14.84
5,942.0	0.80	149.90	5,838.0	873.4	-11.7	873.4	0.64	-0.21	39.47

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Well:	Cannon 27-33	**North Reference:**	True
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	Landmark

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,037.0	0.50	199.60	5,933.0	872.4	-11.5	872.4	0.64	-0.32	52.32
6,133.0	0.70	208.10	6,029.0	871.5	-11.9	871.5	0.23	0.21	8.85
6,228.0	0.80	191.80	6,124.0	870.4	-12.3	870.4	0.25	0.11	-17.16
6,323.0	0.70	185.80	6,218.9	869.1	-12.5	869.1	0.13	-0.11	-6.32
6,418.0	0.70	204.40	6,313.9	868.0	-12.8	868.0	0.24	0.00	19.58
6,513.0	0.50	212.30	6,408.9	867.1	-13.3	867.1	0.23	-0.21	8.32
6,608.0	0.40	172.30	6,503.9	866.5	-13.5	866.5	0.34	-0.11	-42.11
6,704.0	0.44	50.60	6,599.9	866.4	-13.1	866.4	0.76	0.04	-126.77
6,799.0	1.00	23.80	6,694.9	867.4	-12.5	867.4	0.67	0.59	-28.21
6,894.0	1.40	19.10	6,789.9	869.2	-11.8	869.2	0.43	0.42	-4.95
6,985.1	1.78	11.45	6,881.0	871.6	-11.2	871.6	0.48	0.42	-8.39
TARGET CIRCLE 50'FNL, 1000'FEL									
6,989.0	1.80	11.20	6,884.9	871.8	-11.1	871.8	0.48	0.43	-6.51
7,084.0	2.20	9.10	6,979.8	875.0	-10.6	875.0	0.43	0.42	-2.21
7,179.0	2.50	13.10	7,074.7	878.9	-9.8	878.9	0.36	0.32	4.21
7,275.0	2.40	27.00	7,170.6	882.7	-8.4	882.7	0.63	-0.10	14.48
7,369.0	2.80	30.60	7,264.5	886.4	-6.4	886.4	0.46	0.43	3.83
7,465.0	2.10	80.90	7,360.5	888.7	-3.4	888.7	2.27	-0.73	52.40
7,560.0	0.90	120.50	7,455.4	888.6	-1.1	888.6	1.60	-1.26	41.68
7,655.0	0.70	111.80	7,550.4	888.0	0.1	888.0	0.25	-0.21	-9.16
7,825.0	0.70	117.00	7,720.4	887.2	2.0	887.2	0.04	0.00	3.06
7,870.0	0.70	117.00	7,765.4	886.9	2.5	886.9	0.00	0.00	0.00
HARDLINE 50'N OF BHL									

Checked By: _____ Approved By: _____ Date: _____