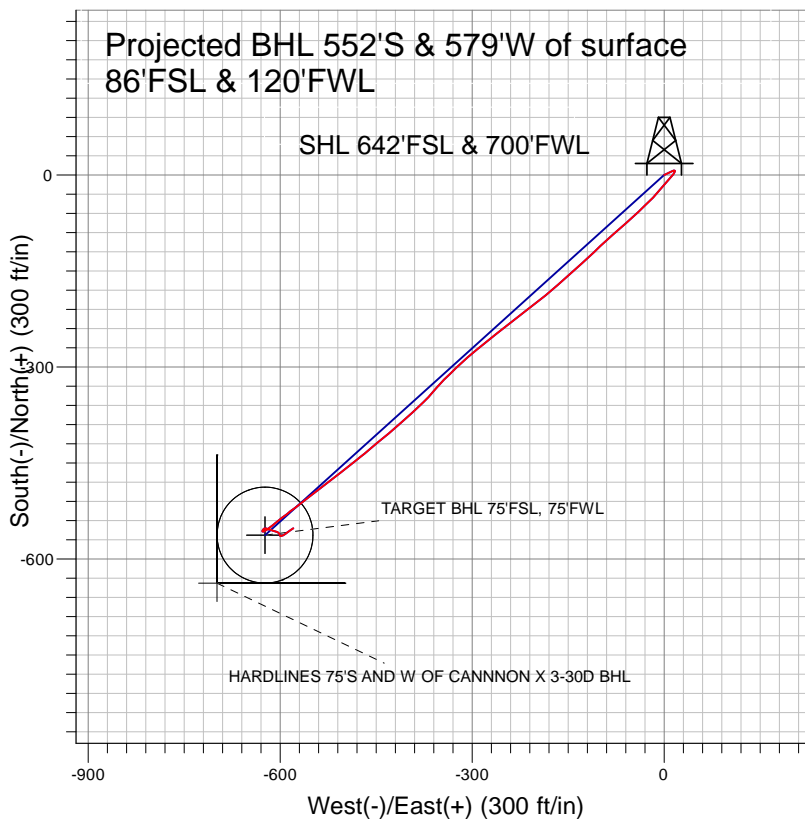


## NOBLE ENERGY INC WELD COUNTY CO



### LEGEND

- △ Cannon X03-30D, Cannon X 3-30D, Noble Cannon X03-30D Plan #4 (12-3-09) V0
- Cannon X 3-30D
- Survey #1

## Final Survey Plot

Projected Final Survey -  
7947'MD & 7840'TVD @ 800' VS  
1.5 deg Inc 58.2 deg AZ

Project: SEC.34-T3N-R65W  
Site: Cannon X03-30D Pad Sec.34-T3N-R65W  
Well: Cannon X03-30D  
Plan: Cannon X 3-30D



# **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.34-T3N-R65W**

**Cannon X03-30D Pad Sec.34-T3N-R65W**

**Cannon X03-30D**

**Cannon X 3-30D**

**Survey: Survey #1**

## **Standard Survey Report**

**18 December, 2009**



<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well Cannon X03-30D
<b>Project:</b>	SEC.34-T3N-R65W	<b>TVD Reference:</b>	WELL @ 4850.0ft (Original Well Elev)
<b>Site:</b>	Cannon X03-30D Pad Sec.34-T3N-R65W	<b>MD Reference:</b>	WELL @ 4850.0ft (Original Well Elev)
<b>Well:</b>	Cannon X03-30D	<b>North Reference:</b>	True
<b>Wellbore:</b>	Cannon X 3-30D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Cannon X 3-30D	<b>Database:</b>	EDM den0-adp01 Server Data

<b>Project</b>	SEC.34-T3N-R65W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

<b>Site</b>	Cannon X03-30D Pad Sec.34-T3N-R65W		
<b>Site Position:</b>		<b>Northing:</b>	1,308,230.03 ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,235,655.04 ft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"
		<b>Latitude:</b>	40° 10' 35.080 N
		<b>Longitude:</b>	104° 39' 23.911 W
		<b>Grid Convergence:</b>	0.54 °

<b>Well</b>	Cannon X03-30D		
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b> 1,308,230.02 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b> 3,235,655.04 ft
<b>Position Uncertainty</b>	0.0 ft	<b>Wellhead Elevation:</b>	ft
		<b>Latitude:</b>	40° 10' 35.079 N
		<b>Longitude:</b>	104° 39' 23.911 W
		<b>Ground Level:</b>	4,838.0 ft

<b>Wellbore</b>	Cannon X 3-30D		
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>
	IGRF200510	10/22/2008	9.11
	IGRF200510	12/7/2009	8.95
		<b>Dip Angle (°)</b>	66.98
			66.95
		<b>Field Strength (nT)</b>	53,321
			53,205

<b>Design</b>	Cannon X 3-30D		
<b>Audit Notes:</b>			
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL
		<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>
	0.0	0.0	0.0
		<b>Direction (°)</b>	226.39

<b>Survey Program</b>	<b>Date</b>	12/18/2009		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
852.0	7,947.0	Survey #1 (Cannon X 3-30D)	MWD	MWD - Standard

<b>Survey</b>									
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
852.0	1.80	64.00	851.9	5.9	12.0	-12.8	0.21	0.21	0.00
977.0	1.00	77.40	976.8	7.0	14.9	-15.6	0.69	-0.64	10.72
1,071.0	1.10	122.50	1,070.8	6.7	16.4	-16.5	0.86	0.11	47.98
1,164.0	1.20	207.20	1,163.8	5.3	16.7	-15.8	1.67	0.11	91.08
1,258.0	2.80	208.30	1,257.7	2.4	15.2	-12.7	1.70	1.70	1.17
1,351.0	4.50	222.90	1,350.5	-2.3	11.6	-6.9	2.07	1.83	15.70
1,445.0	6.40	221.70	1,444.1	-8.9	5.6	2.0	2.02	2.02	-1.28
1,538.0	8.20	220.30	1,536.4	-17.8	-2.1	13.8	1.94	1.94	-1.51
1,632.0	10.30	220.60	1,629.1	-29.3	-11.9	28.8	2.23	2.23	0.32
1,726.0	10.80	226.80	1,721.5	-41.7	-23.8	46.0	1.32	0.53	6.60
1,820.0	12.40	225.40	1,813.6	-54.8	-37.4	64.9	1.73	1.70	-1.49

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well Cannon X03-30D
<b>Project:</b>	SEC.34-T3N-R65W	<b>TVD Reference:</b>	WELL @ 4850.0ft (Original Well Elev)
<b>Site:</b>	Cannon X03-30D Pad Sec.34-T3N-R65W	<b>MD Reference:</b>	WELL @ 4850.0ft (Original Well Elev)
<b>Well:</b>	Cannon X03-30D	<b>North Reference:</b>	True
<b>Wellbore:</b>	Cannon X 3-30D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Cannon X 3-30D	<b>Database:</b>	EDM den0-adp01 Server Data

## 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)
1,913.0	14.40	228.80	1,904.1	-69.5	-53.2	86.4	2.31	2.15	3.66
2,006.0	15.80	228.60	1,993.9	-85.4	-71.4	110.6	1.51	1.51	-0.22
2,100.0	16.20	226.90	2,084.2	-102.9	-90.6	136.5	0.66	0.43	-1.81
2,194.0	16.00	226.80	2,174.5	-120.7	-109.6	162.6	0.21	-0.21	-0.11
2,287.0	15.90	228.10	2,264.0	-138.0	-128.4	188.2	0.40	-0.11	1.40
2,381.0	15.70	228.20	2,354.4	-155.0	-147.5	213.7	0.21	-0.21	0.11
2,474.0	15.80	229.10	2,443.9	-171.7	-166.5	239.0	0.28	0.11	0.97
2,568.0	15.50	229.30	2,534.4	-188.3	-185.6	264.3	0.32	-0.32	0.21
2,662.0	16.30	233.70	2,624.8	-204.3	-205.8	289.9	1.54	0.85	4.68
2,755.0	15.90	231.60	2,714.2	-219.9	-226.3	315.6	0.76	-0.43	-2.26
2,849.0	16.40	232.00	2,804.5	-236.1	-246.9	341.6	0.54	0.53	0.43
2,942.0	16.60	231.00	2,893.7	-252.5	-267.5	367.9	0.37	0.22	-1.08
3,036.0	15.80	231.50	2,983.9	-269.0	-288.0	394.0	0.86	-0.85	0.53
3,129.0	15.60	229.10	3,073.5	-285.0	-307.3	419.1	0.73	-0.22	-2.58
3,223.0	15.20	226.00	3,164.1	-301.9	-325.8	444.1	0.97	-0.43	-3.30
3,317.0	16.20	224.70	3,254.6	-319.7	-343.8	469.5	1.13	1.06	-1.38
3,410.0	14.60	219.20	3,344.2	-338.1	-360.4	494.1	2.33	-1.72	-5.91
3,504.0	14.40	226.50	3,435.2	-355.3	-376.3	517.5	1.95	-0.21	7.77
3,597.0	15.60	226.90	3,525.1	-371.8	-393.9	541.6	1.30	1.29	0.43
3,691.0	14.90	229.30	3,615.8	-388.3	-412.3	566.3	1.00	-0.74	2.55
3,785.0	14.30	229.90	3,706.7	-403.7	-430.3	590.0	0.66	-0.64	0.64
3,878.0	15.80	230.00	3,796.5	-419.2	-448.8	614.1	1.61	1.61	0.11
3,972.0	15.40	230.70	3,887.1	-435.3	-468.2	639.3	0.47	-0.43	0.74
4,065.0	17.40	231.70	3,976.3	-451.8	-488.7	665.5	2.17	2.15	1.08
4,159.0	16.40	232.00	4,066.2	-468.7	-510.2	692.7	1.07	-1.06	0.32
4,253.0	14.30	232.60	4,156.9	-483.9	-529.9	717.4	2.24	-2.23	0.64
4,346.0	13.00	231.90	4,247.2	-497.3	-547.2	739.2	1.41	-1.40	-0.75
4,440.0	11.70	232.20	4,339.1	-509.7	-563.1	759.3	1.38	-1.38	0.32
4,533.0	10.40	233.70	4,430.3	-520.4	-577.3	777.0	1.43	-1.40	1.61
4,627.0	8.70	230.20	4,523.0	-530.0	-589.6	792.5	1.91	-1.81	-3.72
4,720.0	7.80	233.00	4,615.1	-538.3	-600.1	805.8	1.06	-0.97	3.01
4,814.0	5.50	232.20	4,708.4	-544.9	-608.7	816.6	2.45	-2.45	-0.85
4,908.0	4.30	232.20	4,802.1	-549.8	-615.1	824.6	1.28	-1.28	0.00
5,002.0	3.60	233.10	4,895.9	-553.8	-620.2	831.0	0.75	-0.74	0.96
5,095.0	2.30	239.40	4,988.7	-556.5	-624.1	835.7	1.44	-1.40	6.77
5,106.3	2.15	241.91	5,000.0	-556.7	-624.5	836.1	1.58	-1.33	22.18
<b>TARGET BHL 75'FSL, 75'FWL</b>									
5,188.0	1.30	275.90	5,081.7	-557.3	-626.8	838.2	1.58	-1.04	41.61
5,282.0	0.70	354.60	5,175.7	-556.6	-627.9	838.6	1.44	-0.64	83.72
5,375.0	1.20	32.80	5,268.7	-555.2	-627.4	837.3	0.84	0.54	41.08
5,469.0	1.10	39.00	5,362.7	-553.7	-626.3	835.4	0.17	-0.11	6.60
5,563.0	0.70	58.00	5,456.6	-552.7	-625.3	834.0	0.53	-0.43	20.21
5,656.0	0.60	62.80	5,549.6	-552.2	-624.4	832.9	0.12	-0.11	5.16
5,750.0	0.40	71.60	5,643.6	-551.8	-623.6	832.2	0.23	-0.21	9.36
5,906.0	1.30	117.30	5,799.6	-552.5	-621.5	831.1	0.68	0.58	29.29
6,062.0	1.20	102.70	5,955.6	-553.7	-618.4	829.6	0.21	-0.06	-9.36
6,218.0	1.40	108.70	6,111.5	-554.6	-615.0	827.8	0.15	0.13	3.85
6,374.0	1.10	115.20	6,267.5	-555.9	-611.8	826.4	0.21	-0.19	4.17
6,530.0	1.60	96.50	6,423.5	-556.8	-608.3	824.5	0.42	0.32	-11.99
6,686.0	1.40	117.70	6,579.4	-557.9	-604.4	822.4	0.38	-0.13	13.59
6,842.0	1.00	136.50	6,735.4	-559.8	-601.8	821.8	0.36	-0.26	12.05
6,987.5	1.26	175.50	6,880.9	-562.3	-600.8	822.8	0.55	0.18	26.80
<b>TARGET CIRCLE 75'FSL, 75'FWL</b>									
6,998.0	1.30	177.50	6,891.3	-562.5	-600.8	823.0	0.55	0.34	19.07

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<b>Site:</b>	Cannon X03-30D Pad Sec.34-T3N-R65W	<b>MD Reference:</b>	WELL @ 4850.0ft (Original Well Elev)
<b>Well:</b>	Cannon X03-30D	<b>North Reference:</b>	True
<b>Wellbore:</b>	Cannon X 3-30D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Cannon X 3-30D	<b>Database:</b>	EDM den0-adp01 Server Data

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)
7,154.0	1.30	85.40	7,047.3	-564.1	-599.0	822.8	1.20	0.00	-59.04
7,310.0	1.60	65.50	7,203.3	-563.1	-595.2	819.4	0.37	0.19	-12.76
7,466.0	1.70	47.80	7,359.2	-560.6	-591.5	815.0	0.33	0.06	-11.35
7,621.0	2.00	55.30	7,514.1	-557.6	-587.6	810.0	0.25	0.19	4.84
7,777.0	1.80	53.80	7,670.0	-554.6	-583.4	804.9	0.13	-0.13	-0.96
7,899.8	1.50	58.15	7,792.8	-552.6	-580.4	801.4	0.26	-0.24	3.54
<b>HARDLINES 75'S AND W OF CANNON X 3-30D BHL</b>									
7,901.0	1.50	58.20	7,794.0	-552.6	-580.4	801.4	0.26	-0.24	4.25
7,947.0	1.50	58.20	7,840.0	-551.9	-579.4	800.2	0.00	0.00	0.00

Wellbore Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
TARGET BHL 75'FSL	0.00	0.00	5,000.0	-562.8	-623.7	1,307,661.32	3,235,036.72	40° 10' 29.518 N	104° 39' 31.946 W
- survey misses target center by 6.2ft at 5106.3ft MD (5000.0 TVD, -556.7 N, -624.5 E)									
- Point									
TARGET CIRCLE 75'	0.00	0.00	6,881.0	-562.8	-623.7	1,307,661.34	3,235,036.75	40° 10' 29.518 N	104° 39' 31.946 W
- survey misses target center by 22.9ft at 6987.6ft MD (6881.0 TVD, -562.3 N, -600.8 E)									
- Circle (radius 75.0)									
HARDLINES 75'S AN	0.00	0.00	7,797.0	-637.8	-698.7	1,307,585.63	3,234,962.47	40° 10' 28.777 N	104° 39' 32.912 W
- survey misses target center by 145.8ft at 7900.2ft MD (7793.2 TVD, -552.6 N, -580.4 E)									
- Polygon									
Point 1			7,797.0	0.0	0.0	1,307,585.63	3,234,962.47		
Point 2			7,797.0	0.0	200.0	1,307,587.54	3,235,162.45		
Point 3			7,797.0	0.0	0.0	1,307,585.63	3,234,962.47		
Point 4			7,797.0	200.0	0.0	1,307,785.62	3,234,960.57		

Checked By: _____	Approved By: _____	Date: _____
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