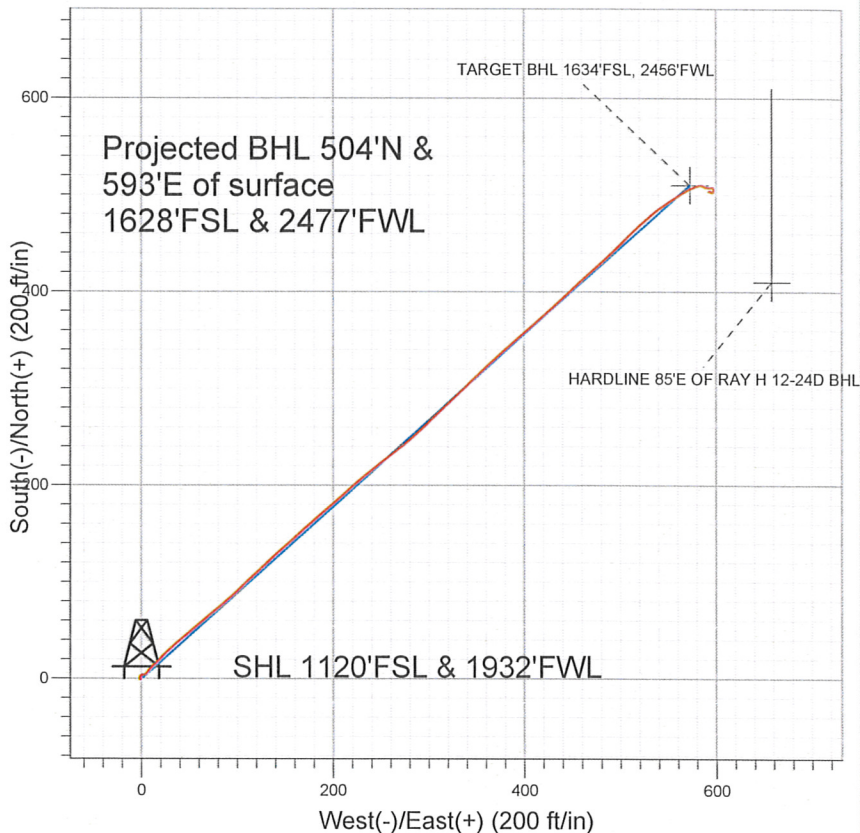


NOBLE ENERGY INC WELD COUNTY CO



LEGEND

- Ray H 12-24D, Ray H 12-24D, Ray H 12-24D Plan #1 V0
- Ray H 12-24D
- Survey #1

Final Survey Plot

Projected Final Survey -
 7872'MD & 7787'TVD @ 778'VS
 0.2 deg Inc 254.0 deg AZ

Project: SEC.12-T3N-R65W
 Site: Ray Pad Sec.12-T3N-R65W
 Well: Ray H 12-24D
 Plan: Ray H 12-24D

Company: NOBLE ENERGY INC WELD COUNTY CO
Project: SEC.12-T3N-R65W
Site: Ray Pad Sec.12-T3N-R65W
Well: Ray H 12-24D
Wellbore: Ray H 12-24D
Design: Ray H 12-24D

Local Co-ordinate Reference: Site Ray Pad Sec.12-T3N-R65W
TVD Reference: WELL @ 4870.0ft (Original Well Elev)
MD Reference: WELL @ 4870.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: Landmark

Project	SEC.12-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 Ray Pad Sec.12-T3N-R65W

Site Position:		Northing:	1,329,876.91 ft	Latitude:	40.235520
From:	Lat/Long	Easting:	3,247,287.74 ft	Longitude:	-104.614240
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.57 °

Well	Ray H 12-24D					
Well Position	+N/-S	0.0 ft	Northing:	1,329,876.90 ft	Latitude:	40.235520
	+E/-W	0.0 ft	Easting:	3,247,287.74 ft	Longitude:	-104.614240
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,858.0 ft

Wellbore Ray H 12-24D

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	6/1/2011	8.73	66.95	53,087

Design Ray H 12-24D

Audit Notes:

Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
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Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	48.29

Survey Program Date 6/13/2011

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
688.0	7,872.0	Survey #1 (Ray H 12-24D)	MWD	MWD - Standard

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
688.0	0.20	225.90	688.0	-0.8	-0.9	-1.2	0.03	0.03	0.00
774.0	0.30	329.10	774.0	-0.8	-1.1	-1.3	0.46	0.12	120.00
860.0	0.50	21.70	860.0	-0.2	-1.1	-0.9	0.46	0.23	61.16
945.0	0.40	340.40	945.0	0.4	-1.0	-0.5	0.39	-0.12	-48.59
1,031.0	0.40	2.20	1,031.0	1.0	-1.1	-0.2	0.18	0.00	25.35
1,116.0	0.60	11.30	1,116.0	1.7	-1.0	0.4	0.25	0.24	10.71
1,202.0	1.20	35.20	1,202.0	2.9	-0.4	1.6	0.81	0.70	27.79
1,287.0	1.20	75.30	1,287.0	3.9	1.0	3.3	0.97	0.00	47.18
1,373.0	1.10	80.50	1,372.9	4.2	2.7	4.8	0.17	-0.12	6.05
1,458.0	1.00	67.30	1,457.9	4.6	4.1	6.2	0.31	-0.12	-15.53
1,544.0	0.90	62.10	1,543.9	5.2	5.4	7.6	0.15	-0.12	-6.05
1,629.0	1.90	35.50	1,628.9	6.7	6.8	9.6	1.37	1.18	-31.29

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North Reference: True
Survey Calculation Method: Minimum Curvature
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)
1,715.0	3.10	35.70	1,714.8	9.8	9.0	13.2	1.40	1.40	0.23
1,800.0	4.30	44.90	1,799.6	13.9	12.6	18.7	1.57	1.41	10.82
1,886.0	5.60	46.30	1,885.3	19.1	17.9	26.1	1.52	1.51	1.63
1,971.0	6.90	45.20	1,969.8	25.5	24.5	35.3	1.54	1.53	-1.29
2,057.0	8.10	48.10	2,055.1	33.2	32.7	46.5	1.46	1.40	3.37
2,142.0	9.20	50.60	2,139.1	41.5	42.4	59.3	1.37	1.29	2.94
2,228.0	10.50	50.20	2,223.8	50.9	53.8	74.0	1.51	1.51	-0.47
2,313.0	12.60	49.50	2,307.1	61.9	66.8	91.0	2.48	2.47	-0.82
2,399.0	13.70	50.10	2,390.8	74.5	81.7	110.6	1.29	1.28	0.70
2,484.0	13.80	47.90	2,473.4	87.8	97.0	130.8	0.63	0.12	-2.59
2,570.0	13.70	45.60	2,556.9	101.8	111.8	151.2	0.65	-0.12	-2.67
2,655.0	13.40	46.00	2,639.6	115.7	126.1	171.1	0.37	-0.35	0.47
2,741.0	14.40	48.90	2,723.1	129.6	141.3	191.8	1.42	1.16	3.37
2,826.0	14.40	48.40	2,805.4	143.6	157.2	212.9	0.15	0.00	-0.59
2,912.0	13.50	48.70	2,888.9	157.3	172.8	233.6	1.05	-1.05	0.35
2,998.0	14.50	49.10	2,972.3	171.0	188.4	254.4	1.17	1.16	0.47
3,083.0	14.90	49.10	3,054.5	185.1	204.7	276.0	0.47	0.47	0.00
3,169.0	13.30	47.80	3,137.9	199.0	220.4	296.9	1.90	-1.86	-1.51
3,254.0	14.00	50.10	3,220.5	212.1	235.6	317.0	1.04	0.82	2.71
3,340.0	13.50	53.00	3,304.1	224.9	251.5	337.4	0.99	-0.58	3.37
3,425.0	12.40	54.10	3,386.9	236.2	266.9	356.4	1.33	-1.29	1.29
3,511.0	11.80	48.90	3,471.0	247.4	281.0	374.3	1.45	-0.70	-6.05
3,596.0	12.40	46.50	3,554.1	259.4	294.1	392.2	0.92	0.71	-2.82
3,682.0	13.00	46.40	3,638.0	272.4	307.8	411.1	0.70	0.70	-0.12
3,767.0	12.50	46.30	3,720.9	285.3	321.4	429.8	0.59	-0.59	-0.12
3,853.0	12.60	47.10	3,804.8	298.2	335.0	448.5	0.23	0.12	0.93
3,938.0	14.70	45.50	3,887.4	312.0	349.5	468.5	2.51	2.47	-1.88
4,024.0	15.10	48.60	3,970.5	327.1	365.7	490.6	1.04	0.47	3.60
4,109.0	14.30	48.70	4,052.8	341.3	381.9	512.2	0.94	-0.94	0.12
4,195.0	13.30	47.10	4,136.3	355.1	397.1	532.7	1.24	-1.16	-1.86
4,280.0	14.80	50.40	4,218.7	368.7	412.6	553.3	2.00	1.76	3.88
4,366.0	15.70	47.20	4,301.7	383.6	429.6	575.9	1.43	1.05	-3.72
4,451.0	15.10	47.40	4,383.7	398.9	446.2	598.5	0.71	-0.71	0.24
4,537.0	15.60	47.30	4,466.6	414.3	463.0	621.3	0.58	0.58	-0.12
4,622.0	14.50	47.80	4,548.7	429.2	479.3	643.3	1.30	-1.29	0.59
4,708.0	13.90	45.90	4,632.0	443.6	494.6	664.4	0.88	-0.70	-2.21
4,793.0	12.10	46.20	4,714.9	456.9	508.4	683.5	2.12	-2.12	0.35
4,879.0	11.30	46.40	4,799.1	468.9	521.0	701.0	0.93	-0.93	0.23
4,964.0	9.80	49.30	4,882.6	479.4	532.5	716.5	1.87	-1.76	3.41
5,050.0	7.90	55.80	4,967.6	487.5	543.0	729.7	2.49	-2.21	7.56
5,136.0	7.00	56.00	5,052.9	493.7	552.2	740.8	1.05	-1.05	0.23
5,221.0	6.10	57.30	5,137.3	499.1	560.3	750.3	1.07	-1.06	1.53
5,307.0	4.90	60.70	5,222.9	503.3	567.3	758.4	1.45	-1.40	3.95
5,392.0	3.50	64.50	5,307.7	506.2	572.9	764.5	1.68	-1.65	4.47
5,478.0	2.20	63.00	5,393.6	508.1	576.7	768.6	1.51	-1.51	-1.74
5,563.0	1.80	74.70	5,478.5	509.2	579.4	771.4	0.67	-0.47	13.76
5,584.3	1.63	75.57	5,499.8	509.4	580.0	771.9	0.83	-0.82	4.09
TARGET BHL 1634'FSL, 2456'FWL									
5,649.0	1.10	79.90	5,564.5	509.7	581.5	773.3	0.83	-0.81	6.69
5,734.0	0.90	81.60	5,649.5	510.0	583.0	774.5	0.24	-0.24	2.00
5,820.0	0.50	67.10	5,735.5	510.2	584.0	775.5	0.51	-0.47	-16.86
5,905.0	0.50	99.30	5,820.5	510.3	584.7	776.0	0.33	0.00	37.88
5,991.0	0.80	93.20	5,906.5	510.2	585.7	776.7	0.36	0.35	-7.09
6,076.0	0.90	120.50	5,991.5	509.8	586.9	777.3	0.49	0.12	32.12

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6,162.0	1.00	111.20	6,077.5	509.2	588.2	777.9	0.21	0.12	-10.81
6,247.0	1.30	106.20	6,162.4	508.7	589.8	778.7	0.37	0.35	-5.88
6,333.0	1.40	109.60	6,248.4	508.0	591.7	779.8	0.15	0.12	3.95
6,418.0	0.70	82.40	6,333.4	507.8	593.2	780.7	0.99	-0.82	-32.00
6,504.0	0.50	103.80	6,419.4	507.7	594.1	781.3	0.35	-0.23	24.88
6,589.0	0.70	87.20	6,504.4	507.7	595.0	781.9	0.31	0.24	-19.53
6,675.0	0.70	82.20	6,590.4	507.8	596.0	782.8	0.07	0.00	-5.81
6,760.0	0.60	81.00	6,675.4	507.9	597.0	783.6	0.12	-0.12	-1.41
6,846.0	0.60	168.30	6,761.4	507.5	597.5	783.7	0.96	0.00	101.51
6,931.0	1.00	170.50	6,846.4	506.4	597.7	783.1	0.47	0.47	2.59
7,017.0	1.10	175.60	6,932.4	504.8	597.9	782.2	0.16	0.12	5.93
7,102.0	0.70	203.90	7,017.3	503.5	597.7	781.3	0.69	-0.47	33.29
7,188.0	0.60	279.90	7,103.3	503.1	597.1	780.5	0.94	-0.12	88.37
7,273.0	0.50	275.60	7,188.3	503.2	596.3	780.0	0.13	-0.12	-5.06
7,359.0	0.30	272.30	7,274.3	503.3	595.7	779.6	0.23	-0.23	-3.84
7,445.0	0.30	314.50	7,360.3	503.5	595.3	779.4	0.25	0.00	49.07
7,530.0	0.30	288.10	7,445.3	503.7	594.9	779.3	0.16	0.00	-31.06
7,616.0	0.40	286.80	7,531.3	503.8	594.4	779.0	0.12	0.12	-1.51
✕7,701.0	0.40	294.10	7,616.3	<u>504.0</u>	<u>593.9</u>	778.7	0.06	0.00	8.59
7,787.0	0.30	290.00	7,702.3	504.2	593.4	778.5	0.12	-0.12	-4.77
7,818.4	0.21	264.17	7,733.7	504.3	593.2	778.4	0.46	-0.28	-82.36
HARDLINE 85'E OF RAY H 12-24D BHL									
7,827.0	0.20	253.80	7,742.3	504.3	593.2	778.4	0.46	-0.15	-120.06
7,872.0	0.20	254.00	7,787.3	<u>504.2</u>	<u>593.1</u>	778.2	0.00	0.00	0.44

Checked By: _____	Approved By: _____	Date: _____
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