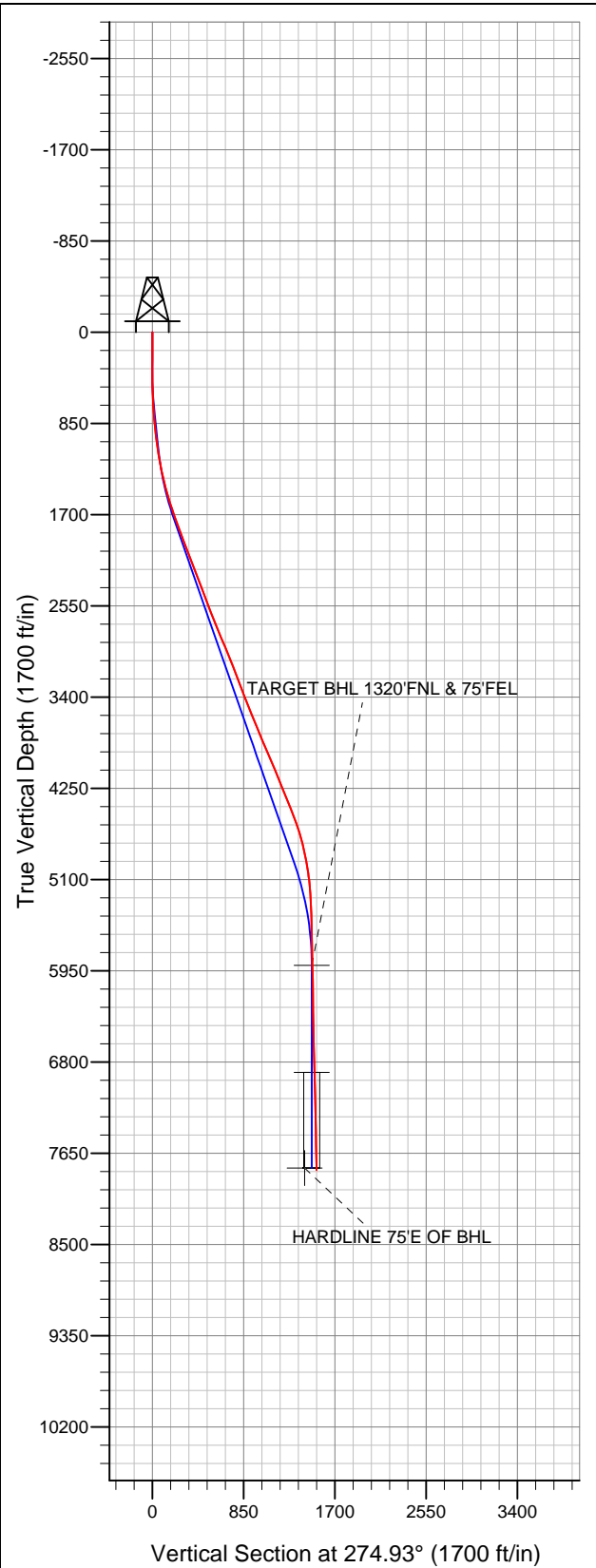


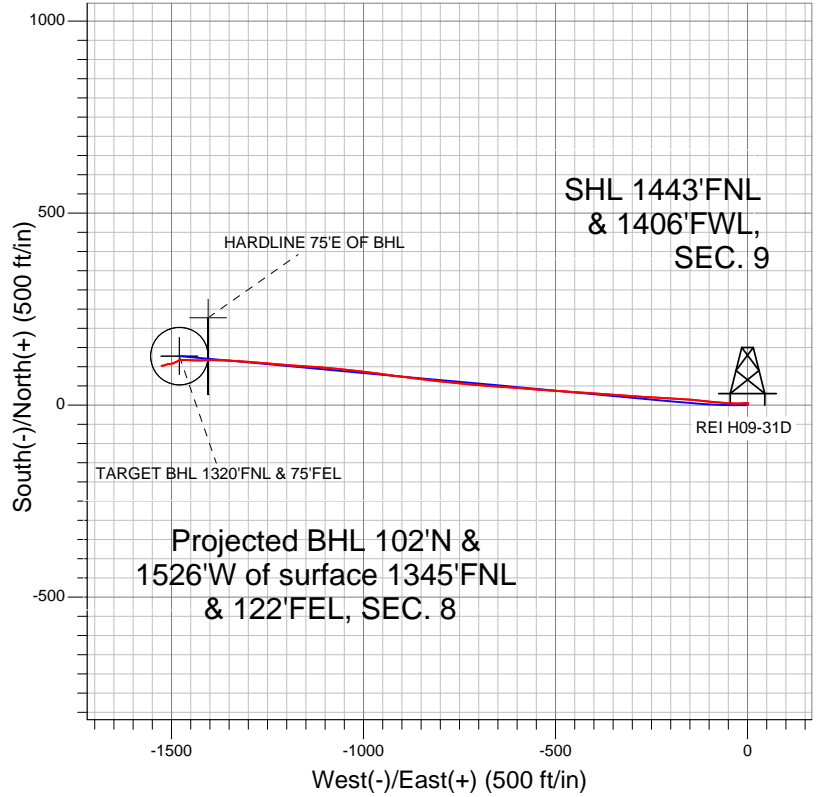
Well Name: REI H09-31D

Surface Location: REI H09-31D Pad Sec.9-T3N-R65W
North American Datum 1983 US State Plane 1983Colorado Northern Zone
Ground Elevation: 4830.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1332502.31	3230946.90	40.243160	-104.672680	
Original Well Elev			WELL @ 4843.0ft (Original Well Elev)			



NOBLE ENERGY INC WELD COUNTY CO



- LEGEND
- Wellbore #1
 - REI H09-31D, Wellbore #1, Noble REI H09-31D Plan #2 (4-16-12) R V0
 - Survey #1

Final Survey Plot

Projected Final Survey -
8063'MD & 7807'TVD @ 1529'VS
0.90 deg Inc 268.00 deg AZ

Project: SEC.9-T3N-R65W
Site: REI H09-31D Pad Sec.9-T3N-R65W
Well: REI H09-31D
Plan: Wellbore #1



NOBLE ENERGY INC WELD COUNTY CO

SEC.9-T3N-R65W

REI H09-31D Pad Sec.9-T3N-R65W

REI H09-31D

Wellbore #1

Survey: Survey #1

Standard Survey Report

23 April, 2012



Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well REI H09-31D
Project:	SEC.9-T3N-R65W	TVD Reference:	WELL @ 4843.0ft (Original Well Elev)
Site:	REI H09-31D Pad Sec.9-T3N-R65W	MD Reference:	WELL @ 4843.0ft (Original Well Elev)
Well:	REI H09-31D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.9-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	REI H09-31D Pad Sec.9-T3N-R65W		
Site Position:		Northing:	1,332,502.33ft
From:	Lat/Long	Easting:	3,230,946.90ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.243160
		Longitude:	-104.672680
		Grid Convergence:	0.53 °

Well	REI H09-31D		
Well Position	+N/-S	0.0 ft	Northing: 1,332,502.31 ft
	+E/-W	0.0 ft	Easting: 3,230,946.90 ft
Position Uncertainty		0.0 ft	Wellhead Elevation: ft
			Latitude: 40.243160
			Longitude: -104.672680
			Ground Level: 4,830.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	4/16/2012	8.64	66.92	52,995

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	5,900.0	0.0	0.0	274.93	

Survey Program	Date	4/23/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
74.0	8,063.0	Survey #1 (Wellbore #1)	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	
74.0	0.80	354.60	74.0	0.5	0.0	0.1	1.08	1.08	0.00	
163.0	1.00	11.80	163.0	1.9	0.1	0.1	0.38	0.22	19.33	
253.0	0.80	36.10	253.0	3.2	0.6	-0.3	0.47	-0.22	27.00	
342.0	0.80	53.50	342.0	4.0	1.4	-1.1	0.27	0.00	19.55	
471.0	0.90	277.80	471.0	4.7	1.2	-0.8	1.22	0.08	-105.19	
599.0	3.00	276.40	598.9	5.2	-3.2	3.6	1.64	1.64	-1.09	
697.0	4.00	264.90	696.7	5.2	-9.1	9.5	1.24	1.02	-11.73	
769.0	5.00	263.00	768.5	4.6	-14.7	15.1	1.40	1.39	-2.64	
897.0	6.20	270.90	895.9	4.0	-27.2	27.4	1.11	0.94	6.17	
1,026.0	6.60	271.40	1,024.1	4.3	-41.6	41.8	0.31	0.31	0.39	
1,154.0	9.10	275.30	1,150.9	5.4	-59.0	59.2	2.00	1.95	3.05	
1,282.0	11.30	274.30	1,276.8	7.3	-81.6	81.9	1.72	1.72	-0.78	

Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well REI H09-31D
Project:	SEC.9-T3N-R65W	TVD Reference:	WELL @ 4843.0ft (Original Well Elev)
Site:	REI H09-31D Pad Sec.9-T3N-R65W	MD Reference:	WELL @ 4843.0ft (Original Well Elev)
Well:	REI H09-31D	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)	
1,411.0	14.20	276.70	1,402.6	10.1	-109.9	110.4	2.28	2.25	1.86	
1,539.0	16.70	274.80	1,526.0	13.5	-143.8	144.4	1.99	1.95	-1.48	
1,668.0	18.30	273.20	1,649.0	16.2	-182.5	183.2	1.30	1.24	-1.24	
1,796.0	20.20	272.70	1,769.9	18.3	-224.7	225.4	1.49	1.48	-0.39	
1,924.0	20.80	273.90	1,889.7	20.9	-269.4	270.2	0.57	0.47	0.94	
2,053.0	20.60	274.40	2,010.4	24.2	-314.9	315.8	0.21	-0.16	0.39	
2,181.0	21.20	274.60	2,130.0	27.8	-360.4	361.5	0.47	0.47	0.16	
2,310.0	21.50	273.90	2,250.1	31.3	-407.2	408.4	0.31	0.23	-0.54	
2,438.0	19.90	272.80	2,369.9	33.9	-452.4	453.6	1.29	-1.25	-0.86	
2,566.0	20.60	274.40	2,490.0	36.7	-496.6	497.9	0.70	0.55	1.25	
2,695.0	21.50	274.40	2,610.4	40.3	-542.8	544.3	0.70	0.70	0.00	
2,823.0	22.20	274.30	2,729.2	43.9	-590.3	591.9	0.55	0.55	-0.08	
2,952.0	22.60	274.30	2,848.4	47.6	-639.3	641.1	0.31	0.31	0.00	
3,080.0	22.50	274.40	2,966.6	51.3	-688.3	690.1	0.08	-0.08	0.08	
3,208.0	22.40	275.00	3,084.9	55.3	-737.0	739.0	0.20	-0.08	0.47	
3,337.0	21.20	276.90	3,204.7	60.2	-784.6	786.9	1.08	-0.93	1.47	
3,465.0	19.80	275.70	3,324.6	65.2	-829.2	831.7	1.14	-1.09	-0.94	
3,594.0	21.60	277.20	3,445.3	70.3	-874.5	877.3	1.45	1.40	1.16	
3,722.0	22.60	277.80	3,563.9	76.6	-922.2	925.4	0.80	0.78	0.47	
3,850.0	22.20	277.40	3,682.2	83.1	-970.6	974.1	0.33	-0.31	-0.31	
3,979.0	22.90	276.70	3,801.3	89.1	-1,019.7	1,023.6	0.58	0.54	-0.54	
4,107.0	23.70	275.50	3,918.9	94.5	-1,070.0	1,074.2	0.73	0.63	-0.94	
4,236.0	23.40	274.40	4,037.2	99.0	-1,121.4	1,125.7	0.41	-0.23	-0.85	
4,364.0	21.20	272.80	4,155.6	102.0	-1,169.8	1,174.3	1.78	-1.72	-1.25	
4,492.0	22.30	275.80	4,274.5	105.6	-1,217.1	1,221.7	1.22	0.86	2.34	
4,621.0	22.20	274.30	4,393.9	109.9	-1,265.8	1,270.5	0.45	-0.08	-1.16	
4,749.0	21.00	273.60	4,512.9	113.2	-1,312.8	1,317.6	0.96	-0.94	-0.55	
4,878.0	18.20	273.60	4,634.4	115.9	-1,356.0	1,360.9	2.17	-2.17	0.00	
5,006.0	14.10	268.80	4,757.3	116.8	-1,391.5	1,396.4	3.37	-3.20	-3.75	
5,134.0	11.10	269.00	4,882.2	116.3	-1,419.4	1,424.2	2.34	-2.34	0.16	
5,263.0	9.10	272.80	5,009.2	116.6	-1,442.0	1,446.7	1.63	-1.55	2.95	
5,391.0	6.00	272.80	5,136.1	117.4	-1,458.8	1,463.5	2.42	-2.42	0.00	
5,520.0	3.40	271.10	5,264.7	117.8	-1,469.4	1,474.1	2.02	-2.02	-1.32	
5,648.0	1.80	256.30	5,392.5	117.4	-1,475.1	1,479.8	1.35	-1.25	-11.56	
5,776.0	1.70	255.40	5,520.5	116.4	-1,478.9	1,483.5	0.08	-0.08	-0.70	
5,905.0	1.30	252.80	5,649.4	115.5	-1,482.2	1,486.6	0.31	-0.31	-2.02	
6,033.0	1.40	235.20	5,777.4	114.2	-1,484.8	1,489.2	0.33	0.08	-13.75	
6,155.3	1.30	247.39	5,899.7	112.8	-1,487.4	1,491.5	0.25	-0.08	9.96	
TARGET BHL 1320'FNL & 75'FEL										
6,162.0	1.30	248.10	5,906.3	112.7	-1,487.5	1,491.7	0.25	-0.05	10.65	
6,290.0	1.20	245.60	6,034.3	111.7	-1,490.1	1,494.1	0.09	-0.08	-1.95	
6,418.0	0.80	241.90	6,162.3	110.7	-1,492.1	1,496.1	0.32	-0.31	-2.89	
6,547.0	1.00	242.10	6,291.3	109.7	-1,493.9	1,497.8	0.16	0.16	0.16	
6,675.0	1.10	247.20	6,419.3	108.7	-1,496.0	1,499.8	0.11	0.08	3.98	
6,804.0	1.20	257.00	6,548.2	107.9	-1,498.4	1,502.2	0.17	0.08	7.60	
6,932.0	1.10	262.10	6,676.2	107.5	-1,501.0	1,504.6	0.11	-0.08	3.98	
7,060.0	1.30	265.10	6,804.2	107.2	-1,503.6	1,507.3	0.16	0.16	2.34	
7,152.1	1.59	266.33	6,896.3	107.0	-1,505.9	1,509.6	0.31	0.31	1.33	
TARGET CIRCLE 1320'FNL & 75'FEL										
7,189.0	1.70	266.70	6,933.1	106.9	-1,507.0	1,510.6	0.31	0.31	1.02	
7,317.0	1.80	255.30	7,061.1	106.3	-1,510.8	1,514.4	0.28	0.08	-8.91	
7,446.0	1.50	248.60	7,190.0	105.2	-1,514.4	1,517.8	0.28	-0.23	-5.19	
7,574.0	1.30	243.70	7,318.0	103.9	-1,517.2	1,520.5	0.18	-0.16	-3.83	
7,702.0	1.10	260.40	7,446.0	103.1	-1,519.7	1,523.0	0.31	-0.16	13.05	

Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well REI H09-31D
Project:	SEC.9-T3N-R65W	TVD Reference:	WELL @ 4843.0ft (Original Well Elev)
Site:	REI H09-31D Pad Sec.9-T3N-R65W	MD Reference:	WELL @ 4843.0ft (Original Well Elev)
Well:	REI H09-31D	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)
7,831.0	1.00	262.50	7,574.9	102.7	-1,522.1	1,525.3	0.08	-0.08	1.63
7,959.0	1.10	262.00	7,702.9	102.4	-1,524.4	1,527.6	0.08	0.08	-0.39
8,016.0	0.90	268.50	7,759.9	102.3	-1,525.4	1,528.5	0.40	-0.35	11.40
8,042.1	0.90	268.22	7,786.0	102.3	-1,525.8	1,528.9	0.02	0.00	-1.06
HARDLINE 75'E OF BHL									
8,063.0	0.90	268.00	7,806.9	102.3	-1,526.1	1,529.3	0.02	0.00	-1.06

Checked By: _____	Approved By: _____	Date: _____
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