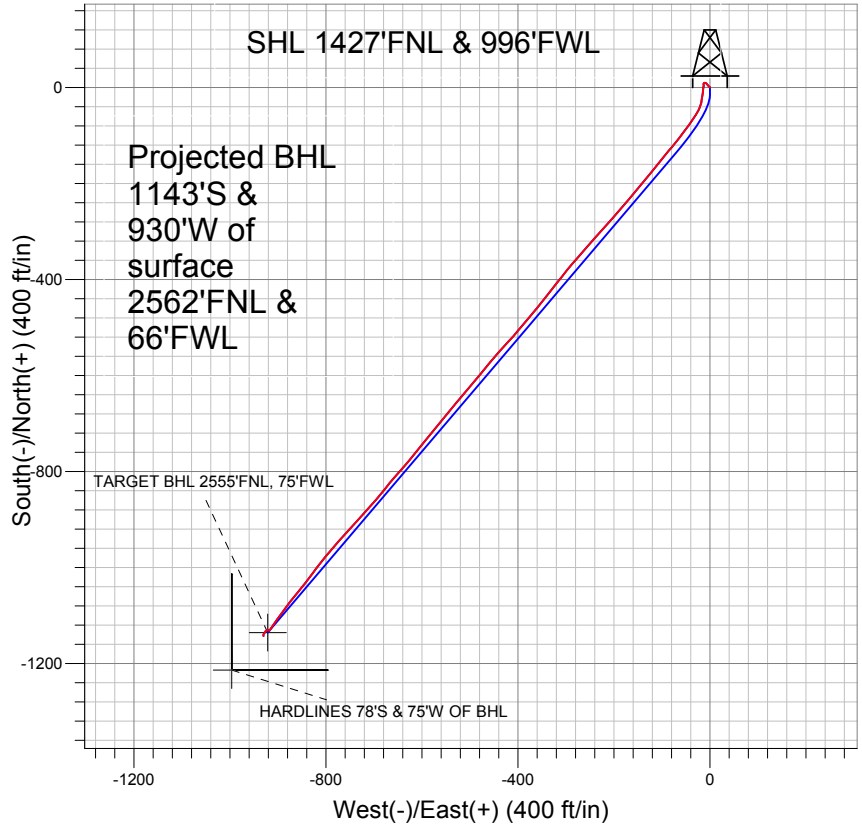
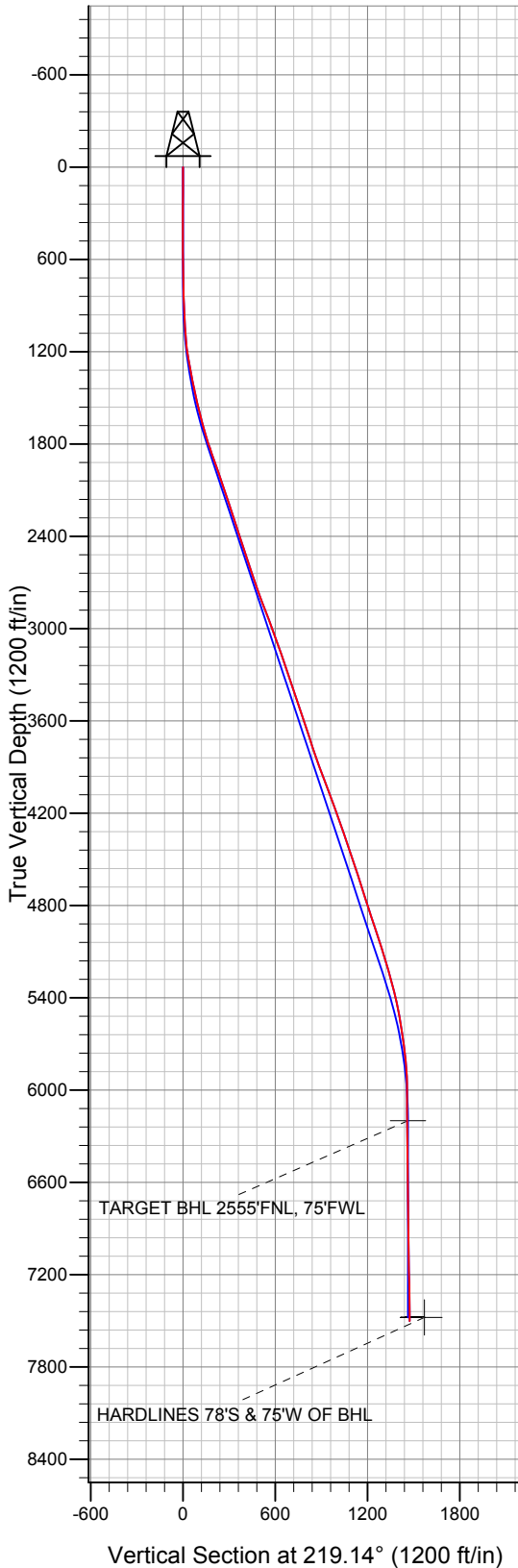


## NOBLE ENERGY INC WELD COUNTY CO



### LEGEND

- IGO Farms J28-32D, Wellbore #1, Plan #1 (07-06-09) V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
7729'MD & 7504'TVD @ 1474' VS  
0.8 deg Inc 169.3 deg AZ

Project: SEC.28-T5N-R66W  
Site: IGO Farms Pad Sec.28-T5N-R66W  
Well: IGO Farms J28-32D  
Plan: Wellbore #1



## **Directional**

# **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.28-T5N-R66W**

**IGO Farms Pad Sec.28-T5N-R66W**

**IGO Farms J28-32D**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**10 January, 2011**



<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well IGO Farms J28-32D
<b>Project:</b>	SEC.28-T5N-R66W	<b>TVD Reference:</b>	WELL @ 4889.0ft (Original Well Elev)
<b>Site:</b>	IGO Farms Pad Sec.28-T5N-R66W	<b>MD Reference:</b>	WELL @ 4889.0ft (Original Well Elev)
<b>Well:</b>	IGO Farms J28-32D	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

<b>Project</b>	SEC.28-T5N-R66W, 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>	IGO Farms Pad Sec.28-T5N-R66W		
<b>Site Position:</b>		<b>Northing:</b>	1,379,821.42 ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,197,699.53 ft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"
		<b>Latitude:</b>	40° 22' 25.824 N
		<b>Longitude:</b>	104° 47' 25.512 W
		<b>Grid Convergence:</b>	0.46 °

<b>Well</b>	IGO Farms J28-32D		
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b> 1,379,821.41 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b> 3,197,699.53 ft
<b>Position Uncertainty</b>	0.0 ft	<b>Wellhead Elevation:</b>	ft
		<b>Latitude:</b>	40° 22' 25.824 N
		<b>Longitude:</b>	104° 47' 25.512 W
		<b>Ground Level:</b>	4,876.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	7/6/2009	9.10	67.10	53,338

<b>Design</b>	Wellbore #1				
<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>	<b>Direction (°)</b>	
	0.0	0.0	0.0	219.14	

<b>Survey Program</b>	<b>Date</b>	1/10/2011			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
86.0	7,729.0	Survey #1 (Wellbore #1)	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	
86.0	1.00	314.40	86.0	0.5	-0.5	-0.1	1.16	1.16	0.00	
176.0	1.40	314.80	176.0	1.8	-1.9	-0.2	0.44	0.44	0.44	
267.0	2.00	326.80	266.9	4.0	-3.5	-0.8	0.76	0.66	13.19	
355.0	2.30	314.00	354.9	6.5	-5.6	-1.5	0.64	0.34	-14.55	
445.0	1.60	312.70	444.8	8.6	-7.9	-1.7	0.78	-0.78	-1.44	
535.0	1.20	277.90	534.8	9.6	-9.7	-1.3	1.02	-0.44	-38.67	
578.0	0.90	261.70	577.8	9.6	-10.5	-0.8	0.97	-0.70	-37.67	
664.0	1.00	258.50	663.8	9.3	-11.9	0.3	0.13	0.12	-3.72	
758.0	1.60	194.50	757.8	7.9	-13.0	2.1	1.56	0.64	-68.09	
852.0	2.10	166.40	851.7	4.9	-13.0	4.3	1.09	0.53	-29.89	
945.0	2.90	199.30	944.6	1.1	-13.3	7.6	1.73	0.86	35.38	
1,039.0	3.80	183.00	1,038.5	-4.3	-14.3	12.3	1.38	0.96	-17.34	

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well IGO Farms J28-32D
<b>Project:</b>	SEC.28-T5N-R66W	<b>TVD Reference:</b>	WELL @ 4889.0ft (Original Well Elev)
<b>Site:</b>	IGO Farms Pad Sec.28-T5N-R66W	<b>MD Reference:</b>	WELL @ 4889.0ft (Original Well Elev)
<b>Well:</b>	IGO Farms J28-32D	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
1,132.0	6.70	186.50	1,131.1	-12.8	-15.1	19.4	3.14	3.12	3.76
1,226.0	10.00	189.20	1,224.1	-26.3	-17.0	31.1	3.53	3.51	2.87
1,319.0	10.90	201.50	1,315.5	-42.4	-21.5	46.5	2.58	0.97	13.23
1,413.0	11.70	213.00	1,407.7	-58.7	-30.0	64.4	2.54	0.85	12.23
1,506.0	13.00	216.80	1,498.6	-75.0	-41.4	84.3	1.65	1.40	4.09
1,600.0	13.80	216.30	1,590.0	-92.5	-54.3	106.0	0.86	0.85	-0.53
1,693.0	15.20	217.90	1,680.0	-111.0	-68.4	129.3	1.57	1.51	1.72
1,787.0	17.20	221.20	1,770.3	-131.2	-85.1	155.5	2.34	2.13	3.51
1,881.0	19.30	219.30	1,859.6	-153.7	-104.1	184.9	2.32	2.23	-2.02
1,974.0	19.40	217.90	1,947.3	-177.8	-123.3	215.7	0.51	0.11	-1.51
2,068.0	18.80	218.70	2,036.1	-201.9	-142.4	246.5	0.70	-0.64	0.85
2,162.0	18.90	221.80	2,125.1	-225.1	-162.0	276.8	1.07	0.11	3.30
2,255.0	18.60	220.80	2,213.2	-247.5	-181.7	306.7	0.47	-0.32	-1.08
2,349.0	18.10	220.60	2,302.4	-270.0	-201.0	336.3	0.54	-0.53	-0.21
2,436.0	17.80	221.10	2,385.2	-290.3	-218.6	363.1	0.39	-0.34	0.57
2,536.0	18.30	222.60	2,480.2	-313.3	-239.3	394.0	0.68	0.50	1.50
2,629.0	17.90	220.30	2,568.6	-335.0	-258.4	422.9	0.88	-0.43	-2.47
2,723.0	18.70	221.40	2,657.9	-357.3	-277.7	452.4	0.93	0.85	1.17
2,817.0	20.00	219.30	2,746.6	-381.0	-297.8	483.5	1.57	1.38	-2.23
2,910.0	21.00	218.30	2,833.7	-406.4	-318.2	516.1	1.14	1.08	-1.08
3,004.0	20.50	217.70	2,921.6	-432.7	-338.7	549.4	0.58	-0.53	-0.64
3,098.0	20.40	219.20	3,009.7	-458.4	-359.2	582.2	0.57	-0.11	1.60
3,191.0	20.00	220.20	3,096.9	-483.1	-379.7	614.4	0.57	-0.43	1.08
3,285.0	19.00	220.00	3,185.5	-507.1	-399.9	645.7	1.07	-1.06	-0.21
3,378.0	18.30	223.00	3,273.7	-529.4	-419.6	675.4	1.28	-0.75	3.23
3,472.0	18.70	221.80	3,362.8	-551.4	-439.7	705.2	0.59	0.43	-1.28
3,565.0	18.70	219.20	3,450.9	-574.1	-459.0	735.0	0.90	0.00	-2.80
3,659.0	18.50	219.60	3,540.0	-597.2	-478.1	765.0	0.25	-0.21	0.43
3,753.0	19.10	220.70	3,629.0	-620.4	-497.6	795.3	0.74	0.64	1.17
3,846.0	17.40	218.80	3,717.3	-642.8	-516.2	824.4	1.94	-1.83	-2.04
3,940.0	18.80	220.40	3,806.6	-665.3	-534.9	853.6	1.58	1.49	1.70
4,033.0	20.30	220.20	3,894.3	-689.0	-555.0	884.7	1.61	1.61	-0.22
4,127.0	20.70	218.50	3,982.3	-714.4	-575.9	917.6	0.76	0.43	-1.81
4,220.0	21.00	218.50	4,069.2	-740.3	-596.5	950.7	0.32	0.32	0.00
4,314.0	19.70	218.90	4,157.4	-765.9	-616.9	983.4	1.39	-1.38	0.43
4,408.0	19.30	222.10	4,246.0	-789.7	-637.3	1,014.8	1.21	-0.43	3.40
4,501.0	19.30	220.30	4,333.7	-812.8	-657.5	1,045.5	0.64	0.00	-1.94
4,595.0	18.20	219.20	4,422.8	-836.1	-676.8	1,075.7	1.23	-1.17	-1.17
4,689.0	18.70	220.00	4,511.9	-859.0	-695.8	1,105.4	0.60	0.53	0.85
4,783.0	19.00	222.10	4,600.9	-881.9	-715.7	1,135.8	0.79	0.32	2.23
4,877.0	17.80	221.70	4,690.1	-904.0	-735.6	1,165.4	1.28	-1.28	-0.43
4,970.0	17.00	222.40	4,778.8	-924.6	-754.2	1,193.2	0.89	-0.86	0.75
5,063.0	18.20	221.80	4,867.5	-945.5	-773.0	1,221.3	1.30	1.29	-0.65
5,156.0	18.60	221.00	4,955.7	-967.5	-792.4	1,250.6	0.51	0.43	-0.86
5,250.0	18.40	217.20	5,044.9	-990.6	-811.3	1,280.4	1.30	-0.21	-4.04
5,344.0	16.80	217.30	5,134.5	-1,013.3	-828.5	1,308.8	1.70	-1.70	0.11
5,437.0	15.70	217.40	5,223.7	-1,034.0	-844.2	1,334.8	1.18	-1.18	0.11
5,530.0	15.30	218.90	5,313.4	-1,053.5	-859.6	1,359.7	0.61	-0.43	1.61
5,623.0	13.30	218.40	5,403.5	-1,071.4	-873.9	1,382.7	2.15	-2.15	-0.54
5,716.0	10.80	217.80	5,494.4	-1,086.7	-885.9	1,402.1	2.69	-2.69	-0.65
5,810.0	8.70	213.90	5,587.0	-1,099.6	-895.3	1,418.0	2.34	-2.23	-4.15
5,905.0	8.20	214.80	5,681.0	-1,111.1	-903.2	1,431.9	0.54	-0.53	0.95
5,999.0	6.50	215.80	5,774.2	-1,120.9	-910.1	1,443.9	1.81	-1.81	1.06
6,092.0	4.20	216.00	5,866.8	-1,127.9	-915.2	1,452.5	2.47	-2.47	0.22

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well IGO Farms J28-32D
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<b>Well:</b>	IGO Farms J28-32D	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
6,186.0	0.90	197.40	5,960.7	-1,131.4	-917.4	1,456.6	3.57	-3.51	-19.79
6,280.0	0.60	310.50	6,054.7	-1,131.8	-918.0	1,457.3	1.34	-0.32	120.32
6,373.0	0.70	310.90	6,147.7	-1,131.1	-918.8	1,457.3	0.11	0.11	0.43
6,425.3	0.63	299.14	6,200.0	-1,130.8	-919.3	1,457.3	0.29	-0.13	-22.50
<b>TARGET BHL 2555'FNL, 75'FWL</b>									
6,467.0	0.60	288.20	6,241.7	-1,130.6	-919.7	1,457.4	0.29	-0.08	-26.22
6,561.0	0.70	267.10	6,335.7	-1,130.5	-920.8	1,458.0	0.27	0.11	-22.45
6,654.0	0.80	258.40	6,428.7	-1,130.6	-922.0	1,458.9	0.16	0.11	-9.35
6,748.0	0.80	243.30	6,522.7	-1,131.1	-923.2	1,460.0	0.22	0.00	-16.06
6,841.0	0.80	232.30	6,615.7	-1,131.7	-924.3	1,461.2	0.16	0.00	-11.83
6,935.0	0.90	223.50	6,709.7	-1,132.7	-925.3	1,462.6	0.17	0.11	-9.36
7,029.0	0.80	210.10	6,803.7	-1,133.8	-926.2	1,464.0	0.24	-0.11	-14.26
7,122.0	0.70	207.70	6,896.6	-1,134.8	-926.7	1,465.2	0.11	-0.11	-2.58
7,216.0	0.60	229.10	6,990.6	-1,135.7	-927.4	1,466.2	0.28	-0.11	22.77
7,309.0	1.10	210.10	7,083.6	-1,136.8	-928.2	1,467.6	0.61	0.54	-20.43
7,403.0	1.00	212.20	7,177.6	-1,138.2	-929.1	1,469.3	0.11	-0.11	2.23
7,497.0	0.90	204.00	7,271.6	-1,139.6	-929.8	1,470.8	0.18	-0.11	-8.72
7,590.0	0.90	187.40	7,364.6	-1,141.0	-930.2	1,472.1	0.28	0.00	-17.85
7,684.0	0.80	169.30	7,458.6	-1,142.4	-930.2	1,473.2	0.30	-0.11	-19.26
<b>HARDLINES 78'S &amp; 75'W OF BHL</b>									
7,729.0	0.80	169.30	7,503.6	-1,143.0	-930.1	1,473.6	0.00	0.00	0.00

Checked By: _____	Approved By: _____	Date: _____
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