

ENSIGN Directional



Well Name: **Bell B29-24D**

Surface Location: Bell Pad SEC.29-T5N-R64W
 North American Datum 1983, US State Plane 1983, Colorado Northern Zone

Ground Elevation: 4685.0

+N/-S+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1378903.46	3258830.04	40° 22' 11.172 N	104° 34' 15.816 W

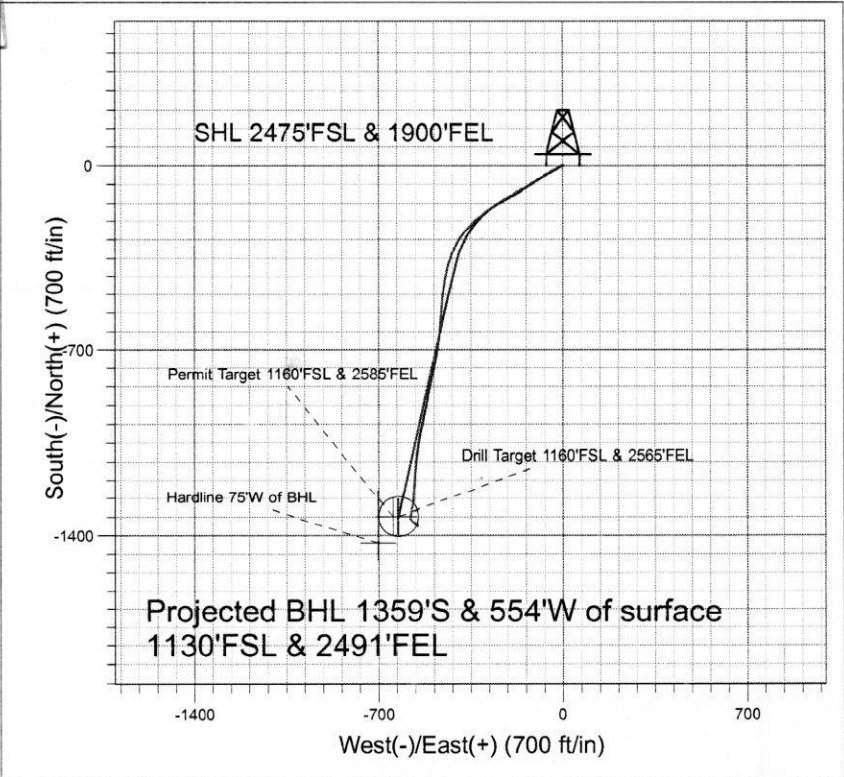
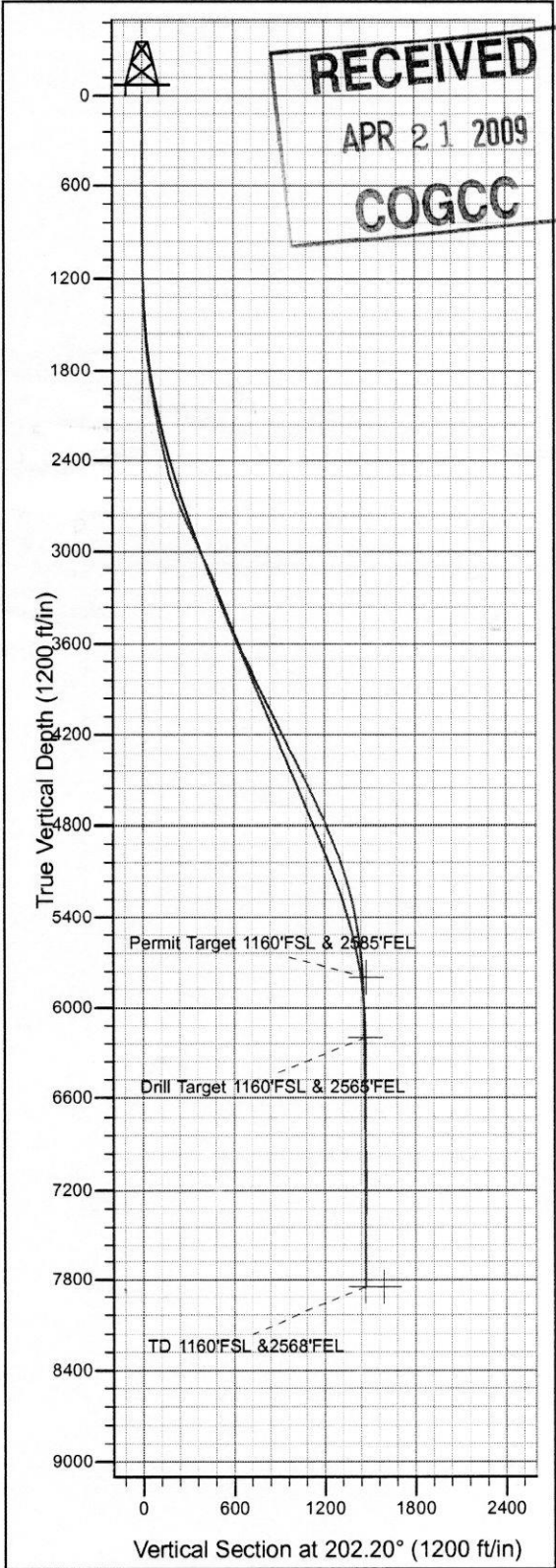
Original Well Elev WELL @ 4698.0ft (Original Well Elev)

123-28124

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NOBLE ENERGY INC WELD COUNTY CO



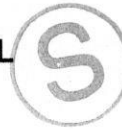
LEGEND

- ⊕ Bell B29-24D, Bell B29-24D, Design #2 Nudge V0
- ⊞ Bell B29-24D
- ⊙ Survey #1

Final Survey Plot

Projected Final Survey -
 7853'MD & 7546'TVD @ 1465' VS
 0.8 deg Inc 334.3 deg AZ

Project: SEC.29-T5N-R64W
 Site: Bell Pad SEC.29-T5N-R64W
 Well: Bell B29-24D
 Plan: Bell B29-24D



Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Bell B29-24D
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4698.0ft (Original Well Elev)
Site:	Bell Pad SEC.29-T5N-R64W	MD Reference:	WELL @ 4698.0ft (Original Well Elev)
Well:	Bell B29-24D	North Reference:	True
Wellbore:	Bell B29-24D	Survey Calculation Method:	Minimum Curvature
Design:	Bell B29-24D	Database:	EDM den0-adp01 Server Data

Project	SEC.29-T5N-R64W, 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	Bell Pad SEC.29-T5N-R64W		
Site Position:		Northing:	1,378,903.73 ft
From:	Lat/Long	Easting:	3,258,855.12 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40° 22' 11.172 N
		Longitude:	104° 34' 15.492 W
		Grid Convergence:	0.60 °

Well	Bell B29-24D		
Well Position	+N/-S	0.0 ft	Northing: 1,378,903.46 ft
	+E/-W	0.0 ft	Easting: 3,258,830.04 ft
Position Uncertainty		0.0 ft	Wellhead Elevation: ft
			Latitude: 40° 22' 11.172 N
			Longitude: 104° 34' 15.816 W
			Ground Level: 4,685.0 ft

Wellbore	Bell B29-24D				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	5/14/2008	9.14	67.17	53,479
	IGRF200510	12/3/2008	9.06	67.15	53,422

Design	Bell B29-24D			
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 (°)
	0.0	0.0	0.0	202.20

Survey Program	Date 12/9/2008			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
685.0	7,853.0	Survey #1 (Bell B29-24D)	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	
685.0	0.20	323.80	685.0	1.0	-0.7	-0.6	0.03	0.03	0.00	
857.0	0.40	328.70	857.0	1.7	-1.2	-1.1	0.12	0.12	2.85	
985.0	0.20	287.30	985.0	2.2	-1.6	-1.4	0.22	-0.16	-32.34	
1,071.0	0.70	262.00	1,071.0	2.1	-2.3	-1.1	0.61	0.58	-29.42	
1,157.0	1.40	261.70	1,157.0	1.9	-3.9	-0.3	0.81	0.81	-0.35	
1,242.0	2.20	238.80	1,241.9	0.9	-6.3	1.5	1.25	0.94	-26.94	
1,328.0	3.20	225.70	1,327.8	-1.6	-9.4	5.1	1.36	1.16	-15.23	
1,414.0	4.20	229.30	1,413.7	-5.3	-13.5	10.1	1.19	1.16	4.19	
1,499.0	4.50	239.70	1,498.4	-9.1	-18.8	15.5	0.99	0.35	12.24	
1,585.0	5.30	247.00	1,584.1	-12.3	-25.3	21.0	1.18	0.93	8.49	
1,671.0	6.90	242.80	1,669.6	-16.2	-33.6	27.7	1.93	1.86	-4.88	

Company:	NOBLE ENERGY INC WELD COUNTY CO	Local Co-ordinate Reference:	Well Bell B29-24D
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Site:	Bell Pad SEC.29-T5N-R64W	MD Reference:	WELL @ 4698.0ft (Original Well Elev)
Well:	Bell B29-24D	North Reference:	True
Wellbore:	Bell B29-24D	Survey Calculation Method:	Minimum Curvature
Design:	Bell B29-24D	Database:	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)
1,756.0	8.60	242.60	1,753.8	-21.5	-43.8	36.4	2.00	2.00	-0.24
1,842.0	9.50	238.50	1,838.8	-28.1	-55.5	47.0	1.29	1.05	-4.77
1,928.0	10.40	231.30	1,923.5	-36.7	-67.6	59.5	1.78	1.05	-8.37
2,013.0	11.60	239.80	2,006.9	-45.8	-81.0	73.0	2.37	1.41	10.00
2,099.0	12.70	239.60	2,091.0	-54.9	-96.6	87.4	1.28	1.28	-0.23
2,185.0	13.70	236.90	2,174.7	-65.3	-113.3	103.3	1.37	1.16	-3.14
2,270.0	14.70	242.50	2,257.1	-75.8	-131.3	119.8	2.00	1.18	6.59
2,356.0	17.00	246.00	2,339.8	-85.9	-152.5	137.2	2.90	2.67	4.07
2,442.0	17.50	243.60	2,422.0	-96.8	-175.6	155.9	1.01	0.58	-2.79
2,527.0	19.60	238.00	2,502.6	-110.0	-199.1	177.1	3.24	2.47	-6.59
2,613.0	22.20	238.50	2,582.9	-126.2	-225.2	201.9	3.03	3.02	0.58
2,699.0	24.50	234.60	2,661.9	-145.0	-253.6	230.0	3.22	2.67	-4.53
2,785.0	26.80	232.20	2,739.4	-167.2	-283.4	261.9	2.93	2.67	-2.79
2,870.0	25.80	230.90	2,815.6	-190.6	-312.9	294.7	1.36	-1.18	-1.53
2,956.0	26.20	226.00	2,892.9	-215.6	-341.1	328.5	2.54	0.47	-5.70
3,042.0	26.80	221.10	2,969.9	-243.4	-367.5	364.2	2.64	0.70	-5.70
3,127.0	26.00	214.10	3,046.0	-273.3	-390.6	400.6	3.78	-0.94	-8.24
3,213.0	24.60	207.20	3,123.8	-304.8	-409.3	436.9	3.79	-1.63	-8.02
3,299.0	22.50	200.90	3,202.6	-336.1	-423.4	471.2	3.81	-2.44	-7.33
3,384.0	21.90	196.10	3,281.3	-366.5	-433.6	503.2	2.25	-0.71	-5.65
3,470.0	22.30	191.00	3,361.0	-398.0	-441.1	535.2	2.28	0.47	-5.93
3,555.0	22.50	191.50	3,439.6	-429.7	-447.5	567.0	0.32	0.24	0.59
3,641.0	21.80	188.40	3,519.3	-461.7	-453.1	598.6	1.58	-0.81	-3.60
3,726.0	23.90	186.20	3,597.6	-494.4	-457.2	630.5	2.67	2.47	-2.59
3,812.0	25.90	184.90	3,675.6	-530.4	-460.7	665.2	2.41	2.33	-1.51
3,898.0	26.40	184.00	3,752.8	-568.2	-463.7	701.3	0.74	0.58	-1.05
3,983.0	26.50	184.10	3,828.9	-606.0	-466.3	737.3	0.13	0.12	0.12
4,069.0	27.70	187.20	3,905.4	-645.0	-470.2	774.8	2.15	1.40	3.60
4,154.0	26.60	188.00	3,981.1	-683.4	-475.3	812.3	1.36	-1.29	0.94
4,240.0	27.30	189.40	4,057.7	-721.9	-481.2	850.2	1.10	0.81	1.63
4,326.0	27.00	191.10	4,134.3	-760.5	-488.2	888.6	0.97	-0.35	1.98
4,411.0	25.90	193.70	4,210.4	-797.5	-496.3	925.9	1.88	-1.29	3.06
4,497.0	26.50	191.10	4,287.5	-834.6	-504.5	963.3	1.51	0.70	-3.02
4,583.0	26.20	191.60	4,364.6	-872.0	-512.0	1,000.8	0.43	-0.35	0.58
4,668.0	27.10	189.90	4,440.6	-909.5	-519.1	1,038.2	1.39	1.06	-2.00
4,754.0	26.90	191.90	4,517.2	-947.8	-526.5	1,076.5	1.08	-0.23	2.33
4,839.0	25.20	192.80	4,593.6	-984.3	-534.5	1,113.2	2.05	-2.00	1.06
4,925.0	25.80	190.90	4,671.2	-1,020.5	-542.0	1,149.7	1.18	0.70	-2.21
5,011.0	25.20	190.10	4,748.8	-1,056.9	-548.8	1,185.9	0.80	-0.70	-0.93
5,096.0	23.50	187.40	4,826.2	-1,091.5	-554.2	1,220.0	2.39	-2.00	-3.18
5,182.0	23.30	185.30	4,905.2	-1,125.5	-557.9	1,252.8	1.00	-0.23	-2.44
5,268.0	22.90	184.80	4,984.3	-1,159.1	-560.9	1,285.1	0.52	-0.47	-0.58
5,353.0	20.40	183.10	5,063.3	-1,190.4	-563.1	1,314.9	3.03	-2.94	-2.00
5,439.0	17.10	182.50	5,144.7	-1,218.0	-564.5	1,340.9	3.84	-3.84	-0.70
5,525.0	15.80	183.50	5,227.2	-1,242.3	-565.7	1,363.9	1.55	-1.51	1.16
5,610.0	13.60	188.20	5,309.4	-1,263.7	-567.8	1,384.6	2.94	-2.59	5.53
5,696.0	11.20	190.70	5,393.4	-1,281.9	-570.8	1,402.6	2.86	-2.79	2.91
5,782.0	8.90	193.10	5,478.1	-1,296.6	-573.9	1,417.4	2.72	-2.67	2.79
5,867.0	6.90	191.60	5,562.2	-1,308.0	-576.4	1,428.9	2.37	-2.35	-1.76
5,953.0	5.90	186.20	5,647.7	-1,317.5	-577.9	1,438.2	1.36	-1.16	-6.28
6,038.0	4.70	186.60	5,732.3	-1,325.3	-578.8	1,445.8	1.41	-1.41	0.47
6,106.3	3.51	187.76	5,800.5	-1,330.1	-579.4	1,450.5	1.75	-1.74	1.70
Permit Target 1160°FSL & 2585°FEL									
6,124.0	3.20	188.20	5,818.1	-1,331.2	-579.6	1,451.5	1.75	-1.74	2.49

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Site:	Bell Pad SEC.29-T5N-R64W	MD Reference:	WELL @ 4698.0ft (Original Well Elev)
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Wellbore:	Bell B29-24D	Survey Calculation Method:	Minimum Curvature
Design:	Bell B29-24D	Database:	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)
6,210.0	1.90	183.40	5,904.1	-1,335.0	-580.0	1,455.2	1.53	-1.51	-5.58
6,295.0	0.20	49.70	5,989.0	-1,336.3	-580.0	1,456.4	2.40	-2.00	-157.29
6,466.0	1.50	140.50	6,160.0	-1,337.8	-578.3	1,457.2	0.89	0.76	53.10
6,504.6	1.79	142.43	6,198.7	-1,338.7	-577.6	1,457.7	0.76	0.75	4.99
Drill Target 1160'FSL & 2565'FEL									
6,638.0	2.80	146.00	6,331.9	-1,343.0	-574.5	1,460.6	0.76	0.76	2.68
6,809.0	1.80	133.40	6,502.8	-1,348.3	-570.2	1,463.9	0.65	-0.58	-7.37
→ 6,980.0	0.70	91.10	6,673.7	-1,350.2	-567.2	1,464.4	0.80	-0.64	-24.74
7,151.0	1.90	134.00	6,844.7	-1,352.2	-564.2	1,465.1	0.86	0.70	25.09
7,322.0	3.30	141.50	7,015.5	-1,358.0	-559.0	1,468.6	0.84	0.82	4.39
7,493.0	1.20	83.20	7,186.4	-1,361.7	-554.2	1,470.1	1.67	-1.23	-34.09
7,665.0	0.70	319.10	7,358.4	-1,360.7	-553.1	1,468.8	0.99	-0.29	-72.15
7,805.0	0.80	334.30	7,498.3	-1,359.1	-554.1	1,467.7	0.16	0.07	10.86
7,853.0	0.80	334.30	7,546.3	-1,358.5	-554.4	1,467.3	0.00	0.00	0.00
TD 1160'FSL & 2568'FEL - Hardline 75'W of BHL									

Checked By: _____ Approved By: _____ Date: _____



ENSIGN

Directional

**NOBLE ENERGY INC WELD
COUNTY CO**

SEC.29-T5N-R64W
Bell Pad SEC.29-T5N-R64W
Bell B29-24D

Bell B29-24D

Survey: Survey #1

Standard Survey Report

09 December, 2008

