ENSIGN
Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.19-T3N-R64W
Butterball D19-17D Pad Sec.19-T3N-R64W
Butterball D19-19D

Wellbore #1
Noble Butterball D19-19D Plan #1 (2-15-12)

Anticollision Report

22 February, 2012

noble energy

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Butterball D19-19D
Project:	SEC.19-T3N-R64W	**TVD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Reference Site:	Butterball D19-17D Pad Sec.19-T3N-R64W	**MD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Butterball D19-19D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	Landmark
Reference Design:	Noble Butterball D19-19D Plan #1 (2-15-12)	**Offset TVD Reference:**	Offset Datum

Reference	Noble Butterball D19-19D Plan #1 (2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0ft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**		

Survey Tool Program **Date** 2/22/2012

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	7,715.4	Noble Butterball D19-19D Plan #1 (2-15-1	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Butterball D19-17D Pad Sec.19-T3N-R64W						
Butterball D19-17D - Wellbore #1 - Noble Butterball D19-	200.0	200.0	20.2	19.5	29.927	CC, ES
Butterball D19-17D - Wellbore #1 - Noble Butterball D19-	500.0	497.5	32.8	30.8	16.266	SF
Butterball D19-18D - Wellbore #1 - Noble Butterball D19-	750.0	749.0	24.8	21.6	7.871	CC
Butterball D19-18D - Wellbore #1 - Noble Butterball D19-	800.0	799.0	24.9	21.5	7.411	ES
Butterball D19-18D - Wellbore #1 - Noble Butterball D19-	900.0	898.9	26.1	22.3	6.933	SF
Dechant D19-32D - Wellbore #1 - Noble Dechant D19-32	200.0	199.0	44.9	44.3	66.856	CC
Dechant D19-32D - Wellbore #1 - Noble Dechant D19-32	300.0	298.9	45.0	43.9	40.823	ES
Dechant D19-32D - Wellbore #1 - Noble Dechant D19-32	700.0	693.8	63.4	60.5	21.664	SF

Offset Design Butterball D19-17D Pad Sec.19-T3N-R64W - Butterball D19-17D - Wellbore #1 - Noble Butterball D19-1 **Offset Site Error:** 0.0 ft

Survey Program: 0-MWD **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	136.21	-14.6	14.0	20.2				
100.0	100.0	100.0	100.0	0.1	0.1	136.21	-14.6	14.0	20.2	20.0	0.22	89.781	
200.0	200.0	200.0	200.0	0.3	0.3	136.21	-14.6	14.0	20.2	19.5	0.67	29.927	CC, ES
300.0	300.0	299.5	299.5	0.6	0.6	132.80	-14.5	15.7	21.4	20.3	1.11	19.207	
400.0	400.0	398.7	398.6	0.8	0.8	124.67	-14.4	20.9	25.4	23.8	1.56	16.272	
500.0	500.0	497.5	497.0	1.0	1.0	115.86	-14.2	29.4	32.8	30.8	2.02	16.266	SF
600.0	600.0	595.6	594.3	1.2	1.3	108.76	-14.0	41.2	43.9	41.4	2.48	17.691	
700.0	700.0	692.7	690.3	1.5	1.6	103.68	-13.7	56.2	58.7	55.7	2.96	19.821	
750.0	750.0	740.9	737.7	1.6	1.8	101.76	-13.5	64.9	67.4	64.2	3.21	21.017	
800.0	800.0	788.7	784.5	1.7	2.0	-111.89	-13.3	74.2	77.1	73.7	3.40	22.658	
900.0	899.9	882.9	876.4	1.9	2.4	-115.64	-12.9	94.9	100.3	96.5	3.83	26.163	
1,000.0	999.7	974.8	965.4	2.0	2.9	-119.19	-12.4	118.1	128.5	124.3	4.28	30.061	
1,100.0	1,099.1	1,064.1	1,051.0	2.3	3.4	-122.22	-11.9	143.3	162.0	157.3	4.74	34.202	
1,200.0	1,198.2	1,150.3	1,133.0	2.5	3.9	-124.69	-11.3	170.1	200.6	195.4	5.22	38.447	
1,266.7	1,263.9	1,206.0	1,185.5	2.7	4.3	-126.05	-10.9	188.8	229.1	223.5	5.55	41.281	
1,300.0	1,296.7	1,233.4	1,211.1	2.8	4.5	-126.89	-10.7	198.3	244.0	238.3	5.72	42.659	
1,400.0	1,395.0	1,313.9	1,286.1	3.1	5.0	-128.82	-10.1	227.8	290.8	284.6	6.25	46.521	
1,500.0	1,493.4	1,392.1	1,358.0	3.5	5.7	-130.15	-9.5	258.4	340.2	333.4	6.79	50.071	
1,600.0	1,591.8	1,468.0	1,427.0	3.8	6.3	-131.08	-8.8	289.9	392.0	384.6	7.35	53.361	
1,700.0	1,690.2	1,546.0	1,497.1	4.2	7.0	-131.77	-8.1	324.1	445.8	437.9	7.92	56.286	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Butterball D19-19D
Project:	SEC.19-T3N-R64W	**TVD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Reference Site:	Butterball D19-17D Pad Sec.19-T3N-R64W	**MD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Butterball D19-19D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	Landmark
Reference Design:	Noble Butterball D19-19D Plan #1 (2-15-12)	**Offset TVD Reference:**	Offset Datum

Offset Design Butterball D19-17D Pad Sec.19-T3N-R64W - Butterball D19-17D - Wellbore #1 - Noble Butterball D19-1 — **Offset Site Error:** 0.0 ft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
1,800.0	1,788.6	1,629.9	1,572.3	4.6	7.8	-132.35	-7.3	361.2	500.0	491.5	8.51	58.775	
1,900.0	1,886.9	1,713.8	1,647.6	5.0	8.6	-132.82	-6.5	398.3	554.3	545.2	9.11	60.881	
2,000.0	1,985.3	1,797.7	1,722.9	5.4	9.4	-133.21	-5.8	435.4	608.6	598.9	9.71	62.671	
2,100.0	2,083.7	1,881.6	1,798.1	5.7	10.2	-133.53	-5.0	472.5	663.0	652.6	10.33	64.200	
2,200.0	2,182.1	1,965.5	1,873.4	6.1	11.0	-133.80	-4.2	509.6	717.3	706.3	10.95	65.523	
2,300.0	2,280.4	2,049.4	1,948.6	6.5	11.8	-134.03	-3.4	546.6	771.6	760.1	11.57	66.675	
2,400.0	2,378.8	2,133.3	2,023.9	6.9	12.6	-134.24	-2.7	583.7	826.0	813.8	12.20	67.685	
2,500.0	2,477.2	2,217.2	2,099.2	7.3	13.4	-134.41	-1.9	620.8	880.3	867.5	12.84	68.576	
2,600.0	2,575.6	2,301.1	2,174.4	7.7	14.2	-134.57	-1.1	657.9	934.7	921.2	13.48	69.366	
2,700.0	2,674.0	2,385.0	2,249.7	8.1	15.0	-134.71	-0.3	695.0	989.1	975.0	14.12	70.069	
2,800.0	2,772.3	2,468.9	2,324.9	8.5	15.8	-134.84	0.4	732.1	1,043.4	1,028.7	14.76	70.700	
2,900.0	2,870.7	2,552.8	2,400.2	8.9	16.6	-134.95	1.2	769.2	1,097.8	1,082.4	15.40	71.268	
3,000.0	2,969.1	2,636.7	2,475.5	9.4	17.4	-135.05	2.0	806.3	1,152.2	1,136.1	16.05	71.782	
3,100.0	3,067.5	2,720.6	2,550.7	9.8	18.2	-135.15	2.8	843.3	1,206.6	1,189.9	16.70	72.249	
3,200.0	3,165.8	2,804.5	2,626.0	10.2	19.0	-135.23	3.5	880.4	1,261.0	1,243.6	17.35	72.674	
3,300.0	3,264.2	2,888.4	2,701.2	10.6	19.8	-135.31	4.3	917.5	1,315.3	1,297.3	18.00	73.063	
3,400.0	3,362.6	2,972.4	2,776.5	11.0	20.6	-135.38	5.1	954.6	1,369.7	1,351.1	18.66	73.419	
3,500.0	3,461.0	3,056.3	2,851.8	11.4	21.4	-135.45	5.9	991.7	1,424.1	1,404.8	19.31	73.748	
3,600.0	3,559.4	3,140.2	2,927.0	11.8	22.2	-135.51	6.6	1,028.8	1,478.5	1,458.5	19.97	74.050	
3,700.0	3,657.7	3,224.1	3,002.3	12.2	23.0	-135.57	7.4	1,065.9	1,532.9	1,512.3	20.62	74.331	
3,800.0	3,756.1	3,308.0	3,077.5	12.6	23.8	-135.62	8.2	1,103.0	1,587.3	1,566.0	21.28	74.591	
3,900.0	3,854.5	3,391.9	3,152.8	13.0	24.6	-135.67	9.0	1,140.0	1,641.7	1,619.7	21.94	74.832	
4,000.0	3,952.9	3,475.8	3,228.1	13.4	25.5	-135.72	9.7	1,177.1	1,696.1	1,673.5	22.60	75.057	
4,100.0	4,051.3	3,559.7	3,303.3	13.8	26.3	-135.76	10.5	1,214.2	1,750.5	1,727.2	23.26	75.267	
4,200.0	4,149.6	3,643.6	3,378.6	14.3	27.1	-135.80	11.3	1,251.3	1,804.9	1,780.9	23.92	75.464	
4,300.0	4,248.0	3,727.5	3,453.8	14.7	27.9	-135.84	12.1	1,288.4	1,859.3	1,834.7	24.58	75.648	
4,338.8	4,286.1	3,760.0	3,483.0	14.8	28.2	-135.85	12.4	1,302.8	1,880.3	1,855.5	24.83	75.716	
4,400.0	4,346.5	3,811.7	3,529.3	15.0	28.7	-136.40	12.8	1,325.6	1,913.2	1,887.9	25.38	75.391	
4,500.0	4,445.5	3,897.1	3,605.9	15.3	29.5	-137.18	13.6	1,363.3	1,965.3	1,939.1	26.20	74.997	
4,600.0	4,544.9	3,983.7	3,683.6	15.5	30.4	-137.82	14.4	1,401.6	2,015.1	1,988.1	27.00	74.627	
4,700.0	4,644.7	4,071.4	3,762.3	15.7	31.2	-138.34	15.2	1,440.4	2,062.6	2,034.9	27.76	74.298	
4,800.0	4,744.6	4,160.1	3,841.9	15.9	32.1	-138.75	16.1	1,479.6	2,107.9	2,079.5	28.48	74.019	
4,855.4	4,800.0	4,209.7	3,886.4	15.9	32.5	73.01	16.5	1,501.5	2,132.0	2,103.2	28.86	73.867	
4,900.0	4,844.6	4,249.7	3,922.2	16.0	32.9	73.15	16.9	1,519.2	2,151.2	2,122.1	29.08	73.984	
5,000.0	4,944.6	4,339.4	4,002.7	16.1	33.8	73.46	17.7	1,558.9	2,194.1	2,164.5	29.54	74.275	
5,100.0	5,044.6	4,429.1	4,083.1	16.2	34.7	73.76	18.5	1,598.5	2,237.0	2,207.0	30.00	74.559	
5,200.0	5,144.6	4,518.8	4,163.6	16.4	35.5	74.04	19.4	1,638.1	2,280.0	2,249.5	30.47	74.834	
5,300.0	5,244.6	4,608.5	4,244.0	16.5	36.4	74.32	20.2	1,677.8	2,323.1	2,292.1	30.93	75.101	
5,400.0	5,344.6	4,698.2	4,324.5	16.6	37.3	74.59	21.0	1,717.4	2,366.1	2,334.8	31.40	75.359	
5,500.0	5,444.6	4,787.9	4,405.0	16.7	38.1	74.84	21.9	1,757.1	2,409.3	2,377.4	31.86	75.610	
5,600.0	5,544.6	4,877.6	4,485.4	16.9	39.0	75.09	22.7	1,796.7	2,452.5	2,420.1	32.33	75.853	
5,700.0	5,644.6	4,967.3	4,565.9	17.0	39.9	75.33	23.5	1,836.4	2,495.7	2,462.9	32.80	76.089	
5,800.0	5,744.6	5,057.0	4,646.3	17.2	40.7	75.56	24.3	1,876.0	2,538.9	2,505.6	33.27	76.317	
5,900.0	5,844.6	5,146.7	4,726.8	17.3	41.6	75.78	25.2	1,915.7	2,582.2	2,548.4	33.74	76.538	
6,000.0	5,944.6	5,236.4	4,807.2	17.4	42.4	76.00	26.0	1,955.3	2,625.5	2,591.3	34.21	76.751	
6,100.0	6,044.6	5,326.1	4,887.7	17.6	43.3	76.21	26.8	1,995.0	2,668.8	2,634.1	34.68	76.958	
6,200.0	6,144.6	5,415.8	4,968.1	17.7	44.2	76.41	27.7	2,034.6	2,712.2	2,677.0	35.15	77.157	
6,300.0	6,244.6	5,505.4	5,048.6	17.9	45.0	76.61	28.5	2,074.3	2,755.6	2,719.9	35.62	77.351	
6,400.0	6,344.6	5,595.1	5,129.0	18.0	45.9	76.80	29.3	2,113.9	2,799.0	2,762.9	36.10	77.537	
6,500.0	6,444.6	5,684.8	5,209.5	18.2	46.8	76.98	30.1	2,153.6	2,842.4	2,805.8	36.57	77.718	
6,600.0	6,544.6	7,068.1	6,544.6	18.3	52.4	78.24	36.6	2,460.5	2,861.2	2,821.6	39.61	72.244	
6,700.0	6,644.6	7,168.1	6,644.6	18.5	52.4	78.24	36.6	2,460.5	2,861.2	2,821.3	39.89	71.729	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Butterball D19-19D
Project:	SEC.19-T3N-R64W	**TVD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Reference Site:	Butterball D19-17D Pad Sec.19-T3N-R64W	**MD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Butterball D19-19D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	Landmark
Reference Design:	Noble Butterball D19-19D Plan #1 (2-15-12)	**Offset TVD Reference:**	Offset Datum

Offset Design Butterball D19-17D Pad Sec.19-T3N-R64W - Butterball D19-17D - Wellbore #1 - Noble Butterball D19-1 — **Offset Site Error:** 0.0 ft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
6,800.0	6,744.6	7,268.1	6,744.6	18.6	52.5	78.24	36.6	2,460.5	2,861.2	2,821.1	40.18	71.216	
6,900.0	6,844.6	7,368.1	6,844.6	18.8	52.6	78.24	36.6	2,460.5	2,861.2	2,820.8	40.47	70.705	
7,000.0	6,944.6	7,468.1	6,944.6	18.9	52.6	78.24	36.6	2,460.5	2,861.2	2,820.5	40.76	70.197	
7,100.0	7,044.6	7,568.1	7,044.6	19.1	52.7	78.24	36.6	2,460.5	2,861.2	2,820.2	41.06	69.691	
7,200.0	7,144.6	7,668.1	7,144.6	19.3	52.8	78.24	36.6	2,460.5	2,861.2	2,819.9	41.35	69.188	
7,300.0	7,244.6	7,768.1	7,244.6	19.4	52.8	78.24	36.6	2,460.5	2,861.2	2,819.6	41.66	68.688	
7,400.0	7,344.6	7,868.1	7,344.6	19.6	52.9	78.24	36.6	2,460.5	2,861.2	2,819.3	41.96	68.191	
7,500.0	7,444.6	7,968.1	7,444.6	19.7	53.0	78.24	36.6	2,460.5	2,861.2	2,819.0	42.27	67.697	
7,600.0	7,544.6	8,068.1	7,544.6	19.9	53.0	78.24	36.6	2,460.5	2,861.2	2,818.7	42.57	67.207	
7,666.1	7,610.7	8,134.2	7,610.7	20.0	53.1	78.24	36.6	2,460.5	2,861.2	2,818.5	42.78	66.884	
7,700.0	7,644.6	8,166.5	7,643.0	20.1	53.1	78.24	36.6	2,460.5	2,861.2	2,818.4	42.88	66.723	
7,715.4	7,660.0	8,166.5	7,643.0	20.1	53.1	78.24	36.6	2,460.5	2,861.3	2,818.4	42.91	66.681	

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Butterball D19-19D
Project:	SEC.19-T3N-R64W	**TVD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Reference Site:	Butterball D19-17D Pad Sec.19-T3N-R64W	**MD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Butterball D19-19D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	Landmark
Reference Design:	Noble Butterball D19-19D Plan #1 (2-15-12)	**Offset TVD Reference:**	Offset Datum

Offset Design Butterball D19-17D Pad Sec.19-T3N-R64W - Butterball D19-18D - Wellbore #1 - Noble Butterball D19-1 — **Offset Site Error:** 0.0 ft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-42.61	18.2	-16.8	24.8				
100.0	100.0	99.0	99.0	0.1	0.1	-42.61	18.2	-16.8	24.8	24.5	0.22	110.669	
200.0	200.0	199.0	199.0	0.3	0.3	-42.61	18.2	-16.8	24.8	24.1	0.67	36.828	
300.0	300.0	299.0	299.0	0.6	0.6	-42.61	18.2	-16.8	24.8	23.6	1.12	22.067	
400.0	400.0	399.0	399.0	0.8	0.8	-42.61	18.2	-16.8	24.8	23.2	1.57	15.753	
500.0	500.0	499.0	499.0	1.0	1.0	-42.61	18.2	-16.8	24.8	22.7	2.02	12.249	
600.0	600.0	599.0	599.0	1.2	1.2	-42.61	18.2	-16.8	24.8	22.3	2.47	10.020	
700.0	700.0	699.0	699.0	1.5	1.5	-42.61	18.2	-16.8	24.8	21.8	2.92	8.477	
750.0	750.0	749.0	749.0	1.6	1.6	-42.61	18.2	-16.8	24.8	21.6	3.14	7.871	CC
800.0	800.0	799.0	799.0	1.7	1.7	106.41	18.2	-16.8	24.9	21.5	3.36	7.411	ES
900.0	899.9	898.9	898.9	1.9	1.9	113.76	18.2	-16.8	26.1	22.3	3.76	6.933	SF
1,000.0	999.7	998.8	998.8	2.0	2.1	126.93	18.2	-16.3	29.4	25.3	4.17	7.059	
1,100.0	1,099.1	1,098.2	1,098.1	2.3	2.3	145.30	18.4	-12.9	36.6	32.0	4.57	7.994	
1,200.0	1,198.2	1,196.2	1,195.9	2.5	2.5	162.14	18.7	-6.2	50.3	45.3	4.98	10.093	
1,266.7	1,263.9	1,260.5	1,259.9	2.7	2.7	170.65	19.0	0.0	63.5	58.3	5.26	12.083	
1,300.0	1,296.7	1,292.3	1,291.5	2.8	2.8	174.12	19.2	3.6	71.2	65.8	5.40	13.181	
1,400.0	1,395.0	1,386.9	1,385.2	3.1	3.0	-177.87	19.9	16.5	96.4	90.6	5.85	16.488	
1,500.0	1,493.4	1,479.8	1,476.8	3.5	3.3	-172.15	20.6	32.0	124.8	118.5	6.32	19.758	
1,600.0	1,591.8	1,571.9	1,567.0	3.8	3.6	-167.78	21.5	50.3	156.2	149.4	6.81	22.928	
1,700.0	1,690.2	1,666.0	1,659.1	4.2	3.9	-164.61	22.5	69.8	188.8	181.5	7.32	25.790	
1,800.0	1,788.6	1,760.1	1,751.1	4.6	4.3	-162.37	23.5	89.4	221.7	213.9	7.84	28.294	
1,900.0	1,886.9	1,854.2	1,843.2	5.0	4.6	-160.70	24.5	108.9	254.9	246.6	8.37	30.474	
2,000.0	1,985.3	1,948.3	1,935.2	5.4	5.0	-159.42	25.4	128.4	288.3	279.4	8.90	32.392	
2,100.0	2,083.7	2,042.4	2,027.3	5.7	5.4	-158.41	26.4	147.9	321.7	312.3	9.44	34.078	
2,200.0	2,182.1	2,136.5	2,119.4	6.1	5.8	-157.59	27.4	167.4	355.2	345.2	9.99	35.569	
2,300.0	2,280.4	2,230.6	2,211.4	6.5	6.2	-156.90	28.3	187.0	388.8	378.2	10.54	36.893	
2,400.0	2,378.8	2,324.7	2,303.5	6.9	6.6	-156.33	29.3	206.5	422.4	411.3	11.09	38.076	
2,500.0	2,477.2	2,418.8	2,395.5	7.3	7.0	-155.84	30.3	226.0	456.0	444.4	11.65	39.137	
2,600.0	2,575.6	2,513.0	2,487.6	7.7	7.4	-155.42	31.3	245.5	489.7	477.5	12.21	40.093	
2,700.0	2,674.0	2,607.1	2,579.6	8.1	7.8	-155.05	32.2	265.0	523.3	510.6	12.78	40.958	
2,800.0	2,772.3	2,701.2	2,671.7	8.5	8.2	-154.73	33.2	284.6	557.0	543.7	13.34	41.744	
2,900.0	2,870.7	2,795.3	2,763.7	8.9	8.6	-154.44	34.2	304.1	590.8	576.8	13.91	42.461	
3,000.0	2,969.1	2,889.4	2,855.8	9.4	9.1	-154.18	35.1	323.6	624.5	610.0	14.48	43.117	
3,100.0	3,067.5	2,983.5	2,947.9	9.8	9.5	-153.96	36.1	343.1	658.2	643.2	15.06	43.719	
3,200.0	3,165.8	3,077.6	3,039.9	10.2	9.9	-153.75	37.1	362.7	692.0	676.3	15.63	44.274	
3,300.0	3,264.2	3,171.7	3,132.0	10.6	10.3	-153.56	38.0	382.2	725.7	709.5	16.20	44.786	
3,400.0	3,362.6	3,265.8	3,224.0	11.0	10.7	-153.39	39.0	401.7	759.5	742.7	16.78	45.261	
3,500.0	3,461.0	3,359.9	3,316.1	11.4	11.2	-153.23	40.0	421.2	793.2	775.9	17.36	45.701	
3,600.0	3,559.4	3,454.0	3,408.1	11.8	11.6	-153.09	41.0	440.7	827.0	809.1	17.93	46.111	
3,700.0	3,657.7	3,548.1	3,500.2	12.2	12.0	-152.96	41.9	460.3	860.8	842.3	18.51	46.494	
3,800.0	3,756.1	3,642.2	3,592.2	12.6	12.4	-152.83	42.9	479.8	894.5	875.4	19.09	46.851	
3,900.0	3,854.5	3,736.3	3,684.3	13.0	12.9	-152.72	43.9	499.3	928.3	908.6	19.67	47.186	
4,000.0	3,952.9	3,830.5	3,776.3	13.4	13.3	-152.61	44.8	518.8	962.1	941.8	20.25	47.500	
4,100.0	4,051.3	3,924.6	3,868.4	13.8	13.7	-152.52	45.8	538.3	995.9	975.0	20.84	47.795	
4,200.0	4,149.6	4,018.7	3,960.5	14.3	14.1	-152.42	46.8	557.9	1,029.7	1,008.2	21.42	48.073	
4,300.0	4,248.0	4,112.8	4,052.5	14.7	14.6	-152.34	47.8	577.4	1,063.5	1,041.5	22.00	48.335	
4,338.8	4,286.1	4,149.3	4,088.2	14.8	14.7	-152.31	48.1	585.0	1,076.6	1,054.3	22.23	48.433	
4,400.0	4,346.5	4,207.1	4,144.7	15.0	15.0	-152.44	48.7	597.0	1,096.7	1,074.1	22.62	48.479	
4,500.0	4,445.5	4,302.2	4,237.8	15.3	15.4	-152.56	49.7	616.7	1,127.2	1,104.0	23.21	48.559	
4,600.0	4,544.9	4,398.2	4,331.7	15.5	15.9	-152.58	50.7	636.6	1,154.8	1,131.0	23.78	48.569	
4,700.0	4,644.7	4,494.9	4,426.3	15.7	16.3	-152.50	51.7	656.7	1,179.4	1,155.1	24.31	48.520	
4,800.0	4,744.6	4,592.3	4,521.5	15.9	16.7	-152.32	52.7	676.9	1,201.1	1,176.3	24.81	48.420	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Butterball D19-19D
Project:	SEC.19-T3N-R64W	**TVD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Reference Site:	Butterball D19-17D Pad Sec.19-T3N-R64W	**MD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Butterball D19-19D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	Landmark
Reference Design:	Noble Butterball D19-19D Plan #1 (2-15-12)	**Offset TVD Reference:**	Offset Datum

Offset Design Butterball D19-17D Pad Sec.19-T3N-R64W - Butterball D19-18D - Wellbore #1 - Noble Butterball D19-1 — **Offset Site Error:** 0.0 ft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,855.4	4,800.0	4,646.4	4,574.5	15.9	17.0	59.76	53.3	688.1	1,211.8	1,186.7	25.07	48.329	
4,900.0	4,844.6	4,690.0	4,617.2	16.0	17.2	59.96	53.7	697.1	1,220.1	1,194.8	25.28	48.258	
5,000.0	4,944.6	4,787.8	4,712.8	16.1	17.6	60.40	54.7	717.4	1,238.7	1,212.9	25.74	48.130	
5,100.0	5,044.6	4,885.6	4,808.5	16.2	18.1	60.82	55.7	737.7	1,257.3	1,231.2	26.19	48.011	
5,200.0	5,144.6	4,983.5	4,904.2	16.4	18.5	61.23	56.7	758.0	1,276.1	1,249.4	26.64	47.899	
5,300.0	5,244.6	5,081.3	4,999.9	16.5	19.0	61.63	57.7	778.3	1,294.9	1,267.8	27.09	47.793	
5,400.0	5,344.6	5,179.1	5,095.6	16.6	19.4	62.02	58.8	798.6	1,313.7	1,286.2	27.54	47.694	
5,500.0	5,444.6	5,341.7	5,255.4	16.7	19.9	62.57	60.2	828.3	1,330.5	1,302.4	28.07	47.406	
5,600.0	5,544.6	5,514.4	5,426.7	16.9	20.4	62.96	61.3	849.9	1,341.9	1,313.3	28.56	46.983	
5,700.0	5,644.6	5,689.1	5,601.0	17.0	20.7	63.16	61.9	861.3	1,347.8	1,318.8	29.02	46.444	
5,800.0	5,744.6	5,831.7	5,743.6	17.2	20.9	63.19	62.0	863.0	1,348.7	1,319.3	29.41	45.854	
5,900.0	5,844.6	5,931.7	5,843.6	17.3	21.0	63.19	62.0	863.0	1,348.7	1,319.0	29.75	45.334	
6,000.0	5,944.6	6,031.7	5,943.6	17.4	21.1	63.19	62.0	863.0	1,348.7	1,318.6	30.09	44.822	
6,100.0	6,044.6	6,131.7	6,043.6	17.6	21.3	63.19	62.0	863.0	1,348.7	1,318.3	30.43	44.317	
6,200.0	6,144.6	6,231.7	6,143.6	17.7	21.4	63.19	62.0	863.0	1,348.7	1,317.9	30.78	43.820	
6,300.0	6,244.6	6,331.7	6,243.6	17.9	21.5	63.19	62.0	863.0	1,348.7	1,317.6	31.13	43.329	
6,400.0	6,344.6	6,431.7	6,343.6	18.0	21.7	63.19	62.0	863.0	1,348.7	1,317.3	31.48	42.847	
6,500.0	6,444.6	6,531.7	6,443.6	18.2	21.8	63.19	62.0	863.0	1,348.7	1,316.9	31.83	42.371	
6,600.0	6,544.6	6,631.7	6,543.6	18.3	22.0	63.19	62.0	863.0	1,348.7	1,316.5	32.19	41.903	
6,700.0	6,644.6	6,731.7	6,643.6	18.5	22.1	63.19	62.0	863.0	1,348.7	1,316.2	32.54	41.442	
6,800.0	6,744.6	6,831.7	6,743.6	18.6	22.2	63.19	62.0	863.0	1,348.7	1,315.8	32.91	40.988	
6,900.0	6,844.6	6,931.7	6,843.6	18.8	22.4	63.19	62.0	863.0	1,348.7	1,315.5	33.27	40.542	
7,000.0	6,944.6	7,031.7	6,943.6	18.9	22.5	63.19	62.0	863.0	1,348.7	1,315.1	33.63	40.102	
7,100.0	7,044.6	7,131.7	7,043.6	19.1	22.7	63.19	62.0	863.0	1,348.7	1,314.7	34.00	39.670	
7,200.0	7,144.6	7,231.7	7,143.6	19.3	22.8	63.19	62.0	863.0	1,348.7	1,314.4	34.37	39.245	
7,300.0	7,244.6	7,331.7	7,243.6	19.4	23.0	63.19	62.0	863.0	1,348.7	1,314.0	34.74	38.826	
7,400.0	7,344.6	7,431.7	7,343.6	19.6	23.1	63.19	62.0	863.0	1,348.7	1,313.6	35.11	38.415	
7,500.0	7,444.6	7,531.7	7,443.6	19.7	23.3	63.19	62.0	863.0	1,348.7	1,313.2	35.48	38.010	
7,600.0	7,544.6	7,631.7	7,543.6	19.9	23.4	63.19	62.0	863.0	1,348.7	1,312.9	35.86	37.611	
7,700.0	7,644.6	7,731.7	7,643.6	20.1	23.6	63.19	62.0	863.0	1,348.7	1,312.5	36.24	37.219	
7,702.0	7,646.6	7,733.7	7,645.6	20.1	23.6	63.19	62.0	863.0	1,348.7	1,312.5	36.24	37.212	
7,715.4	7,660.0	7,741.1	7,653.0	20.1	23.6	63.19	62.0	863.0	1,348.7	1,312.5	36.28	37.172	

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Butterball D19-19D
Project:	SEC.19-T3N-R64W	**TVD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Reference Site:	Butterball D19-17D Pad Sec.19-T3N-R64W	**MD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Butterball D19-19D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	Landmark
Reference Design:	Noble Butterball D19-19D Plan #1 (2-15-12)	**Offset TVD Reference:**	Offset Datum

Offset Design Butterball D19-17D Pad Sec.19-T3N-R64W - Dechant D19-32D - Wellbore #1 - Noble Dechant D19-32[**Offset Site Error:** 0.0 ft

Survey Program: 0-MWD **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-43.14	32.8	-30.7	44.9				
100.0	100.0	99.0	99.0	0.1	0.1	-43.14	32.8	-30.7	44.9	44.7	0.22	200.903	
200.0	200.0	199.0	199.0	0.3	0.3	-43.14	32.8	-30.7	44.9	44.3	0.67	66.856	CC
300.0	300.0	298.9	298.9	0.6	0.5	-45.31	31.7	-32.0	45.0	43.9	1.10	40.823	ES
400.0	400.0	398.6	398.4	0.8	0.8	-51.79	28.3	-35.9	45.7	44.2	1.54	29.668	
500.0	500.0	497.7	497.2	1.0	1.0	-61.89	22.6	-42.4	48.1	46.1	2.00	24.047	
600.0	600.0	596.2	595.0	1.2	1.3	-73.89	14.8	-51.4	53.6	51.2	2.47	21.746	
700.0	700.0	693.8	691.3	1.5	1.6	-85.50	4.9	-62.8	63.4	60.5	2.93	21.664	SF
750.0	750.0	742.1	738.9	1.6	1.8	-90.63	-0.8	-69.3	70.1	66.9	3.16	22.176	
800.0	800.0	790.2	786.1	1.7	2.0	52.98	-7.0	-76.4	77.6	74.1	3.48	22.316	
900.0	899.9	886.0	879.5	1.9	2.4	46.66	-20.8	-92.4	94.1	90.1	3.92	24.002	
1,000.0	999.7	981.2	971.5	2.0	2.9	42.66	-36.7	-110.6	111.7	107.3	4.38	25.493	
1,100.0	1,099.1	1,075.7	1,062.1	2.3	3.4	40.12	-54.3	-130.9	130.1	125.2	4.87	26.696	
1,200.0	1,198.2	1,169.6	1,151.2	2.5	4.0	38.53	-73.8	-153.4	149.0	143.6	5.40	27.593	
1,266.7	1,263.9	1,231.9	1,209.7	2.7	4.4	37.83	-87.8	-169.5	161.7	156.0	5.77	28.018	
1,300.0	1,296.7	1,262.9	1,238.7	2.8	4.7	37.61	-95.1	-177.8	168.3	162.4	5.97	28.193	
1,400.0	1,395.0	1,355.1	1,324.0	3.1	5.3	36.82	-117.9	-204.1	190.1	183.5	6.57	28.948	
1,500.0	1,493.4	1,445.9	1,407.0	3.5	6.1	35.92	-142.2	-232.0	214.8	207.6	7.18	29.910	
1,600.0	1,591.8	1,536.0	1,488.1	3.8	6.9	34.99	-167.9	-261.6	242.4	234.6	7.80	31.072	
1,700.0	1,690.2	1,630.7	1,572.7	4.2	7.7	34.10	-195.8	-293.7	271.6	263.1	8.44	32.177	
1,800.0	1,788.6	1,726.3	1,658.1	4.6	8.6	33.37	-224.0	-326.2	300.8	291.7	9.08	33.109	
1,900.0	1,886.9	1,821.9	1,743.4	5.0	9.5	32.78	-252.2	-358.6	330.0	320.2	9.73	33.903	
2,000.0	1,985.3	1,917.4	1,828.8	5.4	10.3	32.28	-280.4	-391.0	359.2	348.8	10.39	34.586	
2,100.0	2,083.7	2,013.0	1,914.2	5.7	11.2	31.85	-308.6	-423.5	388.5	377.5	11.04	35.178	
2,200.0	2,182.1	2,108.6	1,999.6	6.1	12.1	31.49	-336.8	-455.9	417.8	406.1	11.70	35.697	
2,300.0	2,280.4	2,204.2	2,084.9	6.5	13.0	31.17	-365.0	-488.3	447.1	434.7	12.37	36.153	
2,400.0	2,378.8	2,299.8	2,170.3	6.9	13.9	30.89	-393.2	-520.8	476.4	463.4	13.03	36.558	
2,500.0	2,477.2	2,395.4	2,255.7	7.3	14.8	30.65	-421.4	-553.2	505.7	492.0	13.70	36.920	
2,600.0	2,575.6	2,490.9	2,341.1	7.7	15.7	30.43	-449.6	-585.6	535.1	520.7	14.37	37.244	
2,700.0	2,674.0	2,586.5	2,426.4	8.1	16.6	30.23	-477.8	-618.1	564.4	549.4	15.04	37.536	
2,800.0	2,772.3	2,682.1	2,511.8	8.5	17.5	30.05	-506.0	-650.5	593.7	578.0	15.71	37.800	
2,900.0	2,870.7	2,777.7	2,597.2	8.9	18.3	29.89	-534.2	-683.0	623.1	606.7	16.38	38.041	
3,000.0	2,969.1	2,873.3	2,682.6	9.4	19.2	29.75	-562.4	-715.4	652.4	635.4	17.05	38.261	
3,100.0	3,067.5	2,968.9	2,767.9	9.8	20.1	29.62	-590.6	-747.8	681.8	664.1	17.73	38.462	
3,200.0	3,165.8	3,064.4	2,853.3	10.2	21.0	29.49	-618.8	-780.3	711.1	692.7	18.40	38.648	
3,300.0	3,264.2	3,160.0	2,938.7	10.6	21.9	29.38	-647.0	-812.7	740.5	721.4	19.08	38.818	
3,400.0	3,362.6	3,255.6	3,024.1	11.0	22.8	29.28	-675.2	-845.1	769.9	750.1	19.75	38.977	
3,500.0	3,461.0	3,351.2	3,109.4	11.4	23.7	29.18	-703.4	-877.6	799.2	778.8	20.43	39.123	
3,600.0	3,559.4	3,446.8	3,194.8	11.8	24.6	29.09	-731.6	-910.0	828.6	807.5	21.11	39.260	
3,700.0	3,657.7	3,542.4	3,280.2	12.2	25.5	29.01	-759.8	-942.4	858.0	836.2	21.78	39.387	
3,800.0	3,756.1	3,637.9	3,365.6	12.6	26.4	28.93	-788.0	-974.9	887.3	864.9	22.46	39.505	
3,900.0	3,854.5	3,733.5	3,451.0	13.0	27.3	28.86	-816.1	-1,007.3	916.7	893.6	23.14	39.617	
4,000.0	3,952.9	3,829.1	3,536.3	13.4	28.2	28.79	-844.3	-1,039.7	946.1	922.3	23.82	39.721	
4,100.0	4,051.3	3,924.7	3,621.7	13.8	29.1	28.72	-872.5	-1,072.2	975.5	951.0	24.50	39.819	
4,200.0	4,149.6	4,020.3	3,707.1	14.3	30.0	28.66	-900.7	-1,104.6	1,004.8	979.6	25.18	39.911	
4,300.0	4,248.0	4,115.9	3,792.5	14.7	30.9	28.61	-928.9	-1,137.0	1,034.2	1,008.3	25.86	39.998	
4,338.8	4,286.1	4,152.9	3,825.6	14.8	31.2	28.59	-939.9	-1,149.6	1,045.6	1,019.5	26.12	40.030	
4,400.0	4,346.5	4,211.3	3,877.7	15.0	31.8	28.72	-957.1	-1,169.4	1,064.1	1,037.6	26.49	40.164	
4,500.0	4,445.5	4,305.7	3,962.1	15.3	32.6	28.90	-984.9	-1,201.5	1,096.7	1,069.7	27.03	40.572	
4,600.0	4,544.9	4,399.1	4,045.5	15.5	33.5	29.04	-1,012.5	-1,233.2	1,132.2	1,104.7	27.52	41.148	
4,700.0	4,644.7	4,501.2	4,136.7	15.7	34.4	29.06	-1,043.1	-1,267.2	1,170.4	1,142.4	27.96	41.864	
4,800.0	4,744.6	4,608.7	4,233.0	15.9	35.2	28.83	-1,077.6	-1,300.3	1,210.2	1,181.9	28.29	42.779	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Butterball D19-19D
Project:	SEC.19-T3N-R64W	**TVD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Reference Site:	Butterball D19-17D Pad Sec.19-T3N-R64W	**MD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Butterball D19-19D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	Landmark
Reference Design:	Noble Butterball D19-19D Plan #1 (2-15-12)	**Offset TVD Reference:**	Offset Datum

Offset Design Butterball D19-17D Pad Sec.19-T3N-R64W - Dechant D19-32D - Wellbore #1 - Noble Dechant D19-32D

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,855.4	4,800.0	4,667.6	4,285.8	15.9	35.6	-119.45	-1,097.6	-1,317.0	1,233.0	1,204.5	28.44	43.352	
4,900.0	4,844.6	4,714.9	4,328.2	16.0	36.0	-119.86	-1,114.1	-1,329.8	1,251.4	1,222.9	28.57	43.797	
5,000.0	4,944.6	4,820.7	4,423.1	16.1	36.7	-120.85	-1,153.0	-1,356.1	1,292.2	1,263.3	28.85	44.785	
5,100.0	5,044.6	4,926.2	4,517.5	16.2	37.5	-121.95	-1,193.9	-1,379.2	1,332.0	1,302.9	29.12	45.738	
5,200.0	5,144.6	5,020.2	4,601.5	16.4	38.2	-122.97	-1,231.9	-1,397.6	1,371.4	1,342.0	29.40	46.641	
5,300.0	5,244.6	5,109.5	4,681.2	16.5	38.9	-123.89	-1,268.2	-1,415.1	1,411.1	1,381.4	29.72	47.483	
5,400.0	5,344.6	5,198.8	4,761.0	16.6	39.7	-124.77	-1,304.4	-1,432.5	1,451.1	1,421.1	30.05	48.290	
5,500.0	5,444.6	5,288.1	4,840.7	16.7	40.4	-125.60	-1,340.6	-1,449.9	1,491.4	1,461.0	30.40	49.064	
5,600.0	5,544.6	5,377.4	4,920.5	16.9	41.1	-126.39	-1,376.8	-1,467.3	1,532.0	1,501.2	30.76	49.807	
5,700.0	5,644.6	5,466.7	5,000.3	17.0	41.9	-127.14	-1,413.0	-1,484.8	1,572.8	1,541.6	31.13	50.521	
5,800.0	5,744.6	5,637.8	5,155.0	17.2	43.0	-128.42	-1,478.8	-1,516.4	1,611.8	1,580.2	31.64	50.946	
5,900.0	5,844.6	5,831.8	5,335.2	17.3	44.0	-129.56	-1,543.1	-1,547.4	1,645.6	1,613.3	32.21	51.086	
6,000.0	5,944.6	6,035.5	5,529.4	17.4	44.9	-130.47	-1,598.8	-1,574.2	1,673.4	1,640.6	32.81	50.998	
6,100.0	6,044.6	6,247.7	5,735.6	17.6	45.7	-131.16	-1,643.3	-1,595.6	1,694.9	1,661.5	33.41	50.725	
6,200.0	6,144.6	6,466.4	5,951.5	17.7	46.3	-131.62	-1,674.8	-1,610.7	1,709.6	1,675.7	33.99	50.306	
6,300.0	6,244.6	6,689.2	6,173.5	17.9	46.6	-131.86	-1,691.4	-1,618.7	1,717.3	1,682.8	34.51	49.768	
6,400.0	6,344.6	6,859.4	6,343.6	18.0	46.8	-131.89	-1,693.9	-1,619.9	1,718.5	1,683.6	34.91	49.227	
6,500.0	6,444.6	6,959.4	6,443.6	18.2	46.8	-131.89	-1,693.9	-1,619.9	1,718.5	1,683.3	35.22	48.793	
6,600.0	6,544.6	7,059.4	6,543.6	18.3	46.9	-131.89	-1,693.9	-1,619.9	1,718.5	1,682.9	35.53	48.365	
6,700.0	6,644.6	7,159.4	6,643.6	18.5	46.9	-131.89	-1,693.9	-1,619.9	1,718.5	1,682.6	35.85	47.941	
6,800.0	6,744.6	7,259.4	6,743.6	18.6	47.0	-131.89	-1,693.9	-1,619.9	1,718.5	1,682.3	36.16	47.521	
6,900.0	6,844.6	7,359.4	6,843.6	18.8	47.1	-131.89	-1,693.9	-1,619.9	1,718.5	1,682.0	36.48	47.105	
7,000.0	6,944.6	7,459.4	6,943.6	18.9	47.1	-131.89	-1,693.9	-1,619.9	1,718.5	1,681.7	36.80	46.693	
7,100.0	7,044.6	7,559.4	7,043.6	19.1	47.2	-131.89	-1,693.9	-1,619.9	1,718.5	1,681.3	37.13	46.285	
7,200.0	7,144.6	7,659.4	7,143.6	19.3	47.2	-131.89	-1,693.9	-1,619.9	1,718.5	1,681.0	37.45	45.881	
7,300.0	7,244.6	7,759.4	7,243.6	19.4	47.3	-131.89	-1,693.9	-1,619.9	1,718.5	1,680.7	37.78	45.482	
7,400.0	7,344.6	7,859.4	7,343.6	19.6	47.4	-131.89	-1,693.9	-1,619.9	1,718.5	1,680.4	38.12	45.086	
7,500.0	7,444.6	7,959.4	7,443.6	19.7	47.4	-131.89	-1,693.9	-1,619.9	1,718.5	1,680.0	38.45	44.695	
7,600.0	7,544.6	8,059.4	7,543.6	19.9	47.5	-131.89	-1,693.9	-1,619.9	1,718.5	1,679.7	38.78	44.309	
7,700.0	7,644.6	8,159.4	7,643.6	20.1	47.6	-131.89	-1,693.9	-1,619.9	1,718.5	1,679.3	39.12	43.926	
7,715.4	7,660.0	8,174.8	7,659.0	20.1	47.6	-131.89	-1,693.9	-1,619.9	1,718.5	1,679.3	39.17	43.868	

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Butterball D19-19D
Project:	SEC.19-T3N-R64W	**TVD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Reference Site:	Butterball D19-17D Pad Sec.19-T3N-R64W	**MD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Butterball D19-19D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	Landmark
Reference Design:	Noble Butterball D19-19D Plan #1 (2-15-12)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4803.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Butterball D19-19D
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.58°

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Butterball D19-19D
Project:	SEC.19-T3N-R64W	**TVD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Reference Site:	Butterball D19-17D Pad Sec.19-T3N-R64W	**MD Reference:**	WELL @ 4803.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Butterball D19-19D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	Landmark
Reference Design:	Noble Butterball D19-19D Plan #1 (2-15-12)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4803.0ft (Original Well Elev) Coordinates are relative to: Butterball D19-19D
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.58°