



## **Directional**

### **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.19-T3N-R64W**

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

**Dechant D19-32D**

**Wellbore #1**

**Noble Dechant D19-32D Plan #1 (2-15-12)**

## **Anticollision Report**

**23 February, 2012**



**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.19-T3N-R64W  
**Reference Site:** Butterball D19-17D Pad Sec.19-T3N-R64W  
**Site Error:** 0.0ft  
**Reference Well:** Dechant D19-32D  
**Well Error:** 0.0ft  
**Reference Wellbore:** Wellbore #1  
**Reference Design:** Noble Dechant D19-32D Plan #1 (2-15-12)

**Local Co-ordinate Reference:** Well Dechant D19-32D  
**TVD Reference:** WELL @ 4802.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4802.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** Landmark  
**Offset TVD Reference:** Offset Datum

Reference	Noble Dechant D19-32D Plan #1 (2-				
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria				
Interpolation Method:	MD Interval 100.0ft	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	8,181.7	Noble Dechant D19-32D Plan #1 (2-15-12	MWD	MWD - Standard

### Summary

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
Butterball D19-17D Pad Sec.19-T3N-R64W						
Butterball D19-18D - Wellbore #1 - Noble Butterball D19-	200.0	200.0	20.2	19.5	29.931	CC
Butterball D19-18D - Wellbore #1 - Noble Butterball D19-	300.0	300.0	20.3	19.2	18.410	ES
Butterball D19-18D - Wellbore #1 - Noble Butterball D19-	500.0	499.5	26.2	24.2	13.022	SF
Butterball D19-19D - Wellbore #1 - Noble Butterball D19-	200.0	201.0	44.9	44.3	66.412	CC
Butterball D19-19D - Wellbore #1 - Noble Butterball D19-	300.0	301.0	45.0	43.9	40.670	ES
Butterball D19-19D - Wellbore #1 - Noble Butterball D19-	700.0	698.5	63.7	60.7	21.173	SF
Butterball D19-20D (Exist.) - Wellbore #1 - Design #1	4,435.1	4,077.6	297.9	255.0	6.946	CC, ES
Butterball D19-20D (Exist.) - Wellbore #1 - Design #1	4,500.0	4,135.6	299.1	255.6	6.879	SF
Turk Blue D19-2J (Exist.) - Wellbore #1 - Design #1	289.3	289.3	49.5	48.4	46.718	CC
Turk Blue D19-2J (Exist.) - Wellbore #1 - Design #1	400.0	399.8	49.8	48.3	32.269	ES
Turk Blue D19-2J (Exist.) - Wellbore #1 - Design #1	700.0	697.5	65.0	62.0	21.546	SF
Turk Blue D19-5 (Exist.) - Wellbore #1 - Design #1	4,358.7	4,009.4	262.3	220.3	6.239	CC, ES
Turk Blue D19-5 (Exist.) - Wellbore #1 - Design #1	4,400.0	4,046.3	263.0	220.5	6.192	SF

<b>Offset Design</b> Butterball D19-17D Pad Sec.19-T3N-R64W - Butterball D19-18D - Wellbore #1 - Noble Butterball D19-1													<b>Offset Site Error:</b> 0.0 ft
<b>Survey Program:</b> 0-MWD													<b>Offset Well Error:</b> 0.0 ft
Reference Measured Depth (ft)	Vertical Depth (ft)	Offset Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+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	136.22	-14.6	14.0	20.2				
100.0	100.0	100.0	100.0	0.1	0.1	136.22	-14.6	14.0	20.2	20.0	0.22	89.794	
200.0	200.0	200.0	200.0	0.3	0.3	136.22	-14.6	14.0	20.2	19.5	0.67	29.931	CC
300.0	300.0	300.0	300.0	0.5	0.6	-97.69	-14.6	14.0	20.3	19.2	1.10	18.410	ES
400.0	399.8	399.8	399.8	0.8	0.8	-111.49	-14.6	14.0	21.7	20.1	1.54	14.041	
500.0	499.5	499.5	499.5	1.0	1.0	-129.44	-14.6	14.0	26.2	24.2	2.01	13.022	SF
600.0	598.7	598.7	598.7	1.3	1.2	-144.80	-14.6	14.0	35.2	32.7	2.48	14.192	
700.0	697.5	697.5	697.5	1.6	1.5	-155.30	-14.6	14.0	48.9	45.9	2.95	16.576	
800.0	795.6	795.6	795.6	2.0	1.7	-162.04	-14.6	14.0	66.7	63.3	3.41	19.553	
900.0	893.1	893.1	893.1	2.5	1.9	-166.43	-14.6	14.0	88.4	84.5	3.88	22.810	
1,000.0	989.6	988.3	988.3	3.0	2.1	-169.29	-14.6	14.2	114.0	109.7	4.34	26.277	
1,100.0	1,085.3	1,079.6	1,079.5	3.6	2.3	-170.74	-14.4	16.9	145.3	140.5	4.80	30.279	
1,200.0	1,179.8	1,168.0	1,167.8	4.2	2.5	-171.30	-14.2	22.2	182.4	177.2	5.27	34.615	
1,300.0	1,273.2	1,253.2	1,252.6	4.9	2.7	-171.38	-13.8	30.0	225.1	219.4	5.75	39.142	
1,400.0	1,365.2	1,334.8	1,333.6	5.7	2.9	-171.19	-13.3	39.7	273.2	266.9	6.24	43.764	

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



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Reference Design: Noble Dechant D19-32D Plan #1 (2-15-12)

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Survey Calculation Method: Minimum Curvature  
Output errors are at: 2.00 sigma  
Database: Landmark  
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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		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
1,500.0	1,455.8	1,412.5	1,410.5	6.5	3.1	-170.85	-12.7	51.2	326.3	319.5	6.74	48.404		
1,600.0	1,545.3	1,486.5	1,483.4	7.4	3.3	-170.55	-12.1	64.0	383.6	376.3	7.27	52.756		
1,700.0	1,634.6	1,559.3	1,554.7	8.3	3.5	-170.25	-11.4	78.4	442.8	435.0	7.83	56.553		
1,800.0	1,723.9	1,639.3	1,633.0	9.3	3.8	-169.94	-10.5	95.0	502.7	494.3	8.40	59.856		
1,900.0	1,813.2	1,719.3	1,711.3	10.2	4.1	-169.70	-9.7	111.6	562.7	553.7	8.97	62.704		
2,000.0	1,902.5	1,799.4	1,789.5	11.1	4.4	-169.50	-8.9	128.2	622.6	613.0	9.56	65.151		
2,100.0	1,991.9	1,879.4	1,867.8	12.0	4.7	-169.34	-8.1	144.8	682.5	672.4	10.15	67.247		
2,200.0	2,081.2	1,959.4	1,946.1	13.0	5.1	-169.20	-7.2	161.4	742.5	731.7	10.74	69.119		
2,300.0	2,170.5	2,039.4	2,024.4	13.9	5.4	-169.08	-6.4	178.0	802.4	791.1	11.34	70.754		
2,400.0	2,259.8	2,119.5	2,102.7	14.8	5.7	-168.98	-5.6	194.6	862.4	850.4	11.94	72.197		
2,500.0	2,349.2	2,199.5	2,181.0	15.8	6.0	-168.90	-4.8	211.2	922.3	909.8	12.55	73.480		
2,600.0	2,438.5	2,279.5	2,259.3	16.7	6.4	-168.82	-3.9	227.8	982.3	969.1	13.16	74.621		
2,700.0	2,527.8	2,359.6	2,337.5	17.6	6.7	-168.75	-3.1	244.4	1,042.2	1,028.5	13.78	75.646		
2,800.0	2,617.1	2,439.6	2,415.8	18.6	7.1	-168.69	-2.3	261.0	1,102.2	1,087.8	14.39	76.571		
2,900.0	2,706.4	2,519.6	2,494.1	19.5	7.4	-168.64	-1.5	277.6	1,162.1	1,147.1	15.01	77.408		
3,000.0	2,795.8	2,599.7	2,572.4	20.4	7.8	-168.59	-0.6	294.2	1,222.1	1,206.5	15.63	78.169		
3,100.0	2,885.1	2,679.7	2,650.7	21.4	8.1	-168.54	0.2	310.8	1,282.0	1,265.8	16.26	78.861		
3,200.0	2,974.4	2,759.7	2,729.0	22.3	8.5	-168.50	1.0	327.4	1,342.0	1,325.1	16.88	79.494		
3,300.0	3,063.7	2,839.7	2,807.2	23.2	8.8	-168.47	1.8	344.0	1,402.0	1,384.4	17.51	80.076		
3,400.0	3,153.0	2,919.8	2,885.5	24.2	9.2	-168.43	2.7	360.6	1,461.9	1,443.8	18.14	80.611		
3,500.0	3,242.4	2,999.8	2,963.8	25.1	9.5	-168.40	3.5	377.2	1,521.9	1,503.1	18.76	81.105		
3,600.0	3,331.7	3,079.8	3,042.1	26.0	9.9	-168.37	4.3	393.8	1,581.8	1,562.4	19.39	81.561		
3,700.0	3,421.0	3,159.9	3,120.4	27.0	10.3	-168.35	5.1	410.4	1,641.8	1,621.8	20.03	81.985		
3,800.0	3,510.3	3,239.9	3,198.7	27.9	10.6	-168.32	6.0	427.0	1,701.7	1,681.1	20.66	82.378		
3,900.0	3,599.7	3,319.9	3,277.0	28.8	11.0	-168.30	6.8	443.6	1,761.7	1,740.4	21.29	82.745		
4,000.0	3,689.0	3,400.0	3,355.2	29.8	11.3	-168.28	7.6	460.2	1,821.7	1,799.7	21.92	83.087		
4,100.0	3,778.3	3,480.0	3,433.5	30.7	11.7	-168.26	8.4	476.8	1,881.6	1,859.1	22.56	83.406		
4,200.0	3,867.6	3,560.0	3,511.8	31.7	12.1	-168.24	9.3	493.4	1,941.6	1,918.4	23.20	83.705		
4,300.0	3,956.9	3,640.0	3,590.1	32.6	12.4	-168.22	10.1	510.1	2,001.5	1,977.7	23.83	83.985		
4,400.0	4,046.3	3,720.1	3,668.4	33.5	12.8	-168.20	10.9	526.7	2,061.5	2,037.0	24.47	84.249		
4,500.0	4,135.6	3,800.3	3,746.8	34.4	13.1	-164.81	11.7	543.3	2,121.2	2,095.9	25.28	83.918		
4,600.0	4,225.2	3,881.2	3,825.9	35.2	13.5	-159.58	12.6	560.1	2,179.9	2,153.8	26.18	83.265		
4,700.0	4,314.9	3,962.7	3,905.7	35.9	13.9	-154.45	13.4	577.0	2,237.5	2,210.4	27.10	82.566		
4,800.0	4,404.5	4,044.8	3,986.0	36.6	14.2	-149.46	14.3	594.0	2,293.9	2,265.8	28.03	81.845		
4,900.0	4,494.1	4,127.3	4,066.7	37.3	14.6	-144.64	15.1	611.1	2,349.0	2,320.0	28.96	81.120		
5,000.0	4,583.4	4,210.1	4,147.7	38.0	15.0	-142.15	16.0	628.3	2,403.0	2,373.2	29.77	80.722		
5,100.0	4,672.7	4,293.0	4,228.8	38.8	15.4	-142.57	16.8	645.5	2,456.9	2,426.4	30.46	80.667		
5,200.0	4,762.0	4,375.9	4,309.9	39.7	15.8	-142.96	17.7	662.7	2,510.8	2,479.7	31.15	80.610		
5,300.0	4,851.4	4,458.8	4,391.0	40.5	16.1	-143.34	18.5	679.9	2,564.9	2,533.0	31.84	80.552		
5,400.0	4,940.7	4,541.7	4,472.1	41.3	16.5	-143.71	19.4	697.1	2,619.0	2,586.5	32.54	80.492		
5,500.0	5,030.0	4,624.6	4,553.2	42.1	16.9	-144.22	20.2	714.3	2,673.2	2,640.0	33.20	80.518		
5,600.0	5,120.4	4,708.8	4,635.5	42.7	17.3	-145.23	21.1	731.8	2,725.7	2,692.0	33.70	80.887		
5,700.0	5,212.2	4,794.7	4,719.6	43.3	17.7	-146.13	22.0	749.6	2,775.9	2,741.6	34.22	81.123		
5,800.0	5,305.4	4,882.2	4,805.2	43.8	18.1	-146.92	22.9	767.7	2,823.5	2,788.8	34.75	81.255		
5,900.0	5,399.7	4,971.2	4,892.3	44.3	18.5	-147.62	23.8	786.2	2,868.6	2,833.3	35.28	81.305		
6,000.0	5,495.2	5,061.7	4,980.7	44.8	18.9	-148.21	24.8	805.0	2,911.0	2,875.2	35.81	81.293		
6,100.0	5,591.6	5,153.4	5,070.4	45.2	19.3	-148.72	25.7	824.0	2,950.8	2,914.4	36.32	81.236		
6,200.0	5,689.0	5,242.0	5,154.0	45.5	20.7	-149.61	29.1	892.1	2,983.4	2,945.9	37.55	79.451		
6,300.0	5,787.0	5,339.1	5,248.0	45.9	20.9	-150.13	29.2	893.7	3,000.7	2,962.7	37.98	79.002		
6,400.0	5,885.7	5,436.2	5,343.1	46.1	21.1	-150.43	29.2	893.7	3,014.8	2,976.5	38.28	78.758		
6,500.0	5,984.9	5,533.3	5,439.2	46.3	21.2	-150.66	29.2	893.7	3,025.9	2,987.3	38.53	78.524		
6,600.0	6,084.4	5,630.4	5,535.3	46.5	21.3	-150.82	29.2	893.7	3,034.0	2,995.2	38.75	78.298		

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Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
6,700.0	6,184.3	6,272.3	6,184.3	46.6	21.5	-150.92	29.2	893.7	3,039.0	3,000.1	38.92	78.081		
6,800.0	6,284.2	6,372.3	6,284.2	46.7	21.6	-150.96	29.2	893.7	3,041.0	3,002.0	39.05	77.872		
6,900.0	6,384.2	6,472.3	6,384.2	46.8	21.7	54.73	29.2	893.7	3,041.1	3,001.8	39.31	77.362		
7,000.0	6,484.2	6,572.3	6,484.2	46.8	21.9	54.73	29.2	893.7	3,041.1	3,001.5	39.59	76.812		
7,100.0	6,584.2	6,672.3	6,584.2	46.9	22.0	54.73	29.2	893.7	3,041.1	3,001.2	39.88	76.265		
7,200.0	6,684.2	6,772.3	6,684.2	47.0	22.2	54.73	29.2	893.7	3,041.1	3,000.9	40.16	75.719		
7,300.0	6,784.2	6,872.3	6,784.2	47.0	22.3	54.73	29.2	893.7	3,041.1	3,000.6	40.45	75.176		
7,400.0	6,884.2	6,972.3	6,884.2	47.1	22.4	54.73	29.2	893.7	3,041.1	3,000.3	40.75	74.636		
7,500.0	6,984.2	7,072.3	6,984.2	47.1	22.6	54.73	29.2	893.7	3,041.1	3,000.0	41.04	74.099		
7,600.0	7,084.2	7,172.3	7,084.2	47.2	22.7	54.73	29.2	893.7	3,041.1	2,999.7	41.34	73.564		
7,700.0	7,184.2	7,272.3	7,184.2	47.3	22.9	54.73	29.2	893.7	3,041.1	2,999.4	41.64	73.033		
7,800.0	7,284.2	7,372.3	7,284.2	47.3	23.0	54.73	29.2	893.7	3,041.1	2,999.1	41.94	72.505		
7,900.0	7,384.2	7,472.3	7,384.2	47.4	23.2	54.73	29.2	893.7	3,041.1	2,998.8	42.25	71.980		
8,000.0	7,484.2	7,572.3	7,484.2	47.5	23.3	54.73	29.2	893.7	3,041.1	2,998.5	42.56	71.458		
8,100.0	7,584.2	7,672.3	7,584.2	47.5	23.5	54.73	29.2	893.7	3,041.1	2,998.2	42.87	70.940		
8,149.4	7,633.6	7,721.7	7,633.6	47.6	23.6	54.73	29.2	893.7	3,041.1	2,998.0	43.02	70.686		
8,181.8	7,666.0	7,741.1	7,653.0	47.6	23.6	54.73	29.2	893.7	3,041.1	2,998.0	43.10	70.559		



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Reference Wellbore: Wellbore #1  
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Offset Design Butterball D19-17D Pad Sec.19-T3N-R64W - Butterball D19-19D - Wellbore #1 - Noble Butterball D19-1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	1.0	1.0	0.0	0.0	136.86	-32.8	30.7	44.9	44.9	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	136.86	-32.8	30.7	44.9	44.7	0.23	197.921		
200.0	200.0	201.0	201.0	0.3	0.3	136.86	-32.8	30.7	44.9	44.3	0.68	66.412 CC		
300.0	300.0	301.0	301.0	0.5	0.6	-94.35	-32.8	30.7	45.0	43.9	1.11	40.670 ES		
400.0	399.8	400.8	400.8	0.8	0.8	-100.88	-32.8	30.7	45.7	44.2	1.55	29.593		
500.0	499.5	500.5	500.5	1.0	1.0	-111.04	-32.8	30.7	48.1	46.1	2.02	23.890		
600.0	598.7	599.7	599.7	1.3	1.2	-123.10	-32.8	30.7	53.8	51.2	2.51	21.420		
700.0	697.5	698.5	698.5	1.6	1.5	-134.75	-32.8	30.7	63.7	60.7	3.01	21.173 SF		
800.0	795.6	797.4	797.4	2.0	1.7	-144.31	-33.1	30.5	78.2	74.7	3.49	22.417		
900.0	893.1	897.5	897.5	2.5	1.8	-150.55	-36.0	28.7	95.1	91.2	3.93	24.192		
1,000.0	989.6	998.2	997.9	3.0	2.0	-154.43	-41.9	25.0	113.3	108.9	4.39	25.804		
1,100.0	1,085.3	1,099.5	1,098.7	3.6	2.3	-156.81	-50.9	19.5	132.4	127.5	4.88	27.119		
1,200.0	1,179.8	1,201.4	1,199.6	4.2	2.5	-158.22	-62.9	11.9	152.2	146.7	5.41	28.108		
1,300.0	1,273.2	1,302.2	1,298.8	4.9	2.8	-159.00	-77.6	2.8	172.6	166.6	5.98	28.843		
1,400.0	1,365.2	1,399.4	1,394.5	5.7	3.1	-159.78	-92.4	-6.5	195.6	189.1	6.58	29.732		
1,500.0	1,455.8	1,495.8	1,489.3	6.5	3.5	-160.66	-107.1	-15.6	221.9	214.7	7.19	30.885		
1,600.0	1,545.3	1,591.5	1,583.4	7.4	3.8	-161.63	-121.7	-24.7	250.8	243.0	7.82	32.084		
1,700.0	1,634.6	1,687.0	1,677.4	8.3	4.2	-162.47	-136.2	-33.8	280.0	271.5	8.47	33.065		
1,800.0	1,723.9	1,782.6	1,771.5	9.3	4.5	-163.16	-150.7	-42.8	309.2	300.0	9.12	33.886		
1,900.0	1,813.2	1,878.2	1,865.5	10.2	4.9	-163.72	-165.3	-51.9	338.4	328.6	9.79	34.578		
2,000.0	1,902.5	1,973.8	1,959.5	11.1	5.3	-164.20	-179.8	-61.0	367.7	357.2	10.45	35.173		
2,100.0	1,991.9	2,069.4	2,053.6	12.0	5.6	-164.61	-194.4	-70.0	396.9	385.8	11.12	35.688		
2,200.0	2,081.2	2,165.0	2,147.6	13.0	6.0	-164.96	-208.9	-79.1	426.2	414.4	11.80	36.136		
2,300.0	2,170.5	2,260.5	2,241.6	13.9	6.4	-165.26	-223.5	-88.2	455.5	443.1	12.47	36.531		
2,400.0	2,259.8	2,356.1	2,335.7	14.8	6.8	-165.53	-238.0	-97.3	484.9	471.7	13.15	36.879		
2,500.0	2,349.2	2,451.7	2,429.7	15.8	7.1	-165.77	-252.6	-106.3	514.2	500.4	13.83	37.190		
2,600.0	2,438.5	2,547.3	2,523.7	16.7	7.5	-165.98	-267.1	-115.4	543.5	529.0	14.51	37.468		
2,700.0	2,527.8	2,642.9	2,617.8	17.6	7.9	-166.17	-281.7	-124.5	572.8	557.7	15.19	37.718		
2,800.0	2,617.1	2,738.5	2,711.8	18.6	8.3	-166.34	-296.2	-133.5	602.2	586.3	15.87	37.944		
2,900.0	2,706.4	2,834.0	2,805.8	19.5	8.7	-166.50	-310.8	-142.6	631.5	615.0	16.55	38.149		
3,000.0	2,795.8	2,929.6	2,899.9	20.4	9.1	-166.64	-325.3	-151.7	660.9	643.7	17.24	38.336		
3,100.0	2,885.1	3,025.2	2,993.9	21.4	9.5	-166.77	-339.9	-160.8	690.2	672.3	17.92	38.507		
3,200.0	2,974.4	3,120.8	3,087.9	22.3	9.8	-166.89	-354.4	-169.8	719.6	701.0	18.61	38.665		
3,300.0	3,063.7	3,216.4	3,182.0	23.2	10.2	-167.00	-369.0	-178.9	749.0	729.7	19.30	38.810		
3,400.0	3,153.0	3,312.0	3,276.0	24.2	10.6	-167.10	-383.5	-188.0	778.3	758.3	19.99	38.943		
3,500.0	3,242.4	3,407.5	3,370.0	25.1	11.0	-167.19	-398.1	-197.0	807.7	787.0	20.67	39.067		
3,600.0	3,331.7	3,503.1	3,464.1	26.0	11.4	-167.28	-412.6	-206.1	837.1	815.7	21.36	39.182		
3,700.0	3,421.0	3,598.7	3,558.1	27.0	11.8	-167.36	-427.2	-215.2	866.4	844.4	22.05	39.289		
3,800.0	3,510.3	3,694.3	3,652.1	27.9	12.2	-167.44	-441.7	-224.3	895.8	873.1	22.74	39.389		
3,900.0	3,599.7	3,789.9	3,746.2	28.8	12.6	-167.51	-456.3	-233.3	925.2	901.7	23.43	39.483		
4,000.0	3,689.0	3,885.5	3,840.2	29.8	13.0	-167.58	-470.8	-242.4	954.5	930.4	24.12	39.570		
4,100.0	3,778.3	3,981.0	3,934.2	30.7	13.4	-167.64	-485.4	-251.5	983.9	959.1	24.81	39.652		
4,200.0	3,867.6	4,076.6	4,028.3	31.7	13.7	-167.70	-499.9	-260.5	1,013.3	987.8	25.50	39.730		
4,300.0	3,956.9	4,172.2	4,122.3	32.6	14.1	-167.76	-514.5	-269.6	1,042.7	1,016.5	26.20	39.802		
4,400.0	4,046.3	4,267.8	4,216.3	33.5	14.5	-167.81	-529.0	-278.7	1,072.0	1,045.2	26.89	39.871		
4,500.0	4,135.6	4,357.2	4,304.3	34.4	14.9	-165.01	-542.6	-287.1	1,101.2	1,073.6	27.67	39.794		
4,600.0	4,225.2	4,428.2	4,374.4	35.2	15.1	-160.64	-552.3	-293.2	1,130.7	1,102.3	28.40	39.819		
4,700.0	4,314.9	4,500.0	4,445.5	35.9	15.3	-156.39	-560.5	-298.4	1,161.0	1,132.0	29.07	39.946		
4,800.0	4,404.5	4,567.2	4,512.3	36.6	15.4	-152.23	-566.9	-302.3	1,192.2	1,162.5	29.69	40.157		
4,900.0	4,494.1	4,634.8	4,579.6	37.3	15.6	-148.23	-572.0	-305.5	1,224.2	1,193.9	30.27	40.438		
5,000.0	4,583.4	4,700.0	4,644.7	38.0	15.7	-146.32	-575.7	-307.8	1,257.2	1,226.5	30.76	40.876		
5,100.0	4,672.7	4,765.9	4,710.5	38.8	15.8	-147.04	-578.0	-309.3	1,292.3	1,261.2	31.15	41.491		

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

Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.19-T3N-R64W  
Reference Site: Butterball D19-17D Pad Sec.19-T3N-R64W  
Site Error: 0.0ft  
Reference Well: Dechant D19-32D  
Well Error: 0.0ft  
Reference Wellbore: Wellbore #1  
Reference Design: Noble Dechant D19-32D Plan #1 (2-15-12)

Local Co-ordinate Reference: Well Dechant D19-32D  
TVD Reference: WELL @ 4802.0ft (Original Well Elev)  
MD Reference: WELL @ 4802.0ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 2.00 sigma  
Database: Landmark  
Offset TVD Reference: Offset Datum

Offset Design Butterball D19-17D Pad Sec.19-T3N-R64W - Butterball D19-19D - Wellbore #1 - Noble Butterball D19-1														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
5,200.0	4,762.0	4,829.5	4,774.1	39.7	15.9	-147.75	-579.1	-309.9	1,329.7	1,298.1	31.54	42.159			
5,300.0	4,851.4	4,907.8	4,852.4	40.5	16.0	-148.60	-579.2	-310.0	1,368.8	1,336.9	31.90	42.914			
5,400.0	4,940.7	4,997.1	4,941.7	41.3	16.1	-149.53	-579.2	-310.0	1,408.5	1,376.3	32.23	43.699			
5,500.0	5,030.0	5,086.4	5,031.0	42.1	16.2	-150.50	-579.2	-310.0	1,448.4	1,415.9	32.54	44.508			
5,600.0	5,120.4	5,176.8	5,121.4	42.7	16.3	-151.69	-579.2	-310.0	1,486.7	1,454.0	32.71	45.452			
5,700.0	5,212.2	5,268.6	5,213.2	43.3	16.4	-152.74	-579.2	-310.0	1,522.3	1,489.4	32.91	46.255			
5,800.0	5,305.4	5,361.8	5,306.4	43.8	16.6	-153.65	-579.2	-310.0	1,555.2	1,522.1	33.14	46.933			
5,900.0	5,399.7	5,456.2	5,400.7	44.3	16.7	-154.45	-579.2	-310.0	1,585.3	1,551.9	33.37	47.502			
6,000.0	5,495.2	5,551.6	5,496.2	44.8	16.8	-155.14	-579.2	-310.0	1,612.4	1,578.8	33.61	47.975			
6,100.0	5,591.6	5,648.1	5,592.6	45.2	16.9	-155.73	-579.2	-310.0	1,636.6	1,602.7	33.84	48.365			
6,200.0	5,689.0	5,745.4	5,690.0	45.5	17.1	-156.23	-579.2	-310.0	1,657.7	1,623.7	34.05	48.682			
6,300.0	5,787.0	5,843.4	5,788.0	45.9	17.2	-156.65	-579.2	-310.0	1,675.8	1,641.5	34.24	48.935			
6,400.0	5,885.7	5,942.1	5,886.7	46.1	17.4	-156.98	-579.2	-310.0	1,690.7	1,656.3	34.41	49.131			
6,500.0	5,984.9	6,041.3	5,985.9	46.3	17.5	-157.24	-579.2	-310.0	1,702.4	1,667.9	34.55	49.275			
6,600.0	6,084.4	6,140.8	6,085.4	46.5	17.6	-157.43	-579.2	-310.0	1,711.0	1,676.3	34.66	49.370			
6,700.0	6,184.3	6,240.7	6,185.3	46.6	17.8	-157.54	-579.2	-310.0	1,716.3	1,681.6	34.73	49.420			
6,800.0	6,284.2	6,340.6	6,285.2	46.7	17.9	-157.59	-579.2	-310.0	1,718.4	1,683.7	34.77	49.424			
6,900.0	6,384.2	6,440.6	6,385.2	46.8	18.1	48.11	-579.2	-310.0	1,718.5	1,683.4	35.04	49.048			
7,000.0	6,484.2	6,540.6	6,485.2	46.8	18.2	48.11	-579.2	-310.0	1,718.5	1,683.1	35.35	48.618			
7,100.0	6,584.2	6,640.6	6,585.2	46.9	18.4	48.11	-579.2	-310.0	1,718.5	1,682.8	35.66	48.192			
7,200.0	6,684.2	6,740.6	6,685.2	47.0	18.5	48.11	-579.2	-310.0	1,718.5	1,682.5	35.97	47.770			
7,300.0	6,784.2	6,840.6	6,785.2	47.0	18.7	48.11	-579.2	-310.0	1,718.5	1,682.2	36.29	47.351			
7,400.0	6,884.2	6,940.6	6,885.2	47.1	18.8	48.11	-579.2	-310.0	1,718.5	1,681.9	36.61	46.937			
7,500.0	6,984.2	7,040.6	6,985.2	47.1	19.0	48.11	-579.2	-310.0	1,718.5	1,681.5	36.94	46.527			
7,600.0	7,084.2	7,140.6	7,085.2	47.2	19.2	48.11	-579.2	-310.0	1,718.5	1,681.2	37.26	46.120			
7,700.0	7,184.2	7,240.6	7,185.2	47.3	19.3	48.11	-579.2	-310.0	1,718.5	1,680.9	37.59	45.718			
7,800.0	7,284.2	7,340.6	7,285.2	47.3	19.5	48.11	-579.2	-310.0	1,718.5	1,680.6	37.92	45.321			
7,900.0	7,384.2	7,440.6	7,385.2	47.4	19.6	48.11	-579.2	-310.0	1,718.5	1,680.2	38.25	44.927			
8,000.0	7,484.2	7,540.6	7,485.2	47.5	19.8	48.11	-579.2	-310.0	1,718.5	1,679.9	38.58	44.538			
8,100.0	7,584.2	7,640.6	7,585.2	47.5	20.0	48.11	-579.2	-310.0	1,718.5	1,679.5	38.92	44.153			
8,152.0	7,636.2	7,692.6	7,637.2	47.6	20.1	48.11	-579.2	-310.0	1,718.5	1,679.4	39.10	43.954			
8,181.8	7,666.0	7,715.4	7,660.0	47.6	20.1	48.11	-579.2	-310.0	1,718.5	1,679.3	39.18	43.857			



Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.19-T3N-R64W  
Reference Site: Butterball D19-17D Pad Sec.19-T3N-R64W  
Site Error: 0.0ft  
Reference Well: Dechant D19-32D  
Well Error: 0.0ft  
Reference Wellbore: Wellbore #1  
Reference Design: Noble Dechant D19-32D Plan #1 (2-15-12)

Local Co-ordinate Reference: Well Dechant D19-32D  
TVD Reference: WELL @ 4802.0ft (Original Well Elev)  
MD Reference: WELL @ 4802.0ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 2.00 sigma  
Database: Landmark  
Offset TVD Reference: Offset Datum

Offset Design Butterball D19-17D Pad Sec.19-T3N-R64W - Butterball D19-20D (Exist.) - Wellbore #1 - Design #1													Offset Site Error: 0.0 ft
Survey Program: 0-MWD													Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.0	0.0	0.0	0.0	0.0	0.0	-141.51	-1,278.7	-1,016.6	1,633.6				
100.0	100.0	100.0	100.0	0.1	0.1	-141.51	-1,278.7	-1,016.6	1,633.6	1,633.3	0.22	7,267.869	
200.0	200.0	200.0	200.0	0.3	0.3	-141.51	-1,278.7	-1,016.6	1,633.6	1,632.9	0.67	2,422.623	
300.0	300.0	300.0	300.0	0.5	0.6	-10.53	-1,278.7	-1,016.6	1,631.9	1,630.7	1.11	1,467.623	
400.0	399.8	399.8	399.8	0.8	0.8	-10.58	-1,278.7	-1,016.6	1,626.7	1,625.2	1.55	1,048.852	
500.0	499.5	499.5	499.5	1.0	1.0	-10.67	-1,278.7	-1,016.6	1,618.1	1,616.1	2.00	808.731	
600.0	598.7	598.7	598.7	1.3	1.2	-10.80	-1,278.7	-1,016.6	1,606.2	1,603.7	2.46	653.691	
700.0	697.5	697.5	697.5	1.6	1.5	-10.96	-1,278.7	-1,016.6	1,590.8	1,587.9	2.92	545.056	
800.0	795.6	795.6	795.6	2.0	1.7	-11.17	-1,278.7	-1,016.6	1,572.1	1,568.7	3.39	464.343	
900.0	893.1	893.1	893.1	2.5	1.9	-11.42	-1,278.7	-1,016.6	1,550.0	1,546.1	3.86	401.692	
1,000.0	889.6	889.6	889.6	3.0	2.1	-11.72	-1,278.7	-1,016.6	1,524.6	1,520.3	4.34	351.386	
1,100.0	1,085.3	1,085.3	1,085.3	3.6	2.3	-12.07	-1,278.7	-1,016.6	1,495.9	1,491.1	4.83	309.892	
1,200.0	1,179.8	1,179.8	1,179.8	4.2	2.5	-12.48	-1,278.7	-1,016.6	1,464.0	1,458.7	5.33	274.909	
1,300.0	1,273.2	1,273.2	1,273.2	4.9	2.7	-12.95	-1,278.7	-1,016.6	1,429.0	1,423.1	5.84	244.875	
1,400.0	1,365.2	1,365.2	1,365.2	5.7	3.0	-13.50	-1,278.7	-1,016.6	1,390.8	1,384.4	6.36	218.689	
1,500.0	1,455.8	1,455.8	1,455.8	6.5	3.2	-14.14	-1,278.7	-1,016.6	1,349.5	1,342.6	6.90	195.554	
1,600.0	1,545.3	1,545.3	1,545.3	7.4	3.4	-14.71	-1,278.7	-1,016.6	1,305.9	1,298.4	7.48	174.473	
1,700.0	1,634.6	1,634.6	1,634.6	8.3	3.6	-15.22	-1,278.7	-1,016.6	1,262.2	1,254.1	8.10	155.868	
1,800.0	1,723.9	1,723.9	1,723.9	9.3	3.8	-15.77	-1,278.7	-1,016.6	1,218.5	1,209.8	8.73	139.642	
1,900.0	1,813.2	1,813.2	1,813.2	10.2	4.0	-16.36	-1,278.7	-1,016.6	1,175.0	1,165.6	9.37	125.392	
2,000.0	1,902.5	1,902.5	1,902.5	11.1	4.2	-17.00	-1,278.7	-1,016.6	1,131.6	1,121.5	10.03	112.797	
2,100.0	1,991.9	1,991.9	1,991.9	12.0	4.4	-17.68	-1,278.7	-1,016.6	1,088.3	1,077.5	10.71	101.598	
2,200.0	2,081.2	2,081.2	2,081.2	13.0	4.6	-18.42	-1,278.7	-1,016.6	1,045.1	1,033.7	11.41	91.584	
2,300.0	2,170.5	2,170.5	2,170.5	13.9	4.8	-19.23	-1,278.7	-1,016.6	1,002.1	989.9	12.13	82.586	
2,400.0	2,259.8	2,259.8	2,259.8	14.8	5.0	-20.10	-1,278.7	-1,016.6	959.2	946.3	12.88	74.464	
2,500.0	2,349.2	2,349.2	2,349.2	15.8	5.2	-21.05	-1,278.7	-1,016.6	916.6	902.9	13.66	67.103	
2,600.0	2,438.5	2,438.5	2,438.5	16.7	5.4	-22.10	-1,278.7	-1,016.6	874.2	859.7	14.47	60.410	
2,700.0	2,527.8	2,527.8	2,527.8	17.6	5.6	-23.24	-1,278.7	-1,016.6	832.1	816.8	15.32	54.304	
2,800.0	2,617.1	2,617.1	2,617.1	18.6	5.8	-24.51	-1,278.7	-1,016.6	790.3	774.0	16.22	48.723	
2,900.0	2,706.4	2,706.4	2,706.4	19.5	6.0	-25.91	-1,278.7	-1,016.6	748.8	731.6	17.17	43.610	
3,000.0	2,795.8	2,795.8	2,795.8	20.4	6.2	-27.46	-1,278.7	-1,016.6	707.8	689.6	18.18	38.923	
3,100.0	2,885.1	2,885.1	2,885.1	21.4	6.4	-29.20	-1,278.7	-1,016.6	667.3	648.0	19.27	34.624	
3,200.0	2,974.4	2,974.4	2,974.4	22.3	6.6	-31.15	-1,278.7	-1,016.6	627.4	606.9	20.45	30.684	
3,300.0	3,063.7	3,063.7	3,063.7	23.2	6.8	-33.35	-1,278.7	-1,016.6	588.2	566.5	21.72	27.080	
3,400.0	3,153.0	3,153.0	3,153.0	24.2	7.0	-35.83	-1,278.7	-1,016.6	549.9	526.8	23.11	23.794	
3,500.0	3,242.4	3,242.4	3,242.4	25.1	7.2	-38.66	-1,278.7	-1,016.6	512.7	488.1	24.63	20.812	
3,600.0	3,331.7	3,331.7	3,331.7	26.0	7.4	-41.88	-1,278.7	-1,016.6	476.8	450.5	26.31	18.126	
3,700.0	3,421.0	3,421.0	3,421.0	27.0	7.6	-45.56	-1,278.7	-1,016.6	442.6	414.5	28.14	15.731	
3,800.0	3,510.3	3,510.3	3,510.3	27.9	7.8	-49.77	-1,278.7	-1,016.6	410.5	380.4	30.13	13.624	
3,900.0	3,599.7	3,599.7	3,599.7	28.8	8.0	-54.58	-1,278.7	-1,016.6	381.0	348.7	32.27	11.805	
4,000.0	3,689.0	3,689.0	3,689.0	29.8	8.2	-60.04	-1,278.7	-1,016.6	354.7	320.2	34.52	10.276	
4,100.0	3,778.3	3,778.3	3,778.3	30.7	8.4	-66.17	-1,278.7	-1,016.6	332.5	295.7	36.80	9.036	
4,200.0	3,867.6	3,867.6	3,867.6	31.7	8.6	-72.94	-1,278.7	-1,016.6	315.2	276.2	38.98	8.084	
4,300.0	3,956.9	3,956.9	3,956.9	32.6	8.8	-80.23	-1,278.7	-1,016.6	303.5	262.6	40.93	7.416	
4,400.0	4,046.3	4,046.3	4,046.3	33.5	9.0	-87.86	-1,278.7	-1,016.6	298.3	255.8	42.48	7.022	
4,435.1	4,077.6	4,077.6	4,077.6	33.8	9.1	-89.68	-1,278.7	-1,016.6	297.9	255.0	42.89	6.946 CC, ES	
4,500.0	4,135.6	4,135.6	4,135.6	34.4	9.2	-93.03	-1,278.7	-1,016.6	299.1	255.6	43.48	6.879 SF	
4,600.0	4,225.2	4,225.2	4,225.2	35.2	9.4	-96.59	-1,278.7	-1,016.6	303.3	259.5	43.81	6.923	
4,700.0	4,314.9	4,314.9	4,314.9	35.9	9.6	-99.88	-1,278.7	-1,016.6	310.3	266.7	43.64	7.111	
4,800.0	4,404.5	4,404.5	4,404.5	36.6	9.8	-102.90	-1,278.7	-1,016.6	320.1	277.0	43.06	7.434	
4,900.0	4,494.1	4,494.1	4,494.1	37.3	10.0	-105.66	-1,278.7	-1,016.6	332.3	290.1	42.14	7.885	
5,000.0	4,583.4	4,583.4	4,583.4	38.0	10.2	-109.88	-1,278.7	-1,016.6	347.0	306.0	41.06	8.452	

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

Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.19-T3N-R64W  
Reference Site: Butterball D19-17D Pad Sec.19-T3N-R64W  
Site Error: 0.0ft  
Reference Well: Dechant D19-32D  
Well Error: 0.0ft  
Reference Wellbore: Wellbore #1  
Reference Design: Noble Dechant D19-32D Plan #1 (2-15-12)

Local Co-ordinate Reference: Well Dechant D19-32D  
TVD Reference: WELL @ 4802.0ft (Original Well Elev)  
MD Reference: WELL @ 4802.0ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 2.00 sigma  
Database: Landmark  
Offset TVD Reference: Offset Datum

Offset Design Butterball D19-17D Pad Sec.19-T3N-R64W - Butterball D19-20D (Exist.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,100.0	4,672.7	4,672.7	4,672.7	38.8	10.4	-115.94	-1,278.7	-1,016.6	366.3	326.3	40.03	9.152		
5,200.0	4,762.0	4,762.0	4,762.0	39.7	10.6	-121.44	-1,278.7	-1,016.6	389.8	350.9	38.98	10.002		
5,300.0	4,851.4	4,851.4	4,851.4	40.5	10.8	-126.36	-1,278.7	-1,016.6	416.9	378.9	38.00	10.973		
5,400.0	4,940.7	4,940.7	4,940.7	41.3	11.0	-130.74	-1,278.7	-1,016.6	446.9	409.7	37.14	12.033		
5,500.0	5,030.0	5,030.0	5,030.0	42.1	11.2	-134.70	-1,278.7	-1,016.6	479.2	442.8	36.37	13.175		
5,600.0	5,120.4	5,120.4	5,120.4	42.7	11.4	-138.42	-1,278.7	-1,016.6	511.7	476.1	35.53	14.402		
5,700.0	5,212.2	5,212.2	5,212.2	43.3	11.6	-141.52	-1,278.7	-1,016.6	543.0	508.1	34.95	15.537		
5,800.0	5,305.4	5,305.4	5,305.4	43.8	11.8	-144.10	-1,278.7	-1,016.6	572.7	538.1	34.59	16.557		
5,900.0	5,399.7	5,399.7	5,399.7	44.3	12.0	-146.24	-1,278.7	-1,016.6	600.3	565.9	34.40	17.453		
6,000.0	5,495.2	5,495.2	5,495.2	44.8	12.2	-148.01	-1,278.7	-1,016.6	625.7	591.3	34.33	18.223		
6,100.0	5,591.6	5,591.6	5,591.6	45.2	12.5	-149.48	-1,278.7	-1,016.6	648.5	614.1	34.36	18.873		
6,200.0	5,689.0	5,689.0	5,689.0	45.5	12.7	-150.67	-1,278.7	-1,016.6	668.6	634.1	34.44	19.410		
6,300.0	5,787.0	5,787.0	5,787.0	45.9	12.9	-151.64	-1,278.7	-1,016.6	685.8	651.3	34.57	19.842		
6,400.0	5,885.7	5,885.7	5,885.7	46.1	13.1	-152.40	-1,278.7	-1,016.6	700.2	665.5	34.70	20.176		
6,500.0	5,984.9	5,984.9	5,984.9	46.3	13.3	-152.98	-1,278.7	-1,016.6	711.5	676.7	34.85	20.418		
6,600.0	6,084.4	6,084.4	6,084.4	46.5	13.6	-153.39	-1,278.7	-1,016.6	719.8	684.8	34.99	20.573		
6,700.0	6,184.3	6,184.3	6,184.3	46.6	13.8	-153.64	-1,278.7	-1,016.6	725.0	689.8	35.12	20.644		
6,800.0	6,284.2	6,284.2	6,284.2	46.7	14.0	-153.74	-1,278.7	-1,016.6	727.0	691.8	35.23	20.635		
6,900.0	6,384.2	6,384.2	6,384.2	46.8	14.2	51.96	-1,278.7	-1,016.6	727.1	691.5	35.54	20.456		
7,000.0	6,484.2	6,484.2	6,484.2	46.8	14.5	51.96	-1,278.7	-1,016.6	727.1	691.2	35.88	20.262		
7,100.0	6,584.2	6,584.2	6,584.2	46.9	14.7	51.96	-1,278.7	-1,016.6	727.1	690.8	36.23	20.070		
7,200.0	6,684.2	6,684.2	6,684.2	47.0	14.9	51.96	-1,278.7	-1,016.6	727.1	690.5	36.57	19.881		
7,300.0	6,784.2	6,784.2	6,784.2	47.0	15.1	51.96	-1,278.7	-1,016.6	727.1	690.1	36.92	19.694		
7,400.0	6,884.2	6,884.2	6,884.2	47.1	15.4	51.96	-1,278.7	-1,016.6	727.1	689.8	37.27	19.510		
7,500.0	6,984.2	6,984.2	6,984.2	47.1	15.6	51.96	-1,278.7	-1,016.6	727.1	689.4	37.62	19.328		
7,600.0	7,084.2	7,084.2	7,084.2	47.2	15.8	51.96	-1,278.7	-1,016.6	727.1	689.1	37.97	19.150		
7,700.0	7,184.2	7,184.2	7,184.2	47.3	16.0	51.96	-1,278.7	-1,016.6	727.1	688.7	38.32	18.973		
7,800.0	7,284.2	7,284.2	7,284.2	47.3	16.3	51.96	-1,278.7	-1,016.6	727.1	688.4	38.67	18.799		
7,900.0	7,384.2	7,384.2	7,384.2	47.4	16.5	51.96	-1,278.7	-1,016.6	727.1	688.0	39.03	18.628		
8,000.0	7,484.2	7,484.2	7,484.2	47.5	16.7	51.96	-1,278.7	-1,016.6	727.1	687.7	39.39	18.459		
8,100.0	7,584.2	7,584.2	7,584.2	47.5	16.9	51.96	-1,278.7	-1,016.6	727.1	687.3	39.75	18.292		
8,181.8	7,666.0	7,666.0	7,666.0	47.6	17.1	51.96	-1,278.7	-1,016.6	727.1	687.0	40.04	18.158		



Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.19-T3N-R64W  
Reference Site: Butterball D19-17D Pad Sec.19-T3N-R64W  
Site Error: 0.0ft  
Reference Well: Dechant D19-32D  
Well Error: 0.0ft  
Reference Wellbore: Wellbore #1  
Reference Design: Noble Dechant D19-32D Plan #1 (2-15-12)

Local Co-ordinate Reference: Well Dechant D19-32D  
TVD Reference: WELL @ 4802.0ft (Original Well Elev)  
MD Reference: WELL @ 4802.0ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 2.00 sigma  
Database: Landmark  
Offset TVD Reference: Offset Datum

Offset Design Butterball D19-17D Pad Sec.19-T3N-R64W - Turk Blue D19-2J (Exist.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance			Minimum Separation (ft)	Separation Factor	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)				Between Ellipses (ft)	
0.0	0.0	0.0	0.0	0.0	0.0	-42.61	36.4	-33.5	49.5					
100.0	100.0	100.0	100.0	0.1	0.1	-42.61	36.4	-33.5	49.5	49.3	0.22	220.232		
200.0	200.0	200.0	200.0	0.3	0.3	-42.61	36.4	-33.5	49.5	48.8	0.67	73.411		
289.3	289.3	289.3	289.3	0.5	0.5	90.00	36.4	-33.5	49.5	48.4	1.06	46.718 CC		
300.0	300.0	300.0	300.0	0.5	0.6	90.41	36.4	-33.5	49.5	48.4	1.10	44.782		
400.0	399.8	399.8	399.8	0.8	0.8	96.42	36.4	-33.5	49.8	48.3	1.54	32.269 ES		
500.0	499.5	499.5	499.5	1.0	1.0	106.04	36.4	-33.5	51.5	49.5	2.01	25.572		
600.0	598.7	598.7	598.7	1.3	1.2	117.93	36.4	-33.5	56.1	53.6	2.51	22.345		
700.0	697.5	697.5	697.5	1.6	1.5	129.98	36.4	-33.5	65.0	62.0	3.02	21.546 SF		
800.0	795.6	795.6	795.6	2.0	1.7	140.43	36.4	-33.5	78.7	75.2	3.51	22.424		
900.0	893.1	893.1	893.1	2.5	1.9	148.65	36.4	-33.5	97.2	93.2	3.99	24.372		
1,000.0	989.6	989.6	989.6	3.0	2.1	154.84	36.4	-33.5	120.2	115.8	4.46	26.957		
1,100.0	1,085.3	1,085.3	1,085.3	3.6	2.3	159.45	36.4	-33.5	147.4	142.4	4.93	29.909		
1,200.0	1,179.8	1,179.8	1,179.8	4.2	2.5	162.92	36.4	-33.5	178.4	173.0	5.39	33.066		
1,300.0	1,273.2	1,273.2	1,273.2	4.9	2.7	165.56	36.4	-33.5	213.0	207.2	5.86	36.334		
1,400.0	1,365.2	1,365.2	1,365.2	5.7	3.0	167.60	36.4	-33.5	251.2	244.9	6.33	39.656		
1,500.0	1,455.8	1,455.8	1,455.8	6.5	3.2	169.20	36.4	-33.5	292.8	285.9	6.81	43.000		
1,600.0	1,545.3	1,545.3	1,545.3	7.4	3.4	170.56	36.4	-33.5	337.0	329.6	7.31	46.084		
1,700.0	1,634.6	1,634.6	1,634.6	8.3	3.6	171.67	36.4	-33.5	381.5	373.6	7.84	48.674		
1,800.0	1,723.9	1,723.9	1,723.9	9.3	3.8	172.54	36.4	-33.5	426.1	417.7	8.37	50.910		
1,900.0	1,813.2	1,813.2	1,813.2	10.2	4.0	173.25	36.4	-33.5	470.8	461.9	8.91	52.855		
2,000.0	1,902.5	1,902.5	1,902.5	11.1	4.2	173.84	36.4	-33.5	515.5	506.1	9.45	54.559		
2,100.0	1,991.9	1,991.9	1,991.9	12.0	4.4	174.33	36.4	-33.5	560.3	550.3	9.99	56.062		
2,200.0	2,081.2	2,081.2	2,081.2	13.0	4.6	174.75	36.4	-33.5	605.1	594.6	10.54	57.396		
2,300.0	2,170.5	2,170.5	2,170.5	13.9	4.8	175.11	36.4	-33.5	649.9	638.8	11.09	58.587		
2,400.0	2,259.8	2,259.8	2,259.8	14.8	5.0	175.43	36.4	-33.5	694.8	683.1	11.65	59.655		
2,500.0	2,349.2	2,349.2	2,349.2	15.8	5.2	175.71	36.4	-33.5	739.6	727.4	12.20	60.618		
2,600.0	2,438.5	2,438.5	2,438.5	16.7	5.4	175.95	36.4	-33.5	784.5	771.7	12.76	61.491		
2,700.0	2,527.8	2,527.8	2,527.8	17.6	5.6	176.17	36.4	-33.5	829.4	816.1	13.32	62.285		
2,800.0	2,617.1	2,617.1	2,617.1	18.6	5.8	176.37	36.4	-33.5	874.3	860.4	13.88	63.009		
2,900.0	2,706.4	2,706.4	2,706.4	19.5	6.0	176.55	36.4	-33.5	919.2	904.7	14.44	63.673		
3,000.0	2,795.8	2,795.8	2,795.8	20.4	6.2	176.71	36.4	-33.5	964.1	949.1	15.00	64.284		
3,100.0	2,885.1	2,885.1	2,885.1	21.4	6.4	176.85	36.4	-33.5	1,009.0	993.4	15.56	64.846		
3,200.0	2,974.4	2,974.4	2,974.4	22.3	6.6	176.99	36.4	-33.5	1,053.9	1,037.7	16.12	65.367		
3,300.0	3,063.7	3,063.7	3,063.7	23.2	6.8	177.11	36.4	-33.5	1,098.8	1,082.1	16.69	65.849		
3,400.0	3,153.0	3,153.0	3,153.0	24.2	7.0	177.22	36.4	-33.5	1,143.7	1,126.5	17.25	66.297		
3,500.0	3,242.4	3,242.4	3,242.4	25.1	7.2	177.33	36.4	-33.5	1,188.6	1,170.8	17.82	66.715		
3,600.0	3,331.7	3,331.7	3,331.7	26.0	7.4	177.43	36.4	-33.5	1,233.6	1,215.2	18.38	67.104		
3,700.0	3,421.0	3,421.0	3,421.0	27.0	7.6	177.52	36.4	-33.5	1,278.5	1,259.5	18.95	67.469		
3,800.0	3,510.3	3,510.3	3,510.3	27.9	7.8	177.60	36.4	-33.5	1,323.4	1,303.9	19.52	67.811		
3,900.0	3,599.7	3,599.7	3,599.7	28.8	8.0	177.68	36.4	-33.5	1,368.3	1,348.3	20.08	68.131		
4,000.0	3,689.0	3,689.0	3,689.0	29.8	8.2	177.75	36.4	-33.5	1,413.3	1,392.6	20.65	68.433		
4,100.0	3,778.3	3,778.3	3,778.3	30.7	8.4	177.82	36.4	-33.5	1,458.2	1,437.0	21.22	68.717		
4,200.0	3,867.6	3,867.6	3,867.6	31.7	8.6	177.89	36.4	-33.5	1,503.2	1,481.4	21.79	68.985		
4,300.0	3,956.9	3,956.9	3,956.9	32.6	8.8	177.95	36.4	-33.5	1,548.1	1,525.7	22.36	69.238		
4,400.0	4,046.3	4,046.3	4,046.3	33.5	9.0	178.01	36.4	-33.5	1,593.0	1,570.1	22.93	69.477		
4,500.0	4,135.6	4,135.6	4,135.6	34.4	9.2	-178.81	36.4	-33.5	1,637.9	1,614.4	23.49	69.720		
4,600.0	4,225.2	4,225.2	4,225.2	35.2	9.4	-173.92	36.4	-33.5	1,682.3	1,658.2	24.06	69.925		
4,700.0	4,314.9	4,314.9	4,314.9	35.9	9.6	-169.13	36.4	-33.5	1,726.1	1,701.5	24.64	70.051		
4,800.0	4,404.5	4,404.5	4,404.5	36.6	9.8	-164.47	36.4	-33.5	1,769.5	1,744.2	25.24	70.115		
4,900.0	4,494.1	4,494.1	4,494.1	37.3	10.0	-159.98	36.4	-33.5	1,812.2	1,786.4	25.84	70.130		
5,000.0	4,583.4	4,583.4	4,583.4	38.0	10.2	-157.72	36.4	-33.5	1,854.5	1,828.1	26.42	70.194		

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

Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.19-T3N-R64W  
Reference Site: Butterball D19-17D Pad Sec.19-T3N-R64W  
Site Error: 0.0ft  
Reference Well: Dechant D19-32D  
Well Error: 0.0ft  
Reference Wellbore: Wellbore #1  
Reference Design: Noble Dechant D19-32D Plan #1 (2-15-12)

Local Co-ordinate Reference: Well Dechant D19-32D  
TVD Reference: WELL @ 4802.0ft (Original Well Elev)  
MD Reference: WELL @ 4802.0ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 2.00 sigma  
Database: Landmark  
Offset TVD Reference: Offset Datum

Offset Design Butterball D19-17D Pad Sec.19-T3N-R64W - Turk Blue D19-2J (Exist.) - Wellbore #1 - Design #1												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)		Separation Factor
5,100.0	4,672.7	4,672.7	4,672.7	38.8	10.4	-158.23	36.4	-33.5	1,896.8	1,869.9	26.97	70.330	
5,200.0	4,762.0	4,762.0	4,762.0	39.7	10.6	-158.71	36.4	-33.5	1,939.3	1,911.8	27.52	70.461	
5,300.0	4,851.4	4,851.4	4,851.4	40.5	10.8	-159.18	36.4	-33.5	1,981.8	1,953.7	28.08	70.588	
5,400.0	4,940.7	4,940.7	4,940.7	41.3	11.0	-159.63	36.4	-33.5	2,024.5	1,995.8	28.63	70.710	
5,500.0	5,030.0	5,030.0	5,030.0	42.1	11.2	-160.12	36.4	-33.5	2,067.2	2,038.0	29.20	70.791	
5,600.0	5,120.4	5,120.4	5,120.4	42.7	11.4	-160.81	36.4	-33.5	2,107.9	2,078.1	29.80	70.732	
5,700.0	5,212.2	5,212.2	5,212.2	43.3	11.6	-161.41	36.4	-33.5	2,145.6	2,115.3	30.38	70.619	
5,800.0	5,305.4	5,305.4	5,305.4	43.8	11.8	-161.95	36.4	-33.5	2,180.4	2,149.4	30.94	70.469	
5,900.0	5,399.7	5,399.7	5,399.7	44.3	12.0	-162.41	36.4	-33.5	2,212.0	2,180.6	31.47	70.294	
6,000.0	5,495.2	5,495.2	5,495.2	44.8	12.2	-162.82	36.4	-33.5	2,240.5	2,208.6	31.96	70.103	
6,100.0	5,591.6	5,591.6	5,591.6	45.2	12.5	-163.17	36.4	-33.5	2,265.9	2,233.5	32.41	69.904	
6,200.0	5,689.0	5,689.0	5,689.0	45.5	12.7	-163.47	36.4	-33.5	2,288.0	2,255.2	32.83	69.701	
6,300.0	5,787.0	5,787.0	5,787.0	45.9	12.9	-163.71	36.4	-33.5	2,306.8	2,273.6	33.19	69.499	
6,400.0	5,885.7	5,885.7	5,885.7	46.1	13.1	-163.91	36.4	-33.5	2,322.4	2,288.9	33.51	69.301	
6,500.0	5,984.9	5,984.9	5,984.9	46.3	13.3	-164.07	36.4	-33.5	2,334.6	2,300.9	33.78	69.108	
6,600.0	6,084.4	6,084.4	6,084.4	46.5	13.6	-164.18	36.4	-33.5	2,343.6	2,309.6	34.00	68.922	
6,700.0	6,184.3	6,184.3	6,184.3	46.6	13.8	-164.25	36.4	-33.5	2,349.1	2,314.9	34.17	68.743	
6,800.0	6,284.2	6,284.2	6,284.2	46.7	14.0	-164.27	36.4	-33.5	2,351.3	2,317.0	34.29	68.571	
6,900.0	6,384.2	6,384.2	6,384.2	46.8	14.2	41.42	36.4	-33.5	2,351.4	2,316.8	34.60	67.958	
7,000.0	6,484.2	6,484.2	6,484.2	46.8	14.5	41.42	36.4	-33.5	2,351.4	2,316.4	34.95	67.279	
7,100.0	6,584.2	6,584.2	6,584.2	46.9	14.7	41.42	36.4	-33.5	2,351.4	2,316.1	35.30	66.611	
7,200.0	6,684.2	6,684.2	6,684.2	47.0	14.9	41.42	36.4	-33.5	2,351.4	2,315.7	35.65	65.953	
7,300.0	6,784.2	6,784.2	6,784.2	47.0	15.1	41.42	36.4	-33.5	2,351.4	2,315.4	36.01	65.305	
7,400.0	6,884.2	6,884.2	6,884.2	47.1	15.4	41.42	36.4	-33.5	2,351.4	2,315.0	36.36	64.667	
7,500.0	6,984.2	6,984.2	6,984.2	47.1	15.6	41.42	36.4	-33.5	2,351.4	2,314.7	36.72	64.038	
7,600.0	7,084.2	7,084.2	7,084.2	47.2	15.8	41.42	36.4	-33.5	2,351.4	2,314.3	37.08	63.419	
7,700.0	7,184.2	7,184.2	7,184.2	47.3	16.0	41.42	36.4	-33.5	2,351.4	2,313.9	37.44	62.808	
7,800.0	7,284.2	7,284.2	7,284.2	47.3	16.3	41.42	36.4	-33.5	2,351.4	2,313.6	37.80	62.208	
7,900.0	7,384.2	7,384.2	7,384.2	47.4	16.5	41.42	36.4	-33.5	2,351.4	2,313.2	38.16	61.616	
8,000.0	7,484.2	7,484.2	7,484.2	47.5	16.7	41.42	36.4	-33.5	2,351.4	2,312.8	38.53	61.033	
8,100.0	7,584.2	7,584.2	7,584.2	47.5	16.9	41.42	36.4	-33.5	2,351.4	2,312.5	38.89	60.458	
8,181.8	7,666.0	7,666.0	7,666.0	47.6	17.1	41.42	36.4	-33.5	2,351.4	2,312.2	39.19	59.995	



Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.19-T3N-R64W  
Reference Site: Butterball D19-17D Pad Sec.19-T3N-R64W  
Site Error: 0.0ft  
Reference Well: Dechant D19-32D  
Well Error: 0.0ft  
Reference Wellbore: Wellbore #1  
Reference Design: Noble Dechant D19-32D Plan #1 (2-15-12)

Local Co-ordinate Reference: Well Dechant D19-32D  
TVD Reference: WELL @ 4802.0ft (Original Well Elev)  
MD Reference: WELL @ 4802.0ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 2.00 sigma  
Database: Landmark  
Offset TVD Reference: Offset Datum

Offset Design Butterball D19-17D Pad Sec.19-T3N-R64W - Turk Blue D19-5 (Exist.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (ft)	Separation Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
0.0	0.0	0.0	0.0	0.0	0.0	-140.46	-1,231.3	-1,016.6	1,596.8					
100.0	100.0	100.0	100.0	0.1	0.1	-140.46	-1,231.3	-1,016.6	1,596.8	1,596.5	0.22	7,104.161		
200.0	200.0	200.0	200.0	0.3	0.3	-140.46	-1,231.3	-1,016.6	1,596.8	1,596.1	0.67	2,368.054		
300.0	300.0	300.0	300.0	0.5	0.6	-9.47	-1,231.3	-1,016.6	1,595.1	1,593.9	1.11	1,434.487		
400.0	399.8	399.8	399.8	0.8	0.8	-9.52	-1,231.3	-1,016.6	1,589.9	1,588.3	1.55	1,025.095		
500.0	499.5	499.5	499.5	1.0	1.0	-9.60	-1,231.3	-1,016.6	1,581.3	1,579.3	2.00	790.361		
600.0	598.7	598.7	598.7	1.3	1.2	-9.72	-1,231.3	-1,016.6	1,569.3	1,566.8	2.46	638.805		
700.0	697.5	697.5	697.5	1.6	1.5	-9.87	-1,231.3	-1,016.6	1,553.9	1,550.9	2.92	532.617		
800.0	795.6	795.6	795.6	2.0	1.7	-10.05	-1,231.3	-1,016.6	1,535.1	1,531.7	3.38	453.729		
900.0	893.1	893.1	893.1	2.5	1.9	-10.28	-1,231.3	-1,016.6	1,512.9	1,509.0	3.85	392.500		
1,000.0	989.6	989.6	989.6	3.0	2.1	-10.56	-1,231.3	-1,016.6	1,487.4	1,483.1	4.33	343.344		
1,100.0	1,085.3	1,085.3	1,085.3	3.6	2.3	-10.88	-1,231.3	-1,016.6	1,458.6	1,453.8	4.82	302.806		
1,200.0	1,179.8	1,179.8	1,179.8	4.2	2.5	-11.26	-1,231.3	-1,016.6	1,426.6	1,421.3	5.31	268.638		
1,300.0	1,273.2	1,273.2	1,273.2	4.9	2.7	-11.70	-1,231.3	-1,016.6	1,391.4	1,385.6	5.81	239.311		
1,400.0	1,365.2	1,365.2	1,365.2	5.7	3.0	-12.21	-1,231.3	-1,016.6	1,353.1	1,346.7	6.33	213.751		
1,500.0	1,455.8	1,455.8	1,455.8	6.5	3.2	-12.79	-1,231.3	-1,016.6	1,311.6	1,304.8	6.86	191.176		
1,600.0	1,545.3	1,545.3	1,545.3	7.4	3.4	-13.32	-1,231.3	-1,016.6	1,267.8	1,260.4	7.43	170.570		
1,700.0	1,634.6	1,634.6	1,634.6	8.3	3.6	-13.80	-1,231.3	-1,016.6	1,223.9	1,215.8	8.03	152.351		
1,800.0	1,723.9	1,723.9	1,723.9	9.3	3.8	-14.32	-1,231.3	-1,016.6	1,180.0	1,171.3	8.65	136.448		
1,900.0	1,813.2	1,813.2	1,813.2	10.2	4.0	-14.88	-1,231.3	-1,016.6	1,136.2	1,126.9	9.28	122.472		
2,000.0	1,902.5	1,902.5	1,902.5	11.1	4.2	-15.48	-1,231.3	-1,016.6	1,092.5	1,082.6	9.92	110.109		
2,100.0	1,991.9	1,991.9	1,991.9	12.0	4.4	-16.13	-1,231.3	-1,016.6	1,048.9	1,038.3	10.58	99.108		
2,200.0	2,081.2	2,081.2	2,081.2	13.0	4.6	-16.83	-1,231.3	-1,016.6	1,005.4	994.2	11.26	89.263		
2,300.0	2,170.5	2,170.5	2,170.5	13.9	4.8	-17.60	-1,231.3	-1,016.6	962.1	950.1	11.97	80.409		
2,400.0	2,259.8	2,259.8	2,259.8	14.8	5.0	-18.44	-1,231.3	-1,016.6	918.9	906.2	12.69	72.409		
2,500.0	2,349.2	2,349.2	2,349.2	15.8	5.2	-19.36	-1,231.3	-1,016.6	875.9	862.5	13.44	65.152		
2,600.0	2,438.5	2,438.5	2,438.5	16.7	5.4	-20.37	-1,231.3	-1,016.6	833.1	818.9	14.23	58.545		
2,700.0	2,527.8	2,527.8	2,527.8	17.6	5.6	-21.49	-1,231.3	-1,016.6	790.6	775.5	15.06	52.512		
2,800.0	2,617.1	2,617.1	2,617.1	18.6	5.8	-22.74	-1,231.3	-1,016.6	748.3	732.4	15.93	46.988		
2,900.0	2,706.4	2,706.4	2,706.4	19.5	6.0	-24.12	-1,231.3	-1,016.6	706.4	689.5	16.85	41.922		
3,000.0	2,795.8	2,795.8	2,795.8	20.4	6.2	-25.67	-1,231.3	-1,016.6	664.8	647.0	17.84	37.269		
3,100.0	2,885.1	2,885.1	2,885.1	21.4	6.4	-27.43	-1,231.3	-1,016.6	623.8	604.9	18.91	32.995		
3,200.0	2,974.4	2,974.4	2,974.4	22.3	6.6	-29.41	-1,231.3	-1,016.6	583.3	563.2	20.06	29.072		
3,300.0	3,063.7	3,063.7	3,063.7	23.2	6.8	-31.67	-1,231.3	-1,016.6	543.5	522.2	21.33	25.478		
3,400.0	3,153.0	3,153.0	3,153.0	24.2	7.0	-34.27	-1,231.3	-1,016.6	504.6	481.9	22.73	22.198		
3,500.0	3,242.4	3,242.4	3,242.4	25.1	7.2	-37.26	-1,231.3	-1,016.6	466.8	442.5	24.28	19.221		
3,600.0	3,331.7	3,331.7	3,331.7	26.0	7.4	-40.72	-1,231.3	-1,016.6	430.3	404.3	26.01	16.544		
3,700.0	3,421.0	3,421.0	3,421.0	27.0	7.6	-44.76	-1,231.3	-1,016.6	395.6	367.7	27.93	14.164		
3,800.0	3,510.3	3,510.3	3,510.3	27.9	7.8	-49.46	-1,231.3	-1,016.6	363.2	333.1	30.05	12.085		
3,900.0	3,599.7	3,599.7	3,599.7	28.8	8.0	-54.92	-1,231.3	-1,016.6	333.7	301.3	32.35	10.314		
4,000.0	3,689.0	3,689.0	3,689.0	29.8	8.2	-61.23	-1,231.3	-1,016.6	307.9	273.1	34.77	8.855		
4,100.0	3,778.3	3,778.3	3,778.3	30.7	8.4	-68.39	-1,231.3	-1,016.6	286.9	249.8	37.19	7.716		
4,200.0	3,867.6	3,867.6	3,867.6	31.7	8.6	-76.34	-1,231.3	-1,016.6	271.8	232.4	39.42	6.896		
4,300.0	3,956.9	3,956.9	3,956.9	32.6	8.8	-84.87	-1,231.3	-1,016.6	263.6	222.4	41.24	6.393		
4,358.7	4,009.4	4,009.4	4,009.4	33.1	8.9	-90.00	-1,231.3	-1,016.6	262.3	220.3	42.04	6.239 CC, ES		
4,400.0	4,046.3	4,046.3	4,046.3	33.5	9.0	-93.62	-1,231.3	-1,016.6	263.0	220.5	42.47	6.192 SF		
4,500.0	4,135.6	4,135.6	4,135.6	34.4	9.2	-99.69	-1,231.3	-1,016.6	269.2	226.2	42.99	6.261		
4,600.0	4,225.2	4,225.2	4,225.2	35.2	9.4	-103.86	-1,231.3	-1,016.6	279.3	236.5	42.79	6.527		
4,700.0	4,314.9	4,314.9	4,314.9	35.9	9.6	-107.48	-1,231.3	-1,016.6	292.5	250.4	42.11	6.947		
4,800.0	4,404.5	4,404.5	4,404.5	36.6	9.8	-110.57	-1,231.3	-1,016.6	308.5	267.4	41.09	7.507		
4,900.0	4,494.1	4,494.1	4,494.1	37.3	10.0	-113.18	-1,231.3	-1,016.6	326.7	286.8	39.87	8.193		
5,000.0	4,583.4	4,583.4	4,583.4	38.0	10.2	-117.15	-1,231.3	-1,016.6	347.3	308.6	38.61	8.994		

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

Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.19-T3N-R64W  
Reference Site: Butterball D19-17D Pad Sec.19-T3N-R64W  
Site Error: 0.0ft  
Reference Well: Dechant D19-32D  
Well Error: 0.0ft  
Reference Wellbore: Wellbore #1  
Reference Design: Noble Dechant D19-32D Plan #1 (2-15-12)

Local Co-ordinate Reference: Well Dechant D19-32D  
TVD Reference: WELL @ 4802.0ft (Original Well Elev)  
MD Reference: WELL @ 4802.0ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 2.00 sigma  
Database: Landmark  
Offset TVD Reference: Offset Datum

Offset Design Butterball D19-17D Pad Sec.19-T3N-R64W - Turk Blue D19-5 (Exist.) - Wellbore #1 - Design #1													Offset Site Error: 0.0 ft
Survey Program: 0-MWD													Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.0	4,672.7	4,672.7	4,672.7	38.8	10.4	-122.87	-1,231.3	-1,016.6	371.7	334.2	37.48	9.918	
5,200.0	4,762.0	4,762.0	4,762.0	39.7	10.6	-127.94	-1,231.3	-1,016.6	399.8	363.3	36.46	10.965	
5,300.0	4,851.4	4,851.4	4,851.4	40.5	10.8	-132.40	-1,231.3	-1,016.6	430.7	395.1	35.59	12.101	
5,400.0	4,940.7	4,940.7	4,940.7	41.3	11.0	-136.30	-1,231.3	-1,016.6	463.9	429.0	34.91	13.290	
5,500.0	5,030.0	5,030.0	5,030.0	42.1	11.2	-139.82	-1,231.3	-1,016.6	498.9	464.6	34.34	14.528	
5,600.0	5,120.4	5,120.4	5,120.4	42.7	11.4	-143.13	-1,231.3	-1,016.6	533.7	499.9	33.76	15.809	
5,700.0	5,212.2	5,212.2	5,212.2	43.3	11.6	-145.86	-1,231.3	-1,016.6	566.8	533.3	33.42	16.959	
5,800.0	5,305.4	5,305.4	5,305.4	43.8	11.8	-148.13	-1,231.3	-1,016.6	597.9	564.6	33.28	17.967	
5,900.0	5,399.7	5,399.7	5,399.7	44.3	12.0	-150.01	-1,231.3	-1,016.6	626.7	593.4	33.27	18.835	
6,000.0	5,495.2	5,495.2	5,495.2	44.8	12.2	-151.56	-1,231.3	-1,016.6	652.9	619.6	33.36	19.572	
6,100.0	5,591.6	5,591.6	5,591.6	45.2	12.5	-152.84	-1,231.3	-1,016.6	676.5	643.0	33.51	20.186	
6,200.0	5,689.0	5,689.0	5,689.0	45.5	12.7	-153.88	-1,231.3	-1,016.6	697.2	663.5	33.70	20.690	
6,300.0	5,787.0	5,787.0	5,787.0	45.9	12.9	-154.73	-1,231.3	-1,016.6	714.9	681.0	33.90	21.092	
6,400.0	5,885.7	5,885.7	5,885.7	46.1	13.1	-155.39	-1,231.3	-1,016.6	729.6	695.5	34.09	21.400	
6,500.0	5,984.9	5,984.9	5,984.9	46.3	13.3	-155.90	-1,231.3	-1,016.6	741.2	707.0	34.28	21.623	
6,600.0	6,084.4	6,084.4	6,084.4	46.5	13.6	-156.26	-1,231.3	-1,016.6	749.7	715.3	34.45	21.764	
6,700.0	6,184.3	6,184.3	6,184.3	46.6	13.8	-156.48	-1,231.3	-1,016.6	755.0	720.4	34.59	21.828	
6,800.0	6,284.2	6,284.2	6,284.2	46.7	14.0	-156.56	-1,231.3	-1,016.6	757.1	722.4	34.71	21.815	
6,900.0	6,384.2	6,384.2	6,384.2	46.8	14.2	49.13	-1,231.3	-1,016.6	757.2	722.1	35.02	21.623	
7,000.0	6,484.2	6,484.2	6,484.2	46.8	14.5	49.13	-1,231.3	-1,016.6	757.2	721.8	35.36	21.412	
7,100.0	6,584.2	6,584.2	6,584.2	46.9	14.7	49.13	-1,231.3	-1,016.6	757.2	721.5	35.71	21.204	
7,200.0	6,684.2	6,684.2	6,684.2	47.0	14.9	49.13	-1,231.3	-1,016.6	757.2	721.1	36.06	21.000	
7,300.0	6,784.2	6,784.2	6,784.2	47.0	15.1	49.13	-1,231.3	-1,016.6	757.2	720.8	36.41	20.798	
7,400.0	6,884.2	6,884.2	6,884.2	47.1	15.4	49.13	-1,231.3	-1,016.6	757.2	720.4	36.76	20.599	
7,500.0	6,984.2	6,984.2	6,984.2	47.1	15.6	49.13	-1,231.3	-1,016.6	757.2	720.0	37.11	20.403	
7,600.0	7,084.2	7,084.2	7,084.2	47.2	15.8	49.13	-1,231.3	-1,016.6	757.2	719.7	37.47	20.209	
7,700.0	7,184.2	7,184.2	7,184.2	47.3	16.0	49.13	-1,231.3	-1,016.6	757.2	719.3	37.82	20.019	
7,800.0	7,284.2	7,284.2	7,284.2	47.3	16.3	49.13	-1,231.3	-1,016.6	757.2	719.0	38.18	19.831	
7,900.0	7,384.2	7,384.2	7,384.2	47.4	16.5	49.13	-1,231.3	-1,016.6	757.2	718.6	38.54	19.647	
8,000.0	7,484.2	7,484.2	7,484.2	47.5	16.7	49.13	-1,231.3	-1,016.6	757.2	718.3	38.90	19.464	
8,100.0	7,584.2	7,584.2	7,584.2	47.5	16.9	49.13	-1,231.3	-1,016.6	757.2	717.9	39.26	19.285	
8,181.8	7,666.0	7,666.0	7,666.0	47.6	17.1	49.13	-1,231.3	-1,016.6	757.2	717.6	39.56	19.140	



Company: NOBLE ENERGY INC WELD COUNTY CO  
 Project: SEC.19-T3N-R64W  
 Reference Site: Butterball D19-17D Pad Sec.19-T3N-R64W  
 Site Error: 0.0ft  
 Reference Well: Dechant D19-32D  
 Well Error: 0.0ft  
 Reference Wellbore: Wellbore #1  
 Reference Design: Noble Dechant D19-32D Plan #1 (2-15-12)

Local Co-ordinate Reference: Well Dechant D19-32D  
 TVD Reference: WELL @ 4802.0ft (Original Well Elev)  
 MD Reference: WELL @ 4802.0ft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature  
 Output errors are at: 2.00 sigma  
 Database: Landmark  
 Offset TVD Reference: Offset Datum

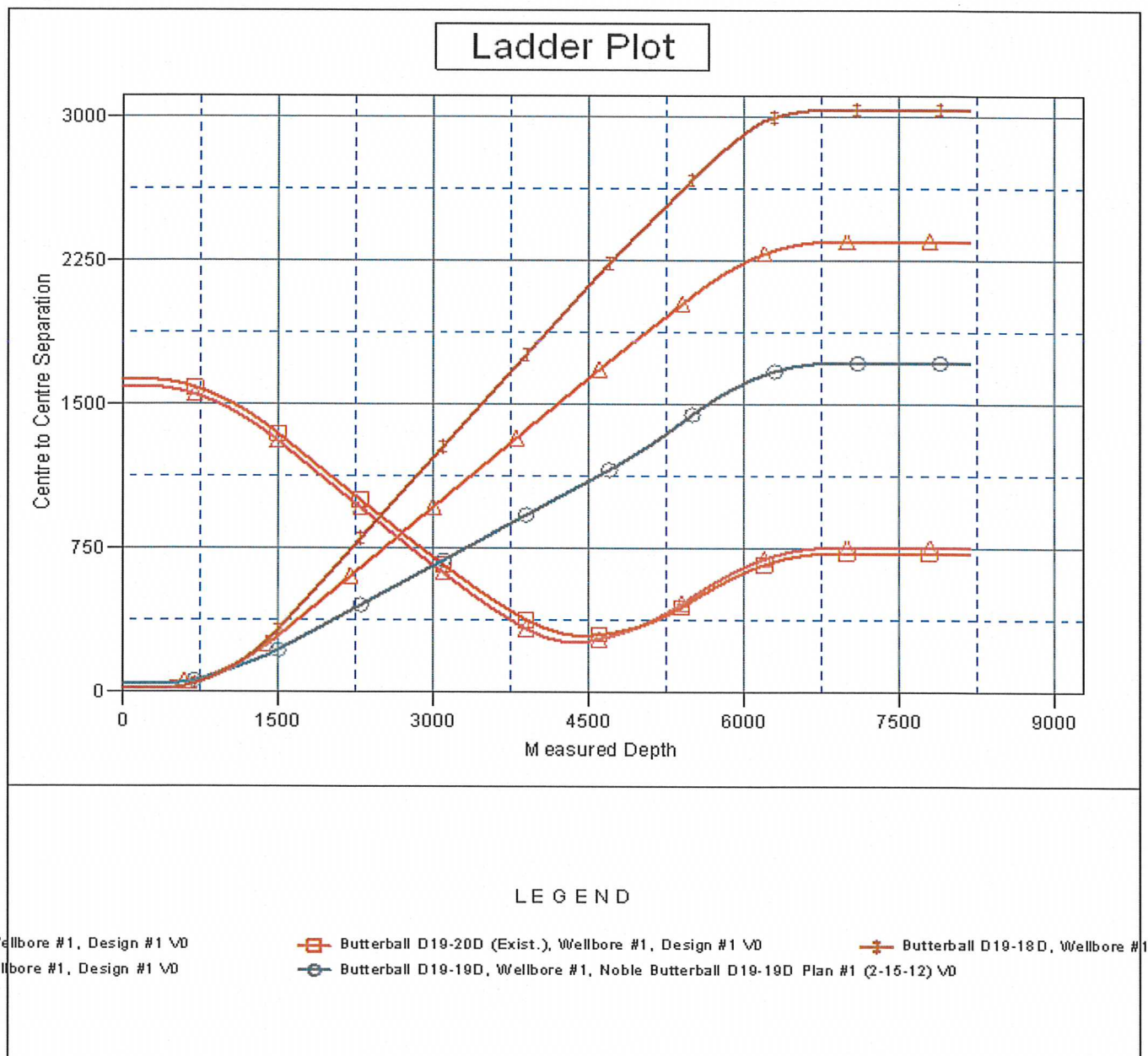
Reference Depths are relative to WELL @ 4802.0ft (Original Well Elev) Coordinates are relative to: Dechant D19-32D

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°

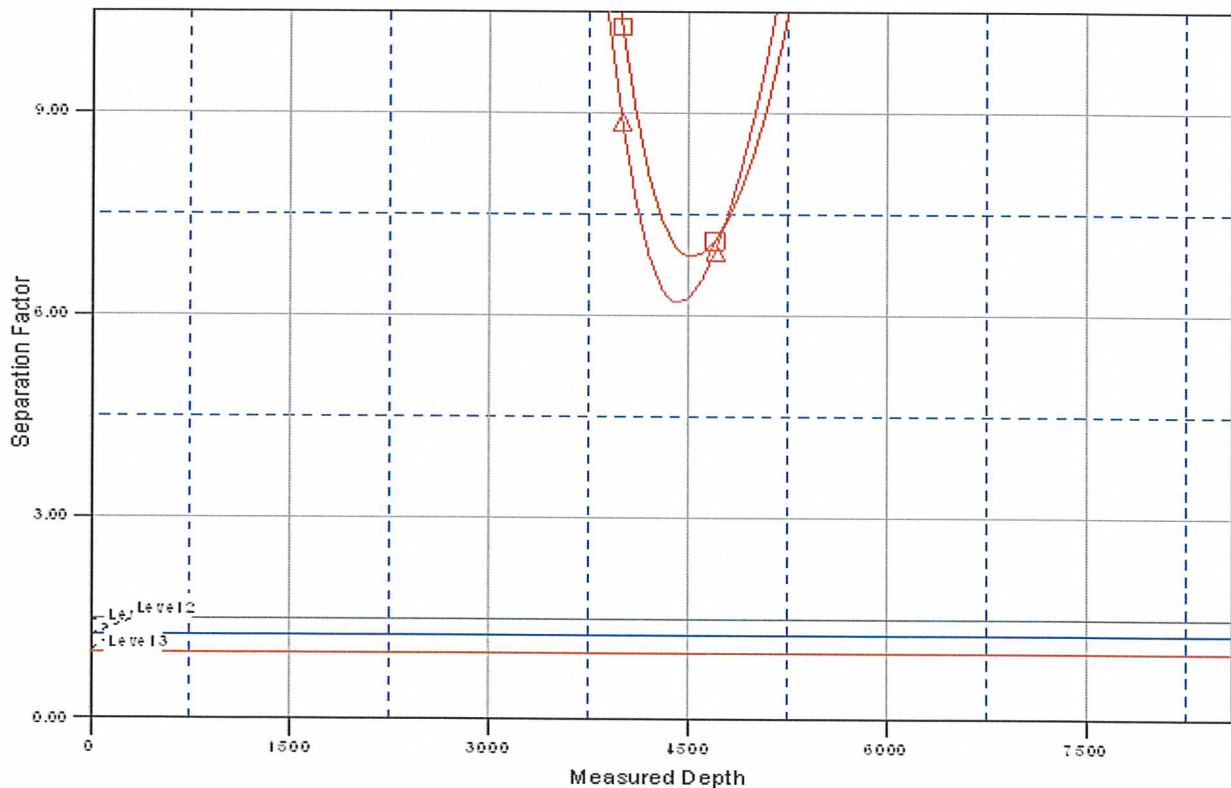


Company: NOBLE ENERGY INC WELD COUNTY CO  
Project: SEC.19-T3N-R64W  
Reference Site: Butterball D19-17D Pad Sec.19-T3N-R64W  
Site Error: 0.0ft  
Reference Well: Dechant D19-32D  
Well Error: 0.0ft  
Reference Wellbore: Wellbore #1  
Reference Design: Noble Dechant D19-32D Plan #1 (2-15-12)

Local Co-ordinate Reference: Well Dechant D19-32D  
TVD Reference: WELL @ 4802.0ft (Original Well Elev)  
MD Reference: WELL @ 4802.0ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Output errors are at: 2.00 sigma  
Database: Landmark  
Offset TVD Reference: Offset Datum

Reference Depths are relative to WELL @ 4802.0ft (Original Well Elev) Coordinates are relative to: Dechant D19-32D  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.58°

### Separation Factor Plot



### LEGEND

Wellbore #1, Design #1 VD  
Wellbore #1, Design #1 VD

Butterball D19-20D (Exist.), Wellbore #1, Design #1 VD  
Butterball D19-19D, Wellbore #1, Noble Butterball D19-19D Plan #1 (2-15-12) VD

Butterball D19-18D, Wellbore #1,