



Scientific Drilling

NM OIL CONSERVATION
ARTESIA DISTRICT

DEC 13 2018

Devon Energy

Eddy County, NM (NAD83 NME)

Spud Muffin 31-30

334H

RECEIVED

30.015-45303

OH

Plan #1

Anticollision Report

07 December, 2018



Scientific Drilling

www.scientificdrilling.com

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Reference	Plan #1
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	Stations
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 9,999.99 usft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic
Casing Method:	Not applied

Survey Tool Program		Date	12/7/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	19,911.12	Plan #1 (OH)	MWD+HDGM	OWSG MWD + HDGM	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Harroun Trust 30						
1H - OH - Actual	15,260.55	9,708.44	1,353.30	1,258.43	14.264	CC
1H - OH - Actual	15,300.00	9,707.53	1,353.87	1,258.41	14.182	ES
1H - OH - Actual	15,400.00	9,705.25	1,360.46	1,263.76	14.069	SF
Harroun Trust 31						
4H - OH - Actual	6,123.20	5,992.00	606.38	580.32	23.269	CC, ES
4H - OH - Actual	6,200.00	6,024.00	608.93	582.68	23.198	SF
Spud Muffin 31-30						
332H (Leam) - OH - Planned	19,671.59	19,964.73	755.12	454.82	2.515	CC, ES
332H (Leam) - OH - Planned	19,700.00	19,964.73	755.66	455.08	2.514	SF
623H (Leam) - OH - Planned	19,911.12	20,170.99	900.00	597.18	2.972	CC, ES, SF
624H - OH - Plan #1	2,500.00	2,500.00	30.01	12.56	1.720	CC, ES
624H - OH - Plan #1	2,600.00	2,599.99	30.77	12.64	1.697	SF
738H - OH - Plan #1	4,104.42	4,083.15	147.75	119.31	5.195	CC, ES
738H - OH - Plan #1	4,300.00	4,275.94	151.37	121.49	5.065	SF

Offset Design												Offset Site Error:	0.00 usft
Harroun Trust 30 - 1H - OH - Actual												Offset Well Error:	0.00 usft
Survey Program: 100-Standard Keeper 104													
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)					
0.00	0.00	0.00	0.00	0.00	0.00	-21.18	5,475.05	-2,121.13	5,871.68				
100.00	100.00	125.00	125.00	0.12	0.10	-21.18	5,474.35	-2,120.88	5,871.10	0.23	N/A		
200.00	200.00	250.00	249.99	0.48	0.26	-21.17	5,473.22	-2,120.10	5,870.07	0.74	7,941.820		
300.00	300.00	350.00	349.98	0.84	0.38	-21.17	5,472.07	-2,119.46	5,868.77	1.22	4,799.329		
400.00	400.00	450.00	449.97	1.20	0.51	-21.17	5,471.10	-2,118.64	5,867.57	1.70	3,446.739		
500.00	500.00	555.62	555.58	1.56	0.64	-21.16	5,470.24	-2,117.68	5,866.49	2.19	2,684.318		
600.00	600.00	636.97	636.92	1.91	0.75	-21.16	5,469.25	-2,116.85	5,865.03	2.64	2,218.679		
700.00	700.00	712.39	712.33	2.27	0.84	-21.15	5,468.88	-2,116.08	5,864.16	3.08	1,903.820		
800.00	800.00	815.99	815.82	2.63	0.95	-21.14	5,468.54	-2,114.68	5,863.37	3.54	1,658.639		
900.00	900.00	900.00	899.93	2.99	1.04	-21.13	5,468.54	-2,113.46	5,862.82	3.96	1,481.846		
947.79	947.79	915.67	915.59	3.16	1.06	-21.13	5,468.58	-2,113.20	5,862.68	4.14	1,417.625		
1,000.00	1,000.00	933.70	933.63	3.35	1.07	-21.12	5,468.76	-2,112.92	5,862.84	4.33	1,354.228		

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

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Offset Design Harroun Trust 30 - 1H - OH - Actual Survey Program: 100-Standard Keeper 104													Offset Site Error: 0.00 usft
													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Distance		Warning							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Tooface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
1,100.00	1,100.00	1,000.00	999.90	3.71	1.11	-21.11	5,469.82	-2,111.55	5,883.64	5,858.93	4.70	1,247.026	
1,200.00	1,200.00	1,100.00	1,099.85	4.07	1.17	-21.08	5,471.95	-2,109.41	5,884.85	5,859.77	5.08	1,155.094	
1,300.00	1,300.00	1,200.00	1,199.81	4.42	1.25	-21.05	5,474.14	-2,107.33	5,886.14	5,860.68	5.46	1,074.756	
1,400.00	1,400.00	1,300.00	1,299.77	4.78	1.33	-21.03	5,476.11	-2,105.31	5,887.27	5,861.42	5.85	1,003.549	
1,500.00	1,500.00	1,417.88	1,417.61	5.14	1.43	-21.01	5,477.96	-2,103.60	5,888.19	5,861.94	6.24	939.778	
1,600.00	1,600.00	1,512.19	1,511.91	5.50	1.52	-20.99	5,479.31	-2,102.39	5,889.07	5,862.43	6.64	884.135	
1,700.00	1,700.00	1,617.72	1,617.43	5.88	1.62	-20.98	5,480.59	-2,101.32	5,889.83	5,862.79	7.04	833.672	
1,800.00	1,800.00	1,750.00	1,749.70	6.22	1.75	-20.97	5,481.71	-2,100.45	5,870.38	5,862.92	7.46	786.823	
1,900.00	1,900.00	1,865.46	1,865.16	6.57	1.87	-20.96	5,482.34	-2,099.85	5,870.73	5,862.85	7.88	744.711	
2,000.00	2,000.00	2,100.00	2,099.57	6.93	2.16	-20.90	5,481.42	-2,092.81	5,868.83	5,860.41	8.42	696.709	
2,100.00	2,100.00	2,295.09	2,294.44	7.29	2.40	-20.83	5,478.54	-2,084.08	5,865.93	5,856.98	8.95	655.474	
2,200.00	2,200.00	2,380.61	2,379.82	7.65	2.50	-20.79	5,476.80	-2,079.60	5,862.16	5,852.78	9.39	624.597	
2,300.00	2,300.00	2,489.32	2,488.36	8.01	2.63	-20.75	5,474.26	-2,074.05	5,858.15	5,848.30	9.84	595.055	
2,400.00	2,400.00	2,575.00	2,573.91	8.37	2.73	-20.72	5,472.24	-2,069.86	5,854.25	5,843.96	10.28	569.206	
2,500.00	2,500.00	2,613.45	2,612.32	8.73	2.78	-20.71	5,471.62	-2,068.23	5,851.25	5,840.57	10.68	547.799	
2,600.00	2,599.99	2,700.00	2,698.82	9.07	2.88	99.34	5,470.49	-2,065.56	5,849.06	5,837.96	11.11	526.538	
2,700.00	2,699.96	2,769.99	2,768.78	9.40	2.97	99.39	5,469.77	-2,063.60	5,847.54	5,836.03	11.51	508.150	
2,800.00	2,799.86	2,864.17	2,862.93	9.74	3.09	99.46	5,468.61	-2,061.55	5,846.35	5,834.41	11.94	489.817	
2,900.00	2,899.68	2,975.00	2,973.73	10.08	3.22	99.54	5,467.27	-2,059.52	5,845.56	5,833.18	12.39	471.958	
3,000.00	2,899.37	3,100.00	3,098.70	10.42	3.37	99.66	5,465.66	-2,057.02	5,845.01	5,832.15	12.85	454.782	
3,066.44	3,065.52	3,131.81	3,130.50	10.65	3.40	99.70	5,465.29	-2,056.34	5,844.77	5,831.66	13.11	445.739	
3,100.00	3,098.90	3,156.15	3,154.83	10.78	3.43	99.72	5,465.05	-2,055.88	5,844.82	5,831.57	13.25	441.053	
3,172.80	3,171.25	3,257.47	3,256.13	11.01	3.56	99.84	5,463.65	-2,054.00	5,844.73	5,831.12	13.61	429.461	
3,200.00	3,198.26	3,275.00	3,273.65	11.11	3.58	99.87	5,463.44	-2,053.61	5,844.77	5,831.04	13.72	425.958	
3,300.00	3,297.40	3,375.00	3,373.63	11.48	3.70	100.00	5,462.15	-2,051.95	5,845.24	5,831.06	14.18	412.294	
3,400.00	3,396.30	3,435.12	3,433.73	11.81	3.77	100.08	5,461.60	-2,050.90	5,846.35	5,831.75	14.59	400.658	
3,500.00	3,494.93	3,550.00	3,548.59	12.18	3.91	100.26	5,460.29	-2,049.04	5,847.62	5,832.55	15.07	387.999	
3,600.00	3,593.41	3,661.73	3,660.31	12.54	4.05	100.46	5,459.17	-2,047.43	5,849.38	5,833.81	15.55	376.109	
3,700.00	3,691.89	3,725.00	3,723.56	12.91	4.13	100.57	5,458.65	-2,046.41	5,851.21	5,835.23	15.98	366.071	
3,800.00	3,790.37	3,839.73	3,838.28	13.29	4.27	100.78	5,457.47	-2,044.83	5,853.00	5,836.52	16.48	355.210	
3,900.00	3,888.85	3,911.79	3,910.33	13.67	4.36	100.90	5,457.00	-2,043.98	5,855.26	5,838.33	16.93	345.927	
4,000.00	3,987.33	4,017.57	4,016.10	14.05	4.49	101.09	5,456.19	-2,042.91	5,857.54	5,840.13	17.42	336.287	
4,100.00	4,085.82	4,134.01	4,132.53	14.44	4.63	101.29	5,455.17	-2,041.76	5,859.82	5,841.89	17.93	326.889	
4,200.00	4,184.30	4,186.87	4,185.39	14.83	4.69	101.38	5,454.81	-2,041.31	5,862.32	5,843.95	18.37	319.185	
4,300.00	4,282.78	4,300.00	4,298.51	15.22	4.79	101.57	5,454.01	-2,041.06	5,865.07	5,846.18	18.89	310.550	
4,400.00	4,381.26	4,362.18	4,360.69	15.61	4.85	101.87	5,453.70	-2,040.88	5,868.08	5,848.73	19.34	303.388	
4,500.00	4,479.74	4,409.39	4,407.90	16.01	4.84	101.75	5,453.76	-2,041.06	5,871.89	5,852.14	19.75	297.340	
4,600.00	4,578.22	4,533.81	4,532.32	16.40	4.80	101.95	5,454.11	-2,041.85	5,875.98	5,855.82	20.16	291.463	
4,700.00	4,676.70	4,661.36	4,659.87	16.80	4.76	102.15	5,453.94	-2,042.88	5,879.82	5,859.21	20.61	285.234	
4,800.00	4,775.18	4,746.90	4,745.41	17.20	4.76	102.29	5,453.67	-2,043.33	5,883.40	5,862.33	21.07	279.211	
4,900.00	4,873.66	4,884.70	4,883.19	17.61	4.79	102.50	5,452.61	-2,044.31	5,886.61	5,865.02	21.59	272.681	
5,000.00	4,972.14	4,976.75	4,975.24	18.01	4.81	102.65	5,451.98	-2,044.89	5,889.94	5,867.88	22.07	266.904	
5,100.00	5,070.62	5,087.95	5,086.43	18.42	4.86	102.82	5,450.70	-2,045.54	5,892.87	5,870.29	22.58	260.987	
5,200.00	5,169.10	5,150.00	5,148.48	18.83	4.89	102.92	5,450.33	-2,045.80	5,896.32	5,873.29	23.04	255.970	
5,300.00	5,267.58	5,266.64	5,265.12	19.23	4.90	103.10	5,449.72	-2,046.71	5,900.02	5,876.49	23.53	250.794	
5,400.00	5,366.07	5,375.00	5,373.47	19.64	4.95	103.27	5,448.75	-2,047.37	5,903.34	5,879.30	24.03	245.633	
5,500.00	5,464.55	5,460.71	5,459.17	20.05	5.04	103.41	5,448.26	-2,047.29	5,906.83	5,882.29	24.53	240.752	
5,600.00	5,563.03	5,600.00	5,595.96	20.47	5.17	103.62	5,447.41	-2,047.23	5,910.28	5,885.17	25.10	235.428	
5,700.00	5,661.51	5,704.97	5,703.42	20.88	5.28	103.81	5,446.10	-2,047.02	5,913.31	5,887.68	25.64	230.671	
5,800.00	5,759.99	5,790.51	5,788.96	21.29	5.38	103.95	5,445.24	-2,046.50	5,916.39	5,890.25	26.14	226.319	
5,900.00	5,858.47	5,884.51	5,882.95	21.71	5.50	104.11	5,444.45	-2,045.94	5,919.67	5,893.01	26.66	222.054	
6,000.00	5,956.95	5,992.10	5,990.54	22.12	5.62	104.28	5,443.47	-2,045.56	5,923.02	5,895.82	27.20	217.790	

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Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Tooface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
6,100.00	6,055.43	6,114.18	6,112.60	22.54	5.75	104.48	5,441.78	-2,045.44	5,928.00	5,898.25	27.75	213.541		
6,200.00	6,153.91	6,233.19	6,231.60	22.96	5.87	104.67	5,439.72	-2,045.28	5,928.70	5,900.40	28.30	209.469		
6,300.00	6,252.39	6,330.98	6,329.37	23.38	5.98	104.83	5,437.92	-2,044.82	5,931.26	5,902.42	28.83	205.718		
6,400.00	6,350.87	6,419.90	6,418.28	23.80	6.08	104.97	5,436.40	-2,044.33	5,933.97	5,904.62	29.35	202.180		
6,500.00	6,449.35	6,543.01	6,541.36	24.21	6.23	105.17	5,434.18	-2,043.52	5,936.61	5,906.70	29.91	198.477		
6,600.00	6,547.98	6,675.00	6,673.31	24.63	6.39	105.40	5,431.23	-2,042.25	5,938.57	5,908.10	30.48	194.848		
6,700.00	6,646.88	6,767.33	6,765.61	25.04	6.50	105.54	5,429.13	-2,041.27	5,940.05	5,909.06	30.99	191.682		
6,800.00	6,746.03	6,866.19	6,864.44	25.43	6.62	105.68	5,426.87	-2,040.06	5,941.05	5,909.55	31.50	188.607		
6,900.00	6,845.38	6,950.00	6,948.22	25.82	6.72	105.78	5,424.92	-2,039.16	5,941.62	5,909.64	31.98	185.765		
7,000.00	6,944.82	7,025.00	7,023.21	26.20	6.80	105.85	5,423.40	-2,039.04	5,942.22	5,909.77	32.45	183.113		
7,100.00	7,044.81	7,115.77	7,113.96	26.57	6.90	105.91	5,421.78	-2,039.08	5,942.63	5,909.71	32.93	180.471		
7,200.00	7,144.42	7,216.71	7,214.89	26.94	7.01	105.96	5,420.05	-2,039.02	5,942.64	5,909.23	33.41	177.863		
7,300.00	7,244.33	7,288.87	7,287.04	27.29	7.09	105.99	5,418.93	-2,038.90	5,942.30	5,908.45	33.85	175.542		
7,400.00	7,344.29	7,378.79	7,376.95	27.63	7.19	106.01	5,417.86	-2,038.62	5,941.81	5,907.50	34.31	173.200		
7,500.00	7,444.29	7,475.66	7,473.81	27.97	7.32	106.01	5,416.95	-2,037.97	5,940.98	5,906.22	34.75	170.942		
7,600.00	7,544.28	7,588.03	7,586.17	28.29	7.48	106.01	5,415.89	-2,036.63	5,939.76	5,904.56	35.20	168.725		
7,700.00	7,644.28	7,675.00	7,673.13	28.61	7.57	106.01	5,415.14	-2,035.31	5,938.56	5,902.94	35.62	166.727		
7,800.00	7,744.28	7,742.96	7,741.08	28.94	7.64	106.01	5,414.88	-2,034.22	5,937.81	5,901.81	36.00	164.936		
7,900.00	7,844.28	7,828.56	7,826.68	29.26	7.73	106.01	5,414.90	-2,033.04	5,937.49	5,901.10	36.39	163.184		
8,000.00	7,944.28	7,925.00	7,923.11	29.59	7.83	106.01	5,414.92	-2,031.95	5,937.24	5,900.45	36.78	161.419		
8,028.74	7,971.02	7,942.12	7,940.22	29.68	7.84	106.01	5,414.90	-2,031.91	5,937.20	5,900.33	36.88	161.005		
8,100.00	8,044.28	7,984.84	7,982.94	29.92	7.83	106.01	5,414.97	-2,032.00	5,937.37	5,900.25	37.12	159.970		
8,200.00	8,144.28	8,042.16	8,040.27	30.24	7.82	106.01	5,415.35	-2,032.58	5,938.23	5,900.79	37.44	158.609		
8,300.00	8,244.28	8,125.00	8,123.07	30.57	7.80	106.01	5,416.01	-2,034.54	5,939.57	5,901.79	37.78	157.215		
8,400.00	8,344.28	8,194.97	8,192.99	30.90	7.79	106.01	5,416.71	-2,037.07	5,941.39	5,903.27	38.12	155.859		
8,500.00	8,444.28	8,410.47	8,408.22	31.23	7.80	106.01	5,416.12	-2,047.90	5,942.26	5,903.70	38.56	154.105		
8,600.00	8,544.28	8,590.42	8,587.95	31.56	7.87	106.01	5,412.50	-2,055.71	5,941.14	5,902.11	39.02	152.249		
8,700.00	8,644.28	8,661.99	8,659.47	31.89	7.90	106.01	5,411.17	-2,058.10	5,940.13	5,900.73	39.41	150.740		
8,800.00	8,744.28	8,748.53	8,745.97	32.23	7.93	106.01	5,409.98	-2,060.60	5,939.50	5,899.70	39.80	149.239		
8,900.00	8,844.28	8,856.99	8,854.37	32.56	7.97	106.01	5,408.55	-2,063.53	5,938.89	5,898.68	40.21	147.701		
9,000.00	8,944.28	9,019.88	9,017.23	32.89	8.09	106.01	5,405.84	-2,065.98	5,937.65	5,896.96	40.70	145.900		
9,100.00	9,044.29	9,153.40	9,150.70	33.22	8.22	106.01	5,402.61	-2,068.78	5,935.40	5,894.21	41.18	144.117		
9,171.72	9,116.00	9,227.82	9,225.10	33.48	8.30	106.01	5,400.75	-2,067.01	5,933.72	5,892.21	41.51	142.937		
9,200.00	9,144.27	9,265.89	9,263.15	33.56	8.34	106.01	5,399.76	-2,067.13	5,932.35	5,890.70	41.85	142.425		
9,250.00	9,194.04	9,326.27	9,323.51	33.72	8.41	106.01	5,398.04	-2,067.28	5,926.49	5,884.60	41.89	141.487		
9,300.00	9,243.22	9,381.94	9,379.16	33.87	8.47	106.01	5,396.43	-2,067.32	5,916.39	5,874.28	42.11	140.496		
9,350.00	9,291.42	9,432.83	9,430.03	34.01	8.53	106.01	5,394.93	-2,067.37	5,902.17	5,859.85	42.32	139.466		
9,400.00	9,338.29	9,482.24	9,479.42	34.14	8.58	106.01	5,393.41	-2,067.40	5,883.89	5,841.37	42.52	138.390		
9,450.00	9,383.47	9,534.68	9,531.83	34.26	8.64	106.01	5,391.78	-2,067.48	5,861.75	5,819.04	42.71	137.261		
9,500.00	9,426.62	9,575.00	9,572.13	34.37	8.69	106.01	5,390.50	-2,067.50	5,835.88	5,793.02	42.87	136.142		
9,550.00	9,467.40	9,611.85	9,608.96	34.46	8.73	106.01	5,389.32	-2,067.58	5,806.55	5,763.54	43.01	135.008		
9,600.00	9,505.50	9,653.12	9,650.21	34.53	8.78	106.01	5,388.00	-2,067.73	5,773.97	5,730.83	43.14	133.836		
9,650.00	9,540.64	9,681.07	9,678.14	34.60	8.81	106.01	5,387.10	-2,067.83	5,738.38	5,695.13	43.25	132.694		
9,700.00	9,572.55	9,703.31	9,700.38	34.65	8.83	106.01	5,386.41	-2,067.93	5,700.09	5,656.77	43.33	131.559		
9,750.00	9,600.98	9,731.20	9,728.25	34.68	8.86	106.01	5,385.55	-2,068.11	5,659.38	5,615.98	43.40	130.398		
9,800.00	9,625.73	9,750.63	9,747.66	34.70	8.88	106.01	5,384.96	-2,068.24	5,616.55	5,573.10	43.45	129.260		
9,850.00	9,646.59	9,775.00	9,772.03	34.71	8.91	106.01	5,384.21	-2,068.40	5,571.92	5,528.42	43.49	128.105		
9,900.00	9,663.42	9,786.65	9,783.67	34.71	8.92	106.01	5,383.85	-2,068.48	5,525.82	5,482.31	43.51	126.991		
9,950.00	9,678.08	9,794.94	9,791.96	34.70	8.93	106.01	5,383.60	-2,068.55	5,478.63	5,435.11	43.52	125.891		
10,000.00	9,684.48	9,800.12	9,797.13	34.68	8.94	106.01	5,383.44	-2,068.59	5,430.69	5,387.18	43.51	124.804		
10,050.00	9,688.55	9,803.42	9,800.43	34.67	8.94	106.01	5,383.34	-2,068.62	5,382.37	5,338.87	43.50	123.730		
10,062.32	9,688.88	9,803.38	9,800.39	34.67	8.94	106.01	5,383.34	-2,068.62	5,370.46	5,326.96	43.50	123.468		

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Harroun Trust 30 - 1H - OH - Actual													Offset Site Error: 0.00 usft
Survey Program: 100-Standard Keeper 104													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
10,062.61	9,688.89	9,803.37	9,800.38	34.87	8.94	-92.46	5,383.34	-2,068.62	5,370.17	5,326.67	43.50	123.462	
10,100.00	9,689.50	9,802.72	9,799.73	34.67	8.94	-92.43	5,383.36	-2,068.61	5,334.00	5,290.52	43.48	122.672	
10,200.00	9,691.15	9,800.99	9,798.00	34.88	8.94	-92.36	5,383.41	-2,068.60	5,237.34	5,193.90	43.45	120.551	
10,300.00	9,692.79	9,800.00	9,797.01	35.21	8.94	-92.32	5,383.44	-2,068.59	5,140.81	5,097.40	43.41	118.415	
10,400.00	9,694.44	9,800.00	9,797.01	35.60	8.94	-92.32	5,383.44	-2,068.59	5,044.42	5,001.03	43.39	116.264	
10,500.00	9,696.09	9,800.00	9,797.01	36.05	8.94	-92.32	5,383.44	-2,068.59	4,948.16	4,904.80	43.37	114.099	
10,600.00	9,697.73	9,796.50	9,793.51	36.54	8.93	-92.17	5,383.55	-2,068.56	4,852.06	4,808.71	43.35	111.930	
10,700.00	9,699.38	9,795.46	9,792.48	37.08	8.93	-92.13	5,383.58	-2,068.55	4,756.12	4,712.78	43.34	109.739	
10,800.00	9,701.02	9,794.42	9,791.44	37.87	8.93	-92.08	5,383.61	-2,068.54	4,660.35	4,617.01	43.34	107.532	
10,900.00	9,702.67	9,793.37	9,790.39	38.30	8.93	-92.04	5,383.64	-2,068.53	4,564.76	4,521.42	43.35	105.309	
11,000.00	9,704.32	9,792.32	9,789.33	38.98	8.93	-91.99	5,383.68	-2,068.53	4,469.37	4,426.00	43.36	103.069	
11,100.00	9,705.96	9,791.26	9,788.27	39.70	8.93	-91.95	5,383.71	-2,068.52	4,374.18	4,330.79	43.39	100.810	
11,200.00	9,707.61	9,790.19	9,787.21	40.45	8.93	-91.90	5,383.74	-2,068.51	4,279.20	4,235.77	43.43	98.533	
11,300.00	9,709.25	9,789.11	9,786.13	41.25	8.92	-91.86	5,383.77	-2,068.50	4,184.47	4,140.98	43.48	96.237	
11,400.00	9,710.90	9,788.03	9,785.05	42.08	8.92	-91.81	5,383.81	-2,068.49	4,089.98	4,046.43	43.55	93.920	
11,500.00	9,712.55	9,786.94	9,783.96	42.94	8.92	-91.77	5,383.84	-2,068.48	3,995.76	3,952.13	43.63	91.581	
11,600.00	9,714.19	9,785.85	9,782.87	43.84	8.92	-91.72	5,383.87	-2,068.48	3,901.83	3,858.09	43.73	89.221	
11,700.00	9,715.84	9,784.74	9,781.77	44.76	8.92	-91.67	5,383.91	-2,068.47	3,808.20	3,764.35	43.85	86.837	
11,800.00	9,717.48	9,783.63	9,780.66	45.71	8.92	-91.63	5,383.94	-2,068.46	3,714.91	3,670.91	44.00	84.430	
11,900.00	9,719.13	9,782.52	9,779.54	46.69	8.92	-91.58	5,383.98	-2,068.45	3,621.97	3,577.80	44.17	81.999	
12,000.00	9,720.78	9,781.39	9,778.42	47.69	8.92	-91.53	5,384.01	-2,068.44	3,529.43	3,485.05	44.37	79.543	
12,100.00	9,722.42	9,780.26	9,777.29	48.72	8.91	-91.48	5,384.05	-2,068.44	3,437.29	3,392.69	44.60	77.063	
12,200.00	9,724.07	9,779.12	9,776.15	49.77	8.91	-91.44	5,384.08	-2,068.43	3,345.61	3,300.74	44.87	74.559	
12,300.00	9,725.71	9,777.98	9,775.00	50.84	8.91	-91.39	5,384.12	-2,068.42	3,254.42	3,209.24	45.18	72.031	
12,400.00	9,727.36	9,775.00	9,772.03	51.92	8.91	-91.26	5,384.21	-2,068.40	3,163.76	3,118.23	45.53	69.483	
12,500.00	9,729.01	9,775.00	9,772.03	53.03	8.91	-91.26	5,384.21	-2,068.40	3,073.68	3,027.75	45.94	66.909	
12,600.00	9,730.65	9,774.29	9,771.32	54.15	8.91	-91.23	5,384.23	-2,068.40	2,984.24	2,937.84	46.40	64.317	
12,700.00	9,732.30	9,772.67	9,769.69	55.29	8.91	-91.16	5,384.28	-2,068.39	2,895.48	2,848.56	46.92	61.710	
12,803.48	9,734.00	9,771.00	9,768.03	56.48	8.90	-91.09	5,384.33	-2,068.38	2,804.43	2,756.89	47.53	58.999	
12,836.60	9,734.35	9,770.25	9,767.28	56.87	8.90	-92.25	5,384.36	-2,068.37	2,775.47	2,727.72	47.75	58.130	
12,900.00	9,734.66	9,768.43	9,765.46	57.61	8.90	-92.18	5,384.41	-2,068.36	2,720.31	2,672.13	48.18	56.466	
13,000.00	9,735.15	9,765.57	9,762.60	58.79	8.90	-92.06	5,384.50	-2,068.34	2,634.06	2,585.14	48.93	53.838	
13,100.00	9,735.64	9,762.73	9,759.76	59.98	8.90	-91.94	5,384.59	-2,068.32	2,548.81	2,499.05	49.77	51.215	
13,200.00	9,736.13	9,759.92	9,756.95	61.18	8.89	-91.82	5,384.67	-2,068.30	2,464.67	2,413.96	50.71	48.602	
13,300.00	9,736.62	9,757.12	9,754.16	62.40	8.89	-91.70	5,384.76	-2,068.29	2,381.76	2,329.99	51.77	46.010	
13,400.00	9,737.11	9,754.36	9,751.39	63.62	8.89	-91.58	5,384.84	-2,068.27	2,300.19	2,247.25	52.94	43.447	
13,500.00	9,737.60	9,751.61	9,748.65	64.86	8.88	-91.47	5,384.93	-2,068.25	2,220.14	2,165.89	54.25	40.925	
13,600.00	9,738.09	9,749.02	9,746.06	66.10	8.88	-91.36	5,385.00	-2,068.23	2,141.76	2,088.06	55.70	38.454	
13,700.00	9,738.58	9,746.60	9,743.64	67.35	8.88	-91.25	5,385.08	-2,068.22	2,065.24	2,007.95	57.29	36.046	
13,800.00	9,739.07	9,744.16	9,741.21	68.62	8.88	-91.15	5,385.15	-2,068.20	1,990.80	1,931.75	59.05	33.715	
13,900.00	9,739.56	9,741.70	9,738.75	69.89	8.87	-91.05	5,385.23	-2,068.18	1,918.69	1,857.72	60.97	31.472	
14,000.00	9,740.05	9,739.22	9,736.27	71.16	8.87	-90.94	5,385.30	-2,068.17	1,849.17	1,786.12	63.05	29.329	
14,100.00	9,740.54	9,736.72	9,733.77	72.45	8.87	-90.84	5,385.38	-2,068.15	1,782.54	1,717.24	65.30	27.298	
14,200.00	9,741.03	9,734.20	9,731.24	73.74	8.87	-90.73	5,385.46	-2,068.13	1,719.16	1,651.44	67.71	25.389	
14,300.00	9,741.52	9,731.65	9,728.70	75.03	8.86	-90.62	5,385.54	-2,068.11	1,659.37	1,589.10	70.27	23.613	
14,400.00	9,742.01	9,729.08	9,726.13	76.34	8.86	-90.51	5,385.62	-2,068.10	1,603.59	1,530.63	72.97	21.977	
14,500.00	9,742.50	9,726.49	9,723.54	77.65	8.86	-90.40	5,385.70	-2,068.08	1,552.26	1,476.50	75.76	20.488	
14,600.00	9,742.99	9,725.00	9,722.05	78.96	8.86	-90.34	5,385.74	-2,068.07	1,505.82	1,427.19	78.82	19.153	
14,700.00	9,743.48	9,721.57	9,718.62	80.28	8.85	-90.19	5,385.85	-2,068.04	1,484.73	1,383.24	81.50	17.973	
14,800.00	9,743.97	9,719.19	9,716.24	81.61	8.85	-90.09	5,385.93	-2,068.03	1,429.48	1,345.15	84.33	16.952	
14,900.00	9,744.46	9,716.82	9,713.88	82.93	8.85	-89.99	5,386.00	-2,068.01	1,400.48	1,313.43	87.04	16.089	
15,000.00	9,744.95	9,714.48	9,711.53	84.27	8.84	-89.89	5,386.07	-2,068.00	1,378.14	1,288.56	89.58	15.384	

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Harroun Trust 30 - 1H - OH - Actual											Offset Site Error: 0.00 usft	
Survey Program: 100-Standard Keeper 104											Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)				Between Centres (usft)
15,100.00	9,745.44	9,712.15	9,709.20	85.61	8.84	-89.80	5,386.14	-2,067.98	1,362.78	1,270.91	91.87	14.834
15,200.00	9,745.93	9,709.83	9,706.89	86.95	8.84	-89.70	5,386.21	-2,067.97	1,354.65	1,260.81	93.85	14.435
15,260.55	9,746.22	9,708.44	9,705.50	87.76	8.84	-89.64	5,386.26	-2,067.96	1,353.30	1,258.43	94.87	14.264 CC
15,300.00	9,746.42	9,707.53	9,704.59	88.30	8.84	-89.60	5,386.28	-2,067.96	1,353.87	1,258.41	95.47	14.182 ES
15,400.00	9,748.91	9,705.25	9,702.31	89.65	8.83	-89.50	5,386.35	-2,067.94	1,360.46	1,263.76	96.70	14.069 SF
15,500.00	9,747.40	9,702.99	9,700.05	91.00	8.83	-89.41	5,386.42	-2,067.93	1,374.31	1,276.78	97.53	14.091
15,600.00	9,747.89	9,700.00	9,697.06	92.36	8.83	-89.28	5,386.51	-2,067.92	1,395.20	1,297.22	97.98	14.239
15,700.00	9,748.38	9,698.36	9,695.42	93.72	8.83	-89.21	5,386.56	-2,067.91	1,422.82	1,324.75	98.07	14.508
15,800.00	9,748.87	9,695.88	9,692.95	95.08	8.82	-89.11	5,386.64	-2,067.90	1,456.80	1,358.95	97.85	14.888
15,900.00	9,749.36	9,693.38	9,690.44	96.45	8.82	-89.00	5,386.72	-2,067.88	1,496.69	1,399.34	97.35	15.374
16,000.00	9,749.85	9,690.83	9,687.90	97.81	8.82	-88.89	5,386.79	-2,067.87	1,542.04	1,445.41	96.63	15.958
16,100.00	9,750.34	9,688.26	9,685.33	99.19	8.82	-88.78	5,386.87	-2,067.86	1,592.38	1,496.64	95.74	16.633
16,200.00	9,750.83	9,685.64	9,682.71	100.56	8.81	-88.67	5,386.96	-2,067.85	1,647.26	1,552.54	94.72	17.391
16,300.00	9,751.32	9,682.99	9,680.06	101.94	8.81	-88.56	5,387.04	-2,067.84	1,706.23	1,612.63	93.80	18.228
16,400.00	9,751.81	9,680.29	9,677.37	103.32	8.81	-88.45	5,387.12	-2,067.83	1,768.89	1,676.45	92.44	19.136
16,500.00	9,752.29	9,677.56	9,674.64	104.70	8.80	-88.33	5,387.21	-2,067.82	1,834.86	1,743.62	91.24	20.110
16,600.00	9,752.78	9,674.79	9,671.86	106.08	8.80	-88.22	5,387.30	-2,067.81	1,903.79	1,813.76	90.03	21.145
16,700.00	9,753.27	9,671.95	9,669.02	107.47	8.80	-88.09	5,387.39	-2,067.80	1,975.38	1,886.55	88.84	22.236
16,800.00	9,753.76	9,669.09	9,666.17	108.86	8.79	-87.97	5,387.48	-2,067.79	2,049.35	1,961.69	87.66	23.378
16,900.00	9,754.25	9,666.21	9,663.29	110.25	8.79	-87.85	5,387.58	-2,067.77	2,125.44	2,038.93	86.52	24.567
17,000.00	9,754.74	9,663.32	9,660.40	111.64	8.79	-87.73	5,387.67	-2,067.76	2,203.44	2,118.03	85.41	25.799
17,100.00	9,755.23	9,660.41	9,657.49	113.03	8.79	-87.61	5,387.76	-2,067.75	2,283.16	2,198.81	84.34	27.070
17,200.00	9,755.72	9,657.48	9,654.57	114.43	8.78	-87.48	5,387.86	-2,067.74	2,364.41	2,281.09	83.32	28.377
17,300.00	9,756.21	9,654.54	9,651.62	115.83	8.78	-87.36	5,387.96	-2,067.73	2,447.05	2,364.71	82.34	29.717
17,400.00	9,756.70	9,651.58	9,648.67	117.23	8.78	-87.23	5,388.05	-2,067.72	2,530.94	2,449.53	81.41	31.088
17,500.00	9,757.19	9,650.00	9,647.09	118.63	8.77	-87.17	5,388.10	-2,067.71	2,615.96	2,535.43	80.52	32.486
17,600.00	9,757.68	9,646.38	9,643.47	120.03	8.77	-87.01	5,388.22	-2,067.70	2,702.00	2,622.32	79.68	33.909
17,700.00	9,758.17	9,643.94	9,641.03	121.43	8.77	-86.91	5,388.30	-2,067.69	2,788.97	2,710.09	78.88	35.358
17,800.00	9,758.66	9,641.52	9,638.61	122.84	8.76	-86.81	5,388.38	-2,067.68	2,876.78	2,798.66	78.12	36.823
17,900.00	9,759.15	9,639.12	9,636.21	124.25	8.76	-86.71	5,388.46	-2,067.67	2,965.37	2,887.96	77.40	38.310
18,000.00	9,759.64	9,636.74	9,633.84	125.66	8.76	-86.61	5,388.53	-2,067.66	3,054.66	2,977.93	76.72	39.814
18,100.00	9,760.13	9,634.38	9,631.48	127.06	8.76	-86.51	5,388.61	-2,067.65	3,144.59	3,068.51	76.08	41.334
18,200.00	9,760.62	9,632.04	9,629.14	128.48	8.75	-86.41	5,388.68	-2,067.65	3,235.11	3,159.64	75.47	42.869
18,300.00	9,761.11	9,629.72	9,626.82	129.89	8.75	-86.31	5,388.76	-2,067.64	3,326.17	3,251.28	74.89	44.418
18,400.00	9,761.60	9,627.42	9,624.52	131.30	8.75	-86.21	5,388.83	-2,067.63	3,417.73	3,343.39	74.34	45.976
18,500.00	9,762.09	9,625.00	9,622.10	132.71	8.75	-86.11	5,388.91	-2,067.62	3,509.74	3,435.92	73.82	47.545
18,600.00	9,762.58	9,622.55	9,619.65	134.13	8.74	-86.01	5,388.99	-2,067.61	3,602.18	3,528.86	73.33	49.125
18,700.00	9,763.07	9,619.93	9,617.04	135.55	8.74	-85.90	5,389.07	-2,067.60	3,695.02	3,622.16	72.86	50.713
18,800.00	9,763.56	9,617.31	9,614.41	136.96	8.74	-85.79	5,389.15	-2,067.59	3,788.21	3,715.79	72.42	52.309
18,900.00	9,764.05	9,614.68	9,611.79	138.38	8.73	-85.68	5,389.23	-2,067.59	3,881.75	3,809.74	72.00	53.912
19,000.00	9,764.54	9,612.05	9,609.15	139.80	8.73	-85.57	5,389.32	-2,067.58	3,975.59	3,903.99	71.61	55.521
19,100.00	9,765.03	9,609.40	9,606.52	141.22	8.73	-85.46	5,389.40	-2,067.57	4,069.73	3,998.50	71.23	57.135
19,200.00	9,765.52	9,606.76	9,603.87	142.64	8.73	-85.34	5,389.49	-2,067.56	4,164.14	4,093.26	70.87	58.754
19,300.00	9,766.01	9,604.10	9,601.22	144.06	8.72	-85.23	5,389.57	-2,067.56	4,258.80	4,188.26	70.54	60.376
19,400.00	9,766.50	9,601.44	9,598.56	145.49	8.72	-85.12	5,389.65	-2,067.55	4,353.70	4,283.48	70.22	62.003
19,500.00	9,766.99	9,598.86	9,595.98	146.91	8.72	-85.01	5,389.74	-2,067.54	4,448.82	4,378.91	69.91	63.632
19,600.00	9,767.48	9,596.39	9,593.50	148.34	8.71	-84.91	5,389.82	-2,067.54	4,544.15	4,474.53	69.63	65.264
19,700.00	9,767.97	9,593.91	9,591.03	149.76	8.71	-84.80	5,389.89	-2,067.53	4,639.68	4,570.32	69.35	66.898
19,800.00	9,768.46	9,591.43	9,588.55	151.19	8.71	-84.70	5,389.97	-2,067.53	4,735.39	4,666.29	69.10	68.533
19,900.00	9,768.95	9,588.96	9,586.08	152.61	8.71	-84.60	5,390.05	-2,067.52	4,831.27	4,762.41	68.85	70.169
19,911.12	9,769.00	9,588.68	9,585.80	152.77	8.71	-84.58	5,390.06	-2,067.52	4,841.94	4,773.11	68.83	70.351

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Harroun Trust 31 - 4H - OH - Actual Survey Program: 100-Standard Keeper 104, 5897-MWD+HDGM													Offset Site Error: 0.00 usft
													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-97.90	-146.85	-1,057.64	1,067.82				
100.00	100.00	87.90	87.90	0.12	0.05	-97.93	-147.26	-1,057.75	1,067.96	1,067.81	0.15	7,132.004	
200.00	200.00	183.77	183.76	0.48	0.16	-97.97	-148.13	-1,058.19	1,068.54	1,067.95	0.59	1,797.216	
300.00	300.00	282.80	282.79	0.84	0.28	-98.01	-149.02	-1,058.91	1,069.38	1,068.33	1.05	1,013.810	
400.00	400.00	379.23	379.20	1.20	0.41	-98.08	-150.52	-1,059.67	1,070.38	1,068.88	1.51	710.306	
500.00	500.00	478.68	478.64	1.56	0.53	-98.16	-152.00	-1,060.72	1,071.64	1,069.67	1.97	543.717	
600.00	600.00	587.68	587.62	1.91	0.61	-98.15	-152.00	-1,061.72	1,072.56	1,070.12	2.43	440.657	
700.00	700.00	696.07	696.00	2.27	0.62	-98.05	-150.13	-1,061.99	1,072.56	1,069.70	2.86	375.672	
800.00	800.00	800.00	799.89	2.63	0.63	-97.89	-147.17	-1,061.77	1,071.95	1,068.69	3.26	329.062	
900.00	900.00	897.91	897.74	2.99	0.67	-97.71	-143.64	-1,061.58	1,071.28	1,067.60	3.66	292.437	
988.98	988.98	981.21	980.98	3.31	0.73	-97.56	-140.90	-1,061.72	1,071.02	1,066.99	4.03	265.587	
1,000.00	1,000.00	991.51	991.29	3.35	0.74	-97.55	-140.63	-1,061.75	1,071.03	1,066.95	4.08	262.645	
1,100.00	1,100.00	1,083.88	1,083.63	3.71	0.83	-97.45	-138.97	-1,062.36	1,071.45	1,068.94	4.51	237.647	
1,200.00	1,200.00	1,181.66	1,181.40	4.07	0.94	-97.40	-138.03	-1,063.40	1,072.38	1,067.42	4.96	216.284	
1,300.00	1,300.00	1,286.61	1,286.34	4.42	1.05	-97.32	-136.77	-1,064.42	1,073.19	1,067.78	5.41	198.412	
1,400.00	1,400.00	1,393.47	1,393.19	4.78	1.17	-97.24	-135.20	-1,064.85	1,073.40	1,067.56	5.84	183.763	
1,500.00	1,500.00	1,499.80	1,499.51	5.14	1.25	-97.18	-134.05	-1,064.56	1,072.99	1,068.75	6.24	171.855	
1,600.00	1,600.00	1,606.00	1,605.71	5.50	1.28	-97.17	-133.79	-1,063.50	1,071.97	1,065.34	6.63	161.618	
1,700.00	1,700.00	1,703.38	1,703.08	5.86	1.30	-97.21	-134.37	-1,062.31	1,070.83	1,063.80	7.03	152.250	
1,800.00	1,800.00	1,809.80	1,809.48	6.22	1.32	-97.28	-135.51	-1,060.76	1,069.53	1,062.08	7.45	143.575	
1,900.00	1,900.00	1,920.11	1,919.76	6.57	1.37	-97.34	-136.22	-1,058.17	1,067.27	1,059.39	7.87	135.554	
2,000.00	2,000.00	2,014.98	2,014.59	6.93	1.43	-97.35	-136.22	-1,055.87	1,064.86	1,056.57	8.30	128.346	
2,100.00	2,100.00	2,105.33	2,104.94	7.29	1.50	-97.32	-135.52	-1,054.48	1,063.23	1,054.50	8.72	121.882	
2,200.00	2,200.00	2,209.40	2,208.99	7.65	1.60	-97.27	-134.36	-1,053.15	1,061.82	1,052.65	9.16	115.860	
2,300.00	2,300.00	2,312.92	2,312.49	8.01	1.69	-97.25	-133.82	-1,051.36	1,060.04	1,050.43	9.61	110.277	
2,400.00	2,400.00	2,413.00	2,412.55	8.37	1.77	-97.27	-133.95	-1,049.34	1,058.06	1,047.99	10.06	105.137	
2,500.00	2,500.00	2,506.69	2,506.22	8.73	1.85	-97.30	-134.29	-1,047.76	1,056.43	1,045.92	10.51	100.494	
2,600.00	2,599.99	2,605.91	2,605.44	9.07	1.93	22.69	-134.66	-1,046.39	1,054.30	1,043.34	10.95	96.241	
2,700.00	2,699.96	2,700.00	2,699.52	9.40	2.01	22.73	-135.07	-1,045.41	1,050.91	1,039.53	11.38	92.351	
2,800.00	2,799.86	2,795.40	2,794.92	9.74	2.08	22.79	-135.78	-1,044.86	1,046.40	1,034.61	11.80	88.716	
2,900.00	2,899.68	2,898.38	2,897.89	10.08	2.15	22.90	-136.71	-1,044.30	1,040.35	1,028.13	12.21	85.171	
3,000.00	2,999.37	2,995.63	2,995.34	10.42	2.23	23.05	-137.44	-1,043.72	1,032.63	1,019.99	12.64	81.725	
3,100.00	3,098.90	3,093.33	3,092.83	10.76	2.30	23.25	-138.18	-1,043.35	1,023.52	1,010.47	13.05	78.429	
3,200.00	3,198.26	3,193.54	3,193.04	11.11	2.38	23.50	-138.97	-1,043.03	1,012.90	999.43	13.47	75.220	
3,300.00	3,297.40	3,292.37	3,291.86	11.46	2.46	23.79	-139.85	-1,042.66	1,000.66	986.78	13.88	72.079	
3,400.00	3,396.30	3,393.58	3,393.07	11.81	2.55	24.14	-140.82	-1,042.20	986.78	972.47	14.31	68.981	
3,500.00	3,494.93	3,490.11	3,489.60	12.18	2.65	24.55	-141.54	-1,041.74	971.32	956.59	14.73	65.939	
3,600.00	3,593.41	3,589.40	3,588.88	12.54	2.74	24.95	-142.12	-1,041.38	955.21	940.05	15.16	63.004	
3,700.00	3,691.89	3,684.92	3,684.40	12.91	2.83	25.34	-142.74	-1,041.10	939.21	923.63	15.58	60.266	
3,800.00	3,790.37	3,779.04	3,778.52	13.29	2.90	25.74	-143.41	-1,041.21	923.67	907.68	15.99	57.772	
3,900.00	3,888.85	3,871.65	3,871.12	13.67	2.94	26.16	-143.81	-1,041.85	908.73	892.38	16.38	55.487	
4,000.00	3,987.33	3,971.08	3,970.55	14.05	2.98	26.65	-144.00	-1,042.98	894.27	877.51	16.77	53.336	
4,100.00	4,085.82	4,070.78	4,070.24	14.44	3.03	27.12	-144.67	-1,043.82	879.60	862.44	17.16	51.248	
4,200.00	4,184.30	4,168.95	4,168.41	14.83	3.09	27.60	-145.33	-1,044.65	865.01	847.44	17.57	49.240	
4,300.00	4,282.78	4,270.05	4,269.50	15.22	3.15	28.11	-145.94	-1,045.45	850.42	832.44	17.98	47.308	
4,400.00	4,381.26	4,370.01	4,369.46	15.61	3.22	28.65	-146.41	-1,045.93	835.58	817.19	18.39	45.431	
4,500.00	4,479.74	4,467.73	4,467.18	16.01	3.29	29.19	-146.80	-1,046.39	820.80	801.99	18.81	43.629	
4,600.00	4,578.22	4,563.48	4,562.93	16.40	3.36	29.74	-147.33	-1,047.05	806.32	787.09	19.24	41.913	
4,700.00	4,676.70	4,661.70	4,661.14	16.80	3.42	30.32	-147.82	-1,048.04	792.23	772.58	19.67	40.284	
4,800.00	4,775.18	4,761.35	4,760.79	17.20	3.49	30.95	-148.20	-1,048.91	778.10	758.00	20.10	38.714	
4,900.00	4,873.66	4,860.70	4,860.13	17.61	3.57	31.58	-148.72	-1,049.69	763.96	743.43	20.54	37.200	
5,000.00	4,972.14	4,961.32	4,960.75	18.01	3.66	32.23	-149.47	-1,050.34	749.78	728.80	20.98	35.740	

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Harroun Trust 31 - 4H - OH - Actual											Offset Site Error: 0.00 usft	
Survey Program: 100-Standard Keeper 104, 5897-MWD+HDGM											Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)				Between Centres (usft)
5,100.00	5,070.62	5,063.02	5,062.43	18.42	3.77	32.86	-150.79	-1,050.64	735.32	713.90	21.42	34.321
5,200.00	5,169.10	5,160.83	5,160.23	18.83	3.87	33.49	-152.19	-1,050.68	720.70	698.82	21.88	32.945
5,300.00	5,267.58	5,257.55	5,256.94	19.23	3.97	34.14	-153.60	-1,051.03	706.48	684.15	22.33	31.638
5,400.00	5,366.07	5,356.18	5,355.56	19.64	4.08	34.84	-154.69	-1,051.51	692.50	669.71	22.78	30.393
5,500.00	5,464.55	5,454.89	5,454.27	20.05	4.18	35.59	-155.78	-1,051.92	678.56	655.32	23.24	29.195
5,600.00	5,563.03	5,552.16	5,551.53	20.47	4.29	36.34	-156.93	-1,052.43	664.83	641.13	23.70	28.047
5,700.00	5,661.51	5,650.88	5,650.25	20.88	4.39	37.13	-158.10	-1,053.15	651.43	627.26	24.17	26.956
5,800.00	5,759.99	5,750.61	5,749.97	21.29	4.50	37.97	-159.27	-1,053.67	637.95	613.32	24.63	25.901
5,900.00	5,858.47	5,848.34	5,847.68	21.71	4.60	38.83	-160.30	-1,054.11	624.57	599.47	25.10	24.887
6,000.00	5,956.95	5,929.00	5,928.32	22.12	4.64	39.72	-159.46	-1,055.18	612.59	587.04	25.55	23.973
6,100.00	6,055.43	5,980.95	5,979.89	22.54	4.66	40.71	-154.17	-1,058.15	606.63	580.68	25.98	23.351
6,123.20	6,078.28	5,992.00	5,990.77	22.64	4.67	40.96	-152.48	-1,059.15	606.38	580.32	26.06	23.269 CC, ES
6,200.00	6,153.91	6,024.00	6,021.97	22.96	4.69	41.78	-146.52	-1,062.93	608.93	582.68	26.25	23.198 SF
6,300.00	6,252.39	6,075.06	6,070.54	23.38	4.74	43.32	-133.64	-1,071.85	620.25	593.82	26.43	23.470
6,400.00	6,350.87	6,132.25	6,123.23	23.80	4.82	45.25	-115.54	-1,084.72	639.64	613.07	26.57	24.072
6,500.00	6,449.35	6,182.00	6,167.38	24.21	4.91	47.11	-96.39	-1,097.25	666.24	639.67	26.57	25.076
6,600.00	6,547.88	6,225.23	6,203.87	24.63	5.02	49.15	-76.48	-1,109.07	701.04	674.63	26.41	26.544
6,700.00	6,646.88	6,264.62	6,235.39	25.04	5.15	51.20	-55.76	-1,120.40	744.09	717.95	26.14	28.470
6,800.00	6,746.03	6,295.69	6,258.89	25.43	5.26	53.02	-37.73	-1,129.78	794.87	769.17	25.69	30.937
6,900.00	6,845.38	6,323.22	6,278.46	25.82	5.39	54.79	-20.51	-1,138.62	852.81	827.62	25.19	33.856
7,000.00	6,944.92	6,340.00	6,289.83	26.20	5.48	56.19	-9.51	-1,144.20	916.85	892.34	24.52	37.395
7,100.00	7,044.61	6,372.00	6,310.36	26.57	5.68	58.29	12.23	-1,155.58	985.87	961.69	24.18	40.773
7,200.00	7,144.42	6,389.56	6,320.88	26.94	5.82	59.88	24.49	-1,162.32	1,059.32	1,035.67	23.65	44.796
7,300.00	7,244.33	6,403.00	6,328.78	27.29	5.94	61.42	34.03	-1,167.67	1,136.40	1,113.28	23.11	49.172
7,400.00	7,344.29	6,435.00	6,346.22	27.63	6.26	63.63	57.22	-1,181.16	1,216.59	1,193.62	22.97	52.958
7,500.00	7,444.29	6,435.00	6,346.22	27.97	6.26	-55.06	57.22	-1,181.16	1,299.07	1,276.72	22.35	58.127
7,600.00	7,544.28	6,451.55	6,354.55	28.29	6.45	-54.60	69.45	-1,188.55	1,383.65	1,361.57	22.07	62.683
7,700.00	7,644.28	6,467.00	6,361.89	28.61	6.63	-54.18	81.00	-1,195.72	1,469.81	1,447.98	21.83	67.329
7,800.00	7,744.28	6,467.00	6,361.89	28.94	6.63	-54.18	81.00	-1,195.72	1,557.31	1,535.91	21.40	72.761
7,900.00	7,844.28	6,482.69	6,368.86	29.26	6.84	-53.79	92.85	-1,203.28	1,645.88	1,624.61	21.27	77.382
8,000.00	7,944.28	6,498.00	6,375.19	29.59	7.05	-53.42	104.51	-1,210.93	1,735.58	1,714.42	21.16	82.005
8,100.00	8,044.28	6,498.00	6,375.19	29.92	7.05	-53.42	104.51	-1,210.93	1,826.05	1,805.17	20.89	87.432
8,200.00	8,144.28	6,498.00	6,375.19	30.24	7.05	-53.42	104.51	-1,210.93	1,917.47	1,896.82	20.65	92.844
8,300.00	8,244.28	6,498.00	6,375.19	30.57	7.05	-53.42	104.51	-1,210.93	2,009.71	1,989.24	20.46	98.218
8,400.00	8,344.28	6,530.00	6,386.66	30.90	7.53	-52.71	129.15	-1,227.80	2,102.38	2,081.67	20.71	101.537
8,500.00	8,444.28	6,530.00	6,386.66	31.23	7.53	-52.71	129.15	-1,227.80	2,195.43	2,174.86	20.57	106.727
8,600.00	8,544.28	6,530.00	6,386.66	31.56	7.53	-52.71	129.15	-1,227.80	2,289.07	2,268.60	20.47	111.839
8,700.00	8,644.28	6,530.00	6,386.66	31.89	7.53	-52.71	129.15	-1,227.80	2,383.22	2,362.83	20.39	116.859
8,800.00	8,744.28	6,530.00	6,386.66	32.23	7.53	-52.71	129.15	-1,227.80	2,477.84	2,457.49	20.35	121.778
8,900.00	8,844.28	6,530.00	6,386.66	32.56	7.53	-52.71	129.15	-1,227.80	2,572.86	2,552.54	20.32	126.587
9,000.00	8,944.28	6,545.42	6,391.34	32.89	7.78	-52.39	141.16	-1,236.27	2,667.95	2,647.47	20.48	130.261
9,100.00	9,044.29	6,562.00	6,395.83	33.22	8.05	-52.06	154.18	-1,245.49	2,763.67	2,743.00	20.66	133.737
9,171.72	9,116.00	6,562.00	6,395.83	33.46	8.05	-52.06	154.18	-1,245.49	2,832.27	2,811.58	20.68	136.932
9,200.00	9,144.27	6,562.00	6,395.83	33.56	8.05	-44.35	154.18	-1,245.49	2,859.23	2,838.54	20.69	138.191
9,250.00	9,194.04	6,562.00	6,395.83	33.72	8.05	-35.63	154.18	-1,245.49	2,906.15	2,885.45	20.70	140.426
9,300.00	9,243.22	6,562.00	6,395.83	33.87	8.05	-29.55	154.18	-1,245.49	2,951.86	2,931.17	20.69	142.656
9,350.00	9,291.42	6,562.00	6,395.83	34.01	8.05	-25.19	154.18	-1,245.49	2,996.08	2,975.40	20.68	144.853
9,400.00	9,338.29	6,562.00	6,395.83	34.14	8.05	-21.97	154.18	-1,245.49	3,038.55	3,017.88	20.67	146.996
9,450.00	9,383.47	6,562.00	6,395.83	34.26	8.05	-19.52	154.18	-1,245.49	3,079.02	3,058.37	20.66	149.061
9,500.00	9,426.62	6,562.00	6,395.83	34.37	8.05	-17.63	154.18	-1,245.49	3,117.27	3,096.63	20.64	151.024
9,550.00	9,467.40	6,577.05	6,399.41	34.46	8.31	-16.28	166.11	-1,253.92	3,152.80	3,132.05	20.76	151.893
9,600.00	9,505.50	6,593.00	6,402.67	34.53	8.59	-15.24	178.89	-1,262.90	3,185.99	3,165.11	20.88	152.569

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Harroun Trust 31 - 4H - OH - Actual												Offset Site Error:	0.00 usft
Survey Program: 100-Standard Keeper 104, 5897-MWD+HDGM												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
9,650.00	9,540.64	6,593.00	6,402.67	34.60	8.59	-14.28	178.89	-1,262.90	3,216.07	3,195.19	20.87	154.077	
9,700.00	9,572.55	6,593.00	6,402.67	34.65	8.59	-13.51	178.89	-1,262.90	3,243.20	3,222.32	20.87	155.372	
9,750.00	9,600.98	6,593.00	6,402.67	34.68	8.59	-12.88	178.89	-1,262.90	3,267.25	3,246.37	20.89	156.425	
9,800.00	9,625.73	6,593.00	6,402.67	34.70	8.59	-12.38	178.89	-1,262.90	3,288.12	3,267.21	20.92	157.206	
9,850.00	9,646.59	6,608.03	6,405.28	34.71	8.85	-12.12	191.07	-1,271.31	3,305.48	3,284.40	21.08	156.803	
9,900.00	9,663.42	6,625.00	6,407.73	34.71	9.16	-11.87	205.00	-1,280.70	3,319.59	3,298.31	21.28	156.029	
9,950.00	9,676.08	6,625.00	6,407.73	34.70	9.16	-11.75	205.00	-1,280.70	3,329.98	3,308.62	21.36	155.888	
10,000.00	9,684.48	6,625.00	6,407.73	34.68	9.16	-11.61	205.00	-1,280.70	3,336.89	3,315.42	21.47	155.426	
10,050.00	9,688.55	6,625.00	6,407.73	34.67	9.16	-11.54	205.00	-1,280.70	3,340.29	3,318.68	21.60	154.613	
10,062.32	9,688.88	6,625.00	6,407.73	34.67	9.16	-11.53	205.00	-1,280.70	3,340.59	3,318.94	21.64	154.362	
10,062.61	9,688.89	6,625.00	6,407.73	34.67	9.16	-11.53	205.00	-1,280.70	3,340.59	3,318.95	21.64	154.356	
10,100.00	9,689.50	6,625.00	6,407.73	34.67	9.16	-11.53	205.00	-1,280.70	3,341.38	3,319.62	21.77	153.518	
10,200.00	9,691.15	6,656.00	6,410.78	34.88	9.73	-11.82	230.77	-1,297.64	3,344.94	3,322.57	22.37	149.518	
10,300.00	9,692.79	6,656.00	6,410.78	35.21	9.73	-11.82	230.77	-1,297.64	3,351.31	3,328.45	22.88	146.633	
10,400.00	9,694.44	6,688.00	6,412.25	35.60	10.32	-12.10	257.64	-1,314.95	3,360.27	3,336.65	23.62	142.237	
10,500.00	9,696.09	6,833.00	6,417.15	36.05	13.04	-13.28	383.03	-1,387.52	3,370.30	3,345.06	25.24	133.510	
10,600.00	9,697.73	6,910.51	6,419.44	36.54	14.47	-13.84	452.35	-1,422.10	3,379.83	3,353.36	26.47	127.678	
10,700.00	9,699.38	7,064.08	6,421.93	37.08	17.18	-14.76	594.22	-1,480.69	3,389.38	3,361.08	28.30	119.760	
10,800.00	9,701.02	7,181.50	6,421.92	37.67	19.09	-15.27	706.63	-1,514.46	3,398.21	3,368.36	29.85	113.827	
10,900.00	9,702.67	7,344.38	6,420.19	38.30	21.49	-15.70	868.48	-1,545.42	3,405.33	3,373.67	31.66	107.556	
11,000.00	9,704.32	7,511.00	6,417.19	38.98	23.78	-15.95	1,031.80	-1,565.74	3,411.82	3,378.37	33.46	101.977	
11,100.00	9,705.96	7,589.39	6,416.43	39.70	24.85	-16.05	1,109.75	-1,574.03	3,416.73	3,382.00	34.72	98.399	
11,200.00	9,707.61	7,744.31	6,415.60	40.45	26.95	-16.22	1,263.97	-1,588.55	3,420.73	3,384.23	36.50	93.728	
11,300.00	9,709.25	7,890.00	6,414.41	41.25	28.87	-16.28	1,409.43	-1,596.46	3,424.23	3,386.05	38.19	89.664	
11,400.00	9,710.90	7,933.24	6,413.88	42.08	29.42	-16.28	1,452.65	-1,597.60	3,427.29	3,388.03	39.26	87.299	
11,500.00	9,712.55	7,985.00	6,411.78	42.94	30.07	-16.26	1,504.38	-1,598.08	3,432.22	3,391.83	40.39	84.984	
11,600.00	9,714.19	8,269.00	6,410.01	43.84	33.85	-16.31	1,787.98	-1,608.74	3,434.89	3,391.92	42.98	79.927	
11,700.00	9,715.84	8,320.45	6,410.72	44.76	34.55	-16.33	1,839.37	-1,611.03	3,435.73	3,391.58	44.16	77.808	
11,800.00	9,717.48	8,383.46	6,410.85	45.71	35.41	-16.35	1,902.33	-1,613.63	3,437.71	3,392.29	45.42	75.681	
11,900.00	9,719.13	8,459.00	6,410.23	46.69	36.45	-16.37	1,977.79	-1,616.94	3,440.71	3,393.93	46.78	73.545	
12,000.00	9,720.78	8,545.97	6,409.52	47.69	37.68	-16.42	2,064.58	-1,622.43	3,444.27	3,396.03	48.25	71.385	
12,100.00	9,722.42	8,743.00	6,411.87	48.72	40.52	-16.60	2,280.88	-1,637.90	3,446.50	3,396.01	50.50	68.251	
12,200.00	9,724.07	8,809.54	6,412.96	49.77	41.48	-16.66	2,327.35	-1,642.61	3,447.72	3,395.85	51.87	66.470	
12,300.00	9,725.71	8,974.53	6,415.69	50.84	43.82	-16.75	2,492.03	-1,651.94	3,448.92	3,395.04	53.89	64.004	
12,378.72	9,727.01	9,048.66	6,417.46	51.69	44.85	-16.77	2,566.11	-1,654.42	3,448.69	3,393.60	55.10	62.593	
12,400.00	9,727.36	9,060.44	6,417.66	51.92	45.02	-16.77	2,577.87	-1,654.75	3,448.72	3,393.35	55.37	62.283	
12,500.00	9,729.01	9,121.00	6,418.12	53.03	45.86	-16.78	2,638.42	-1,656.24	3,449.66	3,392.87	56.70	60.844	
12,600.00	9,730.65	9,169.17	6,417.75	54.15	46.52	-16.77	2,686.57	-1,657.17	3,451.91	3,393.96	57.95	59.572	
12,700.00	9,732.30	9,234.39	6,416.22	55.29	47.42	-16.75	2,751.77	-1,658.10	3,455.49	3,396.19	59.29	58.277	
12,803.48	9,734.00	9,403.53	6,413.48	56.48	49.77	-16.72	2,920.85	-1,681.20	3,458.75	3,397.43	61.32	56.403	
12,836.60	9,734.35	9,404.00	6,413.48	56.87	49.77	-16.72	2,921.32	-1,661.22	3,459.40	3,397.75	61.65	56.116	
12,900.00	9,734.66	9,455.46	6,412.99	57.61	50.50	-16.72	2,972.77	-1,662.56	3,460.45	3,397.86	62.58	55.293	
13,000.00	9,735.15	9,614.22	6,410.38	58.79	52.71	-16.70	3,131.47	-1,665.19	3,462.75	3,398.22	64.53	53.664	
13,100.00	9,735.84	9,782.00	6,410.98	59.98	55.04	-16.67	3,299.23	-1,666.79	3,462.79	3,396.27	66.52	52.058	
13,200.00	9,736.13	9,844.35	6,411.92	61.18	55.92	-16.67	3,361.56	-1,667.89	3,461.81	3,393.91	67.90	50.984	
13,300.00	9,736.62	10,002.81	6,413.87	62.40	58.13	-16.64	3,519.99	-1,668.87	3,460.77	3,390.93	69.84	49.553	
13,400.00	9,737.11	10,065.00	6,415.19	63.62	59.01	-16.64	3,582.16	-1,669.90	3,459.19	3,387.95	71.23	48.561	
13,500.00	9,737.60	10,143.95	6,416.17	64.86	60.12	-16.64	3,661.09	-1,671.27	3,458.43	3,385.70	72.73	47.551	
13,542.78	9,737.81	10,175.00	6,416.34	65.39	60.56	-16.64	3,692.14	-1,671.76	3,458.35	3,385.00	73.35	47.147	
13,600.00	9,738.09	10,217.10	6,416.42	66.10	61.16	-16.64	3,734.23	-1,672.47	3,458.48	3,384.29	74.19	46.617	
13,700.00	9,738.58	10,295.07	6,416.17	67.35	62.27	-16.64	3,812.18	-1,674.05	3,459.27	3,383.58	75.68	45.707	
13,800.00	9,739.07	10,376.49	6,415.72	68.62	63.44	-16.65	3,893.57	-1,676.61	3,460.60	3,383.39	77.21	44.819	

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Harroun Trust 31 - 4H - OH - Actual													Offset Site Error:	0.00 usft
Survey Program: 100-Standard Keeper 104, 5897-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
13,900.00	9,739.58	10,455.15	6,414.94	69.89	64.57	-16.66	3,972.16	-1,679.46	3,462.50	3,383.77	78.73	43.979		
14,000.00	9,740.05	10,535.00	6,413.52	71.16	65.73	-16.68	4,051.95	-1,682.41	3,465.14	3,384.88	80.26	43.176		
14,100.00	9,740.54	10,669.89	6,411.64	72.45	67.70	-16.72	4,186.67	-1,688.83	3,467.86	3,385.69	82.17	42.202		
14,200.00	9,741.03	10,772.77	6,411.98	73.74	69.21	-16.79	4,289.36	-1,695.03	3,469.17	3,385.26	83.91	41.346		
14,300.00	9,741.52	10,922.71	6,412.22	75.03	71.43	-16.89	4,439.01	-1,704.26	3,470.96	3,384.99	85.97	40.374		
14,400.00	9,742.01	11,007.00	6,413.46	76.34	72.67	-16.95	4,523.13	-1,709.45	3,471.28	3,383.69	87.59	39.630		
14,500.00	9,742.50	11,077.63	6,414.09	77.65	73.72	-17.00	4,593.61	-1,714.04	3,472.29	3,383.16	89.13	38.959		
14,600.00	9,742.99	11,142.81	6,413.98	78.96	74.69	-17.05	4,658.63	-1,718.65	3,474.40	3,383.78	90.62	38.339		
14,700.00	9,743.48	11,208.98	6,413.30	80.28	75.68	-17.10	4,724.62	-1,723.52	3,477.46	3,385.34	92.13	37.747		
14,800.00	9,743.97	11,328.54	6,411.65	81.61	77.48	-17.21	4,843.73	-1,733.76	3,481.29	3,387.24	94.05	37.015		
14,900.00	9,744.46	11,603.95	6,414.87	82.93	81.52	-17.35	5,118.73	-1,747.41	3,481.10	3,384.15	96.95	35.907		
15,000.00	9,744.95	11,687.00	6,417.23	84.27	82.72	-17.37	5,201.72	-1,749.43	3,479.04	3,380.50	98.55	35.304		
15,100.00	9,745.44	11,762.90	6,418.83	85.61	83.81	-17.38	5,277.59	-1,750.98	3,477.60	3,377.51	100.09	34.743		
15,174.15	9,745.80	11,805.16	6,419.18	86.60	84.41	-17.37	5,319.84	-1,751.68	3,477.30	3,376.15	101.15	34.377		
15,200.00	9,745.93	11,818.98	6,419.16	86.95	84.61	-17.37	5,333.65	-1,751.79	3,477.36	3,375.85	101.51	34.257		
15,300.00	9,746.42	11,876.00	6,418.33	88.30	85.42	-17.34	5,390.67	-1,751.51	3,478.45	3,375.56	102.89	33.806		
15,400.00	9,746.91	12,025.13	6,416.96	89.65	87.52	-17.26	5,539.77	-1,750.07	3,478.70	3,373.91	104.78	33.199		
15,500.00	9,747.40	12,106.59	6,416.42	91.00	88.67	-17.24	5,621.23	-1,750.24	3,479.27	3,372.94	106.32	32.724		
15,600.00	9,747.89	12,160.00	6,415.93	92.36	89.43	-17.22	5,674.64	-1,750.42	3,480.40	3,372.70	107.69	32.318		
15,700.00	9,748.38	12,229.42	6,414.37	93.72	90.42	-17.19	5,744.05	-1,750.25	3,482.54	3,373.41	109.13	31.911		
15,800.00	9,748.87	12,427.21	6,411.57	95.08	93.27	-17.17	5,941.71	-1,754.14	3,484.59	3,373.18	111.42	31.275		
15,900.00	9,749.36	12,632.00	6,419.30	96.45	96.32	-17.35	6,145.87	-1,767.64	3,482.35	3,368.42	113.93	30.566		
16,000.00	9,749.85	12,683.88	6,421.83	97.81	97.11	-17.42	6,197.48	-1,772.26	3,480.23	3,364.78	115.45	30.145		
16,091.60	9,750.29	12,726.00	6,423.33	99.07	97.74	-17.47	6,239.40	-1,776.01	3,479.52	3,362.73	116.79	29.794		
16,100.00	9,750.34	12,726.00	6,423.33	99.19	97.74	-17.47	6,239.40	-1,776.01	3,479.53	3,362.65	116.88	29.770		
16,200.00	9,750.83	12,785.26	6,424.50	100.56	98.64	-17.54	6,298.43	-1,781.05	3,480.20	3,361.78	118.41	29.390		
16,300.00	9,751.32	12,839.98	6,424.55	101.94	99.46	-17.59	6,352.98	-1,785.33	3,482.31	3,362.43	119.89	29.047		
16,400.00	9,751.81	12,915.00	6,423.61	103.32	100.58	-17.64	6,427.80	-1,790.82	3,485.55	3,364.05	121.50	28.688		
16,500.00	9,752.29	12,971.84	6,422.26	104.70	101.43	-17.68	6,484.48	-1,794.79	3,489.72	3,366.77	122.95	28.383		
16,600.00	9,752.78	13,292.00	6,423.14	106.08	106.17	-17.84	6,804.05	-1,811.87	3,490.32	3,364.04	126.28	27.639		
16,656.84	9,753.06	13,292.00	6,423.14	106.87	106.17	-17.84	6,804.05	-1,811.87	3,489.86	3,362.92	126.93	27.494		
16,700.00	9,753.27	13,292.00	6,423.14	107.47	106.17	-17.84	6,804.05	-1,811.87	3,490.12	3,362.71	127.41	27.393		
16,800.00	9,753.76	13,351.34	6,422.70	108.86	107.00	-17.81	6,863.37	-1,811.14	3,490.98	3,362.17	128.80	27.103		
16,900.00	9,754.25	13,387.00	6,420.66	110.25	107.50	-17.76	6,898.92	-1,809.28	3,494.45	3,364.46	129.99	26.882		
17,000.00	9,754.74	13,519.73	6,413.00	111.64	109.31	-17.56	7,031.20	-1,801.55	3,498.02	3,366.39	131.83	26.576		
17,100.00	9,755.23	13,597.96	6,408.70	113.03	110.39	-17.46	7,109.23	-1,798.10	3,501.78	3,368.76	133.02	26.324		
17,200.00	9,755.72	13,605.00	6,408.30	114.43	110.48	-17.45	7,116.25	-1,797.80	3,506.97	3,372.95	134.01	26.169		
17,300.00	9,756.21	13,605.00	6,408.30	115.83	110.48	-17.45	7,116.25	-1,797.80	3,514.98	3,380.11	134.87	26.062		
17,400.00	9,756.70	13,605.00	6,408.30	117.23	110.48	-17.45	7,116.25	-1,797.80	3,525.81	3,390.18	135.64	25.994		
17,500.00	9,757.19	13,605.00	6,408.30	118.63	110.48	-17.45	7,116.25	-1,797.80	3,539.44	3,403.13	136.31	25.966		
17,600.00	9,757.68	13,605.00	6,408.30	120.03	110.48	-17.45	7,116.25	-1,797.80	3,555.83	3,418.94	136.89	25.976		
17,700.00	9,758.17	13,605.00	6,408.30	121.43	110.48	-17.45	7,116.25	-1,797.80	3,574.94	3,437.57	137.37	26.024		
17,800.00	9,758.66	13,605.00	6,408.30	122.84	110.48	-17.45	7,116.25	-1,797.80	3,596.73	3,458.96	137.77	26.108		
17,900.00	9,759.15	13,605.00	6,408.30	124.25	110.48	-17.45	7,116.25	-1,797.80	3,621.15	3,483.08	138.07	26.227		
18,000.00	9,759.64	13,605.00	6,408.30	125.66	110.48	-17.45	7,116.25	-1,797.80	3,648.15	3,509.86	138.29	26.381		
18,100.00	9,760.13	13,605.00	6,408.30	127.06	110.48	-17.45	7,116.25	-1,797.80	3,677.67	3,539.25	138.42	26.568		
18,200.00	9,760.62	13,605.00	6,408.30	128.48	110.48	-17.45	7,116.25	-1,797.80	3,709.66	3,571.18	138.48	26.789		
18,300.00	9,761.11	13,605.00	6,408.30	129.89	110.48	-17.45	7,116.25	-1,797.80	3,744.04	3,605.58	138.46	27.041		
18,400.00	9,761.60	13,605.00	6,408.30	131.30	110.48	-17.45	7,116.25	-1,797.80	3,780.76	3,642.39	138.37	27.324		
18,500.00	9,762.09	13,605.00	6,408.30	132.71	110.48	-17.45	7,116.25	-1,797.80	3,819.74	3,681.53	138.21	27.638		
18,600.00	9,762.58	13,605.00	6,408.30	134.13	110.48	-17.45	7,116.25	-1,797.80	3,860.91	3,722.93	137.99	27.980		
18,700.00	9,763.07	13,605.00	6,408.30	135.55	110.48	-17.45	7,116.25	-1,797.80	3,904.22	3,766.51	137.71	28.351		

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Harroun Trust 31 - 4H - OH - Actual														Offset Site Error: 0.00 usft	
Survey Program: 100-Standard Keeper 104, 5897-MWD+HDGM														Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance				Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
18,800.00	9,763.56	13,605.00	6,408.30	136.96	110.48	-17.45	7,116.25	-1,797.80	3,949.58	3,812.21	137.38	28.750			
18,900.00	9,764.05	13,605.00	6,408.30	138.38	110.48	-17.45	7,116.25	-1,797.80	3,996.93	3,859.94	136.99	29.176			
19,000.00	9,764.54	13,605.00	6,408.30	139.80	110.48	-17.45	7,116.25	-1,797.80	4,046.20	3,909.63	136.57	29.628			
19,100.00	9,765.03	13,605.00	6,408.30	141.22	110.48	-17.45	7,116.25	-1,797.80	4,097.32	3,961.22	136.10	30.105			
19,200.00	9,765.52	13,605.00	6,408.30	142.64	110.48	-17.45	7,116.25	-1,797.80	4,150.22	4,014.62	135.60	30.606			
19,300.00	9,766.01	13,605.00	6,408.30	144.06	110.48	-17.45	7,116.25	-1,797.80	4,204.83	4,069.76	135.07	31.132			
19,400.00	9,766.50	13,605.00	6,408.30	145.49	110.48	-17.45	7,116.25	-1,797.80	4,261.09	4,126.58	134.50	31.680			
19,500.00	9,766.99	13,605.00	6,408.30	146.91	110.48	-17.45	7,116.25	-1,797.80	4,318.93	4,185.01	133.92	32.251			
19,600.00	9,767.48	13,605.00	6,408.30	148.34	110.48	-17.45	7,116.25	-1,797.80	4,378.29	4,244.98	133.31	32.843			
19,700.00	9,767.97	13,605.00	6,408.30	149.76	110.48	-17.45	7,116.25	-1,797.80	4,439.11	4,306.43	132.68	33.457			
19,800.00	9,768.46	13,605.00	6,408.30	151.19	110.48	-17.45	7,116.25	-1,797.80	4,501.33	4,369.29	132.04	34.091			
19,900.00	9,768.95	13,605.00	6,408.30	152.61	110.48	-17.45	7,116.25	-1,797.80	4,564.89	4,433.51	131.38	34.744			
19,911.12	9,769.00	13,605.00	6,408.30	152.77	110.48	-17.45	7,116.25	-1,797.80	4,572.04	4,440.73	131.31	34.818			

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Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 332H (Leam) - OH - Planned													Offset Site Error: 0.00 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Hightide Tooface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
0.00	0.00	0.00	0.00	0.00	0.00	-89.93	2.23	-1,735.10	1,735.12					
100.00	100.00	92.37	92.37	0.12	0.13	-89.93	2.08	-1,735.06	1,735.06	1,734.81	0.25	6,978.475		
200.00	200.00	193.98	193.98	0.48	0.47	-89.95	1.55	-1,734.93	1,734.93	1,733.98	0.95	1,817.237		
300.00	300.00	295.59	295.58	0.84	0.84	-89.98	0.65	-1,734.70	1,734.71	1,733.03	1.68	1,033.857		
400.00	400.00	397.19	397.17	1.20	1.20	-90.02	-0.62	-1,734.38	1,734.39	1,731.99	2.40	722.261		
500.00	500.00	498.77	498.74	1.56	1.57	-90.07	-2.26	-1,733.96	1,733.98	1,730.86	3.13	554.864		
600.00	600.00	600.34	600.29	1.91	1.93	-90.14	-4.28	-1,733.46	1,733.49	1,729.64	3.85	450.360		
700.00	700.00	701.90	701.82	2.27	2.30	-90.22	-6.66	-1,732.85	1,732.90	1,728.33	4.57	378.897		
800.00	800.00	803.44	803.32	2.63	2.67	-90.31	-9.42	-1,732.16	1,732.23	1,726.93	5.30	326.935		
900.00	900.00	904.95	904.78	2.99	3.03	-90.42	-12.55	-1,731.37	1,731.47	1,725.44	6.02	287.444		
1,000.00	1,000.00	1,006.43	1,006.20	3.35	3.40	-90.53	-16.05	-1,730.48	1,730.62	1,723.88	6.75	256.410		
1,100.00	1,100.00	1,107.89	1,107.58	3.71	3.77	-90.66	-19.92	-1,729.51	1,729.70	1,722.22	7.48	231.374		
1,200.00	1,200.00	1,209.32	1,208.91	4.07	4.14	-90.80	-24.16	-1,728.43	1,728.70	1,720.49	8.20	210.748		
1,300.00	1,300.00	1,310.71	1,310.19	4.42	4.51	-90.95	-28.77	-1,727.27	1,727.62	1,718.69	8.93	193.458		
1,400.00	1,400.00	1,412.06	1,411.41	4.78	4.88	-91.12	-33.75	-1,726.01	1,726.47	1,716.81	9.66	178.753		
1,500.00	1,500.00	1,513.38	1,512.58	5.14	5.25	-91.30	-39.10	-1,724.66	1,725.24	1,714.86	10.39	166.092		
1,600.00	1,600.00	1,614.65	1,613.68	5.50	5.62	-91.49	-44.82	-1,723.22	1,723.95	1,712.84	11.12	155.075		
1,700.00	1,700.00	1,715.87	1,714.71	5.86	5.99	-91.69	-50.90	-1,721.69	1,722.60	1,710.75	11.85	145.400		
1,800.00	1,800.00	1,817.05	1,815.66	6.22	6.36	-91.91	-57.34	-1,720.06	1,721.19	1,708.61	12.58	136.835		
1,900.00	1,900.00	1,918.17	1,916.54	6.57	6.74	-92.14	-64.16	-1,718.34	1,719.73	1,706.41	13.31	129.198		
2,000.00	2,000.00	2,019.24	2,017.34	6.93	7.11	-92.38	-71.33	-1,716.52	1,718.21	1,704.17	14.04	122.347		
2,100.00	2,100.00	2,120.26	2,118.06	7.29	7.49	-92.63	-78.87	-1,714.62	1,716.65	1,701.87	14.78	116.164		
2,200.00	2,200.00	2,221.21	2,218.68	7.65	7.87	-92.90	-86.78	-1,712.63	1,715.05	1,699.54	15.51	110.557		
2,300.00	2,300.00	2,322.10	2,319.21	8.01	8.24	-93.18	-95.04	-1,710.54	1,713.41	1,697.16	16.25	105.447		
2,400.00	2,400.00	2,422.92	2,419.64	8.37	8.62	-93.47	-103.67	-1,708.36	1,711.75	1,694.76	16.99	100.773		
2,500.00	2,500.00	2,523.68	2,519.97	8.73	9.00	-93.78	-112.65	-1,706.09	1,710.06	1,692.33	17.72	96.480		
2,600.00	2,599.99	2,624.38	2,620.21	9.07	9.38	25.93	-121.99	-1,703.73	1,707.56	1,689.11	18.45	92.549		
2,700.00	2,699.96	2,725.03	2,720.36	9.40	9.77	25.65	-131.70	-1,701.28	1,703.48	1,684.32	19.17	88.884		
2,800.00	2,799.86	2,825.60	2,820.39	9.74	10.15	25.40	-141.75	-1,698.75	1,697.81	1,677.93	19.88	85.390		
2,900.00	2,899.68	2,926.06	2,920.27	10.08	10.54	25.16	-152.16	-1,696.12	1,690.54	1,669.93	20.60	82.053		
3,000.00	2,999.37	3,026.38	3,019.97	10.42	10.92	24.93	-162.92	-1,693.40	1,681.67	1,660.34	21.33	78.857		
3,100.00	3,098.90	3,126.53	3,119.47	10.76	11.31	24.73	-174.02	-1,690.60	1,671.20	1,649.15	22.05	75.790		
3,200.00	3,198.26	3,226.04	3,218.30	11.11	11.69	24.54	-185.36	-1,687.73	1,659.13	1,636.36	22.78	72.848		
3,300.00	3,297.40	3,324.92	3,316.48	11.46	12.08	24.38	-196.68	-1,684.88	1,645.51	1,622.01	23.50	70.021		
3,400.00	3,396.30	3,423.80	3,414.47	11.81	12.46	24.24	-207.98	-1,682.03	1,630.34	1,606.11	24.23	67.297		
3,500.00	3,494.93	3,522.07	3,512.25	12.18	12.85	24.14	-219.25	-1,679.18	1,613.61	1,588.66	24.95	64.667		
3,600.00	3,593.41	3,620.42	3,609.92	12.54	13.23	23.97	-230.51	-1,676.34	1,596.11	1,570.43	25.68	62.152		
3,700.00	3,691.89	3,718.77	3,707.58	12.91	13.61	23.81	-241.76	-1,673.49	1,578.63	1,552.22	26.41	59.771		
3,800.00	3,790.37	3,817.12	3,805.24	13.29	14.00	23.63	-253.02	-1,670.65	1,561.16	1,534.01	27.14	57.514		
3,900.00	3,888.85	3,915.47	3,902.91	13.67	14.38	23.46	-264.28	-1,667.81	1,543.70	1,515.82	27.88	55.372		
4,000.00	3,987.33	4,013.83	4,000.57	14.05	14.77	23.28	-275.54	-1,664.97	1,526.25	1,497.64	28.62	53.337		
4,100.00	4,085.82	4,112.18	4,098.23	14.44	15.15	23.09	-286.79	-1,662.13	1,508.83	1,479.47	29.35	51.401		
4,200.00	4,184.30	4,210.53	4,195.90	14.83	15.54	22.90	-298.05	-1,659.28	1,491.41	1,461.32	30.09	49.557		
4,300.00	4,282.78	4,308.88	4,293.56	15.22	15.92	22.71	-309.31	-1,656.44	1,474.02	1,443.18	30.84	47.801		
4,400.00	4,381.26	4,407.23	4,391.22	15.61	16.31	22.51	-320.57	-1,653.60	1,456.64	1,425.06	31.58	46.125		
4,500.00	4,479.74	4,505.58	4,488.89	16.01	16.69	22.31	-331.83	-1,650.76	1,439.28	1,406.95	32.32	44.525		
4,600.00	4,578.22	4,603.93	4,586.55	16.40	17.08	22.10	-343.08	-1,647.91	1,421.93	1,388.86	33.07	42.997		
4,700.00	4,676.70	4,702.28	4,684.21	16.80	17.47	21.89	-354.34	-1,645.07	1,404.61	1,370.79	33.82	41.535		
4,800.00	4,775.18	4,800.64	4,781.88	17.20	17.85	21.67	-365.60	-1,642.23	1,387.30	1,352.74	34.57	40.135		
4,900.00	4,873.66	4,898.99	4,879.54	17.61	18.24	21.44	-376.86	-1,639.39	1,370.02	1,334.70	35.31	38.794		
5,000.00	4,972.14	4,997.34	4,977.20	18.01	18.63	21.21	-388.11	-1,636.54	1,352.75	1,316.69	36.06	37.509		
5,100.00	5,070.62	5,095.69	5,074.87	18.42	19.01	20.98	-399.37	-1,633.70	1,335.51	1,298.69	36.82	36.276		

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

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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 332H (Leam) - OH - Planned													Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
5,200.00	5,169.10	5,194.04	5,172.53	18.83	19.40	20.74	-410.83	-1,630.86	1,318.29	1,280.72	37.57	35.092		
5,300.00	5,267.58	5,292.39	5,270.19	19.23	19.79	20.49	-421.89	-1,628.02	1,301.09	1,262.77	38.32	33.955		
5,400.00	5,366.07	5,390.74	5,367.86	19.64	20.17	20.23	-433.15	-1,625.17	1,283.92	1,244.85	39.07	32.862		
5,500.00	5,464.55	5,489.09	5,465.52	20.05	20.58	19.97	-444.40	-1,622.33	1,266.77	1,226.95	39.82	31.810		
5,600.00	5,563.03	5,587.45	5,563.19	20.47	20.95	19.70	-455.66	-1,619.49	1,249.65	1,209.07	40.58	30.797		
5,700.00	5,661.51	5,685.80	5,660.85	20.88	21.34	19.43	-466.82	-1,616.65	1,232.55	1,191.22	41.33	29.822		
5,800.00	5,759.99	5,784.15	5,758.51	21.29	21.72	18.14	-478.18	-1,613.80	1,215.49	1,173.40	42.08	28.883		
5,900.00	5,858.47	5,882.50	5,856.18	21.71	22.11	18.85	-489.44	-1,610.96	1,198.45	1,155.62	42.84	27.976		
6,000.00	5,956.95	5,980.85	5,953.84	22.12	22.50	18.55	-500.69	-1,608.12	1,181.45	1,137.86	43.59	27.102		
6,100.00	6,055.43	6,079.20	6,051.50	22.54	22.89	18.24	-511.95	-1,605.28	1,164.48	1,120.13	44.35	26.258		
6,200.00	6,153.91	6,177.55	6,149.17	22.96	23.27	17.93	-523.21	-1,602.43	1,147.54	1,102.44	45.10	25.443		
6,300.00	6,252.39	6,275.91	6,246.83	23.38	23.66	17.60	-534.47	-1,599.59	1,130.64	1,084.78	45.86	24.656		
6,400.00	6,350.87	6,374.26	6,344.49	23.80	24.05	17.28	-545.72	-1,596.75	1,113.77	1,067.16	46.61	23.895		
6,500.00	6,449.35	6,472.61	6,442.16	24.21	24.44	16.91	-556.98	-1,593.91	1,096.95	1,049.58	47.37	23.159		
6,600.00	6,547.98	6,571.08	6,539.94	24.63	24.83	16.50	-568.25	-1,591.06	1,080.99	1,032.87	48.12	22.464		
6,700.00	6,646.88	6,669.78	6,637.93	25.04	25.22	16.05	-579.55	-1,588.21	1,066.73	1,017.86	48.87	21.827		
6,800.00	6,746.03	6,768.63	6,736.11	25.43	25.61	15.57	-590.87	-1,585.35	1,054.19	1,004.57	49.62	21.244		
6,900.00	6,845.38	6,867.66	6,834.44	25.82	26.00	15.06	-602.20	-1,582.49	1,043.40	993.02	50.37	20.714		
7,000.00	6,944.92	6,966.81	6,932.90	26.20	26.39	14.52	-613.55	-1,579.63	1,034.36	983.24	51.12	20.234		
7,100.00	7,044.61	7,066.05	7,031.45	26.57	26.78	13.96	-624.91	-1,576.76	1,027.09	975.22	51.86	19.804		
7,200.00	7,144.42	7,165.37	7,130.07	26.94	27.17	13.37	-636.28	-1,573.89	1,021.61	969.00	52.60	19.420		
7,300.00	7,244.33	7,264.71	7,228.72	27.29	27.56	12.75	-647.65	-1,571.02	1,017.93	964.59	53.34	19.083		
7,400.00	7,344.29	7,364.06	7,327.38	27.63	27.96	12.12	-659.02	-1,568.14	1,016.08	962.00	54.08	18.789		
7,451.00	7,395.28	7,414.72	7,377.68	27.80	28.16	11.79	-664.82	-1,566.68	1,015.84	961.39	54.45	18.657		
7,500.00	7,444.29	7,463.38	7,426.00	27.97	28.35	-108.53	-670.39	-1,565.27	1,016.06	961.26	54.81	18.539		
7,600.00	7,544.28	7,563.19	7,525.12	28.29	28.74	-109.19	-681.73	-1,562.41	1,017.03	961.50	55.53	18.316		
7,700.00	7,644.28	7,664.32	7,625.71	28.61	29.13	-109.77	-691.89	-1,559.85	1,017.99	961.75	56.25	18.099		
7,800.00	7,744.28	7,765.80	7,726.81	28.94	29.52	-110.26	-700.36	-1,557.71	1,018.87	961.91	56.96	17.888		
7,900.00	7,844.28	7,867.55	7,828.32	29.26	29.90	-110.65	-707.11	-1,556.00	1,019.62	961.96	57.67	17.681		
8,000.00	7,944.28	7,969.52	7,930.16	29.59	30.26	-110.94	-712.11	-1,554.74	1,020.21	961.84	58.37	17.479		
8,100.00	8,044.28	8,071.64	8,032.22	29.92	30.63	-111.13	-715.37	-1,553.92	1,020.60	961.54	59.06	17.281		
8,200.00	8,144.28	8,173.85	8,134.42	30.24	30.96	-111.21	-718.85	-1,553.54	1,020.78	961.05	59.73	17.089		
8,300.00	8,244.28	8,274.62	8,235.18	30.57	31.27	-111.22	-716.96	-1,553.52	1,020.80	960.41	60.38	16.906		
8,400.00	8,344.28	8,374.62	8,335.18	30.90	31.57	-111.22	-716.96	-1,553.52	1,020.80	959.77	61.02	16.728		
8,500.00	8,444.28	8,474.62	8,435.18	31.23	31.88	-111.22	-716.96	-1,553.52	1,020.80	959.13	61.67	16.553		
8,600.00	8,544.28	8,574.62	8,535.18	31.56	32.16	-111.22	-716.96	-1,553.52	1,020.80	958.48	62.31	16.381		
8,700.00	8,644.28	8,674.62	8,635.18	31.89	32.48	-111.22	-716.96	-1,553.52	1,020.80	957.84	62.96	16.213		
8,800.00	8,744.28	8,774.62	8,735.18	32.23	32.79	-111.22	-716.96	-1,553.52	1,020.80	957.19	63.61	16.048		
8,900.00	8,844.28	8,874.62	8,835.18	32.56	33.09	-111.22	-716.96	-1,553.52	1,020.80	956.54	64.26	15.885		
9,000.00	8,944.28	8,974.62	8,935.18	32.89	33.40	-111.22	-716.96	-1,553.52	1,020.80	955.88	64.91	15.726		
9,100.00	9,044.29	9,074.62	9,035.19	33.22	33.71	-111.22	-716.96	-1,553.52	1,020.80	955.23	65.57	15.569		
9,171.72	9,116.00	9,208.04	9,168.18	33.46	34.10	-110.79	-708.90	-1,553.52	1,019.75	953.79	65.96	15.460		
9,200.00	9,144.27	9,283.81	9,241.81	33.56	34.29	-109.04	-691.34	-1,553.52	1,017.63	951.69	65.94	15.433		
9,250.00	9,194.04	9,407.76	9,355.34	33.72	34.54	-107.51	-642.22	-1,553.52	1,012.13	946.38	65.75	15.393		
9,300.00	9,243.22	9,517.04	9,444.66	33.87	34.71	-105.70	-579.55	-1,553.52	1,005.00	939.40	65.60	15.321		
9,350.00	9,291.42	9,612.07	9,511.46	34.01	34.83	-103.85	-512.11	-1,553.52	996.96	931.32	65.63	15.190		
9,400.00	9,338.29	9,694.77	9,559.84	34.14	34.92	-102.06	-445.12	-1,553.52	988.62	922.74	65.88	15.006		
9,450.00	9,383.47	9,767.40	9,594.00	34.26	34.99	-100.38	-381.08	-1,553.52	980.45	914.16	66.29	14.790		
9,500.00	9,426.62	9,832.00	9,617.36	34.37	35.05	-98.80	-320.89	-1,553.52	972.77	905.98	66.79	14.564		
9,550.00	9,467.40	9,890.27	9,632.50	34.46	35.11	-97.31	-264.65	-1,553.52	965.83	898.50	67.33	14.345		
9,600.00	9,505.50	9,943.53	9,641.28	34.53	35.16	-95.87	-212.14	-1,553.52	959.77	891.92	67.85	14.146		
9,650.00	9,540.64	9,992.81	9,645.03	34.60	35.21	-94.48	-163.02	-1,553.52	954.69	886.38	68.32	13.975		

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 332H (Leam) - OH - Planned														Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance				Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
9,700.00	9,572.55	10,034.08	9,645.64	34.65	35.26	-93.32	-121.75	-1,553.52	950.73	882.02	68.71	13.837			
9,750.00	9,600.98	10,075.51	9,646.12	34.68	35.32	-92.20	-80.32	-1,553.52	947.92	878.89	69.02	13.733			
9,800.00	9,625.73	10,119.22	9,646.64	34.70	35.39	-91.12	-36.61	-1,553.52	945.99	876.70	69.29	13.653			
9,850.00	9,646.59	10,164.87	9,647.17	34.71	35.48	-90.12	9.04	-1,553.52	944.68	875.15	69.53	13.587			
9,900.00	9,663.42	10,212.12	9,647.72	34.71	35.58	-89.29	56.28	-1,553.52	943.73	873.99	69.74	13.531			
9,950.00	9,676.08	10,260.61	9,648.29	34.70	35.70	-88.65	104.77	-1,553.52	942.95	872.98	69.97	13.477			
10,000.00	9,684.48	10,309.97	9,648.87	34.68	35.84	-88.26	154.13	-1,553.52	942.17	871.98	70.19	13.422			
10,050.00	9,688.55	10,359.83	9,649.45	34.67	35.99	-88.13	203.98	-1,553.52	941.30	870.86	70.45	13.362			
10,062.32	9,688.88	10,372.14	9,649.59	34.67	36.03	-88.14	216.29	-1,553.52	941.07	870.56	70.51	13.347			
10,082.61	9,688.89	10,372.43	9,649.60	34.67	36.03	-88.14	216.58	-1,553.52	941.06	870.55	70.51	13.347			
10,100.00	9,689.50	10,409.81	9,650.03	34.67	36.15	-88.13	253.96	-1,553.52	940.33	869.63	70.71	13.299			
10,200.00	9,691.15	10,509.79	9,651.20	34.88	36.53	-88.10	353.93	-1,553.52	938.39	867.06	71.33	13.156			
10,300.00	9,692.79	10,609.77	9,652.37	35.21	36.96	-88.06	453.91	-1,553.52	936.44	864.38	72.06	12.996			
10,400.00	9,694.44	10,709.75	9,653.54	35.60	37.44	-88.03	553.88	-1,553.52	934.50	861.60	72.90	12.819			
10,500.00	9,696.09	10,809.73	9,654.71	36.05	37.97	-88.00	653.85	-1,553.52	932.55	858.70	73.85	12.628			
10,600.00	9,697.73	10,909.71	9,655.88	36.54	38.55	-87.96	753.82	-1,553.52	930.60	855.71	74.90	12.425			
10,700.00	9,699.38	11,009.69	9,657.05	37.08	39.17	-87.93	853.80	-1,553.52	928.66	852.62	76.04	12.212			
10,800.00	9,701.02	11,109.67	9,658.22	37.67	39.84	-87.90	953.77	-1,553.52	926.72	849.43	77.28	11.991			
10,900.00	9,702.67	11,209.65	9,659.39	38.30	40.55	-87.88	1,053.74	-1,553.52	924.77	846.16	78.61	11.764			
11,000.00	9,704.32	11,309.63	9,660.56	38.98	41.30	-87.83	1,153.72	-1,553.52	922.83	842.80	80.02	11.532			
11,100.00	9,705.96	11,409.61	9,661.72	39.70	42.08	-87.79	1,253.69	-1,553.52	920.88	839.37	81.52	11.297			
11,200.00	9,707.61	11,509.59	9,662.89	40.45	42.90	-87.76	1,353.66	-1,553.52	918.94	835.85	83.09	11.060			
11,300.00	9,709.25	11,609.57	9,664.06	41.25	43.76	-87.73	1,453.63	-1,553.52	917.00	832.27	84.73	10.823			
11,400.00	9,710.90	11,709.55	9,665.23	42.08	44.64	-87.69	1,553.61	-1,553.52	915.05	828.62	86.43	10.587			
11,500.00	9,712.55	11,809.53	9,666.40	42.94	45.55	-87.66	1,653.58	-1,553.52	913.11	824.91	88.21	10.352			
11,600.00	9,714.19	11,909.51	9,667.57	43.84	46.50	-87.62	1,753.55	-1,553.52	911.17	821.13	90.04	10.120			
11,700.00	9,715.84	12,009.49	9,668.74	44.76	47.46	-87.59	1,853.52	-1,553.52	909.23	817.31	91.92	9.891			
11,800.00	9,717.48	12,109.47	9,669.91	45.71	48.45	-87.55	1,953.50	-1,553.52	907.29	813.42	93.86	9.666			
11,900.00	9,719.13	12,209.45	9,671.08	46.69	49.47	-87.51	2,053.47	-1,553.52	905.35	809.49	95.85	9.445			
12,000.00	9,720.78	12,309.43	9,672.25	47.69	50.50	-87.48	2,153.44	-1,553.52	903.41	805.52	97.89	9.229			
12,100.00	9,722.42	12,409.41	9,673.42	48.72	51.56	-87.44	2,253.42	-1,553.52	901.47	801.50	99.97	9.018			
12,200.00	9,724.07	12,509.39	9,674.58	49.77	52.63	-87.41	2,353.39	-1,553.52	899.53	797.44	102.09	8.811			
12,300.00	9,725.71	12,609.36	9,675.75	50.84	53.72	-87.37	2,453.36	-1,553.52	897.59	793.34	104.25	8.610			
12,400.00	9,727.36	12,709.34	9,676.92	51.92	54.83	-87.34	2,553.33	-1,553.52	895.65	789.21	106.44	8.414			
12,500.00	9,729.01	12,809.32	9,678.09	53.03	55.96	-87.30	2,653.31	-1,553.52	893.71	785.04	108.67	8.224			
12,600.00	9,730.65	12,909.30	9,679.26	54.15	57.10	-87.26	2,753.28	-1,553.52	891.77	780.84	110.93	8.039			
12,700.00	9,732.30	13,009.28	9,680.43	55.29	58.25	-87.23	2,853.25	-1,553.52	889.83	776.61	113.22	7.859			
12,803.48	9,734.00	13,112.74	9,681.64	56.48	59.46	-87.19	2,956.70	-1,553.52	887.83	772.21	115.62	7.679			
12,836.60	9,734.35	13,145.88	9,682.03	56.87	59.85	-87.20	2,989.82	-1,553.52	887.18	770.78	116.40	7.622			
12,900.00	9,734.66	13,209.24	9,682.77	57.61	60.60	-87.22	3,053.20	-1,553.52	885.91	768.03	117.89	7.515			
13,000.00	9,735.15	13,309.22	9,683.94	58.79	61.79	-87.26	3,153.17	-1,553.52	883.92	763.66	120.26	7.350			
13,100.00	9,735.64	13,409.20	9,685.11	59.98	62.99	-87.30	3,253.14	-1,553.52	881.93	759.28	122.65	7.191			
13,200.00	9,736.13	13,509.18	9,686.28	61.18	64.20	-87.34	3,353.11	-1,553.52	879.94	754.87	125.07	7.036			
13,300.00	9,736.62	13,609.16	9,687.44	62.40	65.43	-87.38	3,453.08	-1,553.52	877.95	750.44	127.51	6.886			
13,400.00	9,737.11	13,709.13	9,688.61	63.62	66.66	-87.42	3,553.06	-1,553.52	875.96	745.99	129.96	6.740			
13,500.00	9,737.60	13,809.11	9,689.78	64.88	67.90	-87.45	3,653.03	-1,553.52	873.97	741.53	132.44	6.599			
13,600.00	9,738.09	13,909.09	9,690.95	66.10	69.15	-87.49	3,753.00	-1,553.52	871.98	737.04	134.93	6.462			
13,700.00	9,738.58	14,009.07	9,692.12	67.35	70.40	-87.53	3,852.97	-1,553.52	869.99	732.54	137.45	6.330			
13,800.00	9,739.07	14,109.05	9,693.29	68.62	71.67	-87.57	3,952.94	-1,553.52	868.00	728.03	139.97	6.201			
13,900.00	9,739.56	14,209.03	9,694.46	69.89	72.94	-87.61	4,052.91	-1,553.52	866.01	723.49	142.51	6.077			
14,000.00	9,740.05	14,309.00	9,695.63	71.18	74.22	-87.65	4,152.89	-1,553.52	864.02	718.95	145.07	5.956			
14,100.00	9,740.54	14,408.98	9,696.80	72.45	75.50	-87.69	4,252.86	-1,553.52	862.03	714.39	147.64	5.839			

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
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Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 332H (Leam) - OH - Planned														Offset Site Error: 0.00 usft
Survey Program: O-MWD+HDGM														Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
14,200.00	9,741.03	14,508.96	9,697.97	73.74	78.79	-87.73	4,352.83	-1,553.52	860.05	709.82	150.22	5.725		
14,300.00	9,741.52	14,608.94	9,699.14	75.03	78.09	-87.77	4,452.80	-1,553.52	858.06	705.24	152.82	5.615		
14,400.00	9,742.01	14,708.92	9,700.30	76.34	79.39	-87.81	4,552.77	-1,553.52	856.07	700.85	155.43	5.508		
14,500.00	9,742.50	14,808.90	9,701.47	77.65	80.70	-87.85	4,652.74	-1,553.52	854.09	696.04	158.04	5.404		
14,600.00	9,742.99	14,908.88	9,702.64	78.96	82.01	-87.89	4,752.71	-1,553.52	852.10	691.43	160.67	5.303		
14,700.00	9,743.48	15,008.85	9,703.81	80.28	83.32	-87.93	4,852.69	-1,553.52	850.12	686.81	163.31	5.206		
14,800.00	9,743.97	15,108.83	9,704.98	81.61	84.64	-87.97	4,952.66	-1,553.52	848.13	682.17	165.96	5.111		
14,900.00	9,744.46	15,208.81	9,706.15	82.93	85.97	-88.02	5,052.63	-1,553.52	846.15	677.53	168.61	5.018		
15,000.00	9,744.95	15,308.79	9,707.32	84.27	87.30	-88.06	5,152.60	-1,553.52	844.16	672.89	171.28	4.929		
15,100.00	9,745.44	15,408.77	9,708.49	85.61	88.63	-88.10	5,252.57	-1,553.52	842.18	668.23	173.95	4.841		
15,200.00	9,745.93	15,508.75	9,709.66	86.95	89.97	-88.14	5,352.54	-1,553.52	840.20	663.56	176.63	4.757		
15,300.00	9,746.42	15,608.72	9,710.83	88.30	91.31	-88.18	5,452.52	-1,553.52	838.21	658.89	179.32	4.674		
15,400.00	9,746.91	15,708.54	9,711.94	89.65	92.65	-88.22	5,552.52	-1,553.52	836.23	654.22	182.01	4.594		
15,500.00	9,747.40	15,808.26	9,713.11	91.00	93.99	-88.16	5,652.04	-1,553.52	834.30	649.59	184.71	4.517		
15,600.00	9,747.89	15,908.23	9,714.14	92.36	95.34	-88.09	5,752.01	-1,553.52	832.37	644.95	187.42	4.441		
15,700.00	9,748.38	16,008.21	9,715.67	93.72	96.70	-88.02	5,851.99	-1,553.52	830.44	640.31	190.13	4.368		
15,800.00	9,748.87	16,108.18	9,716.20	95.08	98.05	-87.95	5,951.96	-1,553.52	828.51	635.67	192.84	4.296		
15,900.00	9,749.36	16,208.16	9,717.23	96.45	99.41	-87.88	6,051.94	-1,553.52	826.59	631.02	195.56	4.227		
16,000.00	9,749.85	16,308.14	9,718.26	97.81	100.77	-87.81	6,151.91	-1,553.52	824.66	626.37	198.29	4.159		
16,100.00	9,750.34	16,408.11	9,719.29	99.19	102.14	-87.73	6,251.89	-1,553.52	822.74	621.72	201.02	4.093		
16,200.00	9,750.83	16,508.09	9,720.31	100.56	103.51	-87.66	6,351.86	-1,553.52	820.82	617.06	203.76	4.028		
16,300.00	9,751.32	16,608.06	9,721.34	101.94	104.87	-87.59	6,451.84	-1,553.52	818.90	612.40	206.50	3.968		
16,400.00	9,751.81	16,708.04	9,722.37	103.32	106.25	-87.52	6,551.81	-1,553.52	816.98	607.74	209.24	3.904		
16,500.00	9,752.29	16,808.02	9,723.40	104.70	107.62	-87.44	6,651.79	-1,553.52	815.06	603.07	211.99	3.845		
16,600.00	9,752.78	16,907.99	9,724.43	106.08	108.99	-87.37	6,751.76	-1,553.52	813.14	598.40	214.74	3.787		
16,700.00	9,753.27	17,007.97	9,725.46	107.47	110.37	-87.29	6,851.74	-1,553.52	811.23	593.73	217.50	3.730		
16,800.00	9,753.76	17,107.95	9,726.49	108.86	111.75	-87.22	6,951.72	-1,553.52	809.32	589.06	220.26	3.674		
16,900.00	9,754.25	17,207.92	9,727.52	110.25	113.13	-87.14	7,051.69	-1,553.52	807.40	584.38	223.02	3.620		
17,000.00	9,754.74	17,307.90	9,728.55	111.64	114.52	-87.07	7,151.67	-1,553.52	805.49	579.70	225.79	3.567		
17,100.00	9,755.23	17,407.87	9,729.58	113.03	115.90	-86.99	7,251.64	-1,553.52	803.58	575.03	228.56	3.516		
17,200.00	9,755.72	17,507.85	9,730.60	114.43	117.29	-86.92	7,351.62	-1,553.52	801.67	570.35	231.33	3.468		
17,300.00	9,756.21	17,607.83	9,731.63	115.83	118.68	-86.84	7,451.59	-1,553.52	799.77	565.66	234.10	3.416		
17,400.00	9,756.70	17,707.80	9,732.66	117.23	120.07	-86.76	7,551.57	-1,553.52	797.86	560.98	236.88	3.368		
17,500.00	9,757.19	17,807.78	9,732.19	118.63	121.46	-86.69	7,651.54	-1,553.52	795.96	556.30	239.66	3.321		
17,600.00	9,757.68	17,907.75	9,731.72	120.03	122.85	-86.61	7,751.52	-1,553.52	794.06	551.61	242.44	3.275		
17,700.00	9,758.17	18,007.73	9,731.25	121.43	124.24	-86.53	7,851.49	-1,553.52	792.16	546.93	245.23	3.230		
17,800.00	9,758.66	18,107.71	9,730.78	122.84	125.64	-86.45	7,951.47	-1,553.52	790.26	542.24	248.01	3.186		
17,900.00	9,759.15	18,207.68	9,730.31	124.25	127.04	-86.38	8,051.44	-1,553.52	788.36	537.56	250.80	3.143		
18,000.00	9,759.64	18,307.66	9,699.83	125.66	128.44	-86.30	8,151.42	-1,553.52	786.46	532.87	253.59	3.101		
18,100.00	9,760.13	18,407.64	9,699.36	127.06	129.83	-86.22	8,251.39	-1,553.52	784.57	528.18	256.38	3.060		
18,200.00	9,760.62	18,507.61	9,698.89	128.48	131.24	-86.14	8,351.37	-1,553.52	782.67	523.50	259.18	3.020		
18,300.00	9,761.11	18,607.59	9,698.42	129.89	132.64	-86.06	8,451.34	-1,553.52	780.78	518.81	261.97	2.980		
18,400.00	9,761.60	18,707.56	9,697.95	131.30	134.04	-85.98	8,551.32	-1,553.52	778.89	514.12	264.77	2.942		
18,500.00	9,762.09	18,807.54	9,697.48	132.71	135.44	-85.90	8,651.29	-1,553.52	777.00	509.44	267.56	2.904		
18,600.00	9,762.58	18,907.52	9,697.01	134.13	136.85	-85.82	8,751.27	-1,553.52	775.11	504.75	270.36	2.867		
18,700.00	9,763.07	19,007.49	9,696.54	135.55	138.26	-85.73	8,851.24	-1,553.52	773.23	500.06	273.16	2.831		
18,800.00	9,763.56	19,107.47	9,696.07	136.96	139.66	-85.65	8,951.22	-1,553.52	771.34	495.38	275.96	2.795		
18,900.00	9,764.05	19,207.44	9,695.59	138.38	141.07	-85.57	9,051.19	-1,553.52	769.46	490.69	278.77	2.760		
19,000.00	9,764.54	19,307.42	9,695.12	139.80	142.48	-85.49	9,151.17	-1,553.52	767.58	486.01	281.57	2.726		
19,100.00	9,765.03	19,407.40	9,694.65	141.22	143.89	-85.40	9,251.14	-1,553.52	765.70	481.33	284.37	2.693		
19,200.00	9,765.52	19,507.37	9,694.18	142.64	145.30	-85.32	9,351.12	-1,553.52	763.82	476.64	287.18	2.660		
19,300.00	9,766.01	19,607.35	9,693.71	144.06	146.71	-85.24	9,451.09	-1,553.52	761.95	471.96	289.98	2.628		

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 332H (Leam) - OH - Planned													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
19,400.00	9,766.50	19,707.32	9,693.24	145.49	148.12	-85.15	9,551.07	-1,553.52	760.07	467.28	292.79	2.596		
19,500.00	9,766.99	19,807.30	9,692.77	146.91	149.54	-85.07	9,651.04	-1,553.52	758.20	462.60	295.60	2.565		
19,600.00	9,767.48	19,907.28	9,692.30	148.34	150.95	-84.98	9,751.02	-1,553.52	756.33	457.92	298.40	2.535		
19,671.59	9,767.83	19,964.73	9,692.03	149.36	151.77	-84.93	9,808.47	-1,553.52	755.12	454.82	300.30	2.515	CC, ES	
19,700.00	9,767.97	19,964.73	9,692.03	149.76	151.77	-84.93	9,808.47	-1,553.52	755.66	455.08	300.58	2.514	SF	
19,800.00	9,768.46	19,964.73	9,692.03	151.19	151.77	-84.93	9,808.47	-1,553.52	765.96	467.50	298.46	2.566		
19,900.00	9,768.95	19,964.73	9,692.03	152.61	151.77	-84.93	9,808.47	-1,553.52	788.91	496.94	291.98	2.702		
19,911.12	9,769.00	19,964.73	9,692.03	152.77	151.77	-84.93	9,808.47	-1,553.52	792.20	501.18	291.03	2.722		

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 623H (Leam) - OH - Planned													Offset Site Error: 0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toothface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)				Between Centres (usft)	Between Ellipses (usft)
0.00	0.00	0.00	0.00	0.00	0.00	-86.48	158.01	-2,565.58	2,570.45				
100.00	100.00	90.80	90.80	0.12	0.12	-86.48	158.01	-2,565.58	2,570.44	0.25	N/A		
200.00	200.00	190.80	190.80	0.48	0.46	-86.48	158.01	-2,565.58	2,570.44	0.94	2,725.924		
300.00	300.00	290.80	290.80	0.84	0.82	-86.48	158.01	-2,565.58	2,570.44	1.66	1,548.546		
400.00	400.00	390.80	390.80	1.20	1.18	-86.48	158.01	-2,565.58	2,570.44	2.38	1,081.449		
500.00	500.00	490.80	490.80	1.56	1.54	-86.48	158.01	-2,565.58	2,570.44	3.09	830.838		
600.00	600.00	590.80	590.80	1.91	1.90	-86.48	158.01	-2,565.58	2,570.44	3.81	674.526		
700.00	700.00	690.80	690.80	2.27	2.25	-86.48	158.01	-2,565.58	2,570.44	4.53	567.717		
800.00	800.00	790.80	790.80	2.63	2.61	-86.48	158.01	-2,565.58	2,570.44	5.24	490.109		
900.00	900.00	890.80	890.80	2.99	2.97	-86.48	158.01	-2,565.58	2,570.44	5.96	431.168		
1,000.00	1,000.00	990.80	990.80	3.35	3.33	-86.48	158.01	-2,565.58	2,570.44	6.88	384.882		
1,100.00	1,100.00	1,090.80	1,090.80	3.71	3.69	-86.48	158.01	-2,565.58	2,570.44	7.40	347.570		
1,200.00	1,200.00	1,190.80	1,190.80	4.07	4.05	-86.48	158.01	-2,565.58	2,570.44	8.11	316.853		
1,300.00	1,300.00	1,290.80	1,290.80	4.42	4.41	-86.48	158.01	-2,565.58	2,570.44	8.83	291.125		
1,400.00	1,400.00	1,390.80	1,390.80	4.78	4.76	-86.48	158.01	-2,565.58	2,570.44	9.55	269.261		
1,500.00	1,500.00	1,490.80	1,490.80	5.14	5.12	-86.48	158.01	-2,565.58	2,570.44	10.26	250.451		
1,600.00	1,600.00	1,590.80	1,590.80	5.50	5.48	-86.48	158.01	-2,565.58	2,570.44	10.98	234.098		
1,700.00	1,700.00	1,690.80	1,690.80	5.86	5.84	-86.48	158.01	-2,565.58	2,570.44	11.70	219.750		
1,800.00	1,800.00	1,790.80	1,790.80	6.22	6.20	-86.48	158.01	-2,565.58	2,570.44	12.41	207.059		
1,900.00	1,900.00	1,890.80	1,890.80	6.57	6.56	-86.48	158.01	-2,565.58	2,570.44	13.13	195.753		
2,000.00	2,000.00	1,990.80	1,990.80	6.93	6.92	-86.48	158.01	-2,565.58	2,570.44	13.85	185.619		
2,100.00	2,100.00	2,090.80	2,090.80	7.29	7.27	-86.48	158.01	-2,565.58	2,570.44	14.56	176.482		
2,200.00	2,200.00	2,190.80	2,190.80	7.65	7.63	-86.48	158.01	-2,565.58	2,570.44	15.28	168.202		
2,300.00	2,300.00	2,290.80	2,290.80	8.01	7.99	-86.48	158.01	-2,565.58	2,570.44	16.00	160.665		
2,400.00	2,400.00	2,390.80	2,390.80	8.37	8.35	-86.48	158.01	-2,565.58	2,570.44	16.72	153.774		
2,500.00	2,500.00	2,490.80	2,490.80	8.73	8.71	-86.48	158.01	-2,565.58	2,570.44	17.43	147.450		
2,600.00	2,599.99	2,648.05	2,648.03	9.07	9.24	33.53	156.95	-2,563.99	2,568.70	18.31	140.292		
2,700.00	2,699.96	2,810.71	2,810.56	9.40	9.79	33.54	153.32	-2,558.59	2,563.06	19.17	133.714		
2,800.00	2,799.86	2,972.57	2,972.03	9.74	10.34	33.55	147.16	-2,549.41	2,553.55	20.02	127.558		
2,900.00	2,899.68	3,133.22	3,131.93	10.08	10.89	33.57	138.53	-2,536.57	2,540.17	20.88	121.782		
3,000.00	2,999.37	3,292.26	3,289.74	10.42	11.44	33.60	127.53	-2,520.20	2,522.99	21.69	116.344		
3,100.00	3,098.90	3,449.34	3,445.01	10.76	12.00	33.63	114.28	-2,500.46	2,502.05	22.50	111.203		
3,200.00	3,198.26	3,604.10	3,597.29	11.11	12.57	33.67	98.90	-2,477.57	2,477.41	23.30	106.328		
3,300.00	3,297.40	3,728.39	3,719.05	11.46	13.04	33.74	85.01	-2,456.89	2,449.43	24.03	101.925		
3,400.00	3,396.30	3,823.87	3,812.51	11.81	13.40	33.85	74.12	-2,440.68	2,419.79	24.71	97.938		
3,500.00	3,494.93	3,918.93	3,905.56	12.18	13.77	34.01	63.28	-2,424.55	2,388.77	25.39	94.100		
3,600.00	3,593.41	4,013.76	3,998.39	12.54	14.14	33.99	52.47	-2,408.45	2,357.06	26.07	90.425		
3,700.00	3,691.89	4,108.60	4,091.23	12.91	14.52	33.97	41.65	-2,392.35	2,325.35	26.75	88.925		
3,800.00	3,790.37	4,203.44	4,184.06	13.29	14.90	33.95	30.84	-2,376.25	2,293.65	27.44	83.585		
3,900.00	3,888.85	4,298.28	4,276.89	13.67	15.28	33.93	20.02	-2,360.15	2,261.94	28.13	80.396		
4,000.00	3,887.33	4,393.11	4,369.72	14.05	15.67	33.91	9.21	-2,344.05	2,230.23	28.83	77.350		
4,100.00	4,085.82	4,487.95	4,462.56	14.44	16.06	33.89	-1.60	-2,327.95	2,198.52	29.53	74.439		
4,200.00	4,184.30	4,582.79	4,555.39	14.83	16.45	33.87	-12.42	-2,311.85	2,168.81	30.24	71.654		
4,300.00	4,282.78	4,677.62	4,648.22	15.22	16.85	33.84	-23.23	-2,295.75	2,135.11	30.95	68.989		
4,400.00	4,381.26	4,772.46	4,741.06	15.61	17.24	33.82	-34.05	-2,279.65	2,103.40	31.66	66.437		
4,500.00	4,479.74	4,867.30	4,833.89	16.01	17.64	33.80	-44.86	-2,263.56	2,071.69	32.37	63.992		
4,600.00	4,578.22	4,962.13	4,926.72	16.40	18.04	33.77	-55.67	-2,247.46	2,039.99	33.09	61.647		
4,700.00	4,676.70	5,056.97	5,019.55	16.80	18.45	33.75	-66.49	-2,231.36	2,008.28	33.81	59.398		
4,800.00	4,775.18	5,151.81	5,112.39	17.20	18.85	33.72	-77.30	-2,215.26	1,976.58	34.53	57.238		
4,900.00	4,873.66	5,246.64	5,205.22	17.61	19.26	33.69	-88.12	-2,199.16	1,944.87	35.26	55.163		
5,000.00	4,972.14	5,341.48	5,298.05	18.01	19.66	33.67	-98.93	-2,183.06	1,913.17	35.98	53.169		
5,100.00	5,070.62	5,436.32	5,390.88	18.42	20.07	33.64	-109.74	-2,166.96	1,881.46	36.71	51.251		

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 623H (Learn) - OH - Planned													Offset Site Error: 0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	5,169.10	5,531.15	5,483.72	18.83	20.48	33.61	-120.56	-2,150.86	1,849.76	1,812.32	37.44	49.405	
5,300.00	5,267.58	5,625.99	5,576.55	19.23	20.90	33.58	-131.37	-2,134.76	1,818.06	1,779.88	38.17	47.627	
5,400.00	5,366.07	5,720.83	5,669.38	19.64	21.31	33.54	-142.18	-2,118.67	1,786.35	1,747.45	38.91	45.914	
5,500.00	5,464.55	5,815.68	5,762.21	20.05	21.72	33.51	-153.00	-2,102.57	1,754.65	1,715.01	39.64	44.263	
5,600.00	5,563.03	5,910.50	5,855.05	20.47	22.14	33.48	-163.81	-2,086.47	1,722.95	1,682.57	40.38	42.671	
5,700.00	5,661.51	6,005.34	5,947.88	20.88	22.55	33.44	-174.63	-2,070.37	1,691.25	1,650.13	41.12	41.134	
5,800.00	5,759.99	6,100.17	6,040.71	21.29	22.97	33.40	-185.44	-2,054.27	1,659.55	1,617.69	41.86	39.650	
5,900.00	5,858.47	6,195.01	6,133.55	21.71	23.39	33.37	-196.25	-2,038.17	1,627.85	1,585.25	42.60	38.216	
6,000.00	5,956.95	6,289.85	6,226.38	22.12	23.81	33.33	-207.07	-2,022.07	1,596.15	1,552.81	43.34	36.830	
6,100.00	6,055.43	6,384.69	6,319.21	22.54	24.23	33.28	-217.88	-2,005.97	1,564.45	1,520.37	44.08	35.490	
6,200.00	6,153.91	6,479.52	6,412.04	22.96	24.65	33.24	-228.70	-1,989.87	1,532.75	1,487.93	44.83	34.194	
6,300.00	6,252.39	6,574.36	6,504.88	23.38	25.07	33.20	-239.51	-1,973.77	1,501.05	1,455.48	45.57	32.939	
6,400.00	6,350.87	6,669.20	6,597.71	23.80	25.49	33.15	-250.32	-1,957.68	1,469.36	1,423.04	46.32	31.724	
6,500.00	6,449.35	6,764.03	6,690.54	24.21	25.92	33.10	-261.14	-1,941.58	1,437.66	1,390.60	47.06	30.547	
6,600.00	6,547.98	6,859.09	6,783.59	24.63	26.34	32.85	-271.98	-1,925.44	1,406.66	1,358.85	47.81	29.420	
6,700.00	6,646.88	6,954.57	6,877.05	25.04	26.77	32.57	-282.87	-1,909.23	1,377.07	1,328.51	48.56	28.357	
6,800.00	6,746.03	7,050.44	6,970.90	25.43	27.20	32.25	-293.80	-1,892.96	1,346.88	1,299.57	49.31	27.355	
6,900.00	6,845.38	7,146.68	7,065.10	25.82	27.63	31.89	-304.77	-1,876.62	1,322.14	1,272.08	50.06	26.411	
7,000.00	6,944.92	7,243.25	7,159.64	26.20	28.06	31.49	-315.78	-1,860.23	1,296.84	1,246.03	50.81	25.523	
7,100.00	7,044.61	7,340.13	7,254.47	26.57	28.50	31.05	-326.83	-1,843.78	1,273.01	1,221.45	51.56	24.689	
7,200.00	7,144.42	7,437.28	7,349.57	26.94	28.93	30.56	-337.91	-1,827.29	1,250.69	1,198.38	52.31	23.908	
7,300.00	7,244.33	7,534.68	7,444.91	27.29	29.37	30.04	-349.01	-1,810.76	1,229.89	1,176.82	53.06	23.177	
7,400.00	7,344.29	7,632.91	7,534.23	27.63	29.78	29.50	-359.35	-1,795.36	1,210.75	1,156.92	53.83	22.492	
7,500.00	7,444.29	7,730.49	7,616.26	27.97	30.15	-91.01	-368.26	-1,782.11	1,194.19	1,139.59	54.60	21.870	
7,600.00	7,544.28	7,828.00	7,705.36	28.29	30.54	-91.45	-377.15	-1,768.87	1,178.68	1,124.33	55.35	21.311	
7,700.00	7,644.28	7,926.12	7,782.45	28.61	30.87	-91.82	-384.19	-1,758.38	1,166.39	1,110.28	56.12	20.786	
7,800.00	7,744.28	8,024.05	7,866.45	28.94	31.22	-92.18	-391.18	-1,747.97	1,154.39	1,097.53	56.86	20.304	
7,900.00	7,844.28	8,121.93	7,959.97	29.26	31.56	-92.52	-397.51	-1,738.56	1,143.63	1,086.04	57.59	19.859	
8,000.00	7,944.28	8,219.82	8,035.97	29.59	31.90	-92.82	-403.15	-1,730.17	1,134.12	1,075.81	58.31	19.450	
8,100.00	8,044.28	8,317.71	8,121.41	29.92	32.23	-93.09	-408.09	-1,722.81	1,125.84	1,066.82	59.02	19.076	
8,200.00	8,144.28	8,415.60	8,201.27	30.24	32.53	-93.31	-412.06	-1,716.89	1,118.80	1,059.09	59.71	18.738	
8,300.00	8,244.28	8,513.49	8,293.32	30.57	32.86	-93.53	-415.87	-1,711.23	1,112.94	1,052.54	60.40	18.426	
8,400.00	8,344.28	8,611.38	8,379.70	30.90	33.17	-93.68	-418.68	-1,707.04	1,108.31	1,047.24	61.07	18.147	
8,500.00	8,444.28	8,709.27	8,466.27	31.23	33.47	-93.80	-420.77	-1,703.94	1,104.89	1,043.16	61.73	17.897	
8,600.00	8,544.28	8,807.16	8,552.98	31.56	33.76	-93.88	-422.13	-1,701.91	1,102.67	1,040.29	62.38	17.676	
8,700.00	8,644.28	8,905.05	8,639.77	31.89	34.04	-93.92	-422.75	-1,700.98	1,101.64	1,038.63	63.01	17.483	
8,751.73	8,696.02	8,956.94	8,686.82	32.07	34.19	-93.92	-422.80	-1,700.91	1,101.57	1,038.23	63.34	17.391	
8,800.00	8,744.28	9,008.83	8,735.08	32.23	34.33	-93.92	-422.80	-1,700.91	1,101.57	1,037.91	63.66	17.304	
8,900.00	8,844.28	9,110.72	8,835.08	32.56	34.64	-93.92	-422.80	-1,700.91	1,101.57	1,037.25	64.32	17.126	
9,000.00	8,944.28	9,212.61	8,935.08	32.89	34.95	-93.92	-422.80	-1,700.91	1,101.57	1,036.59	64.98	16.952	
9,100.00	9,044.29	9,314.50	9,035.09	33.22	35.26	-93.92	-422.80	-1,700.91	1,101.57	1,035.92	65.65	16.780	
9,171.72	9,116.00	9,416.39	9,106.80	33.46	35.48	-93.92	-422.80	-1,700.91	1,101.57	1,035.45	66.12	16.660	
9,200.00	9,144.27	9,518.28	9,135.07	33.56	35.57	-92.83	-422.80	-1,700.91	1,101.60	1,035.29	66.31	16.613	
9,250.00	9,194.04	9,620.17	9,184.84	33.72	35.73	-93.05	-422.80	-1,700.91	1,101.84	1,035.20	66.64	16.534	
9,300.00	9,243.22	9,722.06	9,234.02	33.87	35.88	-93.45	-422.80	-1,700.91	1,102.36	1,035.39	66.97	16.460	
9,350.00	9,291.42	9,823.95	9,290.05	34.01	36.05	-94.06	-421.09	-1,700.91	1,103.12	1,035.81	67.32	16.387	
9,400.00	9,338.29	9,925.84	9,349.45	34.14	36.22	-94.88	-413.35	-1,700.91	1,103.87	1,036.23	67.64	16.319	
9,450.00	9,383.47	10,027.73	9,409.31	34.26	36.38	-95.27	-398.98	-1,700.91	1,104.55	1,036.81	67.93	16.259	
9,500.00	9,428.62	10,129.62	9,468.78	34.37	36.52	-95.82	-377.64	-1,700.91	1,105.12	1,036.93	68.18	16.208	
9,550.00	9,467.40	10,231.51	9,526.87	34.46	36.64	-96.31	-349.14	-1,700.91	1,105.54	1,037.15	68.39	16.165	
9,600.00	9,505.50	10,333.40	9,582.47	34.53	36.74	-96.75	-313.48	-1,700.91	1,105.78	1,037.22	68.56	16.129	
9,650.00	9,540.64	10,435.29	9,634.46	34.60	36.82	-97.11	-270.86	-1,700.91	1,105.79	1,037.10	68.69	16.099	

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
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Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 623H (Leam) - OH - Planned													Offset Site Error: 0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
9,700.00	9,572.55	9,840.35	9,681.68	34.65	36.87	-97.40	-221.76	-1,700.91	1,105.56	1,036.76	68.79	16.071	
9,750.00	9,600.88	9,909.10	9,723.07	34.68	36.89	-97.60	-166.91	-1,700.91	1,105.05	1,036.17	68.89	16.041	
9,800.00	9,625.73	9,978.12	9,757.71	34.70	36.89	-97.72	-107.27	-1,700.91	1,104.27	1,035.29	68.98	16.008	
9,850.00	9,648.59	10,047.05	9,784.91	34.71	36.87	-97.74	-43.97	-1,700.91	1,103.22	1,034.12	69.10	15.966	
9,900.00	9,663.42	10,115.54	9,804.21	34.71	36.83	-97.68	21.70	-1,700.91	1,101.90	1,032.67	69.23	15.916	
9,950.00	9,676.08	10,183.28	9,815.46	34.70	36.78	-97.53	88.46	-1,700.91	1,100.35	1,030.95	69.40	15.856	
10,000.00	9,684.48	10,246.98	9,818.88	34.68	36.73	-97.33	152.04	-1,700.91	1,098.62	1,029.03	69.59	15.787	
10,050.00	9,688.55	10,296.83	9,819.48	34.67	36.68	-97.30	201.89	-1,700.91	1,097.20	1,027.43	69.77	15.725	
10,062.32	9,688.88	10,309.15	9,819.63	34.67	36.67	-97.31	214.20	-1,700.91	1,096.94	1,027.12	69.82	15.711	
10,062.61	9,688.89	10,309.44	9,819.64	34.67	36.67	-97.31	214.49	-1,700.91	1,096.94	1,027.12	69.82	15.711	
10,100.00	9,689.50	10,346.82	9,820.10	34.67	36.64	-97.31	251.87	-1,700.91	1,096.19	1,026.22	69.97	15.688	
10,200.00	9,691.15	10,446.80	9,821.34	34.88	36.58	-97.30	351.85	-1,700.91	1,094.19	1,023.77	70.42	15.537	
10,300.00	9,692.79	10,546.78	9,822.58	35.21	36.54	-97.29	451.82	-1,700.91	1,092.19	1,021.19	71.00	15.384	
10,400.00	9,694.44	10,646.76	9,823.82	35.80	36.61	-97.29	551.79	-1,700.91	1,090.19	1,018.51	71.68	15.208	
10,500.00	9,696.09	10,746.74	9,825.06	36.05	36.96	-97.28	651.76	-1,700.91	1,088.19	1,015.71	72.48	15.014	
10,600.00	9,697.73	10,846.72	9,826.30	36.54	37.41	-97.27	751.73	-1,700.91	1,086.19	1,012.81	73.38	14.802	
10,700.00	9,699.38	10,946.70	9,827.53	37.08	37.93	-97.26	851.71	-1,700.91	1,084.20	1,009.81	74.39	14.575	
10,800.00	9,701.02	11,046.68	9,828.77	37.67	38.49	-97.25	951.68	-1,700.91	1,082.20	1,006.70	75.49	14.335	
10,900.00	9,702.67	11,146.66	9,830.01	38.30	39.10	-97.25	1,051.65	-1,700.91	1,080.20	1,003.51	76.69	14.085	
11,000.00	9,704.32	11,246.64	9,831.25	38.98	39.74	-97.24	1,151.62	-1,700.91	1,078.20	1,000.22	77.98	13.827	
11,100.00	9,705.96	11,346.62	9,832.49	39.70	40.43	-97.23	1,251.60	-1,700.91	1,076.20	996.85	79.35	13.563	
11,200.00	9,707.61	11,446.60	9,833.73	40.45	41.16	-97.22	1,351.57	-1,700.91	1,074.20	993.40	80.81	13.294	
11,300.00	9,709.25	11,546.58	9,834.97	41.25	41.92	-97.21	1,451.54	-1,700.91	1,072.20	989.87	82.34	13.022	
11,400.00	9,710.90	11,646.09	9,836.42	42.08	42.86	-97.20	1,569.03	-1,700.91	1,069.96	985.89	84.07	12.727	
11,500.00	9,712.55	11,822.42	9,838.39	42.94	44.17	-97.24	1,727.18	-1,693.53	1,063.58	977.45	86.13	12.348	
11,600.00	9,714.19	11,979.16	9,840.34	43.84	45.51	-97.33	1,883.12	-1,678.01	1,051.77	963.61	88.16	11.930	
11,700.00	9,715.84	12,091.51	9,841.73	44.78	46.50	-97.44	1,994.40	-1,662.62	1,036.14	946.18	89.96	11.517	
11,800.00	9,717.48	12,190.24	9,842.95	45.71	47.40	-97.53	2,092.16	-1,648.88	1,020.37	928.62	91.75	11.121	
11,900.00	9,719.13	12,288.97	9,844.18	46.69	48.32	-97.63	2,189.93	-1,635.14	1,004.60	911.01	93.59	10.734	
12,000.00	9,720.78	12,387.71	9,845.40	47.69	49.26	-97.73	2,287.69	-1,621.40	988.83	893.35	95.47	10.357	
12,100.00	9,722.42	12,468.82	9,846.40	48.72	50.05	-97.81	2,388.08	-1,610.58	973.69	876.37	97.33	10.005	
12,200.00	9,724.07	12,543.13	9,847.33	49.77	50.80	-97.87	2,441.94	-1,602.54	960.99	861.82	99.17	9.690	
12,300.00	9,725.71	12,617.90	9,848.26	50.84	51.56	-97.91	2,516.44	-1,596.40	950.85	849.81	101.04	9.410	
12,400.00	9,727.36	12,700.00	9,849.28	51.92	52.42	-97.94	2,598.41	-1,591.89	943.33	840.34	102.99	9.159	
12,500.00	9,729.01	12,768.36	9,850.12	53.03	53.15	-97.95	2,666.74	-1,589.93	938.34	833.51	104.83	8.951	
12,600.00	9,730.65	12,852.81	9,851.17	54.15	54.06	-97.95	2,751.18	-1,589.53	935.81	828.97	106.84	8.759	
12,700.00	9,732.30	12,952.79	9,852.41	55.29	55.16	-97.94	2,851.15	-1,589.53	933.81	824.74	109.07	8.561	
12,803.48	9,734.00	13,046.51	9,853.57	56.48	56.20	-97.93	2,944.86	-1,589.69	931.95	820.66	111.29	8.374	
12,834.25	9,734.34	13,069.77	9,853.86	56.84	56.46	-97.94	2,968.12	-1,590.03	931.80	819.82	111.89	8.328	
12,836.60	9,734.35	13,071.55	9,853.88	56.87	56.48	-97.94	2,969.90	-1,590.06	931.81	819.87	111.93	8.325	
12,900.00	9,734.66	13,119.51	9,854.48	57.61	57.02	-97.96	3,017.84	-1,591.39	932.38	819.22	113.16	8.240	
13,000.00	9,735.15	13,200.00	9,855.48	58.79	57.94	-97.98	3,098.22	-1,595.42	935.43	820.27	115.16	8.123	
13,100.00	9,735.64	13,270.48	9,856.35	59.98	58.76	-97.97	3,168.49	-1,600.80	941.05	824.08	116.97	8.045	
13,200.00	9,736.13	13,345.61	9,857.28	61.18	59.64	-97.96	3,243.22	-1,608.43	949.29	830.45	118.83	7.988	
13,300.00	9,736.62	13,421.66	9,858.23	62.40	60.54	-97.92	3,318.64	-1,618.15	960.10	839.40	120.70	7.955	
13,400.00	9,737.11	13,520.94	9,859.46	63.62	61.74	-97.87	3,416.94	-1,631.96	972.06	848.92	123.14	7.894	
13,500.00	9,737.60	13,620.22	9,860.69	64.86	62.94	-97.82	3,515.25	-1,645.78	984.02	858.41	125.60	7.834	
13,600.00	9,738.09	13,719.49	9,861.92	66.10	64.17	-97.77	3,613.55	-1,659.59	995.98	867.89	128.09	7.775	
13,700.00	9,738.58	13,820.01	9,863.16	67.35	65.42	-97.72	3,713.08	-1,673.58	1,007.94	877.31	130.63	7.716	
13,800.00	9,739.07	13,973.29	9,865.07	68.62	67.34	-97.67	3,865.37	-1,690.65	1,017.15	882.75	134.40	7.568	
13,900.00	9,739.56	14,127.64	9,866.98	69.89	69.29	-97.69	4,019.44	-1,699.59	1,021.05	883.15	137.91	7.404	
14,000.00	9,740.05	14,260.70	9,868.31	71.16	70.96	-97.74	4,152.47	-1,700.96	1,020.05	879.17	140.88	7.241	

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 623H (Leam) - OH - Planned													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Tooffset (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
14,100.00	9,740.54	14,360.68	9,868.31	72.45	72.22	-97.73	4,252.45	-1,700.96	1,018.04	874.63	143.41	7.099		
14,200.00	9,741.03	14,460.66	9,868.31	73.74	73.48	-97.72	4,352.43	-1,700.96	1,016.03	870.07	145.96	6.961		
14,300.00	9,741.52	14,560.64	9,868.31	75.03	74.75	-97.70	4,452.41	-1,700.96	1,014.02	865.50	148.52	6.828		
14,400.00	9,742.01	14,660.62	9,868.31	76.34	76.03	-97.69	4,552.39	-1,700.96	1,012.01	860.92	151.09	6.698		
14,500.00	9,742.50	14,760.59	9,868.31	77.65	77.32	-97.68	4,652.37	-1,700.96	1,010.00	856.32	153.68	6.572		
14,600.00	9,742.99	14,860.57	9,868.31	78.96	78.61	-97.66	4,752.35	-1,700.96	1,007.99	851.72	156.27	6.450		
14,700.00	9,743.48	14,960.55	9,868.31	80.28	79.90	-97.65	4,852.33	-1,700.96	1,005.98	847.10	158.88	6.332		
14,800.00	9,743.97	15,060.53	9,868.31	81.61	81.21	-97.64	4,952.31	-1,700.96	1,003.97	842.47	161.50	6.217		
14,900.00	9,744.46	15,160.51	9,868.31	82.93	82.51	-97.63	5,052.29	-1,700.96	1,001.96	837.84	164.12	6.105		
15,000.00	9,744.95	15,260.49	9,868.31	84.27	83.82	-97.61	5,152.27	-1,700.96	999.95	833.19	166.76	5.996		
15,100.00	9,745.44	15,360.47	9,868.31	85.61	85.14	-97.60	5,252.25	-1,700.96	997.94	828.54	169.40	5.891		
15,200.00	9,745.93	15,460.45	9,868.31	86.95	86.46	-97.59	5,352.23	-1,700.96	995.93	823.87	172.06	5.788		
15,300.00	9,746.42	15,560.43	9,868.31	88.30	87.78	-97.57	5,452.21	-1,700.96	993.92	819.20	174.72	5.689		
15,400.00	9,746.91	15,660.41	9,868.31	89.65	89.11	-97.56	5,552.19	-1,700.96	991.91	814.52	177.39	5.592		
15,500.00	9,747.40	15,760.39	9,868.31	91.00	90.45	-97.55	5,652.17	-1,700.96	989.90	809.84	180.07	5.497		
15,600.00	9,747.89	15,860.37	9,868.31	92.36	91.78	-97.54	5,752.14	-1,700.96	987.90	805.15	182.75	5.406		
15,700.00	9,748.38	15,960.35	9,868.31	93.72	93.12	-97.52	5,852.12	-1,700.96	985.89	800.45	185.44	5.316		
15,800.00	9,748.87	16,060.33	9,868.31	95.08	94.46	-97.51	5,952.10	-1,700.96	983.88	795.74	188.14	5.230		
15,900.00	9,749.36	16,160.31	9,868.31	96.45	95.81	-97.50	6,052.08	-1,700.96	981.87	791.03	190.84	5.145		
16,000.00	9,749.85	16,260.29	9,868.31	97.81	97.16	-97.48	6,152.06	-1,700.96	979.86	786.31	193.55	5.063		
16,100.00	9,750.34	16,360.27	9,868.31	99.19	98.51	-97.47	6,252.04	-1,700.96	977.85	781.58	196.27	4.982		
16,200.00	9,750.83	16,460.25	9,868.31	100.56	99.87	-97.45	6,352.02	-1,700.96	975.84	776.85	198.99	4.904		
16,300.00	9,751.32	16,560.23	9,868.31	101.94	101.23	-97.44	6,452.00	-1,700.96	973.83	772.12	201.71	4.828		
16,400.00	9,751.81	16,660.21	9,868.31	103.32	102.59	-97.43	6,551.98	-1,700.96	971.82	767.38	204.44	4.754		
16,500.00	9,752.29	16,760.19	9,868.31	104.70	103.95	-97.41	6,651.96	-1,700.96	969.82	762.64	207.18	4.681		
16,600.00	9,752.78	16,860.17	9,868.31	106.08	105.32	-97.40	6,751.94	-1,700.96	967.81	757.89	209.92	4.610		
16,700.00	9,753.27	16,960.15	9,868.31	107.47	106.68	-97.39	6,851.92	-1,700.96	965.80	753.13	212.67	4.541		
16,800.00	9,753.76	17,060.13	9,868.31	108.86	108.06	-97.35	6,952.35	-1,700.96	963.75	748.32	215.43	4.474		
16,900.00	9,754.25	17,160.11	9,868.31	110.25	109.43	-97.32	7,052.33	-1,700.96	961.69	743.50	218.19	4.408		
17,000.00	9,754.74	17,260.09	9,868.31	111.64	110.81	-97.28	7,152.30	-1,700.96	959.64	738.68	220.95	4.343		
17,100.00	9,755.23	17,360.07	9,868.31	113.03	112.18	-97.25	7,252.28	-1,700.96	957.58	733.86	223.72	4.280		
17,200.00	9,755.72	17,460.05	9,868.31	114.43	113.56	-97.21	7,352.26	-1,700.96	955.53	729.03	226.50	4.219		
17,300.00	9,756.21	17,560.03	9,868.31	115.83	114.94	-97.17	7,452.23	-1,700.96	953.48	724.20	229.27	4.159		
17,400.00	9,756.70	17,660.01	9,868.31	117.23	116.33	-97.14	7,552.21	-1,700.96	951.42	719.37	232.06	4.100		
17,500.00	9,757.19	17,760.00	9,868.31	118.63	117.71	-97.10	7,652.19	-1,700.96	949.37	714.53	234.84	4.043		
17,600.00	9,757.68	17,860.00	9,868.31	120.03	119.10	-97.06	7,752.16	-1,700.96	947.32	709.69	237.63	3.987		
17,700.00	9,758.17	17,960.00	9,868.31	121.43	120.48	-97.03	7,852.14	-1,700.96	945.27	704.85	240.42	3.932		
17,800.00	9,758.66	18,060.00	9,868.31	122.84	121.87	-96.99	7,952.12	-1,700.96	943.21	700.00	243.21	3.879		
17,900.00	9,759.15	18,160.00	9,868.31	124.25	123.26	-96.95	8,052.09	-1,700.96	941.16	695.15	246.01	3.826		
18,000.00	9,759.64	18,260.00	9,868.31	125.66	124.66	-96.92	8,152.07	-1,700.96	939.11	690.30	248.81	3.774		
18,100.00	9,760.13	18,360.00	9,868.31	127.06	126.05	-96.88	8,252.05	-1,700.96	937.06	685.44	251.62	3.724		
18,200.00	9,760.62	18,460.00	9,868.31	128.48	127.44	-96.84	8,352.02	-1,700.96	935.01	680.59	254.42	3.675		
18,300.00	9,761.11	18,560.00	9,868.31	129.89	128.84	-96.80	8,452.00	-1,700.96	932.96	675.73	257.23	3.627		
18,400.00	9,761.60	18,660.00	9,868.31	131.30	130.24	-96.76	8,551.97	-1,700.96	930.91	670.87	260.04	3.580		
18,500.00	9,762.09	18,760.00	9,868.31	132.71	131.64	-96.73	8,651.95	-1,700.96	928.86	666.00	262.86	3.534		
18,600.00	9,762.58	18,860.00	9,868.31	134.13	133.04	-96.69	8,751.93	-1,700.96	926.81	661.14	265.68	3.489		
18,700.00	9,763.07	18,960.00	9,868.31	135.55	134.44	-96.65	8,851.90	-1,700.96	924.77	656.27	268.49	3.444		
18,800.00	9,763.56	19,060.00	9,868.31	136.96	135.84	-96.61	8,951.88	-1,700.96	922.72	651.40	271.32	3.401		
18,900.00	9,764.05	19,160.00	9,868.31	138.38	137.24	-96.57	9,051.86	-1,700.96	920.67	646.53	274.14	3.358		
19,000.00	9,764.54	19,260.00	9,868.31	139.80	138.65	-96.53	9,151.83	-1,700.96	918.63	641.66	276.97	3.317		
19,100.00	9,765.03	19,360.00	9,868.31	141.22	140.05	-96.49	9,251.81	-1,700.96	916.58	636.78	279.80	3.276		
19,200.00	9,765.52	19,460.00	9,868.31	142.64	141.46	-96.45	9,351.79	-1,700.96	914.53	631.91	282.63	3.236		

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 623H (Leam) - OH - Planned													Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
19,300.00	9,766.01	19,560.00	9,858.82	144.06	142.86	-96.41	9,451.76	-1,700.96	912.49	627.03	285.46	3.197		
19,400.00	9,766.50	19,659.98	9,858.45	145.49	144.27	-96.37	9,551.74	-1,700.96	910.44	622.15	288.30	3.158		
19,500.00	9,766.99	19,759.96	9,858.09	146.91	145.68	-96.33	9,651.72	-1,700.96	908.40	617.27	291.13	3.120		
19,600.00	9,767.48	19,859.94	9,857.72	148.34	147.09	-96.29	9,751.69	-1,700.96	906.35	612.38	293.97	3.083		
19,700.00	9,767.97	19,959.91	9,857.35	149.76	148.50	-96.25	9,851.67	-1,700.96	904.31	607.50	296.61	3.047		
19,800.00	9,768.46	20,059.89	9,856.99	151.19	149.91	-96.21	9,951.64	-1,700.96	902.27	602.61	299.65	3.011		
19,900.00	9,768.95	20,159.87	9,856.62	152.61	151.33	-96.17	10,051.62	-1,700.96	900.22	597.72	302.50	2.976		
19,911.12	9,769.00	20,170.99	9,856.58	152.77	151.48	-96.17	10,062.74	-1,700.96	900.00	597.18	302.82	2.972 CC, ES, SF		

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
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Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 624H - OH - Plan #1											Offset Site Error: 0.00 usft	
Survey Program: 0-MWD+HDGM											Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Highside Tooface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)				Between Centres (usft)
0.00	0.00	0.00	0.00	0.00	0.00	90.40	-0.21	30.01	30.01			
100.00	100.00	100.00	100.00	0.12	0.12	90.40	-0.21	30.01	30.01	29.77	0.24 123.125	
200.00	200.00	200.00	200.00	0.48	0.48	90.40	-0.21	30.01	30.01	29.05	0.96 31.241	
300.00	300.00	300.00	300.00	0.84	0.84	90.40	-0.21	30.01	30.01	28.34	1.68 17.890	
400.00	400.00	400.00	400.00	1.20	1.20	90.40	-0.21	30.01	30.01	27.62	2.39 12.534	
500.00	500.00	500.00	500.00	1.56	1.56	90.40	-0.21	30.01	30.01	26.90	3.11 9.646	
600.00	600.00	600.00	600.00	1.91	1.91	90.40	-0.21	30.01	30.01	26.18	3.83 7.839	
700.00	700.00	700.00	700.00	2.27	2.27	90.40	-0.21	30.01	30.01	25.47	4.55 6.603	
800.00	800.00	800.00	800.00	2.63	2.63	90.40	-0.21	30.01	30.01	24.75	5.26 5.703	
900.00	900.00	900.00	900.00	2.99	2.99	90.40	-0.21	30.01	30.01	24.03	5.98 5.020	
1,000.00	1,000.00	1,000.00	1,000.00	3.35	3.35	90.40	-0.21	30.01	30.01	23.32	6.70 4.482	
1,100.00	1,100.00	1,100.00	1,100.00	3.71	3.71	90.40	-0.21	30.01	30.01	22.60	7.41 4.049	
1,200.00	1,200.00	1,200.00	1,200.00	4.07	4.07	90.40	-0.21	30.01	30.01	21.88	8.13 3.692	
1,300.00	1,300.00	1,300.00	1,300.00	4.42	4.42	90.40	-0.21	30.01	30.01	21.17	8.85 3.392	
1,400.00	1,400.00	1,400.00	1,400.00	4.78	4.78	90.40	-0.21	30.01	30.01	20.45	9.56 3.138	
1,500.00	1,500.00	1,500.00	1,500.00	5.14	5.14	90.40	-0.21	30.01	30.01	19.73	10.28 2.919	
1,600.00	1,600.00	1,600.00	1,600.00	5.50	5.50	90.40	-0.21	30.01	30.01	19.02	11.00 2.729	
1,700.00	1,700.00	1,700.00	1,700.00	5.86	5.86	90.40	-0.21	30.01	30.01	18.30	11.71 2.562	
1,800.00	1,800.00	1,800.00	1,800.00	6.22	6.22	90.40	-0.21	30.01	30.01	17.58	12.43 2.414	
1,900.00	1,900.00	1,900.00	1,900.00	6.57	6.57	90.40	-0.21	30.01	30.01	16.86	13.15 2.283	
2,000.00	2,000.00	2,000.00	2,000.00	6.93	6.93	90.40	-0.21	30.01	30.01	16.15	13.87 2.165	
2,100.00	2,100.00	2,100.00	2,100.00	7.29	7.29	90.40	-0.21	30.01	30.01	15.43	14.58 2.058	
2,200.00	2,200.00	2,200.00	2,200.00	7.65	7.65	90.40	-0.21	30.01	30.01	14.71	15.30 1.962	
2,300.00	2,300.00	2,300.00	2,300.00	8.01	8.01	90.40	-0.21	30.01	30.01	14.00	16.02 1.874	
2,400.00	2,400.00	2,400.00	2,400.00	8.37	8.37	90.40	-0.21	30.01	30.01	13.28	16.73 1.794	
2,500.00	2,500.00	2,500.00	2,500.00	8.73	8.73	90.40	-0.21	30.01	30.01	12.56	17.45 1.720 CC, ES	
2,600.00	2,599.99	2,599.99	2,599.98	9.07	9.07	-148.79	-1.08	30.01	30.77	12.64	18.14 1.697 SF	
2,700.00	2,699.96	2,699.93	2,699.89	9.40	9.39	-146.60	-3.70	30.01	33.09	14.30	18.79 1.761	
2,800.00	2,799.86	2,799.78	2,799.65	9.74	9.72	-143.56	-8.05	30.01	37.04	17.59	19.45 1.905	
2,900.00	2,899.68	2,899.50	2,899.18	10.08	10.04	-140.26	-14.13	30.01	42.71	22.59	20.11 2.123	
3,000.00	2,999.37	2,999.03	2,998.40	10.42	10.37	-137.12	-21.93	30.01	50.13	29.36	20.78 2.413	
3,100.00	3,098.90	3,098.34	3,097.26	10.76	10.70	-134.35	-31.42	30.01	59.34	37.90	21.44 2.767	
3,200.00	3,198.26	3,197.74	3,196.11	11.11	11.04	-132.65	-41.81	30.01	70.09	47.97	22.12 3.169	
3,300.00	3,297.40	3,297.02	3,294.85	11.46	11.37	-132.29	-52.19	30.01	82.03	59.23	22.80 3.598	
3,400.00	3,396.30	3,396.15	3,393.44	11.81	11.71	-132.77	-62.55	30.01	95.14	71.66	23.49 4.051	
3,500.00	3,494.93	3,495.10	3,491.84	12.18	12.06	-133.78	-72.90	30.01	109.46	85.28	24.18 4.527	
3,600.00	3,593.41	3,593.95	3,590.15	12.54	12.40	-134.83	-83.23	30.01	124.41	99.53	24.88 5.001	
3,700.00	3,691.89	3,692.80	3,688.48	12.91	12.75	-135.83	-93.56	30.01	139.40	113.82	25.58 5.450	
3,800.00	3,790.37	3,791.65	3,786.77	13.29	13.10	-136.55	-103.89	30.01	154.42	128.13	26.28 5.875	
3,900.00	3,888.85	3,890.50	3,885.07	13.67	13.45	-137.15	-114.23	30.01	169.46	142.46	26.99 6.278	
4,000.00	3,987.33	3,989.35	3,983.38	14.05	13.80	-137.65	-124.56	30.01	184.51	156.80	27.71 6.658	
4,100.00	4,085.82	4,088.20	4,081.69	14.44	14.16	-138.07	-134.89	30.01	199.57	171.15	28.42 7.021	
4,200.00	4,184.30	4,187.05	4,179.99	14.83	14.51	-138.44	-145.22	30.01	214.65	185.50	29.14 7.365	
4,300.00	4,282.78	4,285.89	4,278.30	15.22	14.87	-138.75	-155.56	30.01	229.73	199.88	29.87 7.691	
4,400.00	4,381.26	4,384.74	4,376.61	15.61	15.23	-139.03	-165.89	30.01	244.81	214.22	30.60 8.002	
4,500.00	4,479.74	4,483.59	4,474.92	16.01	15.59	-139.28	-176.22	30.01	259.91	228.58	31.32 8.297	
4,600.00	4,578.22	4,582.44	4,573.22	16.40	15.95	-139.50	-186.55	30.01	275.00	242.95	32.06 8.579	
4,700.00	4,676.70	4,681.29	4,671.53	16.80	16.31	-139.69	-196.89	30.01	290.10	257.31	32.79 8.847	
4,800.00	4,775.18	4,780.14	4,769.84	17.20	16.67	-139.87	-207.22	30.01	305.20	271.68	33.53 9.103	
4,900.00	4,873.66	4,878.99	4,868.15	17.61	17.04	-140.03	-217.55	30.01	320.31	286.04	34.27 9.348	
5,000.00	4,972.14	4,977.84	4,966.45	18.01	17.40	-140.17	-227.88	30.01	335.42	300.41	35.01 9.582	
5,100.00	5,070.62	5,076.69	5,064.76	18.42	17.77	-140.31	-238.22	30.01	350.53	314.78	35.75 9.805	

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 624H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,200.00	5,169.10	5,175.53	5,163.07	18.83	18.13	-140.43	-248.55	30.01	365.64	329.14	36.49	10.020		
5,300.00	5,267.58	5,274.38	5,261.38	19.23	18.50	-140.54	-258.88	30.01	380.75	343.51	37.24	10.225		
5,400.00	5,366.07	5,373.23	5,359.68	19.64	18.87	-140.64	-269.21	30.01	395.86	357.88	37.98	10.422		
5,500.00	5,464.55	5,472.08	5,457.99	20.05	19.24	-140.74	-279.55	30.01	410.98	372.24	38.73	10.610		
5,600.00	5,563.03	5,570.93	5,556.30	20.47	19.61	-140.83	-289.88	30.01	426.09	388.61	39.48	10.792		
5,700.00	5,661.51	5,669.78	5,654.61	20.88	19.98	-140.91	-300.21	30.01	441.21	400.98	40.23	10.966		
5,800.00	5,759.99	5,768.83	5,752.91	21.29	20.35	-140.99	-310.54	30.01	456.33	415.34	40.99	11.134		
5,900.00	5,858.47	5,867.48	5,851.22	21.71	20.72	-141.06	-320.88	30.01	471.45	429.71	41.74	11.295		
6,000.00	5,956.95	5,966.33	5,949.53	22.12	21.09	-141.13	-331.21	30.01	486.57	444.07	42.49	11.450		
6,100.00	6,055.43	6,066.01	6,048.70	22.54	21.46	-141.24	-341.25	30.01	501.63	458.38	43.25	11.597		
6,200.00	6,153.91	6,166.13	6,148.47	22.96	21.83	-141.52	-349.70	30.01	516.47	472.46	44.01	11.735		
6,300.00	6,252.39	6,266.21	6,248.32	23.38	22.20	-141.98	-356.40	30.01	531.09	488.33	44.76	11.866		
6,400.00	6,350.87	6,366.19	6,348.18	23.80	22.56	-142.59	-361.35	30.01	545.53	500.03	45.50	11.991		
6,500.00	6,449.35	6,466.00	6,447.94	24.21	22.91	-143.38	-364.55	30.01	559.83	513.61	46.22	12.111		
6,600.00	6,547.88	6,565.74	6,547.66	24.63	23.26	-144.28	-368.01	30.01	573.37	526.43	46.94	12.215		
6,700.00	6,646.88	6,664.96	6,646.88	25.04	23.59	-145.18	-368.12	30.01	585.49	537.86	47.63	12.292		
6,800.00	6,746.03	6,764.10	6,746.03	25.43	23.92	-145.96	-366.12	30.01	596.28	547.96	48.32	12.339		
6,900.00	6,845.38	6,863.48	6,845.38	25.82	24.26	-146.61	-366.12	30.01	605.72	556.71	49.01	12.358		
7,000.00	6,944.92	6,963.00	6,944.92	26.20	24.59	-147.15	-366.12	30.01	613.78	564.06	49.70	12.349		
7,100.00	7,044.61	7,062.69	7,044.61	26.57	24.93	-147.57	-366.12	30.01	620.37	569.98	50.39	12.311		
7,200.00	7,144.42	7,162.50	7,144.42	26.94	25.26	-147.90	-366.12	30.01	625.54	574.46	51.08	12.247		
7,300.00	7,244.33	7,262.40	7,244.33	27.29	25.60	-148.13	-366.12	30.01	629.24	577.47	51.76	12.156		
7,400.00	7,344.29	7,362.37	7,344.29	27.63	25.94	-148.27	-366.12	30.01	631.46	579.01	52.45	12.040		
7,500.00	7,444.29	7,462.36	7,444.29	27.97	26.28	91.69	-366.12	30.01	632.20	579.08	53.13	11.900		
7,600.00	7,544.28	7,562.36	7,544.28	28.29	26.62	91.69	-366.12	30.01	632.20	578.41	53.80	11.751		
7,700.00	7,644.28	7,662.36	7,644.28	28.61	26.96	91.69	-366.12	30.01	632.20	577.73	54.47	11.606		
7,800.00	7,744.28	7,762.36	7,744.28	28.94	27.30	91.69	-366.12	30.01	632.20	577.06	55.15	11.464		
7,900.00	7,844.28	7,862.36	7,844.28	29.26	27.64	91.69	-366.12	30.01	632.20	576.38	55.82	11.326		
8,000.00	7,944.28	7,962.36	7,944.28	29.59	27.98	91.69	-366.12	30.01	632.20	575.71	56.50	11.190		
8,100.00	8,044.28	8,062.36	8,044.28	29.92	28.32	91.69	-366.12	30.01	632.20	575.03	57.17	11.057		
8,200.00	8,144.28	8,162.36	8,144.28	30.24	28.66	91.69	-366.12	30.01	632.20	574.35	57.85	10.928		
8,300.00	8,244.28	8,262.36	8,244.28	30.57	29.01	91.69	-366.12	30.01	632.20	573.67	58.53	10.801		
8,400.00	8,344.28	8,362.36	8,344.28	30.90	29.35	91.69	-366.12	30.01	632.20	572.99	59.21	10.677		
8,500.00	8,444.28	8,462.36	8,444.28	31.23	29.69	91.69	-366.12	30.01	632.20	572.31	59.89	10.556		
8,600.00	8,544.28	8,562.36	8,544.28	31.56	30.03	91.69	-366.12	30.01	632.20	571.63	60.58	10.437		
8,700.00	8,644.28	8,662.36	8,644.28	31.89	30.38	91.69	-366.12	30.01	632.20	570.95	61.26	10.320		
8,800.00	8,744.28	8,762.36	8,744.28	32.23	30.72	91.69	-366.12	30.01	632.20	570.26	61.94	10.207		
8,900.00	8,844.28	8,862.36	8,844.28	32.56	31.07	91.69	-366.12	30.01	632.20	569.58	62.63	10.095		
9,000.00	8,944.28	8,962.36	8,944.28	32.89	31.41	91.69	-366.12	30.01	632.20	568.89	63.31	9.986		
9,100.00	9,044.29	9,062.36	9,044.29	33.22	31.76	91.69	-366.12	30.01	632.20	568.21	64.00	9.879		
9,171.72	9,116.00	9,134.08	9,116.00	33.46	32.00	91.69	-366.12	30.01	632.20	567.72	64.49	9.803		
9,200.00	9,144.27	9,162.35	9,144.27	33.56	32.10	92.87	-366.12	30.01	632.24	567.56	64.68	9.775		
9,250.00	9,194.04	9,212.12	9,194.04	33.72	32.27	93.26	-366.12	30.01	632.49	567.46	65.03	9.727		
9,300.00	9,243.22	9,261.29	9,243.22	33.87	32.44	94.00	-366.12	30.01	633.07	567.70	65.37	9.685		
9,350.00	9,291.42	9,313.28	9,295.20	34.01	32.62	95.12	-365.89	29.98	634.11	568.39	65.72	9.648		
9,400.00	9,338.29	9,377.05	9,358.71	34.14	32.84	96.58	-360.60	29.24	635.01	568.90	66.11	9.606		
9,450.00	9,383.47	9,443.17	9,423.52	34.26	33.04	98.00	-347.77	27.43	635.41	568.99	66.42	9.566		
9,500.00	9,426.62	9,511.56	9,488.50	34.37	33.24	99.38	-326.83	24.49	635.20	568.55	66.64	9.531		
9,550.00	9,467.40	9,582.03	9,552.35	34.46	33.43	100.65	-297.38	20.35	634.28	567.52	66.76	9.501		
9,600.00	9,505.50	9,654.31	9,613.53	34.53	33.61	101.84	-259.36	15.01	632.56	565.79	66.77	9.473		
9,650.00	9,540.64	9,728.03	9,670.45	34.60	33.78	102.90	-213.05	8.50	629.97	563.27	66.70	9.444		
9,700.00	9,572.55	9,802.70	9,721.50	34.65	33.95	103.81	-159.16	0.93	626.45	559.88	66.60	9.407		

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Project: Eddy County, NM (NAD83 NME)
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Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 624H - OH - Plan #1														Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance								Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
9,750.00	9,600.98	9,877.80	9,765.28	34.68	34.11	104.55	-98.80	-7.56	621.89	555.49	66.50	9.353			
9,800.00	9,625.73	9,952.75	9,800.65	34.70	34.28	105.11	-33.42	-16.75	616.60	550.13	66.47	9.276			
9,850.00	9,646.59	10,027.02	9,826.91	34.71	34.45	105.48	35.32	-28.41	610.32	543.77	66.55	9.171			
9,900.00	9,663.42	10,100.10	9,843.77	34.71	34.62	105.68	105.68	-36.29	603.24	536.47	66.77	9.035			
9,950.00	9,676.08	10,171.57	9,851.39	34.70	34.80	105.66	178.01	-46.18	595.47	528.34	67.13	8.871			
10,000.00	9,684.48	10,225.28	9,852.11	34.68	34.94	105.80	229.19	-53.63	587.57	520.05	67.53	8.701			
10,050.00	9,688.55	10,266.71	9,852.32	34.67	35.06	106.23	270.28	-58.94	581.30	513.48	67.81	8.572			
10,062.32	9,688.88	10,276.97	9,852.37	34.67	35.09	106.36	280.47	-60.16	580.04	512.17	67.87	8.546			
10,062.61	9,688.89	10,277.21	9,852.37	34.67	35.09	106.36	280.71	-60.19	580.01	512.14	67.87	8.546			
10,100.00	9,689.50	10,308.40	9,852.53	34.67	35.19	106.41	311.70	-63.68	576.58	508.53	68.04	8.474			
10,200.00	9,691.15	10,400.00	9,852.99	34.88	35.50	106.49	402.92	-71.98	569.37	500.77	68.61	8.299			
10,300.00	9,692.79	10,476.05	9,853.38	35.21	35.80	106.50	478.83	-76.66	564.84	495.65	69.19	8.163			
10,400.00	9,694.44	10,560.16	9,853.81	35.60	36.15	106.44	562.88	-79.48	563.18	493.28	69.90	8.057			
10,408.78	9,694.58	10,587.55	9,853.84	35.64	36.19	106.43	570.27	-79.61	563.17	493.20	69.97	8.049			
10,500.00	9,696.09	10,654.68	9,854.28	36.05	36.59	106.31	657.40	-80.45	563.74	492.96	70.78	7.964			
10,600.00	9,697.73	10,754.67	9,854.79	36.54	37.10	106.17	757.38	-81.32	564.47	492.67	71.80	7.862			
10,700.00	9,699.38	10,854.66	9,855.30	37.08	37.66	106.02	857.36	-82.19	565.20	492.29	72.91	7.752			
10,800.00	9,701.02	10,954.64	9,855.80	37.67	38.27	105.88	957.34	-83.07	565.94	491.82	74.12	7.635			
10,900.00	9,702.67	11,054.63	9,856.31	38.30	38.92	105.74	1,057.33	-83.94	566.68	491.26	75.42	7.514			
11,000.00	9,704.32	11,154.62	9,856.81	38.98	39.62	105.60	1,157.31	-84.81	567.42	490.62	76.80	7.388			
11,100.00	9,705.96	11,254.61	9,857.32	39.70	40.35	105.46	1,257.29	-85.68	568.17	489.90	78.27	7.259			
11,200.00	9,707.61	11,354.60	9,857.83	40.45	41.13	105.32	1,357.27	-86.56	568.92	489.11	79.81	7.129			
11,300.00	9,709.25	11,454.58	9,858.33	41.25	41.94	105.18	1,457.26	-87.43	569.67	488.25	81.42	6.997			
11,400.00	9,710.90	11,554.57	9,858.84	42.08	42.79	105.04	1,557.24	-88.30	570.42	487.32	83.10	6.864			
11,500.00	9,712.55	11,654.56	9,859.35	42.94	43.66	104.90	1,657.22	-89.17	571.18	486.34	84.85	6.732			
11,600.00	9,714.19	11,754.55	9,859.85	43.84	44.57	104.76	1,757.20	-90.05	571.95	485.29	86.65	6.601			
11,700.00	9,715.84	11,854.53	9,860.36	44.76	45.51	104.63	1,857.19	-90.92	572.71	484.20	88.52	6.470			
11,800.00	9,717.48	11,954.52	9,860.86	45.71	46.47	104.49	1,957.17	-91.79	573.48	483.05	90.43	6.341			
11,900.00	9,719.13	12,054.51	9,861.37	46.69	47.46	104.35	2,057.15	-92.67	574.25	481.85	92.40	6.215			
12,000.00	9,720.78	12,154.50	9,861.88	47.69	48.48	104.21	2,157.13	-93.54	575.03	480.61	94.42	6.090			
12,100.00	9,722.42	12,254.48	9,862.38	48.72	49.51	104.08	2,257.11	-94.41	575.81	479.33	96.48	5.968			
12,200.00	9,724.07	12,354.47	9,862.89	49.77	50.57	103.94	2,357.10	-95.28	576.59	478.01	98.58	5.849			
12,300.00	9,725.71	12,454.46	9,863.39	50.84	51.64	103.81	2,457.08	-96.16	577.38	476.65	100.73	5.732			
12,400.00	9,727.36	12,554.45	9,863.90	51.92	52.74	103.67	2,557.06	-97.03	578.17	475.26	102.91	5.618			
12,500.00	9,729.01	12,654.43	9,864.41	53.03	53.85	103.54	2,657.04	-97.90	578.96	473.83	105.13	5.507			
12,600.00	9,730.65	12,754.42	9,864.91	54.15	54.98	103.40	2,757.03	-98.77	579.75	472.38	107.38	5.399			
12,700.00	9,732.30	12,854.41	9,865.42	55.29	56.12	103.27	2,857.01	-99.65	580.55	470.89	109.66	5.294			
12,803.48	9,734.00	12,957.87	9,865.94	56.48	57.32	103.13	2,960.47	-100.55	581.38	469.33	112.05	5.189			
12,836.60	9,734.35	12,991.00	9,866.11	56.87	57.70	103.10	2,993.59	-100.84	581.69	468.88	112.81	5.156			
12,900.00	9,734.66	13,054.39	9,866.43	57.61	58.45	103.08	3,056.98	-101.39	582.37	468.09	114.28	5.096			
13,000.00	9,735.15	13,154.38	9,866.94	58.79	59.63	103.06	3,156.97	-102.26	583.43	466.82	116.61	5.003			
13,100.00	9,735.64	13,254.38	9,867.44	59.98	60.83	103.04	3,256.96	-103.14	584.50	465.53	118.97	4.913			
13,200.00	9,736.13	13,354.37	9,867.95	61.18	62.03	103.01	3,356.95	-104.01	585.56	464.22	121.35	4.826			
13,300.00	9,736.62	13,454.37	9,868.45	62.40	63.25	102.99	3,456.94	-104.88	586.63	462.88	123.75	4.741			
13,400.00	9,737.11	13,554.36	9,868.96	63.62	64.48	102.97	3,556.93	-105.75	587.69	461.53	126.16	4.658			
13,500.00	9,737.60	13,654.35	9,869.47	64.86	65.72	102.95	3,656.91	-106.63	588.76	460.15	128.60	4.578			
13,600.00	9,738.09	13,754.35	9,869.97	66.10	66.96	102.92	3,756.90	-107.50	589.82	458.76	131.06	4.500			
13,700.00	9,738.58	13,854.34	9,870.48	67.35	68.22	102.90	3,856.89	-108.37	590.89	457.35	133.53	4.425			
13,800.00	9,739.07	13,954.34	9,870.99	68.62	69.48	102.88	3,956.88	-109.24	591.95	455.93	136.02	4.352			
13,900.00	9,739.56	14,054.33	9,871.49	69.89	70.75	102.86	4,056.87	-110.12	593.02	454.49	138.53	4.281			
14,000.00	9,740.05	14,154.32	9,872.00	71.16	72.03	102.84	4,156.86	-110.99	594.08	453.03	141.05	4.212			
14,100.00	9,740.54	14,254.32	9,872.50	72.45	73.31	102.81	4,256.85	-111.86	595.15	451.57	143.58	4.145			

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Offset Design Spud Muffin 31-30 - 624H - OH - Plan #1														Offset Site Error: 0.00 usft	
Survey Program: 0-MWD+HDGM														Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
14,200.00	9,741.03	14,354.31	9,873.01	73.74	74.60	102.79	4,356.84	-112.73	596.22	450.09	146.13	4.080			
14,300.00	9,741.52	14,454.31	9,873.52	75.03	75.90	102.77	4,456.83	-113.61	597.28	448.59	148.69	4.017			
14,400.00	9,742.01	14,554.30	9,874.02	76.34	77.20	102.75	4,556.81	-114.48	598.35	447.09	151.26	3.956			
14,500.00	9,742.50	14,654.29	9,874.53	77.65	78.51	102.73	4,656.80	-115.35	599.41	445.57	153.84	3.896			
14,600.00	9,742.99	14,754.29	9,875.03	78.96	79.82	102.71	4,756.79	-116.22	600.48	444.04	156.44	3.839			
14,700.00	9,743.48	14,854.28	9,875.54	80.28	81.14	102.69	4,856.78	-117.10	601.55	442.51	159.04	3.782			
14,800.00	9,743.97	14,954.28	9,876.05	81.61	82.46	102.68	4,956.77	-117.97	602.61	440.96	161.65	3.728			
14,900.00	9,744.46	15,054.27	9,876.55	82.93	83.79	102.64	5,056.76	-118.84	603.68	439.41	164.27	3.675			
15,000.00	9,744.95	15,154.26	9,877.06	84.27	85.12	102.62	5,156.75	-119.71	604.75	437.84	166.90	3.623			
15,100.00	9,745.44	15,254.26	9,877.56	85.61	86.46	102.60	5,256.74	-120.59	605.81	436.27	169.54	3.573			
15,200.00	9,745.93	15,354.25	9,878.07	86.95	87.80	102.58	5,356.73	-121.46	606.88	434.69	172.19	3.524			
15,300.00	9,746.42	15,454.25	9,878.58	88.30	89.14	102.56	5,456.72	-122.33	607.95	433.10	174.84	3.477			
15,400.00	9,746.91	15,554.24	9,879.08	89.65	90.49	102.54	5,556.70	-123.21	609.01	431.51	177.51	3.431			
15,500.00	9,747.40	15,654.24	9,879.59	91.00	91.84	102.52	5,656.69	-124.08	610.08	429.90	180.18	3.386			
15,600.00	9,747.89	15,754.23	9,880.10	92.36	93.20	102.50	5,756.68	-124.95	611.15	428.29	182.85	3.342			
15,700.00	9,748.38	15,854.22	9,880.60	93.72	94.55	102.48	5,856.67	-125.82	612.21	426.68	185.53	3.300			
15,800.00	9,748.87	15,954.22	9,881.11	95.08	95.91	102.46	5,956.66	-126.70	613.28	425.06	188.22	3.258			
15,900.00	9,749.36	16,054.21	9,881.61	96.45	97.28	102.44	6,056.65	-127.57	614.35	423.43	190.92	3.218			
16,000.00	9,749.85	16,154.21	9,882.12	97.81	98.64	102.42	6,156.64	-128.44	615.41	421.80	193.62	3.178			
16,100.00	9,750.34	16,254.20	9,882.63	99.19	100.01	102.40	6,256.63	-129.31	616.48	420.16	196.32	3.140			
16,200.00	9,750.83	16,354.19	9,883.13	100.56	101.38	102.38	6,356.62	-130.19	617.55	418.51	199.04	3.103			
16,300.00	9,751.32	16,454.19	9,883.64	101.94	102.75	102.35	6,456.61	-131.06	618.62	416.87	201.75	3.066			
16,400.00	9,751.81	16,554.18	9,884.14	103.32	104.13	102.33	6,556.59	-131.93	619.68	415.21	204.47	3.031			
16,500.00	9,752.29	16,654.18	9,884.65	104.70	105.51	102.31	6,656.58	-132.80	620.75	413.55	207.20	2.996			
16,600.00	9,752.78	16,754.17	9,885.16	106.08	106.89	102.29	6,756.57	-133.68	621.82	411.89	209.93	2.962			
16,700.00	9,753.27	16,854.16	9,885.66	107.47	108.27	102.28	6,856.56	-134.55	622.89	410.22	212.66	2.929			
16,800.00	9,753.76	16,954.16	9,886.17	108.86	109.65	102.26	6,956.55	-135.42	623.96	408.55	215.40	2.897			
16,900.00	9,754.25	17,054.15	9,886.67	110.25	111.04	102.24	7,056.54	-136.29	625.02	406.88	218.15	2.865			
17,000.00	9,754.74	17,154.15	9,887.18	111.64	112.43	102.22	7,156.53	-137.17	626.09	405.20	220.89	2.834			
17,100.00	9,755.23	17,254.14	9,887.69	113.03	113.82	102.20	7,256.52	-138.04	627.16	403.52	223.64	2.804			
17,200.00	9,755.72	17,354.13	9,888.19	114.43	115.21	102.18	7,356.51	-138.91	628.23	401.83	226.40	2.775			
17,300.00	9,756.21	17,454.13	9,888.70	115.83	116.60	102.16	7,456.50	-139.78	629.30	400.14	229.15	2.748			
17,400.00	9,756.70	17,554.12	9,889.21	117.23	118.00	102.14	7,556.48	-140.66	630.38	398.45	231.92	2.718			
17,500.00	9,757.19	17,654.12	9,889.71	118.63	119.39	102.12	7,656.47	-141.53	631.43	396.75	234.68	2.691			
17,600.00	9,757.68	17,754.11	9,890.22	120.03	120.79	102.10	7,756.46	-142.40	632.50	395.05	237.45	2.664			
17,700.00	9,758.17	17,854.10	9,890.72	121.43	122.19	102.08	7,856.45	-143.27	633.57	393.35	240.22	2.637			
17,800.00	9,758.66	17,954.10	9,891.23	122.84	123.59	102.06	7,956.44	-144.15	634.64	391.65	242.99	2.612			
17,900.00	9,759.15	18,054.09	9,891.74	124.25	124.99	102.04	8,056.43	-145.02	635.71	389.94	245.77	2.587			
18,000.00	9,759.64	18,154.09	9,892.24	125.66	126.40	102.02	8,156.42	-145.89	636.78	388.23	248.55	2.562			
18,100.00	9,760.13	18,254.08	9,892.75	127.06	127.80	102.00	8,256.41	-146.77	637.85	386.52	251.33	2.538			
18,200.00	9,760.62	18,354.07	9,893.25	128.48	129.21	101.99	8,356.40	-147.64	638.91	384.80	254.11	2.514			
18,300.00	9,761.11	18,454.07	9,893.76	129.89	130.61	101.97	8,456.39	-148.51	639.98	383.08	256.90	2.491			
18,400.00	9,761.60	18,554.06	9,894.27	131.30	132.02	101.95	8,556.37	-149.38	641.05	381.36	259.69	2.469			
18,500.00	9,762.09	18,654.06	9,894.77	132.71	133.43	101.93	8,656.36	-150.26	642.12	379.64	262.48	2.446			
18,600.00	9,762.58	18,754.05	9,895.28	134.13	134.84	101.91	8,756.35	-151.13	643.19	377.91	265.28	2.425			
18,700.00	9,763.07	18,854.05	9,895.78	135.55	136.25	101.89	8,856.34	-152.00	644.26	376.19	268.07	2.403			
18,800.00	9,763.56	18,954.04	9,896.29	136.96	137.66	101.87	8,956.33	-152.87	645.33	374.46	270.87	2.382			
18,900.00	9,764.05	19,054.03	9,896.80	138.38	139.08	101.85	9,056.32	-153.75	646.40	372.72	273.67	2.362			
19,000.00	9,764.54	19,154.03	9,897.30	139.80	140.49	101.84	9,156.31	-154.62	647.47	370.99	276.48	2.342			
19,100.00	9,765.03	19,254.02	9,897.81	141.22	141.90	101.82	9,256.30	-155.49	648.54	369.25	279.28	2.322			
19,200.00	9,765.52	19,354.02	9,898.32	142.64	143.32	101.80	9,356.29	-156.36	649.61	367.52	282.09	2.303			
19,300.00	9,766.01	19,454.01	9,898.82	144.06	144.74	101.78	9,456.27	-157.24	650.68	365.78	284.90	2.284			

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 624H - OH - Plan #1												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
19,400.00	9,768.50	19,554.00	9,899.33	145.49	148.15	101.78	9,558.26	-158.11	651.75	364.04	287.71	2.265	
19,500.00	9,768.99	19,654.00	9,899.83	146.91	147.57	101.75	9,656.25	-158.98	652.82	362.29	290.52	2.247	
19,600.00	9,767.48	19,753.99	9,900.34	148.34	148.99	101.73	9,758.24	-159.85	653.89	360.55	293.34	2.229	
19,700.00	9,767.97	19,832.98	9,901.01	149.76	150.11	101.74	9,835.21	-160.55	655.34	359.82	295.42	2.218	
19,800.00	9,768.46	19,832.98	9,901.01	151.19	150.11	101.74	9,835.21	-160.55	667.14	376.04	291.10	2.292	
19,900.00	9,768.95	19,832.98	9,901.01	152.61	150.11	101.74	9,835.21	-160.55	693.31	411.84	281.47	2.463	
19,911.12	9,769.00	19,832.98	9,901.01	152.77	150.11	101.74	9,835.21	-160.55	697.05	416.91	280.14	2.488	

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 738H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
0.00	0.00	0.00	0.00	0.00	0.00	-130.84	-148.73	-172.09	227.46					
100.00	100.00	100.00	100.00	0.12	0.12	-130.84	-148.73	-172.09	227.46	227.21	0.24	933.122		
200.00	200.00	200.00	200.00	0.48	0.48	-130.84	-148.73	-172.09	227.46	226.50	0.96	236.762		
300.00	300.00	300.00	300.00	0.84	0.84	-130.84	-148.73	-172.09	227.46	225.78	1.68	135.582		
400.00	400.00	400.00	400.00	1.20	1.20	-130.84	-148.73	-172.09	227.46	225.06	2.39	94.989		
500.00	500.00	500.00	500.00	1.56	1.56	-130.84	-148.73	-172.09	227.46	224.35	3.11	73.102		
600.00	600.00	600.00	600.00	1.91	1.91	-130.84	-148.73	-172.09	227.46	223.63	3.83	59.412		
700.00	700.00	700.00	700.00	2.27	2.27	-130.84	-148.73	-172.09	227.46	222.91	4.55	50.041		
800.00	800.00	800.00	800.00	2.63	2.63	-130.84	-148.73	-172.09	227.46	222.20	5.28	43.224		
900.00	900.00	900.00	900.00	2.99	2.99	-130.84	-148.73	-172.09	227.46	221.48	5.98	38.041		
1,000.00	1,000.00	1,000.00	1,000.00	3.35	3.35	-130.84	-148.73	-172.09	227.46	220.76	6.70	33.968		
1,100.00	1,100.00	1,100.00	1,100.00	3.71	3.71	-130.84	-148.73	-172.09	227.46	220.05	7.41	30.683		
1,200.00	1,200.00	1,200.00	1,200.00	4.07	4.07	-130.84	-148.73	-172.09	227.46	219.33	8.13	27.977		
1,300.00	1,300.00	1,300.00	1,300.00	4.42	4.42	-130.84	-148.73	-172.09	227.46	218.61	8.85	25.710		
1,400.00	1,400.00	1,400.00	1,400.00	4.78	4.78	-130.84	-148.73	-172.09	227.46	217.89	9.56	23.783		
1,500.00	1,500.00	1,500.00	1,500.00	5.14	5.14	-130.84	-148.73	-172.09	227.46	217.18	10.28	22.124		
1,600.00	1,600.00	1,600.00	1,600.00	5.50	5.50	-130.84	-148.73	-172.09	227.46	216.46	11.00	20.682		
1,700.00	1,700.00	1,700.00	1,700.00	5.86	5.86	-130.84	-148.73	-172.09	227.46	215.74	11.71	19.416		
1,800.00	1,800.00	1,800.00	1,800.00	6.22	6.22	-130.84	-148.73	-172.09	227.46	215.03	12.43	18.297		
1,900.00	1,900.00	1,900.00	1,900.00	6.57	6.57	-130.84	-148.73	-172.09	227.46	214.31	13.15	17.299		
2,000.00	2,000.00	2,000.00	2,000.00	6.93	6.93	-130.84	-148.73	-172.09	227.46	213.59	13.87	16.404		
2,100.00	2,100.00	2,100.00	2,100.00	7.29	7.29	-130.84	-148.73	-172.09	227.46	212.88	14.58	15.598		
2,200.00	2,200.00	2,200.00	2,200.00	7.65	7.65	-130.84	-148.73	-172.09	227.46	212.16	15.30	14.867		
2,300.00	2,300.00	2,300.00	2,300.00	8.01	8.01	-130.84	-148.73	-172.09	227.46	211.44	16.02	14.202		
2,400.00	2,400.00	2,400.00	2,400.00	8.37	8.37	-130.84	-148.73	-172.09	227.46	210.73	16.73	13.593		
2,500.00	2,500.00	2,500.00	2,500.00	8.73	8.73	-130.84	-148.73	-172.09	227.46	210.01	17.45	13.035		
2,600.00	2,599.99	2,598.23	2,598.22	9.07	9.06	-11.07	-149.55	-171.89	226.99	208.86	18.13	12.521		
2,700.00	2,699.96	2,696.39	2,696.36	9.40	9.38	-11.77	-152.00	-171.28	225.61	206.83	18.78	12.014		
2,800.00	2,799.88	2,794.43	2,794.30	9.74	9.70	-12.95	-156.07	-170.26	223.38	203.95	19.43	11.497		
2,900.00	2,899.68	2,892.28	2,891.98	10.08	10.02	-14.63	-161.76	-168.85	220.43	200.35	20.08	10.976		
3,000.00	2,999.37	2,991.73	2,991.18	10.42	10.35	-16.75	-168.48	-167.17	216.54	195.79	20.75	10.438		
3,100.00	3,098.90	3,091.21	3,090.42	10.76	10.68	-19.09	-175.22	-165.49	211.30	189.88	21.42	9.865		
3,200.00	3,198.26	3,190.54	3,189.51	11.11	11.02	-21.74	-181.94	-163.81	204.82	182.72	22.09	9.270		
3,300.00	3,297.40	3,289.70	3,288.42	11.46	11.35	-24.76	-188.65	-162.14	197.21	174.43	22.77	8.660		
3,400.00	3,396.30	3,388.64	3,387.12	11.81	11.69	-28.25	-195.35	-160.47	188.64	165.19	23.45	8.044		
3,500.00	3,494.93	3,487.34	3,485.59	12.18	12.03	-32.36	-202.03	-158.81	179.36	155.22	24.14	7.431		
3,600.00	3,593.41	3,585.92	3,583.92	12.54	12.37	-36.99	-208.70	-157.14	170.39	145.56	24.83	6.862		
3,700.00	3,691.89	3,684.49	3,682.26	12.91	12.71	-42.10	-215.37	-155.48	162.67	137.14	25.53	6.372		
3,800.00	3,790.37	3,783.07	3,780.59	13.29	13.05	-47.65	-222.04	-153.81	156.38	130.14	26.24	5.961		
3,900.00	3,888.85	3,881.84	3,878.93	13.67	13.39	-53.59	-228.72	-152.15	151.70	124.75	26.95	5.629		
4,000.00	3,987.33	3,980.22	3,977.26	14.05	13.74	-59.83	-235.39	-150.49	148.79	121.12	27.68	5.376		
4,100.00	4,085.82	4,078.79	4,075.60	14.44	14.08	-66.23	-242.06	-148.82	147.76	119.35	28.41	5.201		
4,104.42	4,090.17	4,083.15	4,079.94	14.45	14.10	-66.51	-242.36	-148.75	147.75	119.31	28.44	5.195 CC, ES		
4,200.00	4,184.30	4,177.37	4,173.93	14.83	14.43	-72.63	-248.73	-147.16	148.63	119.48	29.15	5.099		
4,300.00	4,282.78	4,275.94	4,272.26	15.22	14.78	-78.89	-255.40	-145.50	151.37	121.49	29.89	5.065 SF		
4,400.00	4,381.26	4,374.52	4,370.60	15.61	15.13	-84.86	-262.08	-143.83	155.90	125.27	30.63	5.090		
4,500.00	4,479.74	4,473.09	4,468.93	16.01	15.48	-90.45	-268.75	-142.17	162.05	130.68	31.37	5.167		
4,600.00	4,578.22	4,571.67	4,567.27	16.40	15.83	-95.59	-275.42	-140.51	169.65	137.55	32.10	5.285		
4,700.00	4,676.70	4,670.24	4,665.60	16.80	16.18	-100.27	-282.09	-138.84	178.52	145.69	32.84	5.437		
4,800.00	4,775.18	4,768.82	4,763.94	17.20	16.53	-104.49	-288.76	-137.18	188.48	154.91	33.57	5.615		
4,900.00	4,873.66	4,867.39	4,862.27	17.61	16.89	-108.27	-295.44	-135.52	199.36	165.06	34.30	5.812		
5,000.00	4,972.14	4,965.96	4,960.61	18.01	17.24	-111.66	-302.11	-133.85	211.02	176.00	35.03	6.024		

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 738H - OH - Plan #1													Offset Site Error: 0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
5,100.00	5,070.62	5,064.54	5,058.94	18.42	17.59	-114.68	-308.78	-132.19	223.35	187.59	35.76	6.246	
5,200.00	5,169.10	5,163.11	5,157.28	18.83	17.95	-117.39	-315.45	-130.53	238.22	199.74	36.48	6.475	
5,300.00	5,267.58	5,261.69	5,255.61	19.23	18.30	-119.82	-322.12	-128.88	249.57	212.38	37.21	6.707	
5,400.00	5,366.07	5,360.26	5,353.95	19.64	18.66	-121.99	-328.80	-127.20	263.32	225.38	37.94	6.941	
5,500.00	5,464.55	5,458.84	5,452.28	20.05	19.01	-123.95	-335.47	-125.54	277.40	238.74	38.67	7.174	
5,600.00	5,563.03	5,557.41	5,550.62	20.47	19.37	-125.73	-342.14	-123.87	291.78	252.38	39.39	7.407	
5,700.00	5,661.51	5,655.99	5,648.95	20.88	19.73	-127.33	-348.81	-122.21	306.40	266.28	40.12	7.637	
5,800.00	5,759.99	5,754.56	5,747.28	21.29	20.08	-128.79	-355.48	-120.54	321.24	280.39	40.85	7.864	
5,900.00	5,858.47	5,853.14	5,845.62	21.71	20.44	-130.12	-362.16	-118.88	336.27	294.69	41.58	8.087	
6,000.00	5,956.95	5,951.45	5,943.70	22.12	20.81	-131.39	-368.70	-117.25	351.33	309.00	42.33	8.300	
6,100.00	6,055.43	6,050.36	6,042.48	22.54	21.17	-132.79	-373.80	-115.98	365.75	322.67	43.08	8.489	
6,200.00	6,153.91	6,148.25	6,139.31	22.96	21.53	-134.32	-377.14	-115.14	379.50	335.67	43.83	8.659	
6,300.00	6,252.39	6,246.05	6,235.09	23.38	21.89	-135.97	-378.73	-114.75	392.66	348.11	44.56	8.813	
6,400.00	6,350.87	6,343.83	6,330.87	23.80	22.23	-137.67	-378.87	-114.71	405.48	360.23	45.26	8.959	
6,500.00	6,449.35	6,441.31	6,426.35	24.21	22.57	-139.26	-378.87	-114.71	418.57	372.62	45.95	9.109	
6,600.00	6,547.88	6,538.94	6,522.98	24.63	22.91	-140.77	-378.87	-114.71	431.29	384.65	46.64	9.246	
6,700.00	6,646.88	6,636.84	6,619.88	25.04	23.24	-142.04	-378.87	-114.71	442.89	395.56	47.34	9.356	
6,800.00	6,746.03	6,735.98	6,718.03	25.43	23.58	-143.12	-378.87	-114.71	453.29	405.26	48.03	9.438	
6,900.00	6,845.38	6,834.34	6,815.38	25.82	23.92	-144.01	-378.87	-114.71	462.42	413.70	48.72	9.491	
7,000.00	6,944.92	6,932.88	6,912.92	26.20	24.27	-144.74	-378.87	-114.71	470.22	420.81	49.42	9.516	
7,100.00	7,044.61	7,032.57	7,011.61	26.57	24.61	-145.32	-378.87	-114.71	476.66	426.55	50.11	9.512	
7,200.00	7,144.42	7,132.38	7,111.42	26.94	24.95	-145.76	-378.87	-114.71	481.70	430.90	50.80	9.482	
7,300.00	7,244.33	7,232.28	7,211.33	27.29	25.30	-146.07	-378.87	-114.71	485.31	433.82	51.49	9.425	
7,400.00	7,344.29	7,332.25	7,311.29	27.63	25.64	-146.26	-378.87	-114.71	487.49	435.30	52.18	9.342	
7,500.00	7,444.29	7,432.24	7,411.29	27.97	25.99	93.68	-378.87	-114.71	488.21	435.35	52.87	9.235	
7,600.00	7,544.28	7,532.24	7,511.28	28.29	26.33	93.68	-378.87	-114.71	488.21	434.67	53.54	9.118	
7,700.00	7,644.28	7,632.24	7,611.28	28.61	26.68	93.68	-378.87	-114.71	488.21	433.99	54.22	9.004	
7,800.00	7,744.28	7,732.24	7,711.28	28.94	27.02	93.68	-378.87	-114.71	488.21	433.31	54.90	8.892	
7,900.00	7,844.28	7,832.24	7,811.28	29.26	27.37	93.68	-378.87	-114.71	488.21	432.63	55.58	8.783	
8,000.00	7,944.28	7,932.24	7,911.28	29.59	27.72	93.68	-378.87	-114.71	488.21	431.95	56.27	8.677	
8,100.00	8,044.28	8,032.24	8,011.28	29.92	28.06	93.68	-378.87	-114.71	488.21	431.26	56.95	8.573	
8,200.00	8,144.28	8,132.24	8,111.28	30.24	28.41	93.68	-378.87	-114.71	488.21	430.58	57.63	8.471	
8,300.00	8,244.28	8,232.24	8,211.28	30.57	28.76	93.68	-378.87	-114.71	488.21	429.90	58.32	8.372	
8,400.00	8,344.28	8,332.24	8,311.28	30.90	29.11	93.68	-378.87	-114.71	488.21	429.21	59.00	8.275	
8,500.00	8,444.28	8,432.24	8,411.28	31.23	29.45	93.68	-378.87	-114.71	488.21	428.53	59.69	8.180	
8,600.00	8,544.28	8,532.24	8,511.28	31.56	29.80	93.68	-378.87	-114.71	488.21	427.84	60.37	8.087	
8,700.00	8,644.28	8,632.24	8,611.28	31.89	30.15	93.68	-378.87	-114.71	488.21	427.15	61.06	7.996	
8,800.00	8,744.28	8,732.24	8,711.28	32.23	30.50	93.68	-378.87	-114.71	488.21	426.46	61.75	7.907	
8,900.00	8,844.28	8,832.24	8,811.28	32.56	30.85	93.68	-378.87	-114.71	488.21	425.78	62.44	7.819	
9,000.00	8,944.28	8,932.24	8,911.28	32.89	31.20	93.68	-378.87	-114.71	488.21	425.09	63.12	7.734	
9,100.00	9,044.29	9,032.24	9,011.29	33.22	31.55	93.68	-378.87	-114.71	488.21	424.40	63.81	7.651	
9,171.72	9,116.00	9,103.96	9,082.00	33.46	31.80	93.68	-378.87	-114.71	488.21	423.90	64.31	7.592	
9,200.00	9,144.27	9,132.23	9,111.27	33.56	31.90	94.88	-378.87	-114.71	488.27	423.77	64.50	7.570	
9,250.00	9,194.04	9,202.00	9,194.04	33.72	32.07	95.38	-378.87	-114.71	488.69	423.84	64.85	7.535	
9,300.00	9,243.22	9,251.17	9,243.22	33.87	32.24	96.31	-378.87	-114.71	489.62	424.42	65.20	7.510	
9,350.00	9,291.42	9,299.38	9,291.42	34.01	32.41	97.82	-378.87	-114.71	491.28	425.74	65.54	7.496	
9,400.00	9,338.29	9,346.25	9,338.29	34.14	32.58	99.23	-378.87	-114.71	494.00	428.12	65.88	7.498	
9,450.00	9,383.47	9,391.43	9,383.47	34.26	32.74	101.02	-378.87	-114.71	498.15	431.94	66.21	7.524	
9,500.00	9,426.62	9,434.57	9,426.62	34.37	32.89	102.88	-378.87	-114.71	504.19	437.66	66.53	7.579	
9,550.00	9,467.40	9,475.35	9,467.40	34.46	33.03	104.67	-378.87	-114.71	512.53	445.70	66.83	7.669	
9,600.00	9,505.50	9,513.46	9,505.50	34.53	33.16	106.27	-378.87	-114.71	523.61	456.50	67.11	7.802	
9,650.00	9,540.64	9,548.60	9,540.64	34.60	33.29	107.55	-378.87	-114.71	537.77	470.40	67.37	7.982	

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 738H - OH - Plan #1														Offset Site Error:	0.00 usft
Survey Program: O-MWD+HDGM														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
9,700.00	9,572.55	9,580.51	9,572.55	34.65	33.40	108.39	-378.87	-114.71	555.26	487.66	67.60	8.213			
9,750.00	9,600.98	9,608.94	9,600.98	34.68	33.50	108.67	-378.87	-114.71	576.20	508.40	67.80	8.498			
9,800.00	9,625.73	9,633.69	9,625.73	34.70	33.59	108.29	-378.87	-114.71	600.59	532.82	67.77	8.836			
9,850.00	9,646.58	9,654.55	9,646.59	34.71	33.68	107.14	-378.87	-114.71	628.31	560.20	68.10	9.226			
9,900.00	9,663.42	9,671.38	9,663.42	34.71	33.72	105.10	-378.87	-114.71	659.10	590.90	68.20	9.664			
9,950.00	9,676.08	9,684.04	9,676.08	34.70	33.76	102.06	-378.87	-114.71	692.64	624.38	68.26	10.146			
10,000.00	9,684.48	9,692.43	9,684.48	34.68	33.79	97.92	-378.87	-114.71	728.54	660.24	68.30	10.667			
10,050.00	9,688.55	9,696.50	9,688.55	34.67	33.81	92.64	-378.87	-114.71	766.34	698.04	68.30	11.220			
10,062.32	9,688.88	9,696.84	9,688.88	34.67	33.81	91.17	-378.87	-114.71	775.90	707.59	68.30	11.360			
10,062.61	9,688.89	9,696.84	9,688.89	34.67	33.81	91.17	-378.87	-114.71	778.12	707.82	68.30	11.363			
10,100.00	9,689.50	9,697.46	9,689.50	34.67	33.81	91.24	-378.87	-114.71	805.60	737.30	68.29	11.796			
10,200.00	9,691.15	9,699.10	9,691.15	34.88	33.81	91.44	-378.87	-114.71	887.35	819.08	68.27	12.998			
10,300.00	9,692.79	9,700.75	9,692.79	35.21	33.82	91.63	-378.87	-114.71	972.52	904.27	68.25	14.249			
10,400.00	9,694.44	9,702.40	9,694.44	35.60	33.83	91.83	-378.87	-114.71	1,060.28	992.05	68.24	15.538			
10,500.00	9,696.09	9,704.04	9,696.09	36.05	33.83	92.02	-378.87	-114.71	1,150.04	1,081.81	68.23	16.856			
10,600.00	9,697.73	9,705.69	9,697.73	36.54	33.84	92.21	-378.87	-114.71	1,241.36	1,173.14	68.22	18.196			
10,700.00	9,699.38	11,879.37	10,885.03	37.08	41.01	156.92	854.23	-120.25	1,288.80	1,243.72	45.08	28.592			
10,800.00	9,701.02	11,879.35	10,885.15	37.67	41.58	156.84	854.20	-120.70	1,287.99	1,241.94	46.05	27.968			
10,900.00	9,702.67	12,079.33	10,885.27	38.30	42.20	156.75	1,054.18	-121.14	1,287.19	1,240.10	47.08	27.338			
11,000.00	9,704.32	12,179.30	10,885.40	38.98	42.86	156.66	1,154.15	-121.59	1,286.39	1,238.22	48.17	26.706			
11,100.00	9,705.96	12,279.28	10,885.52	39.70	43.56	156.57	1,254.13	-122.04	1,285.59	1,236.29	49.30	26.076			
11,200.00	9,707.61	12,379.26	10,885.64	40.45	44.29	156.48	1,354.11	-122.49	1,284.80	1,234.31	50.48	25.451			
11,300.00	9,709.25	12,479.24	10,885.76	41.25	45.06	156.39	1,454.08	-122.94	1,284.01	1,232.30	51.71	24.833			
11,400.00	9,710.90	12,579.21	10,885.88	42.08	45.86	156.30	1,554.06	-123.39	1,283.22	1,230.25	52.97	24.226			
11,500.00	9,712.55	12,679.19	10,886.01	42.94	46.70	156.21	1,654.03	-123.84	1,282.43	1,228.16	54.27	23.629			
11,600.00	9,714.19	12,779.17	10,886.13	43.84	47.56	156.12	1,754.01	-124.28	1,281.65	1,226.04	55.61	23.046			
11,700.00	9,715.84	12,879.14	10,886.25	44.76	48.45	156.03	1,853.99	-124.73	1,280.87	1,223.89	56.99	22.477			
11,800.00	9,717.48	12,979.12	10,886.37	45.71	49.37	155.94	1,953.96	-125.18	1,280.10	1,221.70	58.39	21.923			
11,900.00	9,719.13	13,079.10	10,886.49	46.69	50.32	155.85	2,053.94	-125.63	1,279.32	1,219.50	59.83	21.384			
12,000.00	9,720.78	13,179.07	10,886.62	47.69	51.29	155.76	2,153.91	-126.08	1,278.55	1,217.26	61.29	20.860			
12,100.00	9,722.42	13,279.05	10,886.74	48.72	52.28	155.67	2,253.89	-126.53	1,277.79	1,215.01	62.78	20.353			
12,200.00	9,724.07	13,379.03	10,886.86	49.77	53.29	155.58	2,353.86	-126.98	1,277.02	1,212.73	64.30	19.861			
12,300.00	9,725.71	13,479.00	10,886.98	50.84	54.32	155.49	2,453.84	-127.43	1,276.26	1,210.43	65.84	19.385			
12,400.00	9,727.36	13,578.98	10,887.11	51.92	55.38	155.40	2,553.82	-127.87	1,275.51	1,208.11	67.40	18.924			
12,500.00	9,729.01	13,678.96	10,887.23	53.03	56.45	155.31	2,653.79	-128.32	1,274.75	1,205.77	68.99	18.478			
12,600.00	9,730.65	13,778.94	10,887.35	54.15	57.53	155.22	2,753.77	-128.77	1,274.00	1,203.41	70.59	18.048			
12,700.00	9,732.30	13,878.91	10,887.47	55.29	58.64	155.13	2,853.74	-129.22	1,273.26	1,201.04	72.22	17.631			
12,803.48	9,734.00	13,982.37	10,887.60	56.48	59.79	155.04	2,957.20	-129.68	1,272.49	1,198.57	73.92	17.215			
12,826.93	9,734.29	14,005.81	10,887.63	56.76	60.06	155.02	2,980.64	-129.79	1,272.40	1,198.10	74.30	17.125			
12,836.80	9,734.35	14,015.49	10,887.64	56.87	60.17	155.01	2,990.32	-129.83	1,272.41	1,197.95	74.46	17.088			
12,900.00	9,734.66	14,078.88	10,887.72	57.61	60.89	154.97	3,053.70	-130.12	1,272.61	1,197.11	75.50	16.858			
13,000.00	9,735.15	14,178.86	10,887.84	58.79	62.03	154.90	3,153.68	-130.57	1,272.92	1,195.76	77.15	16.498			
13,100.00	9,735.64	14,278.85	10,887.96	59.98	63.19	154.83	3,253.66	-131.01	1,273.23	1,194.40	78.82	16.153			
13,200.00	9,736.13	14,378.84	10,888.08	61.18	64.37	154.76	3,353.67	-131.46	1,273.54	1,193.03	80.51	15.819			
13,300.00	9,736.62	14,478.83	10,888.20	62.40	65.55	154.69	3,453.65	-131.91	1,273.85	1,191.65	82.20	15.496			
13,400.00	9,737.11	14,578.81	10,888.33	63.62	66.74	154.63	3,553.64	-132.36	1,274.17	1,190.25	83.91	15.184			
13,500.00	9,737.60	14,678.80	10,888.45	64.86	67.95	154.56	3,653.63	-132.81	1,274.49	1,188.85	85.64	14.882			
13,600.00	9,738.09	14,778.79	10,888.57	66.10	69.16	154.49	3,753.61	-133.26	1,274.81	1,187.43	87.37	14.591			
13,700.00	9,738.58	14,878.78	10,888.69	67.35	70.38	154.42	3,853.60	-133.71	1,275.13	1,186.01	89.12	14.308			
13,800.00	9,739.07	14,978.77	10,888.82	68.62	71.61	154.35	3,953.59	-134.15	1,275.45	1,184.57	90.88	14.035			
13,900.00	9,739.56	15,078.75	10,888.94	69.89	72.85	154.28	4,053.57	-134.60	1,275.77	1,183.13	92.64	13.771			
14,000.00	9,740.05	15,178.74	10,889.06	71.16	74.10	154.22	4,153.56	-135.05	1,276.10	1,181.68	94.42	13.515			

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

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Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
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Well Error: 0.00 usft
Reference Wellbore: OH
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Local Co-ordinate Reference: Well 334H
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Output errors are at 2.00 sigma
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Offset Design Spud Muffin 31-30 - 738H - OH - Plan #1														Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N-S (usft)	+E-W (usft)				Between Centres (usft)	Between Ellipses (usft)		
14,100.00	9,740.54	15,278.73	10,889.18	72.45	75.36	154.15	4,253.55	-135.50	1,276.43	1,180.22	96.21	13.267			
14,200.00	9,741.03	15,378.72	10,889.30	73.74	76.62	154.08	4,353.53	-135.95	1,276.76	1,178.75	98.01	13.027			
14,300.00	9,741.52	15,478.71	10,889.43	75.03	77.89	154.01	4,453.52	-136.40	1,277.09	1,177.28	99.81	12.795			
14,400.00	9,742.01	15,578.69	10,889.55	76.34	79.16	153.94	4,553.51	-136.85	1,277.42	1,175.79	101.63	12.569			
14,500.00	9,742.50	15,678.68	10,889.67	77.65	80.45	153.87	4,653.49	-137.30	1,277.76	1,174.30	103.45	12.351			
14,600.00	9,742.99	15,778.67	10,889.79	78.96	81.73	153.81	4,753.48	-137.74	1,278.10	1,172.81	105.29	12.139			
14,700.00	9,743.48	15,878.66	10,889.92	80.28	83.03	153.74	4,853.47	-138.19	1,278.44	1,171.31	107.13	11.934			
14,800.00	9,743.97	15,978.64	10,890.04	81.61	84.33	153.67	4,953.45	-138.64	1,278.78	1,169.80	108.98	11.735			
14,900.00	9,744.46	16,078.63	10,890.16	82.93	85.63	153.60	5,053.44	-139.09	1,279.12	1,168.29	110.83	11.541			
15,000.00	9,744.95	16,178.62	10,890.28	84.27	86.94	153.53	5,153.43	-139.54	1,279.46	1,166.77	112.69	11.353			
15,100.00	9,745.44	16,278.61	10,890.40	85.61	88.25	153.47	5,253.41	-139.99	1,279.81	1,165.25	114.56	11.171			
15,200.00	9,745.93	16,378.60	10,890.53	86.95	89.57	153.40	5,353.40	-140.44	1,280.16	1,163.72	116.44	10.994			
15,300.00	9,746.42	16,478.58	10,890.65	88.30	90.89	153.33	5,453.39	-140.88	1,280.51	1,162.18	118.33	10.822			
15,400.00	9,746.91	16,578.57	10,890.77	89.65	92.22	153.26	5,553.37	-141.33	1,280.86	1,160.64	120.22	10.655			
15,500.00	9,747.40	16,678.56	10,890.89	91.00	93.55	153.19	5,653.36	-141.78	1,281.21	1,159.10	122.11	10.492			
15,600.00	9,747.89	16,778.55	10,891.01	92.36	94.88	153.13	5,753.35	-142.23	1,281.57	1,157.55	124.02	10.334			
15,700.00	9,748.38	16,878.54	10,891.14	93.72	96.22	153.06	5,853.33	-142.68	1,281.93	1,156.00	125.93	10.180			
15,800.00	9,748.87	16,978.52	10,891.26	95.08	97.56	152.99	5,953.32	-143.13	1,282.28	1,154.44	127.84	10.030			
15,900.00	9,749.36	17,078.51	10,891.38	96.45	98.90	152.92	6,053.31	-143.58	1,282.65	1,152.88	129.76	9.885			
16,000.00	9,749.85	17,178.50	10,891.50	97.81	100.25	152.86	6,153.30	-144.03	1,283.01	1,151.32	131.69	9.743			
16,100.00	9,750.34	17,278.49	10,891.63	99.19	101.60	152.79	6,253.28	-144.47	1,283.37	1,149.75	133.62	9.604			
16,200.00	9,750.83	17,378.48	10,891.75	100.56	102.95	152.72	6,353.27	-144.92	1,283.74	1,148.18	135.56	9.470			
16,300.00	9,751.32	17,478.46	10,891.87	101.94	104.31	152.65	6,453.26	-145.37	1,284.11	1,146.60	137.51	9.339			
16,400.00	9,751.81	17,578.45	10,891.99	103.32	105.67	152.59	6,553.24	-145.82	1,284.48	1,145.02	139.45	9.211			
16,500.00	9,752.29	17,678.44	10,892.11	104.70	107.03	152.52	6,653.23	-146.27	1,284.85	1,143.44	141.41	9.086			
16,600.00	9,752.78	17,778.43	10,892.24	106.08	108.39	152.45	6,753.22	-146.72	1,285.22	1,141.85	143.37	8.964			
16,700.00	9,753.27	17,878.41	10,892.36	107.47	109.76	152.38	6,853.20	-147.17	1,285.60	1,140.26	145.33	8.846			
16,800.00	9,753.76	17,978.40	10,892.48	108.86	111.13	152.32	6,953.19	-147.61	1,285.97	1,138.67	147.30	8.730			
16,900.00	9,754.25	18,078.39	10,892.60	110.25	112.50	152.25	7,053.18	-148.06	1,286.35	1,137.07	149.28	8.617			
17,000.00	9,754.74	18,178.38	10,892.72	111.64	113.87	152.18	7,153.16	-148.51	1,286.73	1,135.47	151.26	8.507			
17,100.00	9,755.23	18,278.37	10,892.85	113.03	115.25	152.11	7,253.15	-148.96	1,287.11	1,133.87	153.24	8.399			
17,200.00	9,755.72	18,378.35	10,892.97	114.43	116.62	152.05	7,353.14	-149.41	1,287.50	1,132.26	155.23	8.294			
17,300.00	9,756.21	18,478.34	10,893.09	115.83	118.00	151.98	7,453.12	-149.86	1,287.88	1,130.66	157.23	8.191			
17,400.00	9,756.70	18,578.33	10,893.21	117.23	119.38	151.91	7,553.11	-150.31	1,288.27	1,129.04	159.22	8.091			
17,500.00	9,757.19	18,678.32	10,893.34	118.63	120.76	151.85	7,653.10	-150.76	1,288.66	1,127.43	161.23	7.993			
17,600.00	9,757.68	18,778.31	10,893.46	120.03	122.15	151.78	7,753.08	-151.20	1,289.05	1,125.81	163.24	7.897			
17,700.00	9,758.17	18,878.29	10,893.58	121.43	123.53	151.71	7,853.07	-151.65	1,289.44	1,124.19	165.25	7.803			
17,800.00	9,758.66	18,978.28	10,893.70	122.84	124.92	151.65	7,953.06	-152.10	1,289.84	1,122.57	167.26	7.711			
17,900.00	9,759.15	19,078.27	10,893.82	124.25	126.31	151.58	8,053.04	-152.55	1,290.23	1,120.95	169.29	7.622			
18,000.00	9,759.64	19,178.26	10,893.95	125.66	127.70	151.51	8,153.03	-153.00	1,290.63	1,119.32	171.31	7.534			
18,100.00	9,760.13	19,278.24	10,894.07	127.06	129.09	151.44	8,253.02	-153.45	1,291.03	1,117.69	173.34	7.448			
18,200.00	9,760.62	19,378.23	10,894.19	128.48	130.49	151.38	8,353.00	-153.90	1,291.43	1,116.06	175.37	7.364			
18,300.00	9,761.11	19,478.22	10,894.31	129.89	131.88	151.31	8,452.99	-154.34	1,291.84	1,114.42	177.41	7.282			
18,400.00	9,761.60	19,578.21	10,894.43	131.30	133.28	151.24	8,552.98	-154.79	1,292.24	1,112.78	179.46	7.201			
18,500.00	9,762.09	19,678.20	10,894.56	132.71	134.67	151.18	8,652.97	-155.24	1,292.65	1,111.15	181.50	7.122			
18,600.00	9,762.58	19,778.18	10,894.68	134.13	136.07	151.11	8,752.95	-155.69	1,293.06	1,109.50	183.55	7.045			
18,700.00	9,763.07	19,878.17	10,894.80	135.55	137.47	151.04	8,852.94	-156.14	1,293.47	1,107.86	185.61	6.969			
18,800.00	9,763.56	19,978.16	10,894.92	136.96	138.87	150.98	8,952.93	-156.59	1,293.88	1,106.21	187.67	6.895			
18,900.00	9,764.05	20,078.15	10,895.05	138.38	140.28	150.91	9,052.91	-157.04	1,294.29	1,104.56	189.73	6.822			
19,000.00	9,764.54	20,178.14	10,895.17	139.80	141.68	150.85	9,152.90	-157.49	1,294.71	1,102.91	191.79	6.750			
19,100.00	9,765.03	20,278.12	10,895.29	141.22	143.08	150.78	9,252.89	-157.93	1,295.12	1,101.26	193.87	6.681			
19,200.00	9,765.52	20,378.11	10,895.41	142.64	144.49	150.71	9,352.87	-158.38	1,295.54	1,099.60	195.94	6.612			

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

Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Offset Design Spud Muffin 31-30 - 738H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Tooface (")	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
19,300.00	9,766.01	20,478.10	10,895.53	144.06	145.90	150.65	9,452.86	-158.83	1,295.96	1,097.94	198.02	6.545		
19,400.00	9,766.50	20,578.09	10,895.66	145.49	147.30	150.58	9,552.85	-159.28	1,296.39	1,096.28	200.10	6.479		
19,500.00	9,766.99	20,678.08	10,895.78	146.91	148.71	150.51	9,652.83	-159.73	1,296.81	1,094.62	202.19	6.414		
19,600.00	9,767.48	20,778.06	10,895.90	148.34	150.12	150.45	9,752.82	-160.18	1,297.24	1,092.96	204.28	6.350		
19,700.00	9,767.97	20,859.47	10,896.00	149.76	151.27	150.39	9,834.23	-160.54	1,297.80	1,091.76	206.04	6.299		
19,800.00	9,768.46	20,859.47	10,896.00	151.19	151.27	150.39	9,834.23	-160.54	1,303.50	1,097.74	205.76	6.335		
19,900.00	9,768.95	20,859.47	10,896.00	152.61	151.27	150.39	9,834.23	-160.54	1,318.79	1,112.31	204.48	6.440		
19,911.12	9,769.00	20,859.47	10,896.00	152.77	151.27	150.39	9,834.23	-160.54	1,318.73	1,114.45	204.28	6.455		

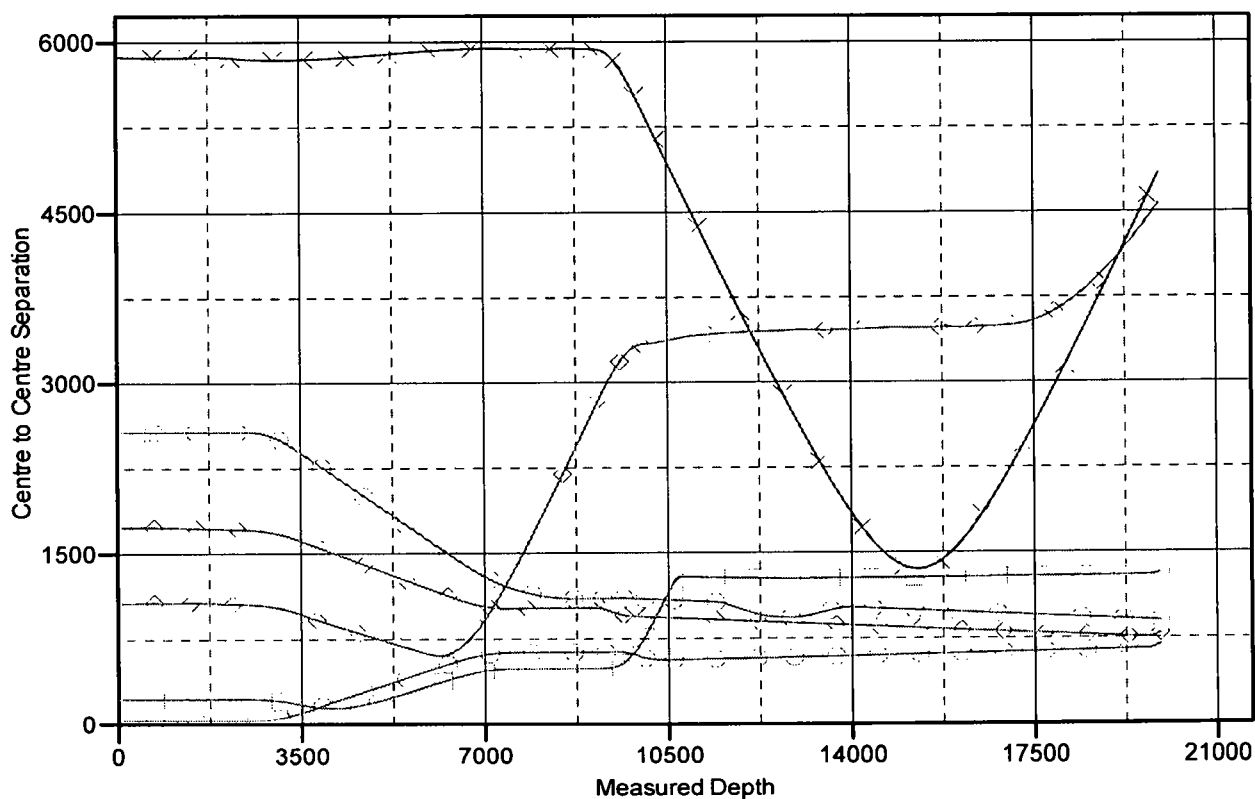
Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB = 32' @ 2992.00usft
 Offset Depths are relative to Offset Datum
 Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: 334H
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone
 Grid Convergence at Surface is: 0.17°

Ladder Plot



LEGEND

624H, OH, Plan #1 V0 332H (Leam), OH, Planned V0 1H, OH, Actual V0
 738H, OH, Plan #1 V0 623H (Leam), OH, Planned V0 4H, OH, Actual V0

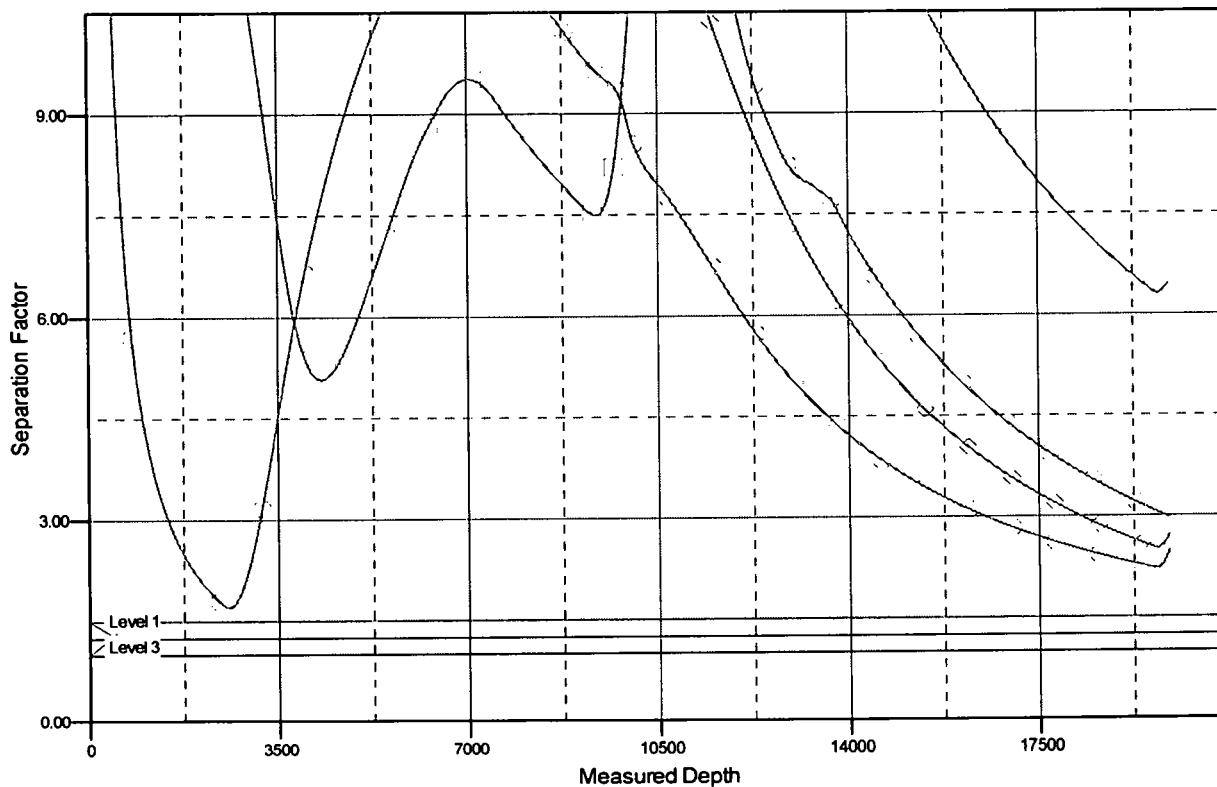
Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Reference Site: Spud Muffin 31-30
Site Error: 0.00 usft
Reference Well: 334H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well 334H
TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: Midland District
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB = 32' @ 2992.00usft
 Offset Depths are relative to Offset Datum
 Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: 334H
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone
 Grid Convergence at Surface is: 0.17°

Separation Factor Plot



LEGEND

624H, OH, Plan #1 V0	332H (Learn), OH, Planned V0	1H, OH, Actual V0
738H, OH, Plan #1 V0	623H (Learn), OH, Planned V0	4H, OH, Actual V0