



Scientific Drilling

NM OIL CONSERVATION
ARTESIA DISTRICT

DEC 13 2018

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Devon Energy

Eddy County, NM (NAD83 NME)

Spud Muffin 31-30

334H

30.015-45303

OH

Plan: Plan #1

Standard Planning Report

04 December, 2018



Scientific Drilling

www.scientificdrilling.com

Database:	Midland District	Local Co-ordinate Reference:	Well 334H
Company:	Devon Energy	TVD Reference:	KB = 32' @ 2992.00usft
Project:	Eddy County, NM (NAD83 NME)	MD Reference:	KB = 32' @ 2992.00usft
Site:	Spud Muffin 31-30	North Reference:	Grid
Well:	334H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project	Eddy County, NM (NAD83 NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		Using geodetic scale factor

Site		Spud Muffin 31-30			
Site Position:		Northing:	456,686.87 usft	Latitude:	32° 15' 18.399 N
From:	Map	Easting:	639,208.90 usft	Longitude:	104° 1' 0.221 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.17 °

Well	334H					
Well Position	+N/-S	148.73 usft	Northing:	456,835.59 usft	Latitude:	32° 15' 19.865 N
	+E/-W	172.09 usft	Easting:	639,380.98 usft	Longitude:	104° 0' 58.211 W
Position Uncertainty	0.00 usft		Wellhead Elevation:	0.00 usft	Ground Level:	2,960.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/4/2018	7.10	60.02	47,955

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(bearing)
	0.00	0.00	0.00	358.88

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,500.00	10.00	240.00	3,494.93	-43.52	-75.38	1.00	1.00	0.00	240.00	
6,500.00	10.00	240.00	6,449.35	-303.99	-526.53	0.00	0.00	0.00	0.00	
7,500.00	0.00	0.00	7,444.29	-347.52	-601.92	1.00	-1.00	0.00	180.00	
9,171.72	0.00	0.00	9,116.00	-347.52	-601.92	0.00	0.00	0.00	0.00	
10,062.32	89.06	358.88	9,688.88	215.93	-612.93	10.00	10.00	0.00	358.88	
10,062.61	89.06	358.88	9,688.89	216.23	-612.94	2.00	-1.06	-1.69	-122.11	
12,803.48	89.06	358.88	9,734.00	2,956.20	-666.74	0.00	0.00	0.00	0.00	AP1[SM\334H]
12,836.60	89.72	358.88	9,734.35	2,989.31	-667.39	2.00	2.00	0.00	0.07	
19,911.12	89.72	358.88	9,769.00	10,062.38	-806.18	0.00	0.00	0.00	0.00	BHL[SM\334H]



Scientific Drilling, Intl
Planning Report



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Well: 334H
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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

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24.00	0.00	0.00	24.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler - Top of Salt									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP - NUDGE									
2,600.00	1.00	240.00	2,599.99	-0.44	-0.76	-0.42	1.00	1.00	0.00
2,700.00	2.00	240.00	2,699.96	-1.75	-3.02	-1.69	1.00	1.00	0.00
2,746.08	2.46	240.00	2,746.00	-2.64	-4.58	-2.55	1.00	1.00	0.00
Base of Salt - Delaware									
2,800.00	3.00	240.00	2,799.86	-3.93	-6.80	-3.79	1.00	1.00	0.00
2,900.00	4.00	240.00	2,899.68	-6.98	-12.09	-6.74	1.00	1.00	0.00
3,000.00	5.00	240.00	2,999.37	-10.90	-18.88	-10.53	1.00	1.00	0.00
3,100.00	6.00	240.00	3,098.90	-15.69	-27.18	-15.16	1.00	1.00	0.00
3,200.00	7.00	240.00	3,198.26	-21.35	-36.99	-20.63	1.00	1.00	0.00
3,300.00	8.00	240.00	3,297.40	-27.88	-48.29	-26.93	1.00	1.00	0.00
3,400.00	9.00	240.00	3,396.30	-35.27	-61.09	-34.07	1.00	1.00	0.00
3,500.00	10.00	240.00	3,494.93	-43.52	-75.38	-42.04	1.00	1.00	0.00
HOLD									
3,600.00	10.00	240.00	3,593.41	-52.20	-90.42	-50.43	0.00	0.00	0.00
3,700.00	10.00	240.00	3,691.89	-60.89	-105.46	-58.81	0.00	0.00	0.00
3,800.00	10.00	240.00	3,790.37	-69.57	-120.50	-67.20	0.00	0.00	0.00
3,900.00	10.00	240.00	3,888.85	-78.25	-135.54	-75.59	0.00	0.00	0.00
4,000.00	10.00	240.00	3,987.33	-86.93	-150.58	-83.97	0.00	0.00	0.00
4,100.00	10.00	240.00	4,085.82	-95.62	-165.61	-92.36	0.00	0.00	0.00
4,200.00	10.00	240.00	4,184.30	-104.30	-180.65	-100.75	0.00	0.00	0.00
4,300.00	10.00	240.00	4,282.78	-112.98	-195.69	-109.14	0.00	0.00	0.00
4,400.00	10.00	240.00	4,381.26	-121.66	-210.73	-117.52	0.00	0.00	0.00
4,500.00	10.00	240.00	4,479.74	-130.35	-225.77	-125.91	0.00	0.00	0.00
4,600.00	10.00	240.00	4,578.22	-139.03	-240.81	-134.30	0.00	0.00	0.00
4,700.00	10.00	240.00	4,676.70	-147.71	-255.84	-142.68	0.00	0.00	0.00

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Design: Plan #1

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TVD Reference: KB = 32' @ 2992.00usft
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North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,800.00	10.00	240.00	4,775.18	-156.39	-270.88	-151.07	0.00	0.00	0.00
4,900.00	10.00	240.00	4,873.66	-165.08	-285.92	-159.46	0.00	0.00	0.00
5,000.00	10.00	240.00	4,972.14	-173.76	-300.96	-167.84	0.00	0.00	0.00
5,100.00	10.00	240.00	5,070.62	-182.44	-316.00	-176.23	0.00	0.00	0.00
5,200.00	10.00	240.00	5,169.10	-191.12	-331.04	-184.62	0.00	0.00	0.00
5,300.00	10.00	240.00	5,267.58	-199.81	-346.07	-193.00	0.00	0.00	0.00
5,400.00	10.00	240.00	5,366.07	-208.49	-361.11	-201.39	0.00	0.00	0.00
5,500.00	10.00	240.00	5,464.55	-217.17	-376.15	-209.78	0.00	0.00	0.00
5,600.00	10.00	240.00	5,563.03	-225.85	-391.19	-218.16	0.00	0.00	0.00
5,700.00	10.00	240.00	5,661.51	-234.54	-406.23	-226.55	0.00	0.00	0.00
5,800.00	10.00	240.00	5,759.99	-243.22	-421.27	-234.94	0.00	0.00	0.00
5,900.00	10.00	240.00	5,858.47	-251.90	-436.30	-243.32	0.00	0.00	0.00
6,000.00	10.00	240.00	5,956.95	-260.58	-451.34	-251.71	0.00	0.00	0.00
6,100.00	10.00	240.00	6,055.43	-269.27	-466.38	-260.10	0.00	0.00	0.00
6,157.44	10.00	240.00	6,112.00	-274.25	-475.02	-264.92	0.00	0.00	0.00
Lower Brushy Canyon									
6,200.00	10.00	240.00	6,153.91	-277.95	-481.42	-268.48	0.00	0.00	0.00
6,300.00	10.00	240.00	6,252.39	-286.63	-496.46	-276.87	0.00	0.00	0.00
6,400.00	10.00	240.00	6,350.87	-295.31	-511.50	-285.26	0.00	0.00	0.00
6,492.53	10.00	240.00	6,442.00	-303.35	-525.41	-293.02	0.00	0.00	0.00
1st BSPG Lime									
6,500.00	10.00	240.00	6,449.35	-303.99	-526.53	-293.64	0.00	0.00	0.00
DROP									
6,600.00	9.00	240.00	6,547.98	-312.25	-540.83	-301.62	1.00	-1.00	0.00
6,700.00	8.00	240.00	6,646.88	-319.64	-553.63	-308.75	1.00	-1.00	0.00
6,800.00	7.00	240.00	6,746.03	-326.16	-564.93	-315.06	1.00	-1.00	0.00
6,900.00	6.00	240.00	6,845.38	-331.82	-574.74	-320.53	1.00	-1.00	0.00
7,000.00	5.00	240.00	6,944.92	-336.62	-583.04	-325.16	1.00	-1.00	0.00
7,100.00	4.00	240.00	7,044.61	-340.54	-589.83	-328.94	1.00	-1.00	0.00
7,200.00	3.00	240.00	7,144.42	-343.59	-595.12	-331.89	1.00	-1.00	0.00
7,300.00	2.00	240.00	7,244.33	-345.77	-598.90	-334.00	1.00	-1.00	0.00
7,400.00	1.00	240.00	7,344.29	-347.08	-601.16	-335.26	1.00	-1.00	0.00
7,500.00	0.00	0.00	7,444.29	-347.52	-601.92	-335.69	1.00	-1.00	0.00
HOLD									
7,513.72	0.00	0.00	7,458.00	-347.52	-601.92	-335.69	0.00	0.00	0.00
1st BSPG Sand									
7,600.00	0.00	0.00	7,544.28	-347.52	-601.92	-335.69	0.00	0.00	0.00
7,700.00	0.00	0.00	7,644.28	-347.52	-601.92	-335.69	0.00	0.00	0.00
7,800.00	0.00	0.00	7,744.28	-347.52	-601.92	-335.69	0.00	0.00	0.00
7,831.72	0.00	0.00	7,776.00	-347.52	-601.92	-335.69	0.00	0.00	0.00
2nd BSPG Lime									
7,900.00	0.00	0.00	7,844.28	-347.52	-601.92	-335.69	0.00	0.00	0.00
8,000.00	0.00	0.00	7,944.28	-347.52	-601.92	-335.69	0.00	0.00	0.00
8,100.00	0.00	0.00	8,044.28	-347.52	-601.92	-335.69	0.00	0.00	0.00
8,200.00	0.00	0.00	8,144.28	-347.52	-601.92	-335.69	0.00	0.00	0.00
8,298.72	0.00	0.00	8,243.00	-347.52	-601.92	-335.69	0.00	0.00	0.00
2nd BSPG Sand									
8,300.00	0.00	0.00	8,244.28	-347.52	-601.92	-335.69	0.00	0.00	0.00
8,400.00	0.00	0.00	8,344.28	-347.52	-601.92	-335.69	0.00	0.00	0.00
8,500.00	0.00	0.00	8,444.28	-347.52	-601.92	-335.69	0.00	0.00	0.00
8,600.00	0.00	0.00	8,544.28	-347.52	-601.92	-335.69	0.00	0.00	0.00
8,700.00	0.00	0.00	8,644.28	-347.52	-601.92	-335.69	0.00	0.00	0.00

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8,741.72	0.00	0.00	8,686.00	-347.52	-601.92	-335.69	0.00	0.00	0.00
3rd BSPG Lime									
8,800.00	0.00	0.00	8,744.28	-347.52	-601.92	-335.69	0.00	0.00	0.00
8,900.00	0.00	0.00	8,844.28	-347.52	-601.92	-335.69	0.00	0.00	0.00
9,000.00	0.00	0.00	8,944.28	-347.52	-601.92	-335.69	0.00	0.00	0.00
9,100.00	0.00	0.00	9,044.29	-347.52	-601.92	-335.69	0.00	0.00	0.00
9,171.72	0.00	0.00	9,116.00	-347.52	-601.92	-335.69	0.00	0.00	0.00
Curve KOP - Build 10.0° / 100									
9,200.00	2.83	358.88	9,144.27	-346.82	-601.93	-334.99	10.00	10.00	0.00
9,250.00	7.83	358.88	9,194.04	-342.18	-602.02	-330.35	10.00	10.00	0.00
9,300.00	12.83	358.88	9,243.22	-333.22	-602.20	-321.38	10.00	10.00	0.00
9,350.00	17.83	358.88	9,291.42	-320.01	-602.46	-308.17	10.00	10.00	0.00
9,400.00	22.83	358.88	9,338.29	-302.65	-602.80	-290.81	10.00	10.00	0.00
9,440.46	26.87	358.88	9,375.00	-285.65	-603.13	-273.80	10.00	10.00	0.00
3rd BSPG Sand									
9,450.00	27.83	358.88	9,383.47	-281.27	-603.21	-269.42	10.00	10.00	0.00
9,500.00	32.83	358.88	9,426.62	-256.03	-603.71	-244.18	10.00	10.00	0.00
9,550.00	37.83	358.88	9,467.40	-227.13	-604.27	-215.28	10.00	10.00	0.00
9,600.00	42.83	358.88	9,505.50	-194.79	-604.90	-182.93	10.00	10.00	0.00
9,650.00	47.83	358.88	9,540.64	-159.25	-605.60	-147.38	10.00	10.00	0.00
9,700.00	52.83	358.88	9,572.55	-120.79	-606.35	-108.91	10.00	10.00	0.00
9,750.00	57.83	358.88	9,600.98	-79.69	-607.15	-67.80	10.00	10.00	0.00
9,800.00	62.83	358.88	9,625.73	-36.26	-608.00	-24.37	10.00	10.00	0.00
9,850.00	67.83	358.88	9,646.59	9.15	-608.89	21.05	10.00	10.00	0.00
9,900.00	72.83	358.88	9,663.42	56.21	-609.81	68.12	10.00	10.00	0.00
9,950.00	77.83	358.88	9,676.08	104.55	-610.76	116.47	10.00	10.00	0.00
9,954.45	78.27	358.88	9,677.00	108.91	-610.84	120.83	10.00	10.00	0.00
3BSS G (TZT)									
10,000.00	82.83	358.88	9,684.48	153.82	-611.72	165.74	10.00	10.00	0.00
10,050.00	87.83	358.88	9,688.55	203.63	-612.69	215.56	10.00	10.00	0.00
10,062.32	89.06	358.88	9,688.88	215.94	-612.93	227.87	10.00	10.00	0.00
FTP[SM334H]									
10,062.61	89.06	358.88	9,688.89	216.23	-612.94	228.17	2.01	-1.07	-1.71
EOC - HOLD									
10,100.00	89.06	358.88	9,689.50	253.61	-613.67	265.55	0.00	0.00	0.00
10,200.00	89.06	358.88	9,691.15	353.57	-615.64	365.54	0.00	0.00	0.00
10,300.00	89.06	358.88	9,692.79	453.54	-617.60	465.53	0.00	0.00	0.00
10,400.00	89.06	358.88	9,694.44	553.51	-619.56	565.51	0.00	0.00	0.00
10,500.00	89.06	358.88	9,696.09	653.47	-621.53	665.50	0.00	0.00	0.00
10,600.00	89.06	358.88	9,697.73	753.44	-623.49	765.48	0.00	0.00	0.00
10,700.00	89.06	358.88	9,699.38	853.41	-625.45	865.47	0.00	0.00	0.00
10,800.00	89.06	358.88	9,701.02	953.38	-627.41	965.46	0.00	0.00	0.00
10,900.00	89.06	358.88	9,702.67	1,053.34	-629.38	1,065.44	0.00	0.00	0.00
11,000.00	89.06	358.88	9,704.32	1,153.31	-631.34	1,165.43	0.00	0.00	0.00
11,100.00	89.06	358.88	9,705.96	1,253.28	-633.30	1,265.42	0.00	0.00	0.00
11,200.00	89.06	358.88	9,707.61	1,353.24	-635.27	1,365.40	0.00	0.00	0.00
11,300.00	89.06	358.88	9,709.25	1,453.21	-637.23	1,465.39	0.00	0.00	0.00
11,400.00	89.06	358.88	9,710.90	1,553.18	-639.19	1,565.38	0.00	0.00	0.00
11,500.00	89.06	358.88	9,712.55	1,653.15	-641.16	1,665.36	0.00	0.00	0.00
11,600.00	89.06	358.88	9,714.19	1,753.11	-643.12	1,765.35	0.00	0.00	0.00
11,700.00	89.06	358.88	9,715.84	1,853.08	-645.08	1,865.34	0.00	0.00	0.00
11,800.00	89.06	358.88	9,717.48	1,953.05	-647.05	1,965.32	0.00	0.00	0.00
11,900.00	89.06	358.88	9,719.13	2,053.01	-649.01	2,065.31	0.00	0.00	0.00



Scientific Drilling, Intl
Planning Report

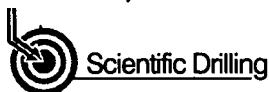


Database: Midland District
Company: Devon Energy
Project: Eddy County, NM (NAD83 NME)
Site: Spud Muffin 31-30
Well: 334H
Wellbore: OH
Design: Plan #1

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

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,000.00	89.06	358.88	9,720.78	2,152.98	-650.97	2,165.29	0.00	0.00	0.00
12,100.00	89.06	358.88	9,722.42	2,252.95	-652.93	2,265.28	0.00	0.00	0.00
12,200.00	89.06	358.88	9,724.07	2,352.92	-654.90	2,365.27	0.00	0.00	0.00
12,300.00	89.06	358.88	9,725.71	2,452.88	-656.86	2,465.25	0.00	0.00	0.00
12,400.00	89.06	358.88	9,727.36	2,552.85	-658.82	2,565.24	0.00	0.00	0.00
12,500.00	89.06	358.88	9,729.01	2,652.82	-660.79	2,665.23	0.00	0.00	0.00
12,600.00	89.06	358.88	9,730.65	2,752.79	-662.75	2,765.21	0.00	0.00	0.00
12,621.22	89.06	358.88	9,731.00	2,773.99	-663.17	2,786.43	0.00	0.00	0.00
Wolfcamp (TZB)									
12,700.00	89.06	358.88	9,732.30	2,852.75	-664.71	2,865.20	0.00	0.00	0.00
12,803.48	89.06	358.88	9,734.00	2,956.20	-666.74	2,968.66	0.00	0.00	0.00
BUILD - AP1[SM1334H]									
12,836.60	89.72	358.88	9,734.35	2,989.31	-667.39	3,001.79	2.00	2.00	0.00
HOLD									
12,900.00	89.72	358.88	9,734.66	3,052.70	-668.64	3,065.18	0.00	0.00	0.00
13,000.00	89.72	358.88	9,735.15	3,152.68	-670.60	3,165.18	0.00	0.00	0.00
13,100.00	89.72	358.88	9,735.64	3,252.66	-672.56	3,265.18	0.00	0.00	0.00
13,200.00	89.72	358.88	9,736.13	3,352.64	-674.52	3,365.18	0.00	0.00	0.00
13,300.00	89.72	358.88	9,736.62	3,452.62	-676.49	3,465.18	0.00	0.00	0.00
13,400.00	89.72	358.88	9,737.11	3,552.59	-678.45	3,565.18	0.00	0.00	0.00
13,500.00	89.72	358.88	9,737.60	3,652.57	-680.41	3,665.18	0.00	0.00	0.00
13,600.00	89.72	358.88	9,738.09	3,752.55	-682.37	3,765.17	0.00	0.00	0.00
13,700.00	89.72	358.88	9,738.58	3,852.53	-684.33	3,865.17	0.00	0.00	0.00
13,800.00	89.72	358.88	9,739.07	3,952.51	-686.29	3,965.17	0.00	0.00	0.00
13,900.00	89.72	358.88	9,739.56	4,052.49	-688.26	4,065.17	0.00	0.00	0.00
14,000.00	89.72	358.88	9,740.05	4,152.47	-690.22	4,165.17	0.00	0.00	0.00
14,100.00	89.72	358.88	9,740.54	4,252.45	-692.18	4,265.17	0.00	0.00	0.00
14,200.00	89.72	358.88	9,741.03	4,352.43	-694.14	4,365.17	0.00	0.00	0.00
14,300.00	89.72	358.88	9,741.52	4,452.41	-696.10	4,465.17	0.00	0.00	0.00
14,400.00	89.72	358.88	9,742.01	4,552.39	-698.07	4,565.17	0.00	0.00	0.00
14,500.00	89.72	358.88	9,742.50	4,652.37	-700.03	4,665.16	0.00	0.00	0.00
14,600.00	89.72	358.88	9,742.99	4,752.35	-701.99	4,765.16	0.00	0.00	0.00
14,700.00	89.72	358.88	9,743.48	4,852.33	-703.95	4,865.16	0.00	0.00	0.00
14,800.00	89.72	358.88	9,743.97	4,952.31	-705.91	4,965.16	0.00	0.00	0.00
14,900.00	89.72	358.88	9,744.46	5,052.29	-707.87	5,065.16	0.00	0.00	0.00
15,000.00	89.72	358.88	9,744.95	5,152.27	-709.84	5,165.16	0.00	0.00	0.00
15,100.00	89.72	358.88	9,745.44	5,252.25	-711.80	5,265.16	0.00	0.00	0.00
15,200.00	89.72	358.88	9,745.93	5,352.23	-713.76	5,365.16	0.00	0.00	0.00
15,300.00	89.72	358.88	9,746.42	5,452.21	-715.72	5,465.15	0.00	0.00	0.00
15,400.00	89.72	358.88	9,746.91	5,552.19	-717.68	5,565.15	0.00	0.00	0.00
15,500.00	89.72	358.88	9,747.40	5,652.17	-719.65	5,665.15	0.00	0.00	0.00
15,600.00	89.72	358.88	9,747.89	5,752.14	-721.61	5,765.15	0.00	0.00	0.00
15,700.00	89.72	358.88	9,748.38	5,852.12	-723.57	5,865.15	0.00	0.00	0.00
15,800.00	89.72	358.88	9,748.87	5,952.10	-725.53	5,965.15	0.00	0.00	0.00
15,900.00	89.72	358.88	9,749.36	6,052.08	-727.49	6,065.15	0.00	0.00	0.00
16,000.00	89.72	358.88	9,749.85	6,152.06	-729.45	6,165.15	0.00	0.00	0.00
16,100.00	89.72	358.88	9,750.34	6,252.04	-731.42	6,265.14	0.00	0.00	0.00
16,200.00	89.72	358.88	9,750.83	6,352.02	-733.38	6,365.14	0.00	0.00	0.00
16,300.00	89.72	358.88	9,751.32	6,452.00	-735.34	6,465.14	0.00	0.00	0.00
16,400.00	89.72	358.88	9,751.81	6,551.98	-737.30	6,565.14	0.00	0.00	0.00
16,500.00	89.72	358.88	9,752.29	6,651.96	-739.26	6,665.14	0.00	0.00	0.00
16,600.00	89.72	358.88	9,752.78	6,751.94	-741.23	6,765.14	0.00	0.00	0.00
16,700.00	89.72	358.88	9,753.27	6,851.92	-743.19	6,865.14	0.00	0.00	0.00



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North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,800.00	89.72	358.88	9,753.76	6,951.90	-745.15	6,965.14	0.00	0.00	0.00
16,900.00	89.72	358.88	9,754.25	7,051.88	-747.11	7,065.14	0.00	0.00	0.00
17,000.00	89.72	358.88	9,754.74	7,151.86	-749.07	7,165.13	0.00	0.00	0.00
17,100.00	89.72	358.88	9,755.23	7,251.84	-751.04	7,265.13	0.00	0.00	0.00
17,200.00	89.72	358.88	9,755.72	7,351.82	-753.00	7,365.13	0.00	0.00	0.00
17,300.00	89.72	358.88	9,756.21	7,451.80	-754.96	7,465.13	0.00	0.00	0.00
17,400.00	89.72	358.88	9,756.70	7,551.78	-756.92	7,565.13	0.00	0.00	0.00
17,500.00	89.72	358.88	9,757.19	7,651.76	-758.88	7,665.13	0.00	0.00	0.00
17,600.00	89.72	358.88	9,757.68	7,751.74	-760.84	7,765.13	0.00	0.00	0.00
17,700.00	89.72	358.88	9,758.17	7,851.72	-762.81	7,865.13	0.00	0.00	0.00
17,800.00	89.72	358.88	9,758.66	7,951.70	-764.77	7,965.12	0.00	0.00	0.00
17,900.00	89.72	358.88	9,759.15	8,051.67	-766.73	8,065.12	0.00	0.00	0.00
18,000.00	89.72	358.88	9,759.64	8,151.65	-768.69	8,165.12	0.00	0.00	0.00
18,100.00	89.72	358.88	9,760.13	8,251.63	-770.65	8,265.12	0.00	0.00	0.00
18,200.00	89.72	358.88	9,760.62	8,351.61	-772.62	8,365.12	0.00	0.00	0.00
18,300.00	89.72	358.88	9,761.11	8,451.59	-774.58	8,465.12	0.00	0.00	0.00
18,400.00	89.72	358.88	9,761.60	8,551.57	-776.54	8,565.12	0.00	0.00	0.00
18,500.00	89.72	358.88	9,762.09	8,651.55	-778.50	8,665.12	0.00	0.00	0.00
18,600.00	89.72	358.88	9,762.58	8,751.53	-780.46	8,765.11	0.00	0.00	0.00
18,700.00	89.72	358.88	9,763.07	8,851.51	-782.42	8,865.11	0.00	0.00	0.00
18,800.00	89.72	358.88	9,763.56	8,951.49	-784.39	8,965.11	0.00	0.00	0.00
18,900.00	89.72	358.88	9,764.05	9,051.47	-786.35	9,065.11	0.00	0.00	0.00
19,000.00	89.72	358.88	9,764.54	9,151.45	-788.31	9,165.11	0.00	0.00	0.00
19,100.00	89.72	358.88	9,765.03	9,251.43	-790.27	9,265.11	0.00	0.00	0.00
19,200.00	89.72	358.88	9,765.52	9,351.41	-792.23	9,365.11	0.00	0.00	0.00
19,300.00	89.72	358.88	9,766.01	9,451.39	-794.20	9,465.11	0.00	0.00	0.00
19,400.00	89.72	358.88	9,766.50	9,551.37	-796.16	9,565.11	0.00	0.00	0.00
19,500.00	89.72	358.88	9,766.99	9,651.35	-798.12	9,665.10	0.00	0.00	0.00
19,600.00	89.72	358.88	9,767.48	9,751.33	-800.08	9,765.10	0.00	0.00	0.00
19,700.00	89.72	358.88	9,767.97	9,851.31	-802.04	9,865.10	0.00	0.00	0.00
19,800.00	89.72	358.88	9,768.46	9,951.29	-804.00	9,965.10	0.00	0.00	0.00
19,900.00	89.72	358.88	9,768.95	10,051.27	-805.97	10,065.10	0.00	0.00	0.00
19,911.12	89.72	358.88	9,769.00	10,062.38	-806.18	10,076.22	0.00	0.00	0.00

TD at 19911.12 - BHL[SM334H]

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (bearing)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP[SM334H] - plan misses target center by 0.12usft at 10062.32usft MD (9688.88 TVD, 215.94 N, -612.93 E) - Point	0.00	0.01	9,689.00	215.93	-612.93	457,051.51	638,768.10	32° 15' 22.020 N	104° 1' 5.341 W
AP1[SM334H] - plan hits target center - Point	0.00	0.00	9,734.00	2,956.20	-666.74	459,791.55	638,714.29	32° 15' 49.137 N	104° 1' 5.874 W
BHL[SM334H] - plan hits target center - Point	0.00	0.00	9,769.00	10,062.38	-806.18	466,897.17	638,574.86	32° 16' 59.457 N	104° 1' 7.256 W

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TVD Reference: KB = 32' @ 2992.00usft
MD Reference: KB = 32' @ 2992.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (bearing)
24.00	24.00	Rustler			
24.00	24.00	Top of Salt			
2,746.08	2,746.00	Base of Salt			
2,746.08	2,746.00	Delaware			
6,157.44	6,112.00	Lower Brushy Canyon			
6,492.53	6,442.00	1st BSPG Lime			
7,513.72	7,458.00	1st BSPG Sand			
7,831.72	7,776.00	2nd BSPG Lime			
8,298.72	8,243.00	2nd BSPG Sand			
8,741.72	8,686.00	3rd BSPG Lime			
9,440.46	9,375.00	3rd BSPG Sand			
9,954.45	9,677.00	3BSS G (TZT)			
12,621.22	9,731.00	Wolfcamp (TZB)			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,500.00	2,500.00	0.00	0.00	KOP - NUDGE
3,500.00	3,494.93	-43.52	-75.38	HOLD
6,500.00	6,449.35	-303.99	-526.53	DROP
7,500.00	7,444.29	-347.52	-601.92	HOLD
9,171.72	9,116.00	-347.52	-601.92	Curve KOP - Build 10.0° / 100
10,062.61	9,688.89	216.23	-612.94	EOC - HOLD
12,803.48	9,734.00	2,956.20	-666.74	BUILD
12,836.60	9,734.35	2,989.31	-667.39	HOLD
19,911.12	9,769.00	10,062.38	-806.18	TD at 19911.12



EDDY COUNTY, NM (NAD83 NME)
SPUD MUFFIN 31-30
334H

PLAN #1

WELL DETAILS					
GROUND LEVEL: 7960.00					
NUT-S	E/W	DEPTH	EASTING	LATITUDE	LONGITUDE
0.00	0.00	450855.50	630380.08 32° 15' 19.805 N	104° 0' 58.21 W	

SECTION DETAILS									
MD	INC	ATI	TVD	NUT-S	E/W	DEPTH	FACE	VS	TARGET
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2500.00	0.00	0.00	2500.00	0.00	0.00	0.00	0.00	0.00	
3500.00	10.00	24.00	3494.93	-43.52	-75.38	1.00	24.00	-42.04	
4500.00	10.00	24.00	4489.55	-302.19	-576.53	0.00	0.00	293.04	
5500.00	0.00	0.00	5484.28	-347.52	-600.92	1.00	180.00	-335.09	
6500.00	0.00	0.00	6479.00	-347.52	-600.92	0.00	0.00	335.09	
7500.00	0.00	0.00	7473.73	-347.52	-600.92	10.00	358.88	-277.87	
8500.00	0.00	0.00	8468.46	-347.52	-600.92	2.00	-122.11	229.17	AP(SH334H)
9500.00	0.00	0.00	9463.19	-347.52	-600.92	0.00	0.00	2008.00	BP(SH334H)
10500.00	0.00	0.00	10457.92	-347.52	-600.92	2.00	0.00	3009.79	
11500.00	0.00	0.00	11452.65	-347.52	-600.92	0.00	0.00	10076.22	

DESIGN TARGET DETAILS					
Name	TVD	NUT-S	E/W	North	East
AP(SH334H)	9500.00	215.93	-612.83	630780.10	630780.10
BP(SH334H)	9500.00	215.93	-612.83	630780.10	630780.10
BP(SH334H)	9500.00	215.93	-612.83	630780.10	630780.10

SITE DETAILS: SPUD MUFFIN 31-30
SITE COORDINATES: 430855.50
EASTING: 630380.08
POSITIONAL UNCERTAINTY: 0.00
CONFORMANCE: 0.17
LOCAL NORTH: GRID

PROJECT DETAILS: EDDY COUNTY, NM (NAD83 NME)
GEODETIC SYSTEM: US STATE PLANE 1983
DATUM: NORTH AMERICAN DATUM 1983
ELLIPSOID: GRS 1980
ZONE: NEW MEXICO EASTERN ZONE
SYSTEM DATUM: MEAN SEA LEVEL

FORMATION TOP DETAILS	
DEPTH	FORMATION
26.00	PUSTLE
26.00	TOP OF SALT
276.00	BASE OF SALT
276.00	CHALK
612.00	LOWER BRUSHY CANYON
642.00	1ST BSGP SAND
745.00	2ND BSGP SAND
776.00	3RD BSGP SAND
805.00	4TH BSGP SAND
868.00	5TH BSGP SAND
917.00	6TH BSGP SAND
917.00	7TH BSGP SAND
917.00	8TH BSGP SAND
917.00	9TH BSGP SAND
917.00	10TH BSGP SAND
917.00	11TH BSGP SAND
917.00	12TH BSGP SAND
917.00	13TH BSGP SAND
917.00	14TH BSGP SAND
917.00	15TH BSGP SAND
917.00	16TH BSGP SAND
917.00	17TH BSGP SAND
917.00	18TH BSGP SAND
917.00	19TH BSGP SAND
917.00	20TH BSGP SAND
917.00	21TH BSGP SAND
917.00	22TH BSGP SAND
917.00	23TH BSGP SAND
917.00	24TH BSGP SAND
917.00	25TH BSGP SAND
917.00	26TH BSGP SAND
917.00	27TH BSGP SAND
917.00	28TH BSGP SAND
917.00	29TH BSGP SAND
917.00	30TH BSGP SAND
917.00	31TH BSGP SAND
917.00	32TH BSGP SAND
917.00	33TH BSGP SAND
917.00	34TH BSGP SAND
917.00	35TH BSGP SAND
917.00	36TH BSGP SAND
917.00	37TH BSGP SAND
917.00	38TH BSGP SAND
917.00	39TH BSGP SAND
917.00	40TH BSGP SAND
917.00	41TH BSGP SAND
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917.00	65TH BSGP SAND
917.00	66TH BSGP SAND
917.00	67TH BSGP SAND
917.00	68TH BSGP SAND
917.00	69TH BSGP SAND
917.00	70TH BSGP SAND
917.00	71TH BSGP SAND
917.00	72TH BSGP SAND
917.00	73TH BSGP SAND
917.00	74TH BSGP SAND
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917.00	80TH BSGP SAND
917.00	81TH BSGP SAND
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917.00	89TH BSGP SAND
917.00	90TH BSGP SAND
917.00	91TH BSGP SAND
917.00	92TH BSGP SAND
917.00	93TH BSGP SAND
917.00	94TH BSGP SAND
917.00	95TH BSGP SAND
917.00	96TH BSGP SAND
917.00	97TH BSGP SAND
917.00	98TH BSGP SAND
917.00	99TH BSGP SAND
917.00	100TH BSGP SAND

NEW SYSTEM: US STATE PLANE 1983
DATUM: NORTH AMERICAN DATUM 1983
ELLIPSOID: GRS 1980
ZONE: NEW MEXICO EASTERN ZONE
LOCAL ORIGIN: WELL 334H, GRID NORTH
LATITUDE: 32° 15' 19.805 N
LONGITUDE: 104° 0' 58.21 W
GRID EAST: 630380.08
GRID NORTH: 430855.50
SCALE FACTOR: 1.000
GEODETIC MODEL: NAD83
LOCAL DATUM: NEW MEXICO
MAGNETIC DECLINATION: 7.0°
DIAGRAM FROM HORIZONTAL: 40.0°
MAGNETIC FIELD STRENGTH: 4.7955
TO CONVERT A MAGNETIC DIRECTION TO A GRID DIRECTION, ADD 6.95°
TO CONVERT A MAGNETIC DIRECTION TO A TRUE DIRECTION, ADD 7.00° EAST
TO CONVERT A TRUE DIRECTION TO A GRID DIRECTION, SUBTRACT 6.95°

