

WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Sec 31-T23S-R29E

Spud Muffin 31-30 334H

Wellbore #1

Plan: Permit Plan 3

Standard Planning Report - Geographic

17 September, 2018

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Spud Muffin 31-30 334H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 2984.70ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 2984.70ft
Site:	Sec 31-T23S-R29E	North Reference:	Grid
Well:	Spud Muffin 31-30 334H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 3		

Project	Eddy County (NAD 83 NM Eastern)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Zone:	New Mexico Eastern Zone		

Site		Sec 31-T23S-R29E			
Site Position:		Northing:	467,039.80 usft	Latitude:	32.283608
From:	Map	Easting:	634,382.44 usft	Longitude:	-104.032247
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.16 °

Well	Spud Muffin 31-30 334H					
Position	+N/-S	0.00 ft	Northing:	456,835.36 usft	Latitude:	32.255517
	+E/-W	0.00 ft	Easting:	639,410.99 usft	Longitude:	-104.016073
Position Uncertainty		0.50 ft	Wellhead Elevation:		Ground Level:	2,959.70 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/13/2018	7.03	60.00	47,785.40656789

Design	Permit Plan 3			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	355.25

Plan Survey Tool Program	Date	9/17/2018		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,050.68 Permit Plan 3 (Wellbore #1)	MWD+HDGM OWSG MWD + HDGM	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	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	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,975.68	9.76	239.55	3,970.97	-42.00	-71.44	1.00	1.00	0.00	239.55	
8,225.87	9.76	239.55	8,159.69	-407.00	-692.37	0.00	0.00	0.00	0.00	
8,876.32	0.00	0.00	8,807.00	-435.00	-740.00	1.50	-1.50	0.00	180.00	
9,226.36	0.00	0.00	9,157.04	-435.00	-740.00	0.00	0.00	0.00	0.00	
10,126.36	90.00	359.48	9,730.00	137.93	-745.25	10.00	10.00	0.00	359.48	PBHL2 - Spud Muffin
20,050.68	90.00	359.48	9,730.00	10,061.83	-836.13	0.00	0.00	0.00	0.00	PBHL2 - Spud Muffin

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Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Site: Sec 31-T23S-R29E
Well: Spud Muffin 31-30 334H
Wellbore: Wellbore #1
Design: Permit Plan 3

Local Co-ordinate Reference: Well Spud Muffin 31-30 334H
TVD Reference: RKB @ 2984.70ft
MD Reference: RKB @ 2984.70ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
100.00	0.00	0.00	100.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
200.00	0.00	0.00	200.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
300.00	0.00	0.00	300.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
400.00	0.00	0.00	400.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
500.00	0.00	0.00	500.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
600.00	0.00	0.00	600.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
700.00	0.00	0.00	700.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
800.00	0.00	0.00	800.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
900.00	0.00	0.00	900.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
1,000.00	0.00	0.00	1,000.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
1,100.00	0.00	0.00	1,100.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
1,200.00	0.00	0.00	1,200.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
1,300.00	0.00	0.00	1,300.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
1,400.00	0.00	0.00	1,400.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
1,500.00	0.00	0.00	1,500.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
1,600.00	0.00	0.00	1,600.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
1,700.00	0.00	0.00	1,700.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
1,800.00	0.00	0.00	1,800.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
1,900.00	0.00	0.00	1,900.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
2,000.00	0.00	0.00	2,000.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
2,100.00	0.00	0.00	2,100.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
2,200.00	0.00	0.00	2,200.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
2,300.00	0.00	0.00	2,300.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
2,400.00	0.00	0.00	2,400.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
2,500.00	0.00	0.00	2,500.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
2,600.00	0.00	0.00	2,600.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
2,700.00	0.00	0.00	2,700.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
2,800.00	0.00	0.00	2,800.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
2,900.00	0.00	0.00	2,900.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
3,000.00	0.00	0.00	3,000.00	0.00	0.00	456,835.36	639,410.99	32.255517	-104.016073
3,100.00	1.00	239.55	3,099.99	-0.44	-0.75	456,834.92	639,410.24	32.255516	-104.016075
3,200.00	2.00	239.55	3,199.96	-1.77	-3.01	456,833.59	639,407.99	32.255513	-104.016083
3,300.00	3.00	239.55	3,299.86	-3.98	-6.77	456,831.38	639,404.23	32.255507	-104.016095
3,400.00	4.00	239.55	3,399.68	-7.07	-12.03	456,828.29	639,398.96	32.255498	-104.016112
3,500.00	5.00	239.55	3,499.37	-11.05	-18.80	456,824.31	639,392.20	32.255487	-104.016134
3,600.00	6.00	239.55	3,598.90	-15.91	-27.06	456,819.45	639,383.94	32.255474	-104.016161
3,700.00	7.00	239.55	3,698.26	-21.64	-36.82	456,813.72	639,374.18	32.255458	-104.016192
3,800.00	8.00	239.55	3,797.40	-28.26	-48.07	456,807.10	639,362.92	32.255440	-104.016229
3,900.00	9.00	239.55	3,896.30	-35.75	-60.81	456,799.61	639,350.18	32.255420	-104.016270
3,975.68	9.76	239.55	3,970.97	-42.00	-71.44	456,793.36	639,339.55	32.255403	-104.016305
4,000.00	9.76	239.55	3,994.94	-44.09	-75.00	456,791.27	639,336.00	32.255397	-104.016316
4,100.00	9.76	239.55	4,093.49	-52.67	-89.61	456,782.69	639,321.39	32.255373	-104.016363
4,200.00	9.76	239.55	4,192.05	-61.26	-104.22	456,774.10	639,306.78	32.255350	-104.016411
4,300.00	9.76	239.55	4,290.60	-69.85	-118.82	456,765.51	639,292.17	32.255326	-104.016458
4,400.00	9.76	239.55	4,389.15	-78.44	-133.43	456,756.92	639,277.56	32.255303	-104.016505
4,500.00	9.76	239.55	4,487.71	-87.03	-148.04	456,748.33	639,262.95	32.255279	-104.016553
4,600.00	9.76	239.55	4,586.26	-95.61	-162.65	456,739.75	639,248.34	32.255256	-104.016600
4,700.00	9.76	239.55	4,684.81	-104.20	-177.26	456,731.16	639,233.73	32.255232	-104.016647
4,800.00	9.76	239.55	4,783.37	-112.79	-191.87	456,722.57	639,219.12	32.255209	-104.016695
4,900.00	9.76	239.55	4,881.92	-121.38	-206.48	456,713.98	639,204.51	32.255185	-104.016742
5,000.00	9.76	239.55	4,980.48	-129.97	-221.09	456,705.40	639,189.90	32.255162	-104.016789
5,100.00	9.76	239.55	5,079.03	-138.55	-235.70	456,696.81	639,175.29	32.255138	-104.016837
5,200.00	9.76	239.55	5,177.58	-147.14	-250.31	456,688.22	639,160.69	32.255115	-104.016884
5,300.00	9.76	239.55	5,276.14	-155.73	-264.92	456,679.63	639,146.08	32.255091	-104.016931

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Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,400.00	9.76	239.55	5,374.69	-164.32	-279.53	456,671.04	639,131.47	32.255068	-104.016979
5,500.00	9.76	239.55	5,473.24	-172.91	-294.14	456,662.46	639,116.86	32.255044	-104.017026
5,600.00	9.76	239.55	5,571.80	-181.49	-308.75	456,653.87	639,102.25	32.255021	-104.017074
5,700.00	9.76	239.55	5,670.35	-190.08	-323.36	456,645.28	639,087.64	32.254998	-104.017121
5,800.00	9.76	239.55	5,768.90	-198.67	-337.97	456,636.69	639,073.03	32.254974	-104.017168
5,900.00	9.76	239.55	5,867.46	-207.26	-352.58	456,628.10	639,058.42	32.254951	-104.017216
6,000.00	9.76	239.55	5,966.01	-215.85	-367.18	456,619.52	639,043.81	32.254927	-104.017263
6,100.00	9.76	239.55	6,064.57	-224.43	-381.79	456,610.93	639,029.20	32.254904	-104.017310
6,200.00	9.76	239.55	6,163.12	-233.02	-396.40	456,602.34	639,014.59	32.254880	-104.017358
6,300.00	9.76	239.55	6,261.67	-241.61	-411.01	456,593.75	638,999.98	32.254857	-104.017405
6,400.00	9.76	239.55	6,360.23	-250.20	-425.62	456,585.16	638,985.37	32.254833	-104.017452
6,500.00	9.76	239.55	6,458.78	-258.78	-440.23	456,576.58	638,970.76	32.254810	-104.017500
6,600.00	9.76	239.55	6,557.33	-267.37	-454.84	456,567.99	638,956.15	32.254786	-104.017547
6,700.00	9.76	239.55	6,655.89	-275.96	-469.45	456,559.40	638,941.54	32.254763	-104.017594
6,800.00	9.76	239.55	6,754.44	-284.55	-484.06	456,550.81	638,926.94	32.254739	-104.017642
6,900.00	9.76	239.55	6,852.99	-293.14	-498.67	456,542.22	638,912.33	32.254716	-104.017689
7,000.00	9.76	239.55	6,951.55	-301.72	-513.28	456,533.64	638,897.72	32.254692	-104.017736
7,100.00	9.76	239.55	7,050.10	-310.31	-527.89	456,525.05	638,883.11	32.254669	-104.017784
7,200.00	9.76	239.55	7,148.65	-318.90	-542.50	456,516.46	638,868.50	32.254645	-104.017831
7,300.00	9.76	239.55	7,247.21	-327.49	-557.11	456,507.87	638,853.89	32.254622	-104.017878
7,400.00	9.76	239.55	7,345.76	-336.08	-571.72	456,499.28	638,839.28	32.254598	-104.017926
7,500.00	9.76	239.55	7,444.32	-344.66	-586.33	456,490.70	638,824.67	32.254575	-104.017973
7,600.00	9.76	239.55	7,542.87	-353.25	-600.94	456,482.11	638,810.06	32.254551	-104.018020
7,700.00	9.76	239.55	7,641.42	-361.84	-615.54	456,473.52	638,795.45	32.254528	-104.018068
7,800.00	9.76	239.55	7,739.98	-370.43	-630.15	456,464.93	638,780.84	32.254504	-104.018115
7,900.00	9.76	239.55	7,838.53	-379.02	-644.76	456,456.34	638,766.23	32.254481	-104.018162
8,000.00	9.76	239.55	7,937.08	-387.60	-659.37	456,447.76	638,751.62	32.254457	-104.018210
8,100.00	9.76	239.55	8,035.64	-396.19	-673.98	456,439.17	638,737.01	32.254434	-104.018257
8,200.00	9.76	239.55	8,134.19	-404.78	-688.59	456,430.58	638,722.40	32.254410	-104.018304
8,225.87	9.76	239.55	8,159.69	-407.00	-692.37	456,428.36	638,718.62	32.254404	-104.018317
8,300.00	8.64	239.55	8,232.86	-413.01	-702.59	456,422.35	638,708.41	32.254388	-104.018350
8,400.00	7.14	239.55	8,331.91	-419.97	-714.43	456,415.39	638,696.57	32.254369	-104.018388
8,500.00	5.64	239.55	8,431.29	-425.61	-724.03	456,409.75	638,686.96	32.254353	-104.018419
8,600.00	4.14	239.55	8,530.92	-429.94	-731.39	456,405.42	638,679.61	32.254341	-104.018443
8,700.00	2.64	239.55	8,630.74	-432.94	-736.49	456,402.42	638,674.50	32.254333	-104.018460
8,800.00	1.14	239.55	8,730.68	-434.61	-739.34	456,400.75	638,671.65	32.254329	-104.018469
8,876.32	0.00	0.00	8,807.00	-435.00	-740.00	456,400.36	638,671.00	32.254328	-104.018471
8,900.00	0.00	0.00	8,830.68	-435.00	-740.00	456,400.36	638,671.00	32.254328	-104.018471
9,000.00	0.00	0.00	8,930.68	-435.00	-740.00	456,400.36	638,671.00	32.254328	-104.018471
9,100.00	0.00	0.00	9,030.68	-435.00	-740.00	456,400.36	638,671.00	32.254328	-104.018471
9,200.00	0.00	0.00	9,130.68	-435.00	-740.00	456,400.36	638,671.00	32.254328	-104.018471
9,226.36	0.00	0.00	9,157.04	-435.00	-740.00	456,400.36	638,671.00	32.254328	-104.018471
KOP @ 9226' MD, 50' FSL, 995' FEL									
9,300.00	7.36	359.48	9,230.48	-430.27	-740.04	456,405.09	638,670.95	32.254341	-104.018471
9,400.00	17.36	359.48	9,328.03	-408.89	-740.24	456,426.47	638,670.76	32.254399	-104.018471
9,467.51	24.11	359.48	9,391.13	-385.00	-740.46	456,450.36	638,670.54	32.254465	-104.018472
FTP @ 9468' MD, 100' FSL, 995' FEL									
9,500.00	27.36	359.48	9,420.39	-370.89	-740.59	456,464.47	638,670.41	32.254504	-104.018472
9,600.00	37.36	359.48	9,504.75	-317.43	-741.08	456,517.93	638,669.92	32.254651	-104.018473
9,700.00	47.36	359.48	9,578.55	-250.14	-741.69	456,585.22	638,669.30	32.254836	-104.018475
9,800.00	57.36	359.48	9,639.53	-171.05	-742.42	456,664.31	638,668.58	32.255053	-104.018476
9,900.00	67.36	359.48	9,685.86	-82.58	-743.23	456,752.78	638,667.77	32.255296	-104.018478
10,000.00	77.36	359.48	9,716.12	12.60	-744.10	456,847.96	638,666.90	32.255558	-104.018480
10,100.00	87.36	359.48	9,729.39	111.58	-745.01	456,946.94	638,665.99	32.255830	-104.018482

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Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,126.36	90.00	359.48	9,730.00	137.93	-745.25	456,973.29	638,665.75	32.255903	-104.018483
10,200.00	90.00	359.48	9,730.00	211.57	-745.92	457,046.93	638,665.07	32.256105	-104.018484
10,300.00	90.00	359.48	9,730.00	311.56	-746.84	457,146.92	638,664.16	32.256380	-104.018486
10,400.00	90.00	359.48	9,730.00	411.56	-747.75	457,246.92	638,663.24	32.256655	-104.018488
10,500.00	90.00	359.48	9,730.00	511.55	-748.67	457,346.91	638,662.33	32.256930	-104.018490
10,600.00	90.00	359.48	9,730.00	611.55	-749.58	457,446.91	638,661.41	32.257205	-104.018492
10,700.00	90.00	359.48	9,730.00	711.55	-750.50	457,546.91	638,660.50	32.257479	-104.018494
10,800.00	90.00	359.48	9,730.00	811.54	-751.42	457,646.90	638,659.58	32.257754	-104.018496
10,900.00	90.00	359.48	9,730.00	911.54	-752.33	457,746.90	638,658.66	32.258029	-104.018498
11,000.00	90.00	359.48	9,730.00	1,011.53	-753.25	457,846.89	638,657.75	32.258304	-104.018500
11,100.00	90.00	359.48	9,730.00	1,111.53	-754.16	457,946.89	638,656.83	32.258579	-104.018502
11,200.00	90.00	359.48	9,730.00	1,211.53	-755.08	458,046.88	638,655.92	32.258854	-104.018504
11,300.00	90.00	359.48	9,730.00	1,311.52	-755.99	458,146.88	638,655.00	32.259129	-104.018506
11,400.00	90.00	359.48	9,730.00	1,411.52	-756.91	458,246.87	638,654.09	32.259404	-104.018508
11,500.00	90.00	359.48	9,730.00	1,511.51	-757.83	458,346.87	638,653.17	32.259678	-104.018510
11,600.00	90.00	359.48	9,730.00	1,611.51	-758.74	458,446.87	638,652.25	32.259953	-104.018512
11,700.00	90.00	359.48	9,730.00	1,711.50	-759.66	458,546.86	638,651.34	32.260228	-104.018514
11,800.00	90.00	359.48	9,730.00	1,811.50	-760.57	458,646.86	638,650.42	32.260503	-104.018516
11,900.00	90.00	359.48	9,730.00	1,911.50	-761.49	458,746.85	638,649.51	32.260778	-104.018518
12,000.00	90.00	359.48	9,730.00	2,011.49	-762.41	458,846.85	638,648.59	32.261053	-104.018520
12,100.00	90.00	359.48	9,730.00	2,111.49	-763.32	458,946.84	638,647.67	32.261328	-104.018522
12,200.00	90.00	359.48	9,730.00	2,211.48	-764.24	459,046.84	638,646.76	32.261603	-104.018524
12,300.00	90.00	359.48	9,730.00	2,311.48	-765.15	459,146.84	638,645.84	32.261877	-104.018526
12,400.00	90.00	359.48	9,730.00	2,411.48	-766.07	459,246.83	638,644.93	32.262152	-104.018528
12,500.00	90.00	359.48	9,730.00	2,511.47	-766.98	459,346.83	638,644.01	32.262427	-104.018530
12,600.00	90.00	359.48	9,730.00	2,611.47	-767.90	459,446.82	638,643.10	32.262702	-104.018532
12,700.00	90.00	359.48	9,730.00	2,711.46	-768.82	459,546.82	638,642.18	32.262977	-104.018534
12,800.00	90.00	359.48	9,730.00	2,811.46	-769.73	459,646.81	638,641.26	32.263252	-104.018536
12,900.00	90.00	359.48	9,730.00	2,911.45	-770.65	459,746.81	638,640.35	32.263527	-104.018538
13,000.00	90.00	359.48	9,730.00	3,011.45	-771.56	459,846.80	638,639.43	32.263802	-104.018540
13,100.00	90.00	359.48	9,730.00	3,111.45	-772.48	459,946.80	638,638.52	32.264077	-104.018542
13,200.00	90.00	359.48	9,730.00	3,211.44	-773.39	460,046.80	638,637.60	32.264351	-104.018544
13,300.00	90.00	359.48	9,730.00	3,311.44	-774.31	460,146.79	638,636.69	32.264626	-104.018546
13,400.00	90.00	359.48	9,730.00	3,411.43	-775.23	460,246.79	638,635.77	32.264901	-104.018548
13,500.00	90.00	359.48	9,730.00	3,511.43	-776.14	460,346.78	638,634.85	32.265176	-104.018550
13,600.00	90.00	359.48	9,730.00	3,611.42	-777.06	460,446.78	638,633.94	32.265451	-104.018552
13,700.00	90.00	359.48	9,730.00	3,711.42	-777.97	460,546.77	638,633.02	32.265726	-104.018554
13,800.00	90.00	359.48	9,730.00	3,811.42	-778.89	460,646.77	638,632.11	32.266001	-104.018556
13,900.00	90.00	359.48	9,730.00	3,911.41	-779.81	460,746.76	638,631.19	32.266276	-104.018558
14,000.00	90.00	359.48	9,730.00	4,011.41	-780.72	460,846.76	638,630.27	32.266550	-104.018561
14,100.00	90.00	359.48	9,730.00	4,111.40	-781.64	460,946.76	638,629.36	32.266825	-104.018563
14,200.00	90.00	359.48	9,730.00	4,211.40	-782.55	461,046.75	638,628.44	32.267100	-104.018565
14,300.00	90.00	359.48	9,730.00	4,311.40	-783.47	461,146.75	638,627.53	32.267375	-104.018567
14,400.00	90.00	359.48	9,730.00	4,411.39	-784.38	461,246.74	638,626.61	32.267650	-104.018569
14,500.00	90.00	359.48	9,730.00	4,511.39	-785.30	461,346.74	638,625.70	32.267925	-104.018571
14,600.00	90.00	359.48	9,730.00	4,611.38	-786.22	461,446.73	638,624.78	32.268200	-104.018573
14,700.00	90.00	359.48	9,730.00	4,711.38	-787.13	461,546.73	638,623.86	32.268475	-104.018575
14,778.34	90.00	359.48	9,730.00	4,789.72	-787.85	461,625.07	638,623.15	32.268690	-104.018576
Cross Section @ 14778' MD, 0' FSL, 975' FEL									
14,800.00	90.00	359.48	9,730.00	4,811.37	-788.05	461,646.73	638,622.95	32.268749	-104.018577
14,900.00	90.00	359.48	9,730.00	4,911.37	-788.96	461,746.72	638,622.03	32.269024	-104.018579
15,000.00	90.00	359.48	9,730.00	5,011.37	-789.88	461,846.72	638,621.12	32.269299	-104.018581
15,100.00	90.00	359.48	9,730.00	5,111.36	-790.79	461,946.71	638,620.20	32.269574	-104.018583
15,200.00	90.00	359.48	9,730.00	5,211.36	-791.71	462,046.71	638,619.29	32.269849	-104.018585

Planning Report - Geographic

Database: EDM r5000.141_Prod US
 Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Site: Sec 31-T23S-R29E
 Well: Spud Muffin 31-30 334H
 Wellbore: Wellbore #1
 Design: Permit Plan 3

Local Co-ordinate Reference: Well Spud Muffin 31-30 334H
 TVD Reference: RKB @ 2984.70ft
 MD Reference: RKB @ 2984.70ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,300.00	90.00	359.48	9,730.00	5,311.35	-792.63	462,146.70	638,618.37	32.270124	-104.018587
15,400.00	90.00	359.48	9,730.00	5,411.35	-793.54	462,246.70	638,617.45	32.270399	-104.018589
15,500.00	90.00	359.48	9,730.00	5,511.35	-794.46	462,346.69	638,616.54	32.270674	-104.018591
15,600.00	90.00	359.48	9,730.00	5,611.34	-795.37	462,446.69	638,615.62	32.270949	-104.018593
15,700.00	90.00	359.48	9,730.00	5,711.34	-796.29	462,546.69	638,614.71	32.271223	-104.018595
15,800.00	90.00	359.48	9,730.00	5,811.33	-797.20	462,646.68	638,613.79	32.271498	-104.018597
15,900.00	90.00	359.48	9,730.00	5,911.33	-798.12	462,746.68	638,612.88	32.271773	-104.018599
16,000.00	90.00	359.48	9,730.00	6,011.32	-799.04	462,846.67	638,611.96	32.272048	-104.018601
16,100.00	90.00	359.48	9,730.00	6,111.32	-799.95	462,946.67	638,611.04	32.272323	-104.018603
16,200.00	90.00	359.48	9,730.00	6,211.32	-800.87	463,046.66	638,610.13	32.272598	-104.018605
16,300.00	90.00	359.48	9,730.00	6,311.31	-801.78	463,146.66	638,609.21	32.272873	-104.018607
16,400.00	90.00	359.48	9,730.00	6,411.31	-802.70	463,246.65	638,608.30	32.273148	-104.018609
16,500.00	90.00	359.48	9,730.00	6,511.30	-803.62	463,346.65	638,607.38	32.273422	-104.018611
16,600.00	90.00	359.48	9,730.00	6,611.30	-804.53	463,446.65	638,606.46	32.273697	-104.018613
16,700.00	90.00	359.48	9,730.00	6,711.30	-805.45	463,546.64	638,605.55	32.273972	-104.018615
16,800.00	90.00	359.48	9,730.00	6,811.29	-806.36	463,646.64	638,604.63	32.274247	-104.018617
16,900.00	90.00	359.48	9,730.00	6,911.29	-807.28	463,746.63	638,603.72	32.274522	-104.018619
17,000.00	90.00	359.48	9,730.00	7,011.28	-808.19	463,846.63	638,602.80	32.274797	-104.018621
17,100.00	90.00	359.48	9,730.00	7,111.28	-809.11	463,946.62	638,601.89	32.275072	-104.018623
17,200.00	90.00	359.48	9,730.00	7,211.27	-810.03	464,046.62	638,600.97	32.275347	-104.018625
17,300.00	90.00	359.48	9,730.00	7,311.27	-810.94	464,146.62	638,600.05	32.275621	-104.018627
17,400.00	90.00	359.48	9,730.00	7,411.27	-811.86	464,246.61	638,599.14	32.275896	-104.018629
17,500.00	90.00	359.48	9,730.00	7,511.26	-812.77	464,346.61	638,598.22	32.276171	-104.018631
17,600.00	90.00	359.48	9,730.00	7,611.26	-813.69	464,446.60	638,597.31	32.276446	-104.018633
17,700.00	90.00	359.48	9,730.00	7,711.25	-814.60	464,546.60	638,596.39	32.276721	-104.018635
17,800.00	90.00	359.48	9,730.00	7,811.25	-815.52	464,646.59	638,595.48	32.276996	-104.018637
17,900.00	90.00	359.48	9,730.00	7,911.24	-816.44	464,746.59	638,594.56	32.277271	-104.018639
18,000.00	90.00	359.48	9,730.00	8,011.24	-817.35	464,846.58	638,593.64	32.277546	-104.018641
18,100.00	90.00	359.48	9,730.00	8,111.24	-818.27	464,946.58	638,592.73	32.277821	-104.018643
18,200.00	90.00	359.48	9,730.00	8,211.23	-819.18	465,046.58	638,591.81	32.278095	-104.018645
18,300.00	90.00	359.48	9,730.00	8,311.23	-820.10	465,146.57	638,590.90	32.278370	-104.018647
18,400.00	90.00	359.48	9,730.00	8,411.22	-821.02	465,246.57	638,589.98	32.278645	-104.018649
18,500.00	90.00	359.48	9,730.00	8,511.22	-821.93	465,346.56	638,589.06	32.278920	-104.018651
18,600.00	90.00	359.48	9,730.00	8,611.22	-822.85	465,446.56	638,588.15	32.279195	-104.018653
18,700.00	90.00	359.48	9,730.00	8,711.21	-823.76	465,546.55	638,587.23	32.279470	-104.018655
18,800.00	90.00	359.48	9,730.00	8,811.21	-824.68	465,646.55	638,586.32	32.279745	-104.018657
18,900.00	90.00	359.48	9,730.00	8,911.20	-825.59	465,746.55	638,585.40	32.280020	-104.018659
19,000.00	90.00	359.48	9,730.00	9,011.20	-826.51	465,846.54	638,584.49	32.280294	-104.018661
19,100.00	90.00	359.48	9,730.00	9,111.19	-827.43	465,946.54	638,583.57	32.280569	-104.018663
19,200.00	90.00	359.48	9,730.00	9,211.19	-828.34	466,046.53	638,582.65	32.280844	-104.018665
19,300.00	90.00	359.48	9,730.00	9,311.19	-829.26	466,146.53	638,581.74	32.281119	-104.018667
19,400.00	90.00	359.48	9,730.00	9,411.18	-830.17	466,246.52	638,580.82	32.281394	-104.018669
19,500.00	90.00	359.48	9,730.00	9,511.18	-831.09	466,346.52	638,579.91	32.281669	-104.018671
19,600.00	90.00	359.48	9,730.00	9,611.17	-832.00	466,446.51	638,578.99	32.281944	-104.018673
19,700.00	90.00	359.48	9,730.00	9,711.17	-832.92	466,546.51	638,578.08	32.282219	-104.018675
19,800.00	90.00	359.48	9,730.00	9,811.17	-833.84	466,646.51	638,577.16	32.282493	-104.018677
19,900.00	90.00	359.48	9,730.00	9,911.16	-834.75	466,746.50	638,576.24	32.282768	-104.018679
19,970.68	90.00	359.48	9,730.00	9,981.84	-835.40	466,817.18	638,575.60	32.282963	-104.018681
LTP @ 19971' MD, 100' FNL, 975' FEL									
20,000.00	90.00	359.48	9,730.00	10,011.16	-835.67	466,846.50	638,575.33	32.283043	-104.018681
20,050.68	90.00	359.48	9,730.00	10,061.83	-836.13	466,897.17	638,574.86	32.283183	-104.018682
PBHL; 20' FNL, 975' FEL									

Planning Report - Geographic

Database: EDM r5000.141_Prod US
Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Site: Sec 31-T23S-R29E
Well: Spud Muffin 31-30 334H
Wellbore: Wellbore #1
Design: Permit Plan 3

Local Co-ordinate Reference: Well Spud Muffin 31-30 334H
TVD Reference: RKB @ 2984.70ft
MD Reference: RKB @ 2984.70ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Design Targets

Target Name

- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
PBHL2 - Spud Muffin 31	0.00	0.00	0.00	10,061.83	-836.13	466,897.17	638,574.86	32.283183	-104.018682
- plan misses target center by 9730.00ft at 20050.68ft MD (9730.00 TVD, 10061.83 N, -836.13 E)									
- Point									

Plan Annotations

Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
9,226.36	9,157.04	-435.00	-740.00	KOP @ 9226' MD, 50' FSL, 995' FEL
9,467.51	9,391.13	-385.00	-740.46	FTP @ 9468' MD, 100' FSL, 995' FEL
14,778.34	9,730.00	4,789.72	-787.85	Cross Section @ 14778' MD, 0' FSL, 975' FEL
19,970.68	9,730.00	9,981.84	-835.40	LTP @ 19971' MD, 100' FNL, 975' FEL
20,050.68	9,730.00	10,061.83	-836.13	PBHL; 20' FNL, 975' FEL

WCDSC Permian NM

WELL DETAILS: Spud Muffin 31-30 334H

RKB @ 2984.70ft
2859.70
Northing 456835.38 Easting 639410.89 Latitude 32.255517 Longitude -104.016073

SECTION DETAILS Permit Plan 3

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	
3975.88	9.76	238.55	3970.97	-42.00	-71.44	1.00	-35.94	
8225.87	9.76	238.55	8159.89	-407.00	-592.37	0.00	-348.27	
8878.32	0.00	0.00	8807.00	-435.00	-740.00	1.50	-372.23	
9226.36	0.00	0.00	9157.04	-435.00	-740.00	0.00	-372.23	KOP @ 9226' MD, 50' FSL, 995' FEL
10126.36	90.00	359.48	9730.00	137.83	-745.25	10.00	199.17	
20050.68	90.00	359.48	9730.00	10081.83	-838.13	0.00	10096.51	PBHL: 20' FNL, 975' FEL

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