

WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Sec 31-T23S-R29E

Spud Muffin 31-30 Fed Com 331H

Wellbore #1

Plan: Permit Plan 2

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 Fed Com 331H
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 Fed Com 331H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

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

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

Well	Spud Muffin 31-30 Fed Com 331H		
Well Position	+N/-S	0.00 ft	Northing: 456,646.84 usft
	+E/-W	0.00 ft	Easting: 635,655.52 usft
Position Uncertainty	0.50 ft	Wellhead Elevation:	Latitude: 32.255029
			Longitude: -104.028223
			Ground Level: 2,959.70 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2015	6/20/2018	(°)	(°)	(nT)
			7.06	60.01	47,807.67211392

Design	Permit Plan 2			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	358.08

Plan Survey Tool Program	Date 9/17/2018			
Depth From	Depth To	Survey (Wellbore)	Tool Name	Remarks
(ft)	(ft)			
1 0.00	19,963.90	Permit Plan 2 (Wellbore #1)	MWD+HDGM	
			OWSG MWD + HDGM	

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(ft)	(ft)	Rate	Rate	Rate	(°)	
(ft)			(ft)			(°/100usft)	(°/100usft)	(°/100usft)		
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	
2,916.57	4.17	237.70	2,916.21	-8.09	-12.79	1.00	1.00	0.00	237.70	
8,236.95	4.17	237.70	8,222.53	-214.61	-339.47	0.00	0.00	0.00	0.00	
8,514.67	0.00	0.00	8,500.00	-220.00	-348.00	1.50	-1.50	0.00	180.00	
9,071.71	0.00	0.00	9,057.04	-220.00	-348.00	0.00	0.00	0.00	0.00	
9,971.71	90.00	0.01	9,630.00	352.96	-347.90	10.00	10.00	0.00	0.01	PBHL2 - Spud Muffin
19,963.90	90.00	0.01	9,630.00	10,345.15	-346.18	0.00	0.00	0.00	0.00	PBHL2 - Spud Muffin

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 Project: Eddy County (NAD 83 NM Eastern)
 Site: Sec 31-T23S-R29E
 Well: Spud Muffin 31-30 Fed Com 331H
 Wellbore: Wellbore #1
 Design: Permit Plan 2

Local Co-ordinate Reference: Well Spud Muffin 31-30 Fed Com 331H
 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	456,646.84	635,655.52	32.255029	-104.028223	
100.00	0.00	0.00	100.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
200.00	0.00	0.00	200.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
300.00	0.00	0.00	300.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
400.00	0.00	0.00	400.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
500.00	0.00	0.00	500.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
600.00	0.00	0.00	600.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
700.00	0.00	0.00	700.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
800.00	0.00	0.00	800.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
900.00	0.00	0.00	900.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
1,800.00	0.00	0.00	1,800.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
1,900.00	0.00	0.00	1,900.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
2,100.00	0.00	0.00	2,100.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
2,300.00	0.00	0.00	2,300.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
2,400.00	0.00	0.00	2,400.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	456,646.84	635,655.52	32.255029	-104.028223	
2,600.00	1.00	237.70	2,599.99	-0.47	-0.74	456,646.37	635,654.79	32.255028	-104.028226	
2,700.00	2.00	237.70	2,699.96	-1.87	-2.95	456,644.98	635,652.57	32.255024	-104.028233	
2,800.00	3.00	237.70	2,799.86	-4.20	-6.64	456,642.64	635,648.89	32.255018	-104.028245	
2,900.00	4.00	237.70	2,899.68	-7.46	-11.80	456,639.38	635,643.73	32.255009	-104.028262	
2,916.57	4.17	237.70	2,916.21	-8.09	-12.79	456,638.75	635,642.73	32.255007	-104.028265	
3,000.00	4.17	237.70	2,999.41	-11.33	-17.92	456,635.51	635,637.61	32.254998	-104.028281	
3,100.00	4.17	237.70	3,099.15	-15.21	-24.06	456,631.63	635,631.47	32.254987	-104.028301	
3,200.00	4.17	237.70	3,198.88	-19.09	-30.20	456,627.75	635,625.33	32.254977	-104.028321	
3,300.00	4.17	237.70	3,298.62	-22.97	-36.34	456,623.87	635,619.19	32.254966	-104.028341	
3,400.00	4.17	237.70	3,398.36	-26.85	-42.48	456,619.99	635,613.05	32.254956	-104.028361	
3,500.00	4.17	237.70	3,498.09	-30.74	-48.62	456,616.11	635,606.91	32.254945	-104.028381	
3,600.00	4.17	237.70	3,597.83	-34.62	-54.76	456,612.22	635,600.77	32.254934	-104.028401	
3,700.00	4.17	237.70	3,697.56	-38.50	-60.90	456,608.34	635,594.63	32.254924	-104.028421	
3,800.00	4.17	237.70	3,797.30	-42.38	-67.04	456,604.46	635,588.49	32.254913	-104.028441	
3,900.00	4.17	237.70	3,897.04	-46.26	-73.18	456,600.58	635,582.35	32.254903	-104.028460	
4,000.00	4.17	237.70	3,996.77	-50.14	-79.32	456,596.70	635,576.21	32.254892	-104.028480	
4,100.00	4.17	237.70	4,096.51	-54.03	-85.46	456,592.82	635,570.07	32.254881	-104.028500	
4,200.00	4.17	237.70	4,196.24	-57.91	-91.60	456,588.93	635,563.93	32.254871	-104.028520	
4,300.00	4.17	237.70	4,295.98	-61.79	-97.74	456,585.05	635,557.79	32.254860	-104.028540	
4,400.00	4.17	237.70	4,395.71	-65.67	-103.88	456,581.17	635,551.65	32.254849	-104.028560	
4,500.00	4.17	237.70	4,495.45	-69.55	-110.02	456,577.29	635,545.51	32.254839	-104.028580	
4,600.00	4.17	237.70	4,595.19	-73.43	-116.16	456,573.41	635,539.37	32.254828	-104.028600	
4,700.00	4.17	237.70	4,694.92	-77.32	-122.30	456,569.53	635,533.23	32.254818	-104.028620	
4,800.00	4.17	237.70	4,794.66	-81.20	-128.44	456,565.65	635,527.09	32.254807	-104.028640	
4,900.00	4.17	237.70	4,894.39	-85.08	-134.58	456,561.76	635,520.95	32.254796	-104.028659	
5,000.00	4.17	237.70	4,994.13	-88.96	-140.72	456,557.88	635,514.81	32.254786	-104.028679	
5,100.00	4.17	237.70	5,093.86	-92.84	-146.86	456,554.00	635,508.67	32.254775	-104.028699	
5,200.00	4.17	237.70	5,193.60	-96.72	-153.00	456,550.12	635,502.53	32.254764	-104.028719	
5,300.00	4.17	237.70	5,293.34	-100.61	-159.14	456,546.24	635,496.39	32.254754	-104.028739	

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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	
5,400.00	4.17	237.70	5,393.07	-104.49	-165.28	456,542.35	635,490.25	32.254743	-104.028759	
5,500.00	4.17	237.70	5,492.81	-108.37	-171.42	456,538.47	635,484.11	32.254733	-104.028779	
5,600.00	4.17	237.70	5,592.54	-112.25	-177.56	456,534.59	635,477.97	32.254722	-104.028799	
5,700.00	4.17	237.70	5,692.28	-116.13	-183.70	456,530.71	635,471.83	32.254711	-104.028819	
5,800.00	4.17	237.70	5,792.02	-120.01	-189.84	456,526.83	635,465.69	32.254701	-104.028838	
5,900.00	4.17	237.70	5,891.75	-123.90	-195.98	456,522.95	635,459.55	32.254690	-104.028858	
6,000.00	4.17	237.70	5,991.49	-127.78	-202.12	456,519.06	635,453.41	32.254679	-104.028878	
6,100.00	4.17	237.70	6,091.22	-131.66	-208.26	456,515.18	635,447.26	32.254669	-104.028898	
6,200.00	4.17	237.70	6,190.96	-135.54	-214.40	456,511.30	635,441.12	32.254658	-104.028918	
6,300.00	4.17	237.70	6,290.69	-139.42	-220.54	456,507.42	635,434.98	32.254648	-104.028938	
6,400.00	4.17	237.70	6,390.43	-143.30	-226.68	456,503.54	635,428.84	32.254637	-104.028958	
6,500.00	4.17	237.70	6,490.17	-147.19	-232.82	456,499.66	635,422.70	32.254626	-104.028978	
6,600.00	4.17	237.70	6,589.90	-151.07	-238.96	456,495.77	635,416.56	32.254616	-104.028998	
6,700.00	4.17	237.70	6,689.64	-154.95	-245.10	456,491.89	635,410.42	32.254605	-104.029018	
6,800.00	4.17	237.70	6,789.37	-158.83	-251.24	456,488.01	635,404.28	32.254594	-104.029037	
6,900.00	4.17	237.70	6,889.11	-162.71	-257.38	456,484.13	635,398.14	32.254584	-104.029057	
7,000.00	4.17	237.70	6,988.85	-166.59	-263.52	456,480.25	635,392.00	32.254573	-104.029077	
7,100.00	4.17	237.70	7,088.58	-170.48	-269.66	456,476.37	635,385.86	32.254563	-104.029097	
7,200.00	4.17	237.70	7,188.32	-174.36	-275.80	456,472.48	635,379.72	32.254552	-104.029117	
7,300.00	4.17	237.70	7,288.05	-178.24	-281.94	456,468.60	635,373.58	32.254541	-104.029137	
7,400.00	4.17	237.70	7,387.79	-182.12	-288.08	456,464.72	635,367.44	32.254531	-104.029157	
7,500.00	4.17	237.70	7,487.52	-186.00	-294.22	456,460.84	635,361.30	32.254520	-104.029177	
7,600.00	4.17	237.70	7,587.26	-189.88	-300.36	456,456.96	635,355.16	32.254509	-104.029197	
7,700.00	4.17	237.70	7,687.00	-193.76	-306.50	456,453.08	635,349.02	32.254499	-104.029217	
7,800.00	4.17	237.70	7,786.73	-197.65	-312.64	456,449.19	635,342.88	32.254488	-104.029236	
7,900.00	4.17	237.70	7,886.47	-201.53	-318.78	456,445.31	635,336.74	32.254478	-104.029256	
8,000.00	4.17	237.70	7,986.20	-205.41	-324.92	456,441.43	635,330.60	32.254467	-104.029276	
8,100.00	4.17	237.70	8,085.94	-209.29	-331.06	456,437.55	635,324.46	32.254456	-104.029296	
8,200.00	4.17	237.70	8,185.68	-213.17	-337.20	456,433.67	635,318.32	32.254446	-104.029316	
8,236.95	4.17	237.70	8,222.53	-214.61	-339.47	456,432.23	635,316.05	32.254442	-104.029323	
8,300.00	3.22	237.70	8,285.45	-216.78	-342.90	456,430.06	635,312.62	32.254436	-104.029335	
8,400.00	1.72	237.70	8,385.35	-219.08	-346.55	456,427.76	635,308.98	32.254430	-104.029346	
8,500.00	0.22	237.70	8,485.33	-219.98	-347.98	456,426.86	635,307.55	32.254427	-104.029351	
8,514.67	0.00	0.00	8,500.00	-220.00	-348.00	456,426.84	635,307.52	32.254427	-104.029351	
8,600.00	0.00	0.00	8,585.33	-220.00	-348.00	456,426.84	635,307.52	32.254427	-104.029351	
8,700.00	0.00	0.00	8,685.33	-220.00	-348.00	456,426.84	635,307.52	32.254427	-104.029351	
8,800.00	0.00	0.00	8,785.33	-220.00	-348.00	456,426.84	635,307.52	32.254427	-104.029351	
8,900.00	0.00	0.00	8,885.33	-220.00	-348.00	456,426.84	635,307.52	32.254427	-104.029351	
9,000.00	0.00	0.00	8,985.33	-220.00	-348.00	456,426.84	635,307.52	32.254427	-104.029351	
9,071.71	0.00	0.00	9,057.04	-220.00	-348.00	456,426.84	635,307.52	32.254427	-104.029351	
KOP @ 9072' MD, 50' FSL, 927' FWL										
9,100.00	2.83	0.01	9,085.32	-219.30	-348.00	456,427.54	635,307.53	32.254429	-104.029351	
9,200.00	12.83	0.01	9,184.26	-205.70	-348.00	456,441.14	635,307.53	32.254466	-104.029351	
9,300.00	22.83	0.01	9,279.34	-175.12	-347.99	456,471.72	635,307.53	32.254550	-104.029351	
9,312.85	24.11	0.01	9,291.13	-170.00	-347.99	456,476.84	635,307.53	32.254565	-104.029351	
FTP @ 9313' MD, 100' FSL, 927' FWL										
9,400.00	32.83	0.01	9,367.66	-128.49	-347.98	456,518.35	635,307.54	32.254679	-104.029350	
9,500.00	42.83	0.01	9,446.55	-67.24	-347.97	456,579.60	635,307.55	32.254847	-104.029350	
9,600.00	52.83	0.01	9,513.60	6.78	-347.96	456,653.62	635,307.56	32.255050	-104.029349	
9,700.00	62.83	0.01	9,566.77	91.32	-347.95	456,738.16	635,307.58	32.255283	-104.029348	
9,800.00	72.83	0.01	9,604.46	183.81	-347.93	456,830.65	635,307.59	32.255537	-104.029347	
9,900.00	82.83	0.01	9,625.52	281.44	-347.91	456,928.28	635,307.61	32.255805	-104.029346	
9,971.71	90.00	0.01	9,630.00	352.96	-347.90	456,999.80	635,307.62	32.256002	-104.029345	
10,000.00	90.00	0.01	9,630.00	381.25	-347.90	457,028.09	635,307.63	32.256080	-104.029345	

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 Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
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 Well: Spud Muffin 31-30 Fed Com 331H
 Wellbore: Wellbore #1
 Design: Permit Plan 2

Local Co-ordinate Reference: Well Spud Muffin 31-30 Fed Com 331H
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 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
10,100.00	90.00	0.01	9,630.00	481.25	-347.88	457,128.09	635,307.65	32.256355	-104.029344
10,200.00	90.00	0.01	9,630.00	581.25	-347.86	457,228.09	635,307.66	32.256630	-104.029343
10,300.00	90.00	0.01	9,630.00	681.25	-347.84	457,328.09	635,307.68	32.256904	-104.029342
10,400.00	90.00	0.01	9,630.00	781.25	-347.83	457,428.09	635,307.70	32.257179	-104.029341
10,500.00	90.00	0.01	9,630.00	881.25	-347.81	457,528.09	635,307.71	32.257454	-104.029340
10,600.00	90.00	0.01	9,630.00	981.25	-347.79	457,628.09	635,307.73	32.257729	-104.029339
10,700.00	90.00	0.01	9,630.00	1,081.25	-347.78	457,728.09	635,307.75	32.258004	-104.029338
10,800.00	90.00	0.01	9,630.00	1,181.25	-347.76	457,828.09	635,307.77	32.258279	-104.029337
10,900.00	90.00	0.01	9,630.00	1,281.25	-347.74	457,928.09	635,307.78	32.258554	-104.029336
11,000.00	90.00	0.01	9,630.00	1,381.25	-347.72	458,028.09	635,307.80	32.258829	-104.029335
11,100.00	90.00	0.01	9,630.00	1,481.25	-347.71	458,128.09	635,307.82	32.259104	-104.029334
11,200.00	90.00	0.01	9,630.00	1,581.25	-347.69	458,228.09	635,307.84	32.259378	-104.029334
11,300.00	90.00	0.01	9,630.00	1,681.25	-347.67	458,328.09	635,307.85	32.259653	-104.029333
11,400.00	90.00	0.01	9,630.00	1,781.25	-347.66	458,428.09	635,307.87	32.259928	-104.029332
11,500.00	90.00	0.01	9,630.00	1,881.25	-347.64	458,528.09	635,307.89	32.260203	-104.029331
11,600.00	90.00	0.01	9,630.00	1,981.25	-347.62	458,628.09	635,307.90	32.260478	-104.029330
11,700.00	90.00	0.01	9,630.00	2,081.25	-347.60	458,728.09	635,307.92	32.260753	-104.029329
11,800.00	90.00	0.01	9,630.00	2,181.25	-347.59	458,828.09	635,307.94	32.261028	-104.029328
11,900.00	90.00	0.01	9,630.00	2,281.25	-347.57	458,928.09	635,307.96	32.261303	-104.029327
12,000.00	90.00	0.01	9,630.00	2,381.25	-347.55	459,028.09	635,307.97	32.261578	-104.029326
12,100.00	90.00	0.01	9,630.00	2,481.25	-347.53	459,128.09	635,307.99	32.261852	-104.029325
12,200.00	90.00	0.01	9,630.00	2,581.25	-347.52	459,228.08	635,308.01	32.262127	-104.029324
12,300.00	90.00	0.01	9,630.00	2,681.25	-347.50	459,328.08	635,308.02	32.262402	-104.029323
12,400.00	90.00	0.01	9,630.00	2,781.25	-347.48	459,428.08	635,308.04	32.262677	-104.029322
12,500.00	90.00	0.01	9,630.00	2,881.25	-347.47	459,528.08	635,308.06	32.262952	-104.029321
12,600.00	90.00	0.01	9,630.00	2,981.25	-347.45	459,628.08	635,308.08	32.263227	-104.029320
12,700.00	90.00	0.01	9,630.00	3,081.25	-347.43	459,728.08	635,308.09	32.263502	-104.029319
12,800.00	90.00	0.01	9,630.00	3,181.25	-347.41	459,828.08	635,308.11	32.263777	-104.029318
12,900.00	90.00	0.01	9,630.00	3,281.25	-347.40	459,928.08	635,308.13	32.264051	-104.029317
13,000.00	90.00	0.01	9,630.00	3,381.25	-347.38	460,028.08	635,308.15	32.264326	-104.029316
13,100.00	90.00	0.01	9,630.00	3,481.25	-347.36	460,128.08	635,308.16	32.264601	-104.029315
13,200.00	90.00	0.01	9,630.00	3,581.25	-347.35	460,228.08	635,308.18	32.264876	-104.029314
13,300.00	90.00	0.01	9,630.00	3,681.25	-347.33	460,328.08	635,308.20	32.265151	-104.029313
13,400.00	90.00	0.01	9,630.00	3,781.25	-347.31	460,428.08	635,308.21	32.265426	-104.029312
13,500.00	90.00	0.01	9,630.00	3,881.25	-347.29	460,528.08	635,308.23	32.265701	-104.029311
13,600.00	90.00	0.01	9,630.00	3,981.25	-347.28	460,628.08	635,308.25	32.265976	-104.029310
13,700.00	90.00	0.01	9,630.00	4,081.25	-347.26	460,728.08	635,308.27	32.266251	-104.029309
13,800.00	90.00	0.01	9,630.00	4,181.25	-347.24	460,828.08	635,308.28	32.266525	-104.029308
13,900.00	90.00	0.01	9,630.00	4,281.25	-347.22	460,928.08	635,308.30	32.266800	-104.029307
14,000.00	90.00	0.01	9,630.00	4,381.25	-347.21	461,028.08	635,308.32	32.267075	-104.029306
14,100.00	90.00	0.01	9,630.00	4,481.25	-347.19	461,128.08	635,308.33	32.267350	-104.029305
14,200.00	90.00	0.01	9,630.00	4,581.25	-347.17	461,228.08	635,308.35	32.267625	-104.029304
14,300.00	90.00	0.01	9,630.00	4,681.25	-347.16	461,328.08	635,308.37	32.267900	-104.029303
14,400.00	90.00	0.01	9,630.00	4,781.25	-347.14	461,428.08	635,308.39	32.268175	-104.029302
14,500.00	90.00	0.01	9,630.00	4,881.25	-347.12	461,528.08	635,308.40	32.268450	-104.029301
14,600.00	90.00	0.01	9,630.00	4,981.25	-347.10	461,628.08	635,308.42	32.268724	-104.029300
14,656.75	90.00	0.01	9,630.00	5,038.00	-347.09	461,684.83	635,308.43	32.268880	-104.029300
Cross Section @ 14657' MD, 0' FSL, 927' FWL									
14,700.00	90.00	0.01	9,630.00	5,081.25	-347.09	461,728.08	635,308.44	32.268999	-104.029300
14,800.00	90.00	0.01	9,630.00	5,181.25	-347.07	461,828.08	635,308.45	32.269274	-104.029299
14,900.00	90.00	0.01	9,630.00	5,281.25	-347.05	461,928.08	635,308.47	32.269549	-104.029298
15,000.00	90.00	0.01	9,630.00	5,381.25	-347.04	462,028.08	635,308.49	32.269824	-104.029297
15,100.00	90.00	0.01	9,630.00	5,481.25	-347.02	462,128.08	635,308.51	32.270099	-104.029296
15,200.00	90.00	0.01	9,630.00	5,581.25	-347.00	462,228.08	635,308.52	32.270374	-104.029295

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 Fed Com 331H
 Wellbore: Wellbore #1
 Design: Permit Plan 2

Local Co-ordinate Reference: Well Spud Muffin 31-30 Fed Com 331H
 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	0.01	9,630.00	5,681.25	-346.98	462,328.08	635,308.54	32.270649	-104.029294
15,400.00	90.00	0.01	9,630.00	5,781.25	-346.97	462,428.08	635,308.56	32.270924	-104.029293
15,500.00	90.00	0.01	9,630.00	5,881.25	-346.95	462,528.08	635,308.58	32.271198	-104.029292
15,600.00	90.00	0.01	9,630.00	5,981.25	-346.93	462,628.08	635,308.59	32.271473	-104.029291
15,700.00	90.00	0.01	9,630.00	6,081.25	-346.91	462,728.08	635,308.61	32.271748	-104.029290
15,800.00	90.00	0.01	9,630.00	6,181.25	-346.90	462,828.08	635,308.63	32.272023	-104.029289
15,900.00	90.00	0.01	9,630.00	6,281.25	-346.88	462,928.08	635,308.64	32.272298	-104.029288
16,000.00	90.00	0.01	9,630.00	6,381.25	-346.86	463,028.08	635,308.66	32.272573	-104.029287
16,100.00	90.00	0.01	9,630.00	6,481.25	-346.85	463,128.08	635,308.68	32.272848	-104.029286
16,200.00	90.00	0.01	9,630.00	6,581.25	-346.83	463,228.08	635,308.70	32.273123	-104.029285
16,300.00	90.00	0.01	9,630.00	6,681.25	-346.81	463,328.08	635,308.71	32.273398	-104.029284
16,400.00	90.00	0.01	9,630.00	6,781.25	-346.79	463,428.08	635,308.73	32.273672	-104.029283
16,500.00	90.00	0.01	9,630.00	6,881.25	-346.78	463,528.08	635,308.75	32.273947	-104.029282
16,600.00	90.00	0.01	9,630.00	6,981.25	-346.76	463,628.08	635,308.76	32.274222	-104.029281
16,700.00	90.00	0.01	9,630.00	7,081.25	-346.74	463,728.08	635,308.78	32.274497	-104.029280
16,800.00	90.00	0.01	9,630.00	7,181.25	-346.73	463,828.08	635,308.80	32.274772	-104.029279
16,900.00	90.00	0.01	9,630.00	7,281.25	-346.71	463,928.08	635,308.82	32.275047	-104.029278
17,000.00	90.00	0.01	9,630.00	7,381.25	-346.69	464,028.08	635,308.83	32.275322	-104.029277
17,100.00	90.00	0.01	9,630.00	7,481.25	-346.67	464,128.08	635,308.85	32.275597	-104.029276
17,200.00	90.00	0.01	9,630.00	7,581.25	-346.66	464,228.07	635,308.87	32.275871	-104.029275
17,300.00	90.00	0.01	9,630.00	7,681.25	-346.64	464,328.07	635,308.89	32.276146	-104.029274
17,400.00	90.00	0.01	9,630.00	7,781.25	-346.62	464,428.07	635,308.90	32.276421	-104.029273
17,500.00	90.00	0.01	9,630.00	7,881.25	-346.60	464,528.07	635,308.92	32.276696	-104.029272
17,600.00	90.00	0.01	9,630.00	7,981.25	-346.59	464,628.07	635,308.94	32.276971	-104.029271
17,700.00	90.00	0.01	9,630.00	8,081.25	-346.57	464,728.07	635,308.95	32.277246	-104.029270
17,800.00	90.00	0.01	9,630.00	8,181.25	-346.55	464,828.07	635,308.97	32.277521	-104.029269
17,900.00	90.00	0.01	9,630.00	8,281.25	-346.54	464,928.07	635,308.99	32.277796	-104.029268
18,000.00	90.00	0.01	9,630.00	8,381.25	-346.52	465,028.07	635,309.01	32.278071	-104.029267
18,100.00	90.00	0.01	9,630.00	8,481.25	-346.50	465,128.07	635,309.02	32.278345	-104.029266
18,200.00	90.00	0.01	9,630.00	8,581.25	-346.48	465,228.07	635,309.04	32.278620	-104.029265
18,300.00	90.00	0.01	9,630.00	8,681.25	-346.47	465,328.07	635,309.06	32.278895	-104.029264
18,400.00	90.00	0.01	9,630.00	8,781.25	-346.45	465,428.07	635,309.07	32.279170	-104.029264
18,500.00	90.00	0.01	9,630.00	8,881.25	-346.43	465,528.07	635,309.09	32.279445	-104.029263
18,600.00	90.00	0.01	9,630.00	8,981.25	-346.42	465,628.07	635,309.11	32.279720	-104.029262
18,700.00	90.00	0.01	9,630.00	9,081.25	-346.40	465,728.07	635,309.13	32.279995	-104.029261
18,800.00	90.00	0.01	9,630.00	9,181.25	-346.38	465,828.07	635,309.14	32.280270	-104.029260
18,900.00	90.00	0.01	9,630.00	9,281.25	-346.36	465,928.07	635,309.16	32.280545	-104.029259
19,000.00	90.00	0.01	9,630.00	9,381.25	-346.35	466,028.07	635,309.18	32.280819	-104.029258
19,100.00	90.00	0.01	9,630.00	9,481.25	-346.33	466,128.07	635,309.20	32.281094	-104.029257
19,200.00	90.00	0.01	9,630.00	9,581.25	-346.31	466,228.07	635,309.21	32.281369	-104.029256
19,300.00	90.00	0.01	9,630.00	9,681.25	-346.30	466,328.07	635,309.23	32.281644	-104.029255
19,400.00	90.00	0.01	9,630.00	9,781.25	-346.28	466,428.07	635,309.25	32.281919	-104.029254
19,500.00	90.00	0.01	9,630.00	9,881.25	-346.26	466,528.07	635,309.26	32.282194	-104.029253
19,600.00	90.00	0.01	9,630.00	9,981.25	-346.24	466,628.07	635,309.28	32.282469	-104.029252
19,669.92	90.00	0.01	9,630.00	10,051.17	-346.23	466,697.99	635,309.29	32.282661	-104.029251
LTP @ 19670' MD, 100' FNL, 927' FWL									
19,700.00	90.00	0.01	9,630.00	10,081.25	-346.23	466,728.07	635,309.30	32.282744	-104.029251
19,749.92	90.00	0.01	9,630.00	10,131.17	-346.22	466,777.99	635,309.31	32.282881	-104.029250
PBHL; 20' FNL, 927' FWL									
19,800.00	90.00	0.01	9,630.00	10,181.25	-346.21	466,828.07	635,309.32	32.283018	-104.029250
19,900.00	90.00	0.01	9,630.00	10,281.25	-346.19	466,928.07	635,309.33	32.283293	-104.029249
19,963.90	90.00	0.01	9,630.00	10,345.15	-346.18	466,991.97	635,309.34	32.283469	-104.029248

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 Fed Com 331H
Wellbore: Wellbore #1
Design: Permit Plan 2

Local Co-ordinate Reference: Well Spud Muffin 31-30 Fed Com 331H
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 - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL - Spud Muffin 31-30 - plan misses target center by 9630.20ft at 19752.09ft MD (9630.00 TVD, 10133.34 N, -346.22 E) - Point	0.00	0.00	0.00	10,133.33	-283.26	466,780.15	635,372.26	32.282886	-104.029047
PBHL2 - Spud Muffin 31 - plan misses target center by 9630.00ft at 19963.90ft MD (9630.00 TVD, 10345.15 N, -346.18 E) - Point	0.00	0.00	0.00	10,345.15	-346.18	466,991.97	635,309.34	32.283469	-104.029248
VP - Spud Muffin 331H - plan misses target center by 162.69ft at 8514.41ft MD (8499.74 TVD, -220.00 N, -348.00 E) - Point	0.00	0.00	8,500.00	-70.00	-285.00	456,576.84	635,370.52	32.254839	-104.029146

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
9,071.71	9,057.04	-220.00	-348.00	KOP @ 9072' MD, 50' FSL, 927' FWL
9,312.85	9,291.13	-170.00	-347.99	FTP @ 9313' MD, 100' FSL, 927' FWL
14,656.75	9,630.00	5,038.00	-347.09	Cross Section @ 14657' MD, 0' FSL, 927' FWL
19,669.92	9,630.00	10,051.17	-346.23	LTP @ 19670' MD, 100' FNL, 927' FWL
19,749.92	9,630.00	10,131.17	-346.22	PBHL; 20' FNL, 927' FWL