

**NM OIL CONSERVATION
ARTESIA DISTRICT**

SEP 25 2018

RECEIVED

WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Sec 31-T23S-R29E

Spud Muffin 31-30 Com 622H

30.015.45266

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 Com 622H
Company:	WCDCS Permian NM	TVD Reference:	RKB @ 2984.30ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 2984.30ft
Site:	Sec 31-T23S-R29E	North Reference:	Grid
Well:	Spud Muffin 31-30 Com 622H	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	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 Com 622H			
Well Position	+N/-S	0.00 ft	Northing:	456,994.04 usft
	+E/-W	0.00 ft	Easting:	636,755.68 usft
Position Uncertainty		0.50 ft	Wellhead Elevation:	Ground Level: 2,959.30 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	6/14/2018	7.06	60.01	47,810.30334675

Design	Permit Plan 2			
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	357.05

Plan Survey Tool Program	Date 9/17/2018			
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	19,951.62 Permit Plan 2 (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	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,619.74	6.20	233.53	2,618.53	-19.90	-26.93	1.00	1.00	0.00	233.53	
8,726.15	6.20	233.53	8,689.26	-411.73	-557.05	0.00	0.00	0.00	0.00	
9,139.31	0.00	0.00	9,101.61	-425.00	-575.00	1.50	-1.50	0.00	180.00	
9,439.74	0.00	0.00	9,402.04	-425.00	-575.00	0.00	0.00	0.00	0.00	
10,339.74	90.00	0.40	9,975.00	147.94	-570.95	10.00	10.00	0.00	0.40	PBHL2 - Spud Muffin
19,951.62	90.00	0.40	9,975.00	9,759.58	-503.05	0.00	0.00	0.00	0.00	PBHL2 - Spud Muffin

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 Com 622H
Wellbore: Wellbore #1
Design: Permit Plan 2

Local Co-ordinate Reference: Well Spud Muffin 31-30 Com 622H
TVD Reference: RKB @ 2984.30ft
MD Reference: RKB @ 2984.30ft
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	456,994.04	636,755.68	32.255975	-104.024661
100.00	0.00	0.00	100.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
200.00	0.00	0.00	200.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
300.00	0.00	0.00	300.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
400.00	0.00	0.00	400.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
500.00	0.00	0.00	500.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
600.00	0.00	0.00	600.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
700.00	0.00	0.00	700.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
800.00	0.00	0.00	800.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
900.00	0.00	0.00	900.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
1,000.00	0.00	0.00	1,000.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
1,100.00	0.00	0.00	1,100.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
1,200.00	0.00	0.00	1,200.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
1,300.00	0.00	0.00	1,300.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
1,400.00	0.00	0.00	1,400.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
1,500.00	0.00	0.00	1,500.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
1,600.00	0.00	0.00	1,600.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
1,700.00	0.00	0.00	1,700.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
1,800.00	0.00	0.00	1,800.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
1,900.00	0.00	0.00	1,900.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
2,000.00	0.00	0.00	2,000.00	0.00	0.00	456,994.04	636,755.68	32.255975	-104.024661
2,100.00	1.00	233.53	2,099.99	-0.52	-0.70	456,993.52	636,754.98	32.255973	-104.024663
2,200.00	2.00	233.53	2,199.96	-2.07	-2.81	456,991.97	636,752.88	32.255969	-104.024670
2,300.00	3.00	233.53	2,299.86	-4.67	-6.31	456,989.37	636,749.37	32.255962	-104.024682
2,400.00	4.00	233.53	2,399.68	-8.30	-11.22	456,985.74	636,744.46	32.255952	-104.024698
2,500.00	5.00	233.53	2,499.37	-12.96	-17.53	456,981.08	636,738.15	32.255939	-104.024718
2,600.00	6.00	233.53	2,598.90	-18.66	-25.24	456,975.38	636,730.44	32.255924	-104.024743
2,619.74	6.20	233.53	2,618.53	-19.90	-26.93	456,974.14	636,728.76	32.255920	-104.024748
2,700.00	6.20	233.53	2,698.32	-25.05	-33.90	456,968.99	636,721.79	32.255906	-104.024771
2,800.00	6.20	233.53	2,797.74	-31.47	-42.58	456,962.57	636,713.11	32.255889	-104.024799
2,900.00	6.20	233.53	2,897.15	-37.89	-51.26	456,956.15	636,704.43	32.255871	-104.024827
3,000.00	6.20	233.53	2,996.57	-44.30	-59.94	456,949.74	636,695.75	32.255854	-104.024855
3,100.00	6.20	233.53	3,095.99	-50.72	-68.62	456,943.32	636,687.06	32.255836	-104.024884
3,200.00	6.20	233.53	3,195.40	-57.14	-77.30	456,936.90	636,678.38	32.255818	-104.024912
3,300.00	6.20	233.53	3,294.82	-63.55	-85.98	456,930.49	636,669.70	32.255801	-104.024940
3,400.00	6.20	233.53	3,394.23	-69.97	-94.66	456,924.07	636,661.02	32.255783	-104.024968
3,500.00	6.20	233.53	3,493.65	-76.39	-103.35	456,917.65	636,652.34	32.255766	-104.024996
3,600.00	6.20	233.53	3,593.06	-82.80	-112.03	456,911.24	636,643.66	32.255748	-104.025024
3,700.00	6.20	233.53	3,692.48	-89.22	-120.71	456,904.82	636,634.98	32.255731	-104.025052
3,800.00	6.20	233.53	3,791.89	-95.64	-129.39	456,898.40	636,626.29	32.255713	-104.025081
3,900.00	6.20	233.53	3,891.31	-102.05	-138.07	456,891.99	636,617.61	32.255695	-104.025109
4,000.00	6.20	233.53	3,990.73	-108.47	-146.75	456,885.57	636,608.93	32.255678	-104.025137
4,100.00	6.20	233.53	4,090.14	-114.89	-155.43	456,879.15	636,600.25	32.255660	-104.025165
4,200.00	6.20	233.53	4,189.56	-121.30	-164.12	456,872.74	636,591.57	32.255643	-104.025193
4,300.00	6.20	233.53	4,288.97	-127.72	-172.80	456,866.32	636,582.89	32.255625	-104.025221
4,400.00	6.20	233.53	4,388.39	-134.14	-181.48	456,859.90	636,574.21	32.255608	-104.025249
4,500.00	6.20	233.53	4,487.80	-140.55	-190.16	456,853.49	636,565.52	32.255590	-104.025278
4,600.00	6.20	233.53	4,587.22	-146.97	-198.84	456,847.07	636,556.84	32.255572	-104.025306
4,700.00	6.20	233.53	4,686.64	-153.39	-207.52	456,840.65	636,548.16	32.255555	-104.025334
4,800.00	6.20	233.53	4,786.05	-159.80	-216.20	456,834.24	636,539.48	32.255537	-104.025362
4,900.00	6.20	233.53	4,885.47	-166.22	-224.89	456,827.82	636,530.80	32.255520	-104.025390
5,000.00	6.20	233.53	4,984.88	-172.64	-233.57	456,821.40	636,522.12	32.255502	-104.025418
5,100.00	6.20	233.53	5,084.30	-179.05	-242.25	456,814.99	636,513.44	32.255485	-104.025446
5,200.00	6.20	233.53	5,183.71	-185.47	-250.93	456,808.57	636,504.76	32.255467	-104.025475
5,300.00	6.20	233.53	5,283.13	-191.89	-259.61	456,802.15	636,496.07	32.255449	-104.025503

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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	6.20	233.53	5,382.54	-198.30	-268.29	456,795.74	636,487.39	32.255432	-104.025531
5,500.00	6.20	233.53	5,481.96	-204.72	-276.97	456,789.32	636,478.71	32.255414	-104.025559
5,600.00	6.20	233.53	5,581.38	-211.14	-285.66	456,782.90	636,470.03	32.255397	-104.025587
5,700.00	6.20	233.53	5,680.79	-217.55	-294.34	456,776.49	636,461.35	32.255379	-104.025615
5,800.00	6.20	233.53	5,780.21	-223.97	-303.02	456,770.07	636,452.67	32.255362	-104.025643
5,900.00	6.20	233.53	5,879.62	-230.39	-311.70	456,763.65	636,443.99	32.255344	-104.025672
6,000.00	6.20	233.53	5,979.04	-236.80	-320.38	456,757.24	636,435.30	32.255326	-104.025700
6,100.00	6.20	233.53	6,078.45	-243.22	-329.06	456,750.82	636,426.62	32.255309	-104.025728
6,200.00	6.20	233.53	6,177.87	-249.64	-337.74	456,744.40	636,417.94	32.255291	-104.025756
6,300.00	6.20	233.53	6,277.28	-256.05	-346.43	456,737.99	636,409.26	32.255274	-104.025784
6,400.00	6.20	233.53	6,376.70	-262.47	-355.11	456,731.57	636,400.58	32.255256	-104.025812
6,500.00	6.20	233.53	6,476.12	-268.89	-363.79	456,725.15	636,391.90	32.255239	-104.025840
6,600.00	6.20	233.53	6,575.53	-275.30	-372.47	456,718.74	636,383.22	32.255221	-104.025869
6,700.00	6.20	233.53	6,674.95	-281.72	-381.15	456,712.32	636,374.53	32.255203	-104.025897
6,800.00	6.20	233.53	6,774.36	-288.14	-389.83	456,705.90	636,365.85	32.255186	-104.025925
6,900.00	6.20	233.53	6,873.78	-294.55	-398.51	456,699.49	636,357.17	32.255168	-104.025953
7,000.00	6.20	233.53	6,973.19	-300.97	-407.19	456,693.07	636,348.49	32.255151	-104.025981
7,100.00	6.20	233.53	7,072.61	-307.39	-415.88	456,686.65	636,339.81	32.255133	-104.026009
7,200.00	6.20	233.53	7,172.02	-313.80	-424.56	456,680.24	636,331.13	32.255116	-104.026037
7,300.00	6.20	233.53	7,271.44	-320.22	-433.24	456,673.82	636,322.45	32.255098	-104.026066
7,400.00	6.20	233.53	7,370.86	-326.64	-441.92	456,667.40	636,313.76	32.255080	-104.026094
7,500.00	6.20	233.53	7,470.27	-333.05	-450.60	456,660.99	636,305.08	32.255063	-104.026122
7,600.00	6.20	233.53	7,569.69	-339.47	-459.28	456,654.57	636,296.40	32.255045	-104.026150
7,700.00	6.20	233.53	7,669.10	-345.89	-467.96	456,648.15	636,287.72	32.255028	-104.026178
7,800.00	6.20	233.53	7,768.52	-352.30	-476.65	456,641.74	636,279.04	32.255010	-104.026206
7,900.00	6.20	233.53	7,867.93	-358.72	-485.33	456,635.32	636,270.36	32.254993	-104.026234
8,000.00	6.20	233.53	7,967.35	-365.14	-494.01	456,628.90	636,261.68	32.254975	-104.026263
8,100.00	6.20	233.53	8,066.77	-371.55	-502.69	456,622.49	636,253.00	32.254957	-104.026291
8,200.00	6.20	233.53	8,166.18	-377.97	-511.37	456,616.07	636,244.31	32.254940	-104.026319
8,300.00	6.20	233.53	8,265.60	-384.39	-520.05	456,609.65	636,235.63	32.254922	-104.026347
8,400.00	6.20	233.53	8,365.01	-390.80	-528.73	456,603.24	636,226.95	32.254905	-104.026375
8,500.00	6.20	233.53	8,464.43	-397.22	-537.42	456,596.82	636,218.27	32.254887	-104.026403
8,600.00	6.20	233.53	8,563.84	-403.64	-546.10	456,590.40	636,209.59	32.254870	-104.026431
8,700.00	6.20	233.53	8,663.26	-410.05	-554.78	456,583.99	636,200.91	32.254852	-104.026460
8,726.15	6.20	233.53	8,689.26	-411.73	-557.05	456,582.31	636,198.64	32.254847	-104.026467
8,800.00	5.09	233.53	8,762.75	-416.05	-562.89	456,577.99	636,192.80	32.254836	-104.026486
8,900.00	3.59	233.53	8,862.46	-420.55	-568.97	456,573.50	636,186.71	32.254823	-104.026506
9,000.00	2.09	233.53	8,962.33	-423.49	-572.96	456,570.55	636,182.73	32.254815	-104.026519
9,100.00	0.59	233.53	9,062.30	-424.88	-574.84	456,569.16	636,180.85	32.254811	-104.026525
9,139.31	0.00	0.00	9,101.61	-425.00	-575.00	456,569.04	636,180.69	32.254811	-104.026525
9,200.00	0.00	0.00	9,162.30	-425.00	-575.00	456,569.04	636,180.69	32.254811	-104.026525
9,300.00	0.00	0.00	9,262.30	-425.00	-575.00	456,569.04	636,180.69	32.254811	-104.026525
9,400.00	0.00	0.00	9,362.30	-425.00	-575.00	456,569.04	636,180.69	32.254811	-104.026525
9,439.74	0.00	0.00	9,402.04	-425.00	-575.00	456,569.04	636,180.69	32.254811	-104.026525
KOP @ 9440' MD, 200' FSL, 1870' FWL									
9,500.00	6.03	0.40	9,462.19	-421.83	-574.98	456,572.21	636,180.71	32.254820	-104.026525
9,600.00	16.03	0.40	9,560.22	-402.73	-574.84	456,591.31	636,180.84	32.254872	-104.026524
9,700.00	26.03	0.40	9,653.44	-366.90	-574.59	456,627.14	636,181.10	32.254971	-104.026523
9,800.00	36.03	0.40	9,739.03	-315.42	-574.23	456,678.62	636,181.46	32.255112	-104.026522
9,833.41	39.37	0.40	9,765.46	-295.00	-574.08	456,699.04	636,181.60	32.255168	-104.026521
FTP @ 9833' MD, 330' FSL, 1870' FWL									
9,900.00	46.03	0.40	9,814.37	-249.87	-573.76	456,744.17	636,181.92	32.255293	-104.026520
10,000.00	56.03	0.40	9,877.19	-172.23	-573.21	456,821.81	636,182.47	32.255506	-104.026517
10,100.00	66.03	0.40	9,925.57	-84.86	-572.60	456,909.18	636,183.09	32.255746	-104.026514

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 Com 622H
Wellbore: Wellbore #1
Design: Permit Plan 2

Local Co-ordinate Reference: Well Spud Muffin 31-30 Com 622H
TVD Reference: RKB @ 2984.30ft
MD Reference: RKB @ 2984.30ft
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
10,200.00	76.03	0.40	9,958.04	9.59	-571.93	457,003.63	636,183.76	32.256006	-104.026511
10,300.00	86.03	0.40	9,973.62	108.24	-571.23	457,102.28	636,184.45	32.256277	-104.026508
10,339.74	90.00	0.40	9,975.00	147.94	-570.95	457,141.98	636,184.73	32.256386	-104.026507
10,400.00	90.00	0.40	9,975.00	208.20	-570.53	457,202.24	636,185.16	32.256552	-104.026505
10,500.00	90.00	0.40	9,975.00	308.20	-569.82	457,302.24	636,185.87	32.256827	-104.026502
10,600.00	90.00	0.40	9,975.00	408.20	-569.11	457,402.24	636,186.57	32.257101	-104.026498
10,700.00	90.00	0.40	9,975.00	508.19	-568.41	457,502.23	636,187.28	32.257376	-104.026495
10,800.00	90.00	0.40	9,975.00	608.19	-567.70	457,602.23	636,187.98	32.257651	-104.026492
10,900.00	90.00	0.40	9,975.00	708.19	-566.99	457,702.23	636,188.69	32.257926	-104.026489
11,000.00	90.00	0.40	9,975.00	808.19	-566.29	457,802.23	636,189.40	32.258201	-104.026486
11,100.00	90.00	0.40	9,975.00	908.18	-565.58	457,902.22	636,190.10	32.258476	-104.026482
11,200.00	90.00	0.40	9,975.00	1,008.18	-564.88	458,002.22	636,190.81	32.258751	-104.026479
11,300.00	90.00	0.40	9,975.00	1,108.18	-564.17	458,102.22	636,191.52	32.259026	-104.026476
11,400.00	90.00	0.40	9,975.00	1,208.18	-563.46	458,202.21	636,192.22	32.259300	-104.026473
11,500.00	90.00	0.40	9,975.00	1,308.17	-562.76	458,302.21	636,192.93	32.259575	-104.026470
11,600.00	90.00	0.40	9,975.00	1,408.17	-562.05	458,402.21	636,193.64	32.259850	-104.026466
11,700.00	90.00	0.40	9,975.00	1,508.17	-561.34	458,502.21	636,194.34	32.260125	-104.026463
11,800.00	90.00	0.40	9,975.00	1,608.17	-560.64	458,602.20	636,195.05	32.260400	-104.026460
11,900.00	90.00	0.40	9,975.00	1,708.16	-559.93	458,702.20	636,195.76	32.260675	-104.026457
12,000.00	90.00	0.40	9,975.00	1,808.16	-559.22	458,802.20	636,196.46	32.260950	-104.026453
12,100.00	90.00	0.40	9,975.00	1,908.16	-558.52	458,902.20	636,197.17	32.261224	-104.026450
12,200.00	90.00	0.40	9,975.00	2,008.16	-557.81	459,002.19	636,197.87	32.261499	-104.026447
12,300.00	90.00	0.40	9,975.00	2,108.15	-557.10	459,102.19	636,198.58	32.261774	-104.026444
12,400.00	90.00	0.40	9,975.00	2,208.15	-556.40	459,202.19	636,199.29	32.262049	-104.026441
12,500.00	90.00	0.40	9,975.00	2,308.15	-555.69	459,302.19	636,199.99	32.262324	-104.026437
12,600.00	90.00	0.40	9,975.00	2,408.15	-554.99	459,402.18	636,200.70	32.262599	-104.026434
12,700.00	90.00	0.40	9,975.00	2,508.14	-554.28	459,502.18	636,201.41	32.262874	-104.026431
12,800.00	90.00	0.40	9,975.00	2,608.14	-553.57	459,602.18	636,202.11	32.263149	-104.026428
12,900.00	90.00	0.40	9,975.00	2,708.14	-552.87	459,702.17	636,202.82	32.263423	-104.026425
13,000.00	90.00	0.40	9,975.00	2,808.14	-552.16	459,802.17	636,203.53	32.263698	-104.026421
13,100.00	90.00	0.40	9,975.00	2,908.13	-551.45	459,902.17	636,204.23	32.263973	-104.026418
13,200.00	90.00	0.40	9,975.00	3,008.13	-550.75	460,002.17	636,204.94	32.264248	-104.026415
13,300.00	90.00	0.40	9,975.00	3,108.13	-550.04	460,102.16	636,205.65	32.264523	-104.026412
13,400.00	90.00	0.40	9,975.00	3,208.13	-549.33	460,202.16	636,206.35	32.264798	-104.026409
13,500.00	90.00	0.40	9,975.00	3,308.12	-548.63	460,302.16	636,207.06	32.265073	-104.026405
13,600.00	90.00	0.40	9,975.00	3,408.12	-547.92	460,402.16	636,207.76	32.265348	-104.026402
13,700.00	90.00	0.40	9,975.00	3,508.12	-547.21	460,502.15	636,208.47	32.265622	-104.026399
13,800.00	90.00	0.40	9,975.00	3,608.12	-546.51	460,602.15	636,209.18	32.265897	-104.026396
13,900.00	90.00	0.40	9,975.00	3,708.11	-545.80	460,702.15	636,209.88	32.266172	-104.026392
14,000.00	90.00	0.40	9,975.00	3,808.11	-545.10	460,802.14	636,210.59	32.266447	-104.026389
14,100.00	90.00	0.40	9,975.00	3,908.11	-544.39	460,902.14	636,211.30	32.266722	-104.026386
14,200.00	90.00	0.40	9,975.00	4,008.11	-543.68	461,002.14	636,212.00	32.266997	-104.026383
14,300.00	90.00	0.40	9,975.00	4,108.10	-542.98	461,102.14	636,212.71	32.267272	-104.026380
14,400.00	90.00	0.40	9,975.00	4,208.10	-542.27	461,202.13	636,213.42	32.267547	-104.026376
14,500.00	90.00	0.40	9,975.00	4,308.10	-541.56	461,302.13	636,214.12	32.267821	-104.026373
14,600.00	90.00	0.40	9,975.00	4,408.10	-540.86	461,402.13	636,214.83	32.268096	-104.026370
14,700.00	90.00	0.40	9,975.00	4,508.09	-540.15	461,502.13	636,215.54	32.268371	-104.026367
14,800.00	90.00	0.40	9,975.00	4,608.09	-539.44	461,602.12	636,216.24	32.268646	-104.026364
14,867.00	90.00	0.40	9,975.00	4,675.09	-538.97	461,669.12	636,216.71	32.268830	-104.026361
Cross Section @ 14887' MD, 0' FSL, 1870' FWL									
14,900.00	90.00	0.40	9,975.00	4,708.09	-538.74	461,702.12	636,216.95	32.268921	-104.026360
15,000.00	90.00	0.40	9,975.00	4,808.09	-538.03	461,802.12	636,217.65	32.269196	-104.026357
15,100.00	90.00	0.40	9,975.00	4,908.08	-537.32	461,902.12	636,218.36	32.269471	-104.026354
15,200.00	90.00	0.40	9,975.00	5,008.08	-536.62	462,002.11	636,219.07	32.269746	-104.026351

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 Com 622H
Wellbore: Wellbore #1
Design: Permit Plan 2

Local Co-ordinate Reference: Well Spud Muffin 31-30 Com 622H
TVD Reference: RKB @ 2984.30ft
MD Reference: RKB @ 2984.30ft
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	0.40	9,975.00	5,108.08	-535.91	462,102.11	636,219.77	32.270020	-104.026348
15,400.00	90.00	0.40	9,975.00	5,208.08	-535.21	462,202.11	636,220.48	32.270295	-104.026344
15,500.00	90.00	0.40	9,975.00	5,308.07	-534.50	462,302.10	636,221.19	32.270570	-104.026341
15,600.00	90.00	0.40	9,975.00	5,408.07	-533.79	462,402.10	636,221.89	32.270845	-104.026338
15,700.00	90.00	0.40	9,975.00	5,508.07	-533.09	462,502.10	636,222.60	32.271120	-104.026335
15,800.00	90.00	0.40	9,975.00	5,608.07	-532.38	462,602.10	636,223.31	32.271395	-104.026331
15,900.00	90.00	0.40	9,975.00	5,708.06	-531.67	462,702.09	636,224.01	32.271670	-104.026328
16,000.00	90.00	0.40	9,975.00	5,808.06	-530.97	462,802.09	636,224.72	32.271945	-104.026325
16,100.00	90.00	0.40	9,975.00	5,908.06	-530.26	462,902.09	636,225.43	32.272219	-104.026322
16,200.00	90.00	0.40	9,975.00	6,008.06	-529.55	463,002.09	636,226.13	32.272494	-104.026319
16,300.00	90.00	0.40	9,975.00	6,108.05	-528.85	463,102.08	636,226.84	32.272769	-104.026315
16,400.00	90.00	0.40	9,975.00	6,208.05	-528.14	463,202.08	636,227.54	32.273044	-104.026312
16,500.00	90.00	0.40	9,975.00	6,308.05	-527.43	463,302.08	636,228.25	32.273319	-104.026309
16,600.00	90.00	0.40	9,975.00	6,408.05	-526.73	463,402.07	636,228.96	32.273594	-104.026306
16,700.00	90.00	0.40	9,975.00	6,508.04	-526.02	463,502.07	636,229.66	32.273869	-104.026303
16,800.00	90.00	0.40	9,975.00	6,608.04	-525.32	463,602.07	636,230.37	32.274143	-104.026299
16,900.00	90.00	0.40	9,975.00	6,708.04	-524.61	463,702.07	636,231.08	32.274418	-104.026296
17,000.00	90.00	0.40	9,975.00	6,808.04	-523.90	463,802.06	636,231.78	32.274693	-104.026293
17,100.00	90.00	0.40	9,975.00	6,908.03	-523.20	463,902.06	636,232.49	32.274968	-104.026290
17,200.00	90.00	0.40	9,975.00	7,008.03	-522.49	464,002.06	636,233.20	32.275243	-104.026287
17,300.00	90.00	0.40	9,975.00	7,108.03	-521.78	464,102.06	636,233.90	32.275518	-104.026283
17,400.00	90.00	0.40	9,975.00	7,208.03	-521.08	464,202.05	636,234.61	32.275793	-104.026280
17,500.00	90.00	0.40	9,975.00	7,308.02	-520.37	464,302.05	636,235.32	32.276068	-104.026277
17,600.00	90.00	0.40	9,975.00	7,408.02	-519.66	464,402.05	636,236.02	32.276342	-104.026274
17,700.00	90.00	0.40	9,975.00	7,508.02	-518.96	464,502.05	636,236.73	32.276617	-104.026270
17,800.00	90.00	0.40	9,975.00	7,608.02	-518.25	464,602.04	636,237.43	32.276892	-104.026267
17,900.00	90.00	0.40	9,975.00	7,708.01	-517.54	464,702.04	636,238.14	32.277167	-104.026264
18,000.00	90.00	0.40	9,975.00	7,808.01	-516.84	464,802.04	636,238.85	32.277442	-104.026261
18,100.00	90.00	0.40	9,975.00	7,908.01	-516.13	464,902.03	636,239.55	32.277717	-104.026258
18,200.00	90.00	0.40	9,975.00	8,008.01	-515.43	465,002.03	636,240.26	32.277992	-104.026254
18,300.00	90.00	0.40	9,975.00	8,108.00	-514.72	465,102.03	636,240.97	32.278267	-104.026251
18,400.00	90.00	0.40	9,975.00	8,208.00	-514.01	465,202.03	636,241.67	32.278541	-104.026248
18,500.00	90.00	0.40	9,975.00	8,308.00	-513.31	465,302.02	636,242.38	32.278816	-104.026245
18,600.00	90.00	0.40	9,975.00	8,408.00	-512.60	465,402.02	636,243.09	32.279091	-104.026242
18,700.00	90.00	0.40	9,975.00	8,508.00	-511.89	465,502.02	636,243.79	32.279366	-104.026238
18,800.00	90.00	0.40	9,975.00	8,607.99	-511.19	465,602.02	636,244.50	32.279641	-104.026235
18,900.00	90.00	0.40	9,975.00	8,707.99	-510.48	465,702.01	636,245.21	32.279916	-104.026232
19,000.00	90.00	0.40	9,975.00	8,807.99	-509.77	465,802.01	636,245.91	32.280191	-104.026229
19,100.00	90.00	0.40	9,975.00	8,907.99	-509.07	465,902.01	636,246.62	32.280466	-104.026225
19,200.00	90.00	0.40	9,975.00	9,007.98	-508.36	466,002.00	636,247.32	32.280740	-104.026222
19,300.00	90.00	0.40	9,975.00	9,107.98	-507.65	466,102.00	636,248.03	32.281015	-104.026219
19,400.00	90.00	0.40	9,975.00	9,207.98	-506.95	466,202.00	636,248.74	32.281290	-104.026216
19,500.00	90.00	0.40	9,975.00	9,307.98	-506.24	466,302.00	636,249.44	32.281565	-104.026213
19,600.00	90.00	0.40	9,975.00	9,407.97	-505.53	466,401.99	636,250.15	32.281840	-104.026209
19,700.00	90.00	0.40	9,975.00	9,507.97	-504.83	466,501.99	636,250.86	32.282115	-104.026206
19,800.00	90.00	0.40	9,975.00	9,607.97	-504.12	466,601.99	636,251.56	32.282390	-104.026203
19,851.62	90.00	0.40	9,975.00	9,659.59	-503.76	466,653.61	636,251.93	32.282532	-104.026201
LTP @ 19852' MD, 330' FNL, 1870' FWL									
19,900.00	90.00	0.40	9,975.00	9,707.97	-503.42	466,701.99	636,252.27	32.282664	-104.026200
19,951.62	90.00	0.40	9,975.00	9,759.58	-503.05	466,753.60	636,252.63	32.282806	-104.026198
PBHL; 230' FNL, 1870' FWL									

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 Com 622H
Wellbore: Wellbore #1
Design: Permit Plan 2

Local Co-ordinate Reference: Well Spud Muffin 31-30 Com 622H
TVD Reference: RKB @ 2984.30ft
MD Reference: RKB @ 2984.30ft
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 31-3 - plan misses target center by 9792.89ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E) - Point	0.00	0.00	0.00	9,766.15	-723.14	466,760.17	636,032.54	32.282826	-104.026910
PBHL2 - Spud Muffin 31 - plan misses target center by 9772.54ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E) - Point	0.00	0.00	0.00	9,759.58	-503.05	466,753.60	636,252.63	32.282806	-104.026198
VP - Spud Muffin 622H - plan misses target center by 150.00ft at 9139.31ft MD (9101.61 TVD, -425.00 N, -575.00 E) - Point	0.00	0.00	9,101.61	-425.00	-725.00	456,569.04	636,030.69	32.254812	-104.027010

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
9,439.74	9,402.04	-425.00	-575.00	KOP @ 9440' MD, 200' FSL, 1870' FWL
9,833.41	9,765.46	-295.00	-574.08	FTP @ 9833' MD, 330' FSL, 1870' FWL
14,867.00	9,975.00	4,675.09	-538.97	Cross Section @ 14867' MD, 0' FSL, 1870' FWL
19,851.62	9,975.00	9,658.59	-503.76	LTP @ 19852' MD, 330' FNL, 1870' FWL
19,951.62	9,975.00	9,759.58	-503.05	PBHL; 230' FNL, 1870' FWL

WCDSC Permian NM

WELL DETAILS: Spud Muffin 31-30 Com 622H

RKB @ 2984.30ft
2959.30
Northing 456994.04 Easting 838755.88 Latitude 32.255875 Longitude -104.024661

SECTION DETAILS Permit Plan 2

MD	Inc	Azi	TVD	+N/-S	+E/-W	Diag	V-Set	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	
2619.74	6.20	233.53	2618.53	-19.90	-26.93	1.00	-18.49	
8726.15	6.20	233.53	8689.26	-411.73	-557.05	0.00	-382.51	
5	9139.31	0.00	0.00	9101.61	-425.00	-575.00	1.50	-394.84
6	9439.74	0.00	0.00	9402.04	-425.00	-575.00	0.00	-394.84
7	10339.74	90.00	0.40	9975.00	147.94	-570.95	10.00	177.14
8	19951.62	90.00	0.40	9975.00	9759.58	-503.05	0.00	9772.54

KOP @ 9440' MD, 200' FSL, 1870' FWL
PBHL: 230' FNL, 1870' FWL

devon

