

NM OIL CONSERVATION
ARTESIA DISTRICT

SEP 25 2018

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WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Sec 31-T23S-R29E

Spud Muffin 31-30 624H

30-015-45268

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 624H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 2985.30ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 2985.30ft
Site:	Sec 31-T23S-R29E	North Reference:	Grid
Well:	Spud Muffin 31-30 624H	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		
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 624H					
Well Position	+N/-S	0.00 ft	Northing:	456,835.59 usft	Latitude:	32.255518
	+E/-W	0.00 ft	Easting:	639,380.98 usft	Longitude:	-104.016170
Position Uncertainty		0.50 ft	Wellhead Elevation:		Ground Level:	2,960.30 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/13/2018	7.03	60.00	47,785.39224814

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	359.06

Plan Survey Tool Program	Date	9/17/2018		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	19,929.10 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	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,238.61	2.39	189.17	2,238.54	-4.90	-0.79	1.00	1.00	0.00	189.17	
8,973.88	2.39	189.17	8,967.97	-281.73	-45.47	0.00	0.00	0.00	0.00	
9,132.95	0.00	0.00	9,127.00	-285.00	-46.00	1.50	-1.50	0.00	180.00	
9,482.99	0.00	0.00	9,477.04	-285.00	-46.00	0.00	0.00	0.00	0.00	
10,383.00	90.00	359.35	10,050.00	287.92	-52.48	10.00	10.00	0.00	359.35	PBHL2 - Spud Muffin
19,929.15	90.00	359.35	10,050.00	9,833.46	-160.53	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 624H
 Wellbore: Wellbore #1
 Design: Permit Plan 3

Local Co-ordinate Reference: Well Spud Muffin 31-30 624H
 TVD Reference: RKB @ 2985.30ft
 MD Reference: RKB @ 2985.30ft
 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	456,835.59	639,380.98	32.255518	-104.016170
100.00	0.00	0.00	100.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
200.00	0.00	0.00	200.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
300.00	0.00	0.00	300.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
400.00	0.00	0.00	400.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
500.00	0.00	0.00	500.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
600.00	0.00	0.00	600.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
700.00	0.00	0.00	700.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
800.00	0.00	0.00	800.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
900.00	0.00	0.00	900.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
1,000.00	0.00	0.00	1,000.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
1,100.00	0.00	0.00	1,100.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
1,200.00	0.00	0.00	1,200.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
1,300.00	0.00	0.00	1,300.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
1,400.00	0.00	0.00	1,400.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
1,500.00	0.00	0.00	1,500.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
1,600.00	0.00	0.00	1,600.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
1,700.00	0.00	0.00	1,700.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
1,800.00	0.00	0.00	1,800.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
1,900.00	0.00	0.00	1,900.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
2,000.00	0.00	0.00	2,000.00	0.00	0.00	456,835.59	639,380.98	32.255518	-104.016170
2,100.00	1.00	189.17	2,099.99	-0.86	-0.14	456,834.73	639,380.85	32.255516	-104.016171
2,200.00	2.00	189.17	2,199.96	-3.45	-0.56	456,832.14	639,380.43	32.255509	-104.016172
2,238.61	2.39	189.17	2,238.54	-4.90	-0.79	456,830.69	639,380.19	32.255505	-104.016173
2,300.00	2.39	189.17	2,299.88	-7.43	-1.20	456,828.16	639,379.79	32.255498	-104.016174
2,400.00	2.39	189.17	2,399.79	-11.54	-1.86	456,824.05	639,379.12	32.255487	-104.016176
2,500.00	2.39	189.17	2,499.70	-15.65	-2.53	456,819.94	639,378.46	32.255475	-104.016178
2,600.00	2.39	189.17	2,599.62	-19.76	-3.19	456,815.83	639,377.80	32.255464	-104.016181
2,700.00	2.39	189.17	2,699.53	-23.87	-3.85	456,811.72	639,377.13	32.255453	-104.016183
2,800.00	2.39	189.17	2,799.44	-27.98	-4.52	456,807.61	639,376.47	32.255441	-104.016185
2,900.00	2.39	189.17	2,899.36	-32.09	-5.18	456,803.50	639,375.81	32.255430	-104.016187
3,000.00	2.39	189.17	2,999.27	-36.20	-5.84	456,799.39	639,375.14	32.255419	-104.016189
3,100.00	2.39	189.17	3,099.18	-40.31	-6.51	456,795.28	639,374.48	32.255408	-104.016192
3,200.00	2.39	189.17	3,199.10	-44.42	-7.17	456,791.17	639,373.82	32.255396	-104.016194
3,300.00	2.39	189.17	3,299.01	-48.53	-7.83	456,787.06	639,373.15	32.255385	-104.016196
3,400.00	2.39	189.17	3,398.92	-52.64	-8.50	456,782.95	639,372.49	32.255374	-104.016198
3,500.00	2.39	189.17	3,498.84	-56.75	-9.16	456,778.84	639,371.82	32.255362	-104.016200
3,600.00	2.39	189.17	3,598.75	-60.86	-9.82	456,774.73	639,371.16	32.255351	-104.016202
3,700.00	2.39	189.17	3,698.66	-64.97	-10.49	456,770.62	639,370.50	32.255340	-104.016205
3,800.00	2.39	189.17	3,798.58	-69.08	-11.15	456,766.51	639,369.83	32.255328	-104.016207
3,900.00	2.39	189.17	3,898.49	-73.19	-11.81	456,762.40	639,369.17	32.255317	-104.016209
4,000.00	2.39	189.17	3,998.40	-77.30	-12.48	456,758.29	639,368.51	32.255306	-104.016211
4,100.00	2.39	189.17	4,098.32	-81.41	-13.14	456,754.18	639,367.84	32.255295	-104.016213
4,200.00	2.39	189.17	4,198.23	-85.52	-13.80	456,750.07	639,367.18	32.255283	-104.016216
4,300.00	2.39	189.17	4,298.14	-89.63	-14.47	456,745.96	639,366.52	32.255272	-104.016218
4,400.00	2.39	189.17	4,398.06	-93.74	-15.13	456,741.85	639,365.85	32.255261	-104.016220
4,500.00	2.39	189.17	4,497.97	-97.85	-15.79	456,737.74	639,365.19	32.255249	-104.016222
4,600.00	2.39	189.17	4,597.88	-101.96	-16.46	456,733.63	639,364.53	32.255238	-104.016224
4,700.00	2.39	189.17	4,697.80	-106.07	-17.12	456,729.52	639,363.86	32.255227	-104.016226
4,800.00	2.39	189.17	4,797.71	-110.18	-17.78	456,725.41	639,363.20	32.255216	-104.016229
4,900.00	2.39	189.17	4,897.62	-114.29	-18.45	456,721.30	639,362.54	32.255204	-104.016231
5,000.00	2.39	189.17	4,997.54	-118.40	-19.11	456,717.19	639,361.87	32.255193	-104.016233
5,100.00	2.39	189.17	5,097.45	-122.51	-19.77	456,713.08	639,361.21	32.255182	-104.016235
5,200.00	2.39	189.17	5,197.36	-126.62	-20.44	456,708.97	639,360.55	32.255170	-104.016237
5,300.00	2.39	189.17	5,297.28	-130.73	-21.10	456,704.86	639,359.88	32.255159	-104.016240

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 Well: Spud Muffin 31-30 624H
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Local Co-ordinate Reference: Well Spud Muffin 31-30 624H
 TVD Reference: RKB @ 2985.30R
 MD Reference: RKB @ 2985.30ft
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 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	2.39	189.17	5,397.19	-134.84	-21.76	456,700.75	639,359.22	32.255148	-104.016242
5,500.00	2.39	189.17	5,497.10	-138.95	-22.43	456,696.64	639,358.56	32.255136	-104.016244
5,600.00	2.39	189.17	5,597.02	-143.06	-23.09	456,692.53	639,357.89	32.255125	-104.016246
5,700.00	2.39	189.17	5,696.93	-147.17	-23.75	456,688.42	639,357.23	32.255114	-104.016248
5,800.00	2.39	189.17	5,796.84	-151.28	-24.42	456,684.31	639,356.57	32.255103	-104.016251
5,900.00	2.39	189.17	5,896.76	-155.39	-25.08	456,680.20	639,355.90	32.255091	-104.016253
6,000.00	2.39	189.17	5,996.67	-159.50	-25.74	456,676.09	639,355.24	32.255080	-104.016255
6,100.00	2.39	189.17	6,096.58	-163.61	-26.41	456,671.98	639,354.58	32.255069	-104.016257
6,200.00	2.39	189.17	6,196.50	-167.72	-27.07	456,667.87	639,353.91	32.255057	-104.016259
6,300.00	2.39	189.17	6,296.41	-171.83	-27.73	456,663.76	639,353.25	32.255046	-104.016261
6,400.00	2.39	189.17	6,396.32	-175.94	-28.40	456,659.65	639,352.59	32.255035	-104.016264
6,500.00	2.39	189.17	6,496.24	-180.05	-29.06	456,655.54	639,351.92	32.255024	-104.016266
6,600.00	2.39	189.17	6,596.15	-184.16	-29.72	456,651.43	639,351.26	32.255012	-104.016268
6,700.00	2.39	189.17	6,696.06	-188.27	-30.39	456,647.32	639,350.60	32.255001	-104.016270
6,800.00	2.39	189.17	6,795.98	-192.38	-31.05	456,643.21	639,349.93	32.254990	-104.016272
6,900.00	2.39	189.17	6,895.89	-196.49	-31.71	456,639.10	639,349.27	32.254978	-104.016275
7,000.00	2.39	189.17	6,995.80	-200.60	-32.38	456,634.99	639,348.61	32.254967	-104.016277
7,100.00	2.39	189.17	7,095.72	-204.71	-33.04	456,630.88	639,347.94	32.254956	-104.016279
7,200.00	2.39	189.17	7,195.63	-208.82	-33.70	456,626.77	639,347.28	32.254945	-104.016281
7,300.00	2.39	189.17	7,295.54	-212.93	-34.37	456,622.66	639,346.62	32.254933	-104.016283
7,400.00	2.39	189.17	7,395.46	-217.04	-35.03	456,618.55	639,345.95	32.254922	-104.016286
7,500.00	2.39	189.17	7,495.37	-221.15	-35.69	456,614.44	639,345.29	32.254911	-104.016288
7,600.00	2.39	189.17	7,595.28	-225.26	-36.36	456,610.33	639,344.63	32.254899	-104.016290
7,700.00	2.39	189.17	7,695.20	-229.37	-37.02	456,606.22	639,343.96	32.254888	-104.016292
7,800.00	2.39	189.17	7,795.11	-233.48	-37.68	456,602.11	639,343.30	32.254877	-104.016294
7,900.00	2.39	189.17	7,895.02	-237.59	-38.35	456,598.00	639,342.64	32.254865	-104.016296
8,000.00	2.39	189.17	7,994.94	-241.70	-39.01	456,593.89	639,341.97	32.254854	-104.016299
8,100.00	2.39	189.17	8,094.85	-245.81	-39.68	456,589.78	639,341.31	32.254843	-104.016301
8,200.00	2.39	189.17	8,194.76	-249.92	-40.34	456,585.67	639,340.65	32.254832	-104.016303
8,300.00	2.39	189.17	8,294.68	-254.03	-41.00	456,581.56	639,339.98	32.254820	-104.016305
8,400.00	2.39	189.17	8,394.59	-258.14	-41.67	456,577.45	639,339.32	32.254809	-104.016307
8,500.00	2.39	189.17	8,494.50	-262.25	-42.33	456,573.34	639,338.66	32.254798	-104.016310
8,600.00	2.39	189.17	8,594.42	-266.36	-42.99	456,569.23	639,337.99	32.254786	-104.016312
8,700.00	2.39	189.17	8,694.33	-270.47	-43.66	456,565.12	639,337.33	32.254775	-104.016314
8,800.00	2.39	189.17	8,794.24	-274.58	-44.32	456,561.01	639,336.67	32.254764	-104.016316
8,900.00	2.39	189.17	8,894.16	-278.69	-44.98	456,556.90	639,336.00	32.254753	-104.016318
8,973.88	2.39	189.17	8,967.97	-281.73	-45.47	456,553.86	639,335.51	32.254744	-104.016320
9,000.00	1.99	189.17	8,994.07	-282.72	-45.63	456,552.87	639,335.35	32.254741	-104.016320
9,100.00	0.49	189.17	9,094.05	-284.86	-45.98	456,550.73	639,335.01	32.254736	-104.016322
9,132.95	0.00	0.00	9,127.00	-285.00	-46.00	456,550.59	639,334.98	32.254735	-104.016322
9,200.00	0.00	0.00	9,194.05	-285.00	-46.00	456,550.59	639,334.98	32.254735	-104.016322
9,300.00	0.00	0.00	9,294.05	-285.00	-46.00	456,550.59	639,334.98	32.254735	-104.016322
9,400.00	0.00	0.00	9,394.05	-285.00	-46.00	456,550.59	639,334.98	32.254735	-104.016322
9,482.99	0.00	0.00	9,477.04	-285.00	-46.00	456,550.59	639,334.98	32.254735	-104.016322
KOP @ 9483' MD, 200' FSL, 330' FEL									
9,500.00	1.70	359.35	9,494.04	-284.75	-46.00	456,550.84	639,334.98	32.254736	-104.016322
9,600.00	11.70	359.35	9,593.23	-273.10	-46.13	456,562.50	639,334.85	32.254768	-104.016322
9,700.00	21.70	359.35	9,688.89	-244.40	-46.46	456,591.19	639,334.52	32.254847	-104.016323
9,800.00	31.70	359.35	9,778.12	-199.52	-46.97	456,636.07	639,334.02	32.254970	-104.016324
9,876.67	39.37	359.35	9,840.46	-155.00	-47.47	456,680.59	639,333.51	32.255093	-104.016325
FTP @ 9877' MD, 330' FSL, 330' FEL									
9,900.00	41.70	359.35	9,858.19	-139.84	-47.64	456,695.75	639,333.34	32.255134	-104.016326
10,000.00	51.70	359.35	9,926.69	-67.16	-48.47	456,768.43	639,332.52	32.255334	-104.016328
10,100.00	61.70	359.35	9,981.52	16.31	-49.41	456,851.90	639,331.57	32.255564	-104.016330

Planning Report - Geographic

Database: EDM r5000.141_Prod US
 Company: WCDCS Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Site: Sec 31-T23S-R29E
 Well: Spud Muffin 31-30 624H
 Wellbore: Wellbore #1
 Design: Permit Plan 3

Local Co-ordinate Reference: Well Spud Muffin 31-30 624H
 TVD Reference: RKB @ 2985.30ft
 MD Reference: RKB @ 2985.30ft
 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	71.70	359.35	10,021.02	108.03	-50.45	456,943.62	639,330.54	32.255816	-104.016332
10,300.00	81.70	359.35	10,044.00	205.22	-51.55	457,040.81	639,329.44	32.256083	-104.016335
10,383.00	90.00	359.35	10,050.00	287.92	-52.48	457,123.51	639,328.50	32.256310	-104.016337
10,400.00	90.00	359.35	10,050.00	304.92	-52.68	457,140.51	639,328.31	32.256357	-104.016338
10,500.00	90.00	359.35	10,050.00	404.92	-53.81	457,240.51	639,327.18	32.256632	-104.016340
10,600.00	90.00	359.35	10,050.00	504.91	-54.94	457,340.50	639,326.04	32.256907	-104.016343
10,700.00	90.00	359.35	10,050.00	604.91	-56.07	457,440.49	639,324.91	32.257182	-104.016346
10,800.00	90.00	359.35	10,050.00	704.90	-57.20	457,540.49	639,323.78	32.257456	-104.016348
10,900.00	90.00	359.35	10,050.00	804.89	-58.34	457,640.48	639,322.65	32.257731	-104.016351
11,000.00	90.00	359.35	10,050.00	904.89	-59.47	457,740.47	639,321.52	32.258006	-104.016354
11,100.00	90.00	359.35	10,050.00	1,004.88	-60.60	457,840.47	639,320.38	32.258281	-104.016357
11,200.00	90.00	359.35	10,050.00	1,104.87	-61.73	457,940.46	639,319.25	32.258556	-104.016359
11,300.00	90.00	359.35	10,050.00	1,204.87	-62.86	458,040.45	639,318.12	32.258831	-104.016362
11,400.00	90.00	359.35	10,050.00	1,304.86	-64.00	458,140.45	639,316.99	32.259106	-104.016365
11,500.00	90.00	359.35	10,050.00	1,404.85	-65.13	458,240.44	639,315.86	32.259381	-104.016367
11,600.00	90.00	359.35	10,050.00	1,504.85	-66.26	458,340.44	639,314.73	32.259655	-104.016370
11,700.00	90.00	359.35	10,050.00	1,604.84	-67.39	458,440.43	639,313.59	32.259930	-104.016373
11,800.00	90.00	359.35	10,050.00	1,704.84	-68.52	458,540.42	639,312.46	32.260205	-104.016375
11,900.00	90.00	359.35	10,050.00	1,804.83	-69.65	458,640.42	639,311.33	32.260480	-104.016378
12,000.00	90.00	359.35	10,050.00	1,904.82	-70.79	458,740.41	639,310.20	32.260755	-104.016381
12,100.00	90.00	359.35	10,050.00	2,004.82	-71.92	458,840.40	639,309.07	32.261030	-104.016384
12,200.00	90.00	359.35	10,050.00	2,104.81	-73.05	458,940.40	639,307.93	32.261305	-104.016386
12,300.00	90.00	359.35	10,050.00	2,204.80	-74.18	459,040.39	639,306.80	32.261580	-104.016389
12,400.00	90.00	359.35	10,050.00	2,304.80	-75.31	459,140.38	639,305.67	32.261854	-104.016392
12,500.00	90.00	359.35	10,050.00	2,404.79	-76.45	459,240.38	639,304.54	32.262129	-104.016394
12,600.00	90.00	359.35	10,050.00	2,504.78	-77.58	459,340.37	639,303.41	32.262404	-104.016397
12,700.00	90.00	359.35	10,050.00	2,604.78	-78.71	459,440.36	639,302.28	32.262679	-104.016400
12,800.00	90.00	359.35	10,050.00	2,704.77	-79.84	459,540.36	639,301.14	32.262954	-104.016403
12,900.00	90.00	359.35	10,050.00	2,804.76	-80.97	459,640.35	639,300.01	32.263229	-104.016405
13,000.00	90.00	359.35	10,050.00	2,904.76	-82.10	459,740.34	639,298.88	32.263504	-104.016408
13,100.00	90.00	359.35	10,050.00	3,004.75	-83.24	459,840.34	639,297.75	32.263779	-104.016411
13,200.00	90.00	359.35	10,050.00	3,104.75	-84.37	459,940.33	639,296.62	32.264053	-104.016413
13,300.00	90.00	359.35	10,050.00	3,204.74	-85.50	460,040.32	639,295.48	32.264328	-104.016416
13,400.00	90.00	359.35	10,050.00	3,304.73	-86.63	460,140.32	639,294.35	32.264603	-104.016419
13,500.00	90.00	359.35	10,050.00	3,404.73	-87.76	460,240.31	639,293.22	32.264878	-104.016421
13,600.00	90.00	359.35	10,050.00	3,504.72	-88.90	460,340.30	639,292.09	32.265153	-104.016424
13,700.00	90.00	359.35	10,050.00	3,604.71	-90.03	460,440.30	639,290.96	32.265428	-104.016427
13,800.00	90.00	359.35	10,050.00	3,704.71	-91.16	460,540.29	639,289.83	32.265703	-104.016430
13,900.00	90.00	359.35	10,050.00	3,804.70	-92.29	460,640.28	639,288.69	32.265978	-104.016432
14,000.00	90.00	359.35	10,050.00	3,904.69	-93.42	460,740.28	639,287.56	32.266252	-104.016435
14,100.00	90.00	359.35	10,050.00	4,004.69	-94.55	460,840.27	639,286.43	32.266527	-104.016438
14,200.00	90.00	359.35	10,050.00	4,104.68	-95.69	460,940.26	639,285.30	32.266802	-104.016440
14,300.00	90.00	359.35	10,050.00	4,204.68	-96.82	461,040.26	639,284.17	32.267077	-104.016443
14,400.00	90.00	359.35	10,050.00	4,304.67	-97.95	461,140.25	639,283.03	32.267352	-104.016446
14,500.00	90.00	359.35	10,050.00	4,404.66	-99.08	461,240.24	639,281.90	32.267627	-104.016449
14,600.00	90.00	359.35	10,050.00	4,504.66	-100.21	461,340.24	639,280.77	32.267902	-104.016451
14,700.00	90.00	359.35	10,050.00	4,604.65	-101.35	461,440.23	639,279.64	32.268177	-104.016454
14,800.00	90.00	359.35	10,050.00	4,704.64	-102.48	461,540.22	639,278.51	32.268451	-104.016457
14,867.00	90.00	359.35	10,050.00	4,771.64	-103.24	461,607.22	639,277.75	32.268636	-104.016458
Cross Section @ 14887' MD, 0' FSL, 330' FEL									
14,900.00	90.00	359.35	10,050.00	4,804.64	-103.61	461,640.22	639,277.38	32.268726	-104.016459
15,000.00	90.00	359.35	10,050.00	4,904.63	-104.74	461,740.21	639,276.24	32.269001	-104.016462
15,100.00	90.00	359.35	10,050.00	5,004.62	-105.87	461,840.20	639,275.11	32.269276	-104.016465
15,200.00	90.00	359.35	10,050.00	5,104.62	-107.00	461,940.20	639,273.98	32.269551	-104.016468

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 624H
 Wellbore: Wellbore #1
 Design: Permit Plan 3

Local Co-ordinate Reference: Well Spud Muffin 31-30 624H
 TVD Reference: RKB @ 2985.30ft
 MD Reference: RKB @ 2985.30ft
 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	359.35	10,050.00	5,204.61	-108.14	462,040.19	639,272.85	32.269826	-104.016470
15,400.00	90.00	359.35	10,050.00	5,304.60	-109.27	462,140.18	639,271.72	32.270101	-104.016473
15,500.00	90.00	359.35	10,050.00	5,404.60	-110.40	462,240.18	639,270.58	32.270376	-104.016476
15,600.00	90.00	359.35	10,050.00	5,504.59	-111.53	462,340.17	639,269.45	32.270650	-104.016478
15,700.00	90.00	359.35	10,050.00	5,604.59	-112.66	462,440.16	639,268.32	32.270925	-104.016481
15,800.00	90.00	359.35	10,050.00	5,704.58	-113.80	462,540.16	639,267.19	32.271200	-104.016484
15,900.00	90.00	359.35	10,050.00	5,804.57	-114.93	462,640.15	639,266.06	32.271475	-104.016486
16,000.00	90.00	359.35	10,050.00	5,904.57	-116.06	462,740.14	639,264.93	32.271750	-104.016489
16,100.00	90.00	359.35	10,050.00	6,004.56	-117.19	462,840.14	639,263.79	32.272025	-104.016492
16,200.00	90.00	359.35	10,050.00	6,104.55	-118.32	462,940.13	639,262.66	32.272300	-104.016495
16,300.00	90.00	359.35	10,050.00	6,204.55	-119.45	463,040.12	639,261.53	32.272575	-104.016497
16,400.00	90.00	359.35	10,050.00	6,304.54	-120.59	463,140.12	639,260.40	32.272849	-104.016500
16,500.00	90.00	359.35	10,050.00	6,404.53	-121.72	463,240.11	639,259.27	32.273124	-104.016503
16,600.00	90.00	359.35	10,050.00	6,504.53	-122.85	463,340.10	639,258.13	32.273399	-104.016505
16,700.00	90.00	359.35	10,050.00	6,604.52	-123.98	463,440.10	639,257.00	32.273674	-104.016508
16,800.00	90.00	359.35	10,050.00	6,704.51	-125.11	463,540.09	639,255.87	32.273949	-104.016511
16,900.00	90.00	359.35	10,050.00	6,804.51	-126.25	463,640.09	639,254.74	32.274224	-104.016514
17,000.00	90.00	359.35	10,050.00	6,904.50	-127.38	463,740.08	639,253.61	32.274499	-104.016516
17,100.00	90.00	359.35	10,050.00	7,004.50	-128.51	463,840.07	639,252.48	32.274774	-104.016519
17,200.00	90.00	359.35	10,050.00	7,104.49	-129.64	463,940.07	639,251.34	32.275048	-104.016522
17,300.00	90.00	359.35	10,050.00	7,204.48	-130.77	464,040.06	639,250.21	32.275323	-104.016524
17,400.00	90.00	359.35	10,050.00	7,304.48	-131.90	464,140.05	639,249.08	32.275598	-104.016527
17,500.00	90.00	359.35	10,050.00	7,404.47	-133.04	464,240.05	639,247.95	32.275873	-104.016530
17,600.00	90.00	359.35	10,050.00	7,504.46	-134.17	464,340.04	639,246.82	32.276148	-104.016532
17,700.00	90.00	359.35	10,050.00	7,604.46	-135.30	464,440.03	639,245.68	32.276423	-104.016535
17,800.00	90.00	359.35	10,050.00	7,704.45	-136.43	464,540.03	639,244.55	32.276698	-104.016538
17,900.00	90.00	359.35	10,050.00	7,804.44	-137.56	464,640.02	639,243.42	32.276973	-104.016541
18,000.00	90.00	359.35	10,050.00	7,904.44	-138.70	464,740.01	639,242.29	32.277247	-104.016543
18,100.00	90.00	359.35	10,050.00	8,004.43	-139.83	464,840.01	639,241.16	32.277522	-104.016546
18,200.00	90.00	359.35	10,050.00	8,104.43	-140.96	464,940.00	639,240.03	32.277797	-104.016549
18,300.00	90.00	359.35	10,050.00	8,204.42	-142.09	465,039.99	639,238.89	32.278072	-104.016551
18,400.00	90.00	359.35	10,050.00	8,304.41	-143.22	465,139.99	639,237.76	32.278347	-104.016554
18,500.00	90.00	359.35	10,050.00	8,404.41	-144.35	465,239.98	639,236.63	32.278622	-104.016557
18,600.00	90.00	359.35	10,050.00	8,504.40	-145.49	465,339.97	639,235.50	32.278897	-104.016560
18,700.00	90.00	359.35	10,050.00	8,604.39	-146.62	465,439.97	639,234.37	32.279172	-104.016562
18,800.00	90.00	359.35	10,050.00	8,704.39	-147.75	465,539.96	639,233.23	32.279446	-104.016565
18,900.00	90.00	359.35	10,050.00	8,804.38	-148.88	465,639.95	639,232.10	32.279721	-104.016568
19,000.00	90.00	359.35	10,050.00	8,904.37	-150.01	465,739.95	639,230.97	32.279996	-104.016570
19,100.00	90.00	359.35	10,050.00	9,004.37	-151.15	465,839.94	639,229.84	32.280271	-104.016573
19,200.00	90.00	359.35	10,050.00	9,104.36	-152.28	465,939.93	639,228.71	32.280546	-104.016576
19,300.00	90.00	359.35	10,050.00	9,204.35	-153.41	466,039.93	639,227.58	32.280821	-104.016578
19,400.00	90.00	359.35	10,050.00	9,304.35	-154.54	466,139.92	639,226.44	32.281096	-104.016581
19,500.00	90.00	359.35	10,050.00	9,404.34	-155.67	466,239.91	639,225.31	32.281371	-104.016584
19,600.00	90.00	359.35	10,050.00	9,504.34	-156.80	466,339.91	639,224.18	32.281645	-104.016587
19,700.00	90.00	359.35	10,050.00	9,604.33	-157.94	466,439.90	639,223.05	32.281920	-104.016589
19,800.00	90.00	359.35	10,050.00	9,704.32	-159.07	466,539.89	639,221.92	32.282195	-104.016592
19,829.14	90.00	359.35	10,050.00	9,733.46	-159.40	466,569.03	639,221.59	32.282275	-104.016593
LTP @ 19829' MD, 330' FNL, 330' FEL									
19,900.00	90.00	359.35	10,050.00	9,804.32	-160.20	466,639.89	639,220.78	32.282470	-104.016595
19,929.14	90.00	359.35	10,050.00	9,833.45	-160.53	466,669.03	639,220.45	32.282550	-104.016596
PBHL; 230' FNL, 330' FEL									
19,929.15	90.00	359.35	10,050.00	9,833.46	-160.53	466,669.03	639,220.45	32.282550	-104.016596

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Spud Muffin 31-30 624H
Company:	WCDCS Permian NM	TVD Reference:	RKB @ 2985.30ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 2985.30ft
Site:	Sec 31-T23S-R29E	North Reference:	Grid
Well:	Spud Muffin 31-30 624H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 3		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
- Shape									
PBHL2 - Spud Muffin 31	0.00	0.00	0.00	9,833.46	-160.53	466,669.03	639,220.45	32.282550	-104.016596
- plan misses target center by 9834.77ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)		
9,482.99	9,477.04	-285.00	-46.00	KOP @ 9483' MD, 200' FSL, 330' FEL	
9,876.67	9,840.46	-155.00	-47.47	FTP @ 9877' MD', 330' FSL, 330' FEL	
14,867.00	10,050.00	4,771.64	-103.24	Cross Section @ 14867' MD, 0' FSL, 330' FEL	
19,829.14	10,050.00	9,733.46	-159.40	LTP @ 19829' MD, 330' FNL, 330' FEL	
19,929.14	10,050.00	9,833.45	-160.53	PBHL; 230' FNL, 330' FEL	

WCDSC Permian NM

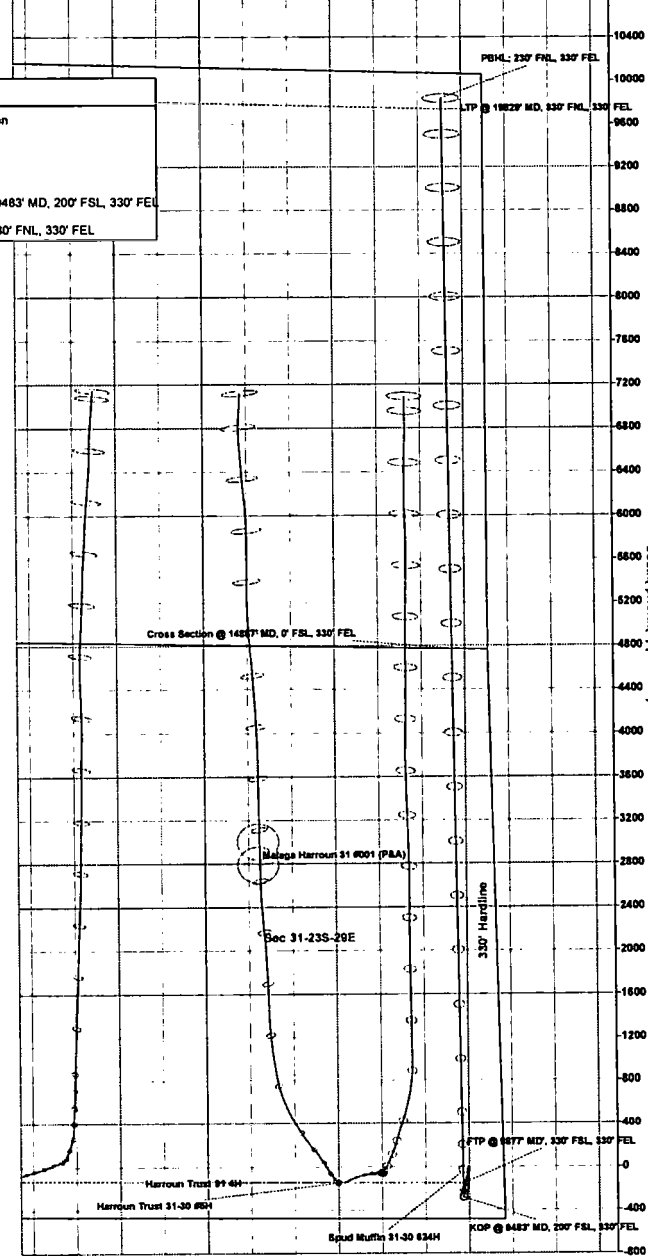
WELL DETAILS: Spud Muffin 31-30 624H

RKB @ 2985.30ft 2960.30			
Northing 456835.59	Easting 639380.68	Latitude 32.255518	Longitude -104.016170

SECTION DETAILS Permit Plan 3

MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	VSec	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	
2238.61	2.39	189.17	2238.54	-4.80	-0.79	1.00	-4.88	
8973.88	2.39	189.17	8987.97	-281.73	-45.47	0.00	-280.85	
5	9132.95	0.00	9127.00	-285.00	-48.00	1.50	-284.21	KOP @ 9483' MD, 200' FSL, 330' FEL
6	9482.99	0.00	9477.04	-285.00	-48.00	0.00	-284.21	
7	10383.00	90.00	358.35	10050.00	287.92	-52.48	10.00	268.74
8	19929.15	90.00	358.35	10050.00	9833.48	-160.53	0.00	9834.77

West(-)/East(+) (350 R/in)



devon

