

WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Sec 31-T23S-R29E

Spud Muffin 31-30 332H

Wellbore #1

Plan: Permit Plan 2

Standard Planning Report - Geographic

17 September, 2018

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 332H
Wellbore: Wellbore #1
Design: Permit Plan 2

Local Co-ordinate Reference: Well Spud Muffin 31-30 332H
TVD Reference: RKB @ 2984.40ft
MD Reference: RKB @ 2984.40ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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 332H			
Well Position	+N/-S	0.00 ft	Northing:	456,993.86 usft
	+E/-W	0.00 ft	Easting:	636,785.66 usft
Position Uncertainty		0.50 ft	Wellhead Elevation:	Ground Level: 2,959.40 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	6/14/2018	7.06	60.01	47,810.31265498

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	0.84

Plan Survey Tool Program	Date 9/17/2018			
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	19,963.91 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	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,104.96	6.05	165.85	3,103.84	-30.94	7.80	1.00	1.00	0.00	165.85	
8,227.09	6.05	165.85	8,197.44	-554.37	139.80	0.00	0.00	0.00	0.00	
8,630.40	0.00	0.00	8,600.00	-575.00	145.00	1.50	-1.50	0.00	180.00	
9,112.44	0.00	0.00	9,082.04	-575.00	145.00	0.00	0.00	0.00	0.00	
10,012.44	90.00	0.00	9,655.00	-2.04	145.02	10.00	10.00	0.00	0.00	PBHL2 - Spud Muffin
19,963.91	90.00	0.00	9,655.00	9,949.43	145.43	0.00	0.00	0.00	0.00	PBHL2 - Spud Muffin

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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
0.00	0.00	0.00	0.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
100.00	0.00	0.00	100.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
200.00	0.00	0.00	200.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
300.00	0.00	0.00	300.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
400.00	0.00	0.00	400.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
500.00	0.00	0.00	500.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
600.00	0.00	0.00	600.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
700.00	0.00	0.00	700.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
800.00	0.00	0.00	800.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
900.00	0.00	0.00	900.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
1,000.00	0.00	0.00	1,000.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
1,100.00	0.00	0.00	1,100.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
1,200.00	0.00	0.00	1,200.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
1,300.00	0.00	0.00	1,300.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
1,400.00	0.00	0.00	1,400.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
1,500.00	0.00	0.00	1,500.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
1,600.00	0.00	0.00	1,600.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
1,700.00	0.00	0.00	1,700.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
1,800.00	0.00	0.00	1,800.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
1,900.00	0.00	0.00	1,900.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
2,000.00	0.00	0.00	2,000.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
2,100.00	0.00	0.00	2,100.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
2,200.00	0.00	0.00	2,200.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
2,300.00	0.00	0.00	2,300.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
2,400.00	0.00	0.00	2,400.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
2,500.00	0.00	0.00	2,500.00	0.00	0.00	456,993.86	636,785.66	32.255974	-104.024564
2,600.00	1.00	165.85	2,599.99	-0.85	0.21	456,993.01	636,785.88	32.255972	-104.024564
2,700.00	2.00	165.85	2,699.96	-3.38	0.85	456,990.48	636,786.52	32.255965	-104.024561
2,800.00	3.00	165.85	2,799.86	-7.61	1.92	456,986.25	636,787.58	32.255953	-104.024558
2,900.00	4.00	165.85	2,899.68	-13.53	3.41	456,980.33	636,789.08	32.255937	-104.024553
3,000.00	5.00	165.85	2,999.37	-21.14	5.33	456,972.72	636,791.00	32.255916	-104.024547
3,100.00	6.00	165.85	3,098.90	-30.43	7.67	456,963.43	636,793.34	32.255890	-104.024540
3,104.96	6.05	165.85	3,103.84	-30.94	7.80	456,962.92	636,793.47	32.255889	-104.024539
3,200.00	6.05	165.85	3,198.35	-40.65	10.25	456,953.21	636,795.92	32.255862	-104.024531
3,300.00	6.05	165.85	3,297.79	-50.87	12.83	456,942.99	636,798.49	32.255834	-104.024523
3,400.00	6.05	165.85	3,397.23	-61.09	15.41	456,932.77	636,801.07	32.255806	-104.024515
3,500.00	6.05	165.85	3,496.68	-71.31	17.98	456,922.55	636,803.65	32.255778	-104.024507
3,600.00	6.05	165.85	3,596.12	-81.53	20.56	456,912.33	636,806.22	32.255750	-104.024498
3,700.00	6.05	165.85	3,695.56	-91.75	23.14	456,902.11	636,808.80	32.255722	-104.024490
3,800.00	6.05	165.85	3,795.01	-101.97	25.71	456,891.89	636,811.38	32.255694	-104.024482
3,900.00	6.05	165.85	3,894.45	-112.18	28.29	456,881.68	636,813.95	32.255666	-104.024474
4,000.00	6.05	165.85	3,993.89	-122.40	30.87	456,871.46	636,816.53	32.255637	-104.024465
4,100.00	6.05	165.85	4,093.34	-132.62	33.44	456,861.24	636,819.11	32.255609	-104.024457
4,200.00	6.05	165.85	4,192.78	-142.84	36.02	456,851.02	636,821.69	32.255581	-104.024449
4,300.00	6.05	165.85	4,292.22	-153.06	38.60	456,840.80	636,824.26	32.255553	-104.024441
4,400.00	6.05	165.85	4,391.66	-163.28	41.18	456,830.58	636,826.84	32.255525	-104.024433
4,500.00	6.05	165.85	4,491.11	-173.50	43.75	456,820.36	636,829.42	32.255497	-104.024424
4,600.00	6.05	165.85	4,590.55	-183.72	46.33	456,810.14	636,831.99	32.255469	-104.024416
4,700.00	6.05	165.85	4,689.99	-193.94	48.91	456,799.92	636,834.57	32.255441	-104.024408
4,800.00	6.05	165.85	4,789.44	-204.16	51.48	456,789.70	636,837.15	32.255413	-104.024400
4,900.00	6.05	165.85	4,888.88	-214.38	54.06	456,779.48	636,839.72	32.255384	-104.024391
5,000.00	6.05	165.85	4,988.32	-224.59	56.64	456,769.27	636,842.30	32.255356	-104.024383
5,100.00	6.05	165.85	5,087.77	-234.81	59.21	456,759.05	636,844.88	32.255328	-104.024375
5,200.00	6.05	165.85	5,187.21	-245.03	61.79	456,748.83	636,847.46	32.255300	-104.024367
5,300.00	6.05	165.85	5,286.65	-255.25	64.37	456,738.61	636,850.03	32.255272	-104.024358

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5,400.00	6.05	165.85	5,386.10	-265.47	66.94	456,728.39	636,852.61	32.255244	-104.024350
5,500.00	6.05	165.85	5,485.54	-275.69	69.52	456,718.17	636,855.19	32.255216	-104.024342
5,600.00	6.05	165.85	5,584.98	-285.91	72.10	456,707.95	636,857.76	32.255188	-104.024334
5,700.00	6.05	165.85	5,684.42	-296.13	74.68	456,697.73	636,860.34	32.255160	-104.024325
5,800.00	6.05	165.85	5,783.87	-306.35	77.25	456,687.51	636,862.92	32.255131	-104.024317
5,900.00	6.05	165.85	5,883.31	-316.57	79.83	456,677.29	636,865.49	32.255103	-104.024309
6,000.00	6.05	165.85	5,982.75	-326.79	82.41	456,667.08	636,868.07	32.255075	-104.024301
6,100.00	6.05	165.85	6,082.20	-337.00	84.98	456,656.86	636,870.65	32.255047	-104.024292
6,200.00	6.05	165.85	6,181.64	-347.22	87.56	456,646.64	636,873.22	32.255019	-104.024284
6,300.00	6.05	165.85	6,281.08	-357.44	90.14	456,636.42	636,875.80	32.254991	-104.024276
6,400.00	6.05	165.85	6,380.53	-367.66	92.71	456,626.20	636,878.38	32.254963	-104.024268
6,500.00	6.05	165.85	6,479.97	-377.88	95.29	456,615.98	636,880.96	32.254935	-104.024259
6,600.00	6.05	165.85	6,579.41	-388.10	97.87	456,605.76	636,883.53	32.254907	-104.024251
6,700.00	6.05	165.85	6,678.86	-398.32	100.45	456,595.54	636,886.11	32.254878	-104.024243
6,800.00	6.05	165.85	6,778.30	-408.54	103.02	456,585.32	636,888.69	32.254850	-104.024235
6,900.00	6.05	165.85	6,877.74	-418.76	105.60	456,575.10	636,891.26	32.254822	-104.024226
7,000.00	6.05	165.85	6,977.19	-428.98	108.18	456,564.88	636,893.84	32.254794	-104.024218
7,100.00	6.05	165.85	7,076.63	-439.20	110.75	456,554.67	636,896.42	32.254766	-104.024210
7,200.00	6.05	165.85	7,176.07	-449.41	113.33	456,544.45	636,898.99	32.254738	-104.024202
7,300.00	6.05	165.85	7,275.51	-459.63	115.91	456,534.23	636,901.57	32.254710	-104.024194
7,400.00	6.05	165.85	7,374.96	-469.85	118.48	456,524.01	636,904.15	32.254682	-104.024185
7,500.00	6.05	165.85	7,474.40	-480.07	121.06	456,513.79	636,906.73	32.254654	-104.024177
7,600.00	6.05	165.85	7,573.84	-490.29	123.64	456,503.57	636,909.30	32.254625	-104.024169
7,700.00	6.05	165.85	7,673.29	-500.51	126.22	456,493.35	636,911.88	32.254597	-104.024161
7,800.00	6.05	165.85	7,772.73	-510.73	128.79	456,483.13	636,914.46	32.254569	-104.024152
7,900.00	6.05	165.85	7,872.17	-520.95	131.37	456,472.91	636,917.03	32.254541	-104.024144
8,000.00	6.05	165.85	7,971.62	-531.17	133.95	456,462.69	636,919.61	32.254513	-104.024136
8,100.00	6.05	165.85	8,071.06	-541.39	136.52	456,452.47	636,922.19	32.254485	-104.024128
8,200.00	6.05	165.85	8,170.50	-551.61	139.10	456,442.26	636,924.76	32.254457	-104.024119
8,227.09	6.05	165.85	8,197.44	-554.37	139.80	456,439.49	636,925.46	32.254449	-104.024117
8,300.00	4.96	165.85	8,270.01	-561.15	141.51	456,432.71	636,927.17	32.254430	-104.024112
8,400.00	3.46	165.85	8,369.74	-568.26	143.30	456,425.60	636,928.97	32.254411	-104.024106
8,500.00	1.96	165.85	8,469.63	-572.84	144.46	456,421.02	636,930.12	32.254398	-104.024102
8,600.00	0.46	165.85	8,569.60	-574.88	144.97	456,418.98	636,930.63	32.254393	-104.024101
8,630.40	0.00	0.00	8,600.00	-575.00	145.00	456,418.86	636,930.66	32.254392	-104.024100
8,700.00	0.00	0.00	8,669.60	-575.00	145.00	456,418.86	636,930.66	32.254392	-104.024100
8,800.00	0.00	0.00	8,769.60	-575.00	145.00	456,418.86	636,930.66	32.254392	-104.024100
8,900.00	0.00	0.00	8,869.60	-575.00	145.00	456,418.86	636,930.66	32.254392	-104.024100
9,000.00	0.00	0.00	8,969.60	-575.00	145.00	456,418.86	636,930.66	32.254392	-104.024100
9,100.00	0.00	0.00	9,069.60	-575.00	145.00	456,418.86	636,930.66	32.254392	-104.024100
9,112.44	0.00	0.00	9,082.04	-575.00	145.00	456,418.86	636,930.66	32.254392	-104.024100
KOP @ 9112' MD, 50' FSL, 2549' FWL									
9,200.00	8.76	0.00	9,169.26	-568.32	145.00	456,425.54	636,930.66	32.254411	-104.024100
9,300.00	18.76	0.00	9,266.27	-544.57	145.00	456,449.29	636,930.67	32.254476	-104.024100
9,353.58	24.11	0.00	9,316.13	-525.00	145.00	456,468.86	636,930.67	32.254530	-104.024100
FTP @ 9354' MD, 100' FSL, 2549' FWL									
9,400.00	28.76	0.00	9,357.68	-504.34	145.00	456,489.52	636,930.67	32.254587	-104.024100
9,500.00	38.76	0.00	9,440.72	-448.84	145.01	456,545.02	636,930.67	32.254739	-104.024099
9,600.00	48.76	0.00	9,512.85	-379.77	145.01	456,614.09	636,930.67	32.254929	-104.024099
9,700.00	58.76	0.00	9,571.90	-299.22	145.01	456,694.64	636,930.68	32.255150	-104.024098
9,800.00	68.76	0.00	9,616.06	-209.65	145.01	456,784.21	636,930.68	32.255397	-104.024097
9,900.00	78.76	0.00	9,644.00	-113.76	145.02	456,880.10	636,930.68	32.255660	-104.024096
10,000.00	88.76	0.00	9,654.86	-14.48	145.02	456,979.38	636,930.69	32.255933	-104.024095
10,012.44	90.00	0.00	9,655.00	-2.04	145.02	456,991.82	636,930.69	32.255967	-104.024095

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10,100.00	90.00	0.00	9,655.00	85.52	145.03	457,079.38	636,930.69	32.256208	-104.024094
10,200.00	90.00	0.00	9,655.00	185.52	145.03	457,179.38	636,930.70	32.256483	-104.024093
10,300.00	90.00	0.00	9,655.00	285.52	145.04	457,279.38	636,930.70	32.256758	-104.024092
10,400.00	90.00	0.00	9,655.00	385.52	145.04	457,379.38	636,930.70	32.257033	-104.024091
10,500.00	90.00	0.00	9,655.00	485.52	145.04	457,479.38	636,930.71	32.257308	-104.024090
10,600.00	90.00	0.00	9,655.00	585.52	145.05	457,579.38	636,930.71	32.257582	-104.024090
10,700.00	90.00	0.00	9,655.00	685.52	145.05	457,679.38	636,930.72	32.257857	-104.024089
10,800.00	90.00	0.00	9,655.00	785.52	145.06	457,779.38	636,930.72	32.258132	-104.024088
10,900.00	90.00	0.00	9,655.00	885.52	145.06	457,879.38	636,930.72	32.258407	-104.024087
11,000.00	90.00	0.00	9,655.00	985.52	145.06	457,979.38	636,930.73	32.258682	-104.024086
11,100.00	90.00	0.00	9,655.00	1,085.52	145.07	458,079.38	636,930.73	32.258957	-104.024085
11,200.00	90.00	0.00	9,655.00	1,185.52	145.07	458,179.38	636,930.74	32.259232	-104.024084
11,300.00	90.00	0.00	9,655.00	1,285.52	145.08	458,279.38	636,930.74	32.259507	-104.024083
11,400.00	90.00	0.00	9,655.00	1,385.52	145.08	458,379.38	636,930.74	32.259782	-104.024082
11,500.00	90.00	0.00	9,655.00	1,485.52	145.08	458,479.38	636,930.75	32.260056	-104.024081
11,600.00	90.00	0.00	9,655.00	1,585.52	145.09	458,579.38	636,930.75	32.260331	-104.024080
11,700.00	90.00	0.00	9,655.00	1,685.52	145.09	458,679.38	636,930.76	32.260606	-104.024079
11,800.00	90.00	0.00	9,655.00	1,785.52	145.10	458,779.38	636,930.76	32.260881	-104.024078
11,900.00	90.00	0.00	9,655.00	1,885.52	145.10	458,879.38	636,930.76	32.261156	-104.024077
12,000.00	90.00	0.00	9,655.00	1,985.52	145.10	458,979.38	636,930.77	32.261431	-104.024076
12,100.00	90.00	0.00	9,655.00	2,085.52	145.11	459,079.38	636,930.77	32.261706	-104.024075
12,200.00	90.00	0.00	9,655.00	2,185.52	145.11	459,179.38	636,930.78	32.261981	-104.024074
12,300.00	90.00	0.00	9,655.00	2,285.52	145.12	459,279.38	636,930.78	32.262256	-104.024073
12,400.00	90.00	0.00	9,655.00	2,385.52	145.12	459,379.37	636,930.78	32.262530	-104.024073
12,500.00	90.00	0.00	9,655.00	2,485.52	145.13	459,479.37	636,930.79	32.262805	-104.024072
12,600.00	90.00	0.00	9,655.00	2,585.52	145.13	459,579.37	636,930.79	32.263080	-104.024071
12,700.00	90.00	0.00	9,655.00	2,685.52	145.13	459,679.37	636,930.80	32.263355	-104.024070
12,800.00	90.00	0.00	9,655.00	2,785.52	145.14	459,779.37	636,930.80	32.263630	-104.024069
12,900.00	90.00	0.00	9,655.00	2,885.52	145.14	459,879.37	636,930.81	32.263905	-104.024068
13,000.00	90.00	0.00	9,655.00	2,985.52	145.15	459,979.37	636,930.81	32.264180	-104.024067
13,100.00	90.00	0.00	9,655.00	3,085.52	145.15	460,079.37	636,930.81	32.264455	-104.024066
13,200.00	90.00	0.00	9,655.00	3,185.52	145.15	460,179.37	636,930.82	32.264729	-104.024065
13,300.00	90.00	0.00	9,655.00	3,285.52	145.16	460,279.37	636,930.82	32.265004	-104.024064
13,400.00	90.00	0.00	9,655.00	3,385.52	145.16	460,379.37	636,930.83	32.265279	-104.024063
13,500.00	90.00	0.00	9,655.00	3,485.52	145.17	460,479.37	636,930.83	32.265554	-104.024062
13,600.00	90.00	0.00	9,655.00	3,585.52	145.17	460,579.37	636,930.83	32.265829	-104.024061
13,700.00	90.00	0.00	9,655.00	3,685.52	145.17	460,679.37	636,930.84	32.266104	-104.024060
13,800.00	90.00	0.00	9,655.00	3,785.52	145.18	460,779.37	636,930.84	32.266379	-104.024059
13,900.00	90.00	0.00	9,655.00	3,885.52	145.18	460,879.37	636,930.85	32.266654	-104.024058
14,000.00	90.00	0.00	9,655.00	3,985.52	145.19	460,979.37	636,930.85	32.266929	-104.024057
14,100.00	90.00	0.00	9,655.00	4,085.52	145.19	461,079.37	636,930.85	32.267203	-104.024056
14,200.00	90.00	0.00	9,655.00	4,185.52	145.19	461,179.37	636,930.86	32.267478	-104.024055
14,300.00	90.00	0.00	9,655.00	4,285.52	145.20	461,279.37	636,930.86	32.267753	-104.024055
14,400.00	90.00	0.00	9,655.00	4,385.52	145.20	461,379.37	636,930.87	32.268028	-104.024054
14,500.00	90.00	0.00	9,655.00	4,485.52	145.21	461,479.37	636,930.87	32.268303	-104.024053
14,600.00	90.00	0.00	9,655.00	4,585.52	145.21	461,579.37	636,930.87	32.268578	-104.024052
14,671.48	90.00	0.00	9,655.00	4,657.00	145.21	461,650.85	636,930.88	32.268774	-104.024051
Cross Section @ 14671' MD, 0' FSL, 2549' FWL									
14,700.00	90.00	0.00	9,655.00	4,685.52	145.22	461,679.37	636,930.88	32.268853	-104.024051
14,800.00	90.00	0.00	9,655.00	4,785.52	145.22	461,779.37	636,930.88	32.269128	-104.024050
14,900.00	90.00	0.00	9,655.00	4,885.52	145.22	461,879.37	636,930.89	32.269403	-104.024049
15,000.00	90.00	0.00	9,655.00	4,985.52	145.23	461,979.37	636,930.89	32.269677	-104.024048
15,100.00	90.00	0.00	9,655.00	5,085.52	145.23	462,079.37	636,930.90	32.269952	-104.024047
15,200.00	90.00	0.00	9,655.00	5,185.52	145.24	462,179.37	636,930.90	32.270227	-104.024046

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 332H
 Wellbore: Wellbore #1
 Design: Permit Plan 2

Local Co-ordinate Reference: Well Spud Muffin 31-30 332H
 TVD Reference: RKB @ 2984.40ft
 MD Reference: RKB @ 2984.40ft
 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	0.00	9,655.00	5,285.52	145.24	462,279.37	636,930.90	32.270502	-104.024045	
15,400.00	90.00	0.00	9,655.00	5,385.52	145.24	462,379.37	636,930.91	32.270777	-104.024044	
15,500.00	90.00	0.00	9,655.00	5,485.52	145.25	462,479.37	636,930.91	32.271052	-104.024043	
15,600.00	90.00	0.00	9,655.00	5,585.52	145.25	462,579.37	636,930.92	32.271327	-104.024042	
15,700.00	90.00	0.00	9,655.00	5,685.52	145.26	462,679.37	636,930.92	32.271602	-104.024041	
15,800.00	90.00	0.00	9,655.00	5,785.52	145.26	462,779.37	636,930.92	32.271876	-104.024040	
15,900.00	90.00	0.00	9,655.00	5,885.52	145.26	462,879.37	636,930.93	32.272151	-104.024039	
16,000.00	90.00	0.00	9,655.00	5,985.52	145.27	462,979.37	636,930.93	32.272426	-104.024038	
16,100.00	90.00	0.00	9,655.00	6,085.52	145.27	463,079.37	636,930.94	32.272701	-104.024038	
16,200.00	90.00	0.00	9,655.00	6,185.52	145.28	463,179.37	636,930.94	32.272976	-104.024037	
16,300.00	90.00	0.00	9,655.00	6,285.52	145.28	463,279.37	636,930.94	32.273251	-104.024036	
16,400.00	90.00	0.00	9,655.00	6,385.52	145.28	463,379.37	636,930.95	32.273526	-104.024035	
16,500.00	90.00	0.00	9,655.00	6,485.52	145.29	463,479.37	636,930.95	32.273801	-104.024034	
16,600.00	90.00	0.00	9,655.00	6,585.52	145.29	463,579.37	636,930.96	32.274076	-104.024033	
16,700.00	90.00	0.00	9,655.00	6,685.52	145.30	463,679.37	636,930.96	32.274350	-104.024032	
16,800.00	90.00	0.00	9,655.00	6,785.52	145.30	463,779.37	636,930.96	32.274625	-104.024031	
16,900.00	90.00	0.00	9,655.00	6,885.52	145.31	463,879.37	636,930.97	32.274900	-104.024030	
17,000.00	90.00	0.00	9,655.00	6,985.52	145.31	463,979.37	636,930.97	32.275175	-104.024029	
17,100.00	90.00	0.00	9,655.00	7,085.52	145.31	464,079.37	636,930.98	32.275450	-104.024028	
17,200.00	90.00	0.00	9,655.00	7,185.52	145.32	464,179.37	636,930.98	32.275725	-104.024027	
17,300.00	90.00	0.00	9,655.00	7,285.52	145.32	464,279.37	636,930.99	32.276000	-104.024026	
17,400.00	90.00	0.00	9,655.00	7,385.52	145.33	464,379.37	636,930.99	32.276275	-104.024025	
17,500.00	90.00	0.00	9,655.00	7,485.52	145.33	464,479.36	636,930.99	32.276549	-104.024024	
17,600.00	90.00	0.00	9,655.00	7,585.52	145.33	464,579.36	636,931.00	32.276824	-104.024023	
17,700.00	90.00	0.00	9,655.00	7,685.52	145.34	464,679.36	636,931.00	32.277099	-104.024022	
17,800.00	90.00	0.00	9,655.00	7,785.52	145.34	464,779.36	636,931.01	32.277374	-104.024021	
17,900.00	90.00	0.00	9,655.00	7,885.52	145.35	464,879.36	636,931.01	32.277649	-104.024020	
18,000.00	90.00	0.00	9,655.00	7,985.52	145.35	464,979.36	636,931.01	32.277924	-104.024020	
18,100.00	90.00	0.00	9,655.00	8,085.52	145.35	465,079.36	636,931.02	32.278199	-104.024019	
18,200.00	90.00	0.00	9,655.00	8,185.52	145.36	465,179.36	636,931.02	32.278474	-104.024018	
18,300.00	90.00	0.00	9,655.00	8,285.52	145.36	465,279.36	636,931.03	32.278749	-104.024017	
18,400.00	90.00	0.00	9,655.00	8,385.52	145.37	465,379.36	636,931.03	32.279023	-104.024016	
18,500.00	90.00	0.00	9,655.00	8,485.52	145.37	465,479.36	636,931.03	32.279298	-104.024015	
18,600.00	90.00	0.00	9,655.00	8,585.52	145.37	465,579.36	636,931.04	32.279573	-104.024014	
18,700.00	90.00	0.00	9,655.00	8,685.52	145.38	465,679.36	636,931.04	32.279848	-104.024013	
18,800.00	90.00	0.00	9,655.00	8,785.52	145.38	465,779.36	636,931.05	32.280123	-104.024012	
18,900.00	90.00	0.00	9,655.00	8,885.52	145.39	465,879.36	636,931.05	32.280398	-104.024011	
19,000.00	90.00	0.00	9,655.00	8,985.52	145.39	465,979.36	636,931.05	32.280673	-104.024010	
19,100.00	90.00	0.00	9,655.00	9,085.52	145.39	466,079.36	636,931.06	32.280948	-104.024009	
19,200.00	90.00	0.00	9,655.00	9,185.52	145.40	466,179.36	636,931.06	32.281223	-104.024008	
19,300.00	90.00	0.00	9,655.00	9,285.52	145.40	466,279.36	636,931.07	32.281497	-104.024007	
19,400.00	90.00	0.00	9,655.00	9,385.52	145.41	466,379.36	636,931.07	32.281772	-104.024006	
19,500.00	90.00	0.00	9,655.00	9,485.52	145.41	466,479.36	636,931.08	32.282047	-104.024005	
19,600.00	90.00	0.00	9,655.00	9,585.52	145.42	466,579.36	636,931.08	32.282322	-104.024004	
19,700.00	90.00	0.00	9,655.00	9,685.52	145.42	466,679.36	636,931.08	32.282597	-104.024003	
19,800.00	90.00	0.00	9,655.00	9,785.52	145.42	466,779.36	636,931.09	32.282872	-104.024003	
19,883.90	90.00	0.00	9,655.00	9,869.42	145.43	466,863.26	636,931.09	32.283102	-104.024002	
LTP @ 19884' MD, 100' FNL, 2549' FWL										
19,900.00	90.00	0.00	9,655.00	9,885.52	145.43	466,879.36	636,931.09	32.283147	-104.024002	
19,963.90	90.00	0.00	9,655.00	9,949.42	145.43	466,943.26	636,931.09	32.283322	-104.024001	
PBHL; 20' FNL, 2631' FWL										
19,963.91	90.00	0.00	9,655.00	9,949.43	145.43	466,943.27	636,931.09	32.283322	-104.024001	

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 332H
 Wellbore: Wellbore #1
 Design: Permit Plan 2

Local Co-ordinate Reference: Well Spud Muffin 31-30 332H
 TVD Reference: RKB @ 2984.40ft
 MD Reference: RKB @ 2984.40ft
 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 9657.95ft at 19760.99ft MD (9655.00 TVD, 9746.51 N, 145.42 E) - Point	0.00	0.00	0.00	9,746.52	-93.13	466,740.36	636,692.53	32.282766	-104.024775
PBHL2 - Spud Muffin 31 - plan misses target center by 9655.00ft at 19963.91ft MD (9655.00 TVD, 9949.43 N, 145.43 E) - Point	0.00	0.00	0.00	9,949.43	145.43	466,943.27	636,931.09	32.283322	-104.024001
VP - Spud Muffin 332H - plan misses target center by 283.02ft at 8629.59ft MD (8599.19 TVD, -575.00 N, 145.00 E) - Point	0.00	0.00	8,600.00	-425.00	-95.00	456,568.86	636,690.66	32.254807	-104.024875

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
9,112.44	9,082.04	-575.00	145.00	KOP @ 9112' MD, 50' FSL, 2549' FWL
9,353.58	9,316.13	-525.00	145.00	FTP @ 9354' MD, 100' FSL, 2549' FWL
14,671.48	9,655.00	4,657.00	145.21	Cross Section @ 14671' MD, 0' FSL, 2549' FWL
19,883.90	9,655.00	9,869.42	145.43	LTP @ 19884' MD, 100' FNL, 2549' FWL
19,963.90	9,655.00	9,949.42	145.43	PBHL; 20' FNL, 2631' FWL

WCDSC Permian NM

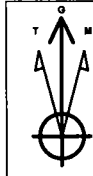
WELL DETAILS: Spud Muffin 31-30 332H

RKB @ 2984.40ft
2959.40
Northing 456993.86 Easting 636785.86 Latitude 32 255974 Longitude -104 024564

SECTION DETAILS Permit Plan 2

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	V/Sect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2500.00	0.00	0.00	2500.00	0.00	0.00	0.00	0.00	
3104.86	6.05	165.85	3103.84	-30.94	7.80	1.00	-30.82	
8227.09	6.05	165.85	8197.44	-554.37	139.80	0.00	-552.27	
8630.40	0.00	0.00	8600.00	-575.00	145.00	1.50	-572.82	KOP @ 9112' MD, 50' FSL, 2548' FWL
9112.44	0.00	0.00	9082.04	-575.00	145.00	0.00	-572.82	
10012.44	90.00	0.00	9655.00	-2.04	145.02	10.00	0.08	PBHL: 20' FNL, 2631' FWL
19863.91	90.00	0.00	9655.00	9949.43	145.43	0.00	9950.49	

devon



Admuths to Grid North
True North: -0.17°
Magnetic North: 8.89°
Magnetic Field
Strength: 47810.3uT
Dip Angle: 60.91°
Date: 8/14/2018
Model: KGRF2015

