

WCDSC Permian NM

Lea County (NAD83 New Mexico East)

Sec 15-T23S-R33E

North Thistle 15-10 State Com 3H

Wellbore #1

Plan: Permit Plan 1

Standard Planning Report - Geographic

15 November, 2018

**HOBBS UCD
DEC 06 2018
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Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well North Thistle 15-10 State Com 3H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3742.90ft
Project:	Lea County (NAD83 New Mexico East)	MD Reference:	RKB @ 3742.90ft
Site:	Sec 15-T23S-R33E	North Reference:	Grid
Well:	North Thistle 15-10 State Com 3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Project	Lea County (NAD83 New Mexico East)		
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 15-T23S-R33E			
Site Position:		Northing:	478,077.43 usft	Latitude: 32.311992
From:	Map	Easting:	777,535.58 usft	Longitude: -103.568785
Position Uncertainty:	5.00 ft	Slot Radius:	13-3/16 "	Grid Convergence: 0.41 °

Well	North Thistle 15-10 State Com 3H			
Well Position	+N/-S	0.00 ft	Northing:	473,286.14 usft
	+E/-W	0.00 ft	Easting:	780,191.08 usft
Position Uncertainty		0.50 ft	Wellhead Elevation:	Ground Level: 3,717.90 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/13/2018	6.80	60.11	47,836.59996844

Design	Permit Plan 1			
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	357.10

Plan Survey Tool Program	Date 11/15/2018			
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,026.65 Permit Plan 1 (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	
3,089.45	5.89	225.13	3,088.41	-21.37	-21.47	1.00	1.00	0.00	225.13	
8,464.18	5.89	225.13	8,434.73	-410.75	-412.69	0.00	0.00	0.00	0.00	
8,857.15	0.00	0.00	8,827.00	-425.00	-427.00	1.50	-1.50	0.00	180.00	
9,207.19	0.00	0.00	9,177.04	-425.00	-427.00	0.00	0.00	0.00	0.00	
10,107.19	90.00	359.55	9,750.00	147.94	-431.49	10.00	10.00	0.00	359.55	PBHL - North Thistle
20,026.65	90.00	359.55	9,750.00	10,067.09	-509.31	0.00	0.00	0.00	0.00	PBHL - North Thistle

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Well:	North Thistle 15-10 State Com 3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

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	473,286.14	780,191.08	32.298770	-103.560301
100.00	0.00	0.00	100.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
200.00	0.00	0.00	200.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
300.00	0.00	0.00	300.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
400.00	0.00	0.00	400.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
500.00	0.00	0.00	500.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
600.00	0.00	0.00	600.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
700.00	0.00	0.00	700.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
800.00	0.00	0.00	800.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
900.00	0.00	0.00	900.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
1,000.00	0.00	0.00	1,000.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
1,100.00	0.00	0.00	1,100.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
1,200.00	0.00	0.00	1,200.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
1,300.00	0.00	0.00	1,300.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
1,400.00	0.00	0.00	1,400.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
1,500.00	0.00	0.00	1,500.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
1,600.00	0.00	0.00	1,600.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
1,700.00	0.00	0.00	1,700.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
1,800.00	0.00	0.00	1,800.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
1,900.00	0.00	0.00	1,900.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
2,000.00	0.00	0.00	2,000.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
2,100.00	0.00	0.00	2,100.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
2,200.00	0.00	0.00	2,200.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
2,300.00	0.00	0.00	2,300.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
2,400.00	0.00	0.00	2,400.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
2,500.00	0.00	0.00	2,500.00	0.00	0.00	473,286.14	780,191.08	32.298770	-103.560301
2,600.00	1.00	225.13	2,599.99	-0.62	-0.62	473,285.52	780,190.46	32.298769	-103.560303
2,700.00	2.00	225.13	2,699.96	-2.46	-2.47	473,283.68	780,188.60	32.298764	-103.560309
2,800.00	3.00	225.13	2,799.86	-5.54	-5.57	473,280.60	780,185.51	32.298755	-103.560320
2,900.00	4.00	225.13	2,899.68	-9.85	-9.89	473,276.29	780,181.19	32.298743	-103.560334

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Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

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	5.89	225.13	5,386.74	-188.76	-189.65	473,097.38	780,001.43	32.298255	-103.560920	
5,500.00	5.89	225.13	5,486.22	-196.01	-196.93	473,090.13	779,994.15	32.298235	-103.560943	
5,600.00	5.89	225.13	5,585.69	-203.25	-204.21	473,082.89	779,986.87	32.298216	-103.560967	
5,700.00	5.89	225.13	5,685.16	-210.50	-211.49	473,075.64	779,979.59	32.298196	-103.560991	
5,800.00	5.89	225.13	5,784.63	-217.74	-218.77	473,068.40	779,972.31	32.298176	-103.561014	
5,900.00	5.89	225.13	5,884.10	-224.99	-226.04	473,061.15	779,965.03	32.298156	-103.561038	
6,000.00	5.89	225.13	5,983.57	-232.23	-233.32	473,053.91	779,957.75	32.298137	-103.561062	
6,100.00	5.89	225.13	6,083.04	-239.48	-240.60	473,046.67	779,950.48	32.298117	-103.561086	
6,200.00	5.89	225.13	6,182.51	-246.72	-247.88	473,039.42	779,943.20	32.298097	-103.561109	
6,300.00	5.89	225.13	6,281.99	-253.96	-255.16	473,032.18	779,935.92	32.298077	-103.561133	
6,400.00	5.89	225.13	6,381.46	-261.21	-262.44	473,024.93	779,928.64	32.298057	-103.561157	
6,500.00	5.89	225.13	6,480.93	-268.45	-269.72	473,017.69	779,921.36	32.298038	-103.561181	
6,600.00	5.89	225.13	6,580.40	-275.70	-277.00	473,010.44	779,914.08	32.298018	-103.561204	
6,700.00	5.89	225.13	6,679.87	-282.94	-284.27	473,003.20	779,906.80	32.297998	-103.561228	
6,800.00	5.89	225.13	6,779.34	-290.19	-291.55	472,995.95	779,899.52	32.297978	-103.561252	
6,900.00	5.89	225.13	6,878.81	-297.43	-298.83	472,988.71	779,892.25	32.297959	-103.561275	
7,000.00	5.89	225.13	6,978.28	-304.68	-306.11	472,981.46	779,884.97	32.297939	-103.561299	
7,100.00	5.89	225.13	7,077.76	-311.92	-313.39	472,974.22	779,877.69	32.297919	-103.561323	
7,200.00	5.89	225.13	7,177.23	-319.17	-320.67	472,966.97	779,870.41	32.297899	-103.561347	
7,300.00	5.89	225.13	7,276.70	-326.41	-327.95	472,959.73	779,863.13	32.297880	-103.561370	
7,400.00	5.89	225.13	7,376.17	-333.66	-335.23	472,952.49	779,855.85	32.297860	-103.561394	
7,500.00	5.89	225.13	7,475.64	-340.90	-342.51	472,945.24	779,848.57	32.297840	-103.561418	
7,600.00	5.89	225.13	7,575.11	-348.15	-349.78	472,938.00	779,841.29	32.297820	-103.561441	
7,700.00	5.89	225.13	7,674.58	-355.39						

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Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,107.19	90.00	359.55	9,750.00	147.94	-431.49	473,434.08	779,759.58	32.299185	-103.561694
10,200.00	90.00	359.55	9,750.00	240.75	-432.22	473,526.89	779,758.86	32.299441	-103.561695
10,300.00	90.00	359.55	9,750.00	340.74	-433.01	473,626.88	779,758.07	32.299715	-103.561695
10,400.00	90.00	359.55	9,750.00	440.74	-433.79	473,726.88	779,757.29	32.299990	-103.561695
10,500.00	90.00	359.55	9,750.00	540.74	-434.58	473,826.88	779,756.50	32.300265	-103.561695
10,600.00	90.00	359.55	9,750.00	640.73	-435.36	473,926.87	779,755.72	32.300540	-103.561695
10,700.00	90.00	359.55	9,750.00	740.73	-436.15	474,026.87	779,754.93	32.300815	-103.561696
10,800.00	90.00	359.55	9,750.00	840.73	-436.93	474,126.87	779,754.15	32.301090	-103.561696
10,900.00	90.00	359.55	9,750.00	940.73	-437.71	474,226.86	779,753.36	32.301365	-103.561696
11,000.00	90.00	359.55	9,750.00	1,040.72	-438.50	474,326.86	779,752.58	32.301639	-103.561696
11,100.00	90.00	359.55	9,750.00	1,140.72	-439.28	474,426.86	779,751.80	32.301914	-103.561696
11,200.00	90.00	359.55	9,750.00	1,240.72	-440.07	474,526.85	779,751.01	32.302189	-103.561697
11,300.00	90.00	359.55	9,750.00	1,340.71	-440.85	474,626.85	779,750.23	32.302464	-103.561697
11,400.00	90.00	359.55	9,750.00	1,440.71	-441.64	474,726.85	779,749.44	32.302739	-103.561697
11,500.00	90.00	359.55	9,750.00	1,540.71	-442.42	474,826.84	779,748.66	32.303014	-103.561697
11,600.00	90.00	359.55	9,750.00	1,640.70	-443.21	474,926.84	779,747.87	32.303289	-103.561697
11,700.00	90.00	359.55	9,750.00	1,740.70	-443.99	475,026.84	779,747.09	32.303564	-103.561698
11,800.00	90.00	359.55	9,750.00	1,840.70	-444.77	475,126.83	779,746.30	32.303838	-103.561698
11,900.00	90.00	359.55	9,750.00	1,940.69	-445.56	475,226.83	779,745.52	32.304113	-103.561698
12,000.00	90.00	359.55	9,750.00	2,040.69	-446.34	475,326.83	779,744.73	32.304388	-103.561698
12,100.00	90.00	359.55	9,750.00	2,140.69	-447.13	475,426.82	779,743.95	32.304663	-103.561699
12,200.00	90.00	359.55	9,750.00	2,240.69	-447.91	475,526.82	779,743.17	32.304938	-103.561699
12,300.00	90.00	359.55	9,750.00	2,340.68	-448.70	475,626.82	779,742.38	32.305213	-103.561699
12,400.00	90.00	359.55	9,750.00	2,440.68	-449.48	475,726.81	779,741.60	32.305488	-103.561699
12,500.00	90.00	359.55	9,750.00	2,540.68	-450.27	475,826.81	779,740.81	32.305762	-103.561699
12,600.00	90.00	359.55	9,750.00	2,640.67	-451.05	475,926.81	779,740.03	32.306037	-103.561700
12,700.00	90.00	359.55	9,750.00	2,740.67	-451.83	476,026.81	779,739.24	32.306312	-103.561700

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Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

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	359.55	9,750.00	5,340.59	-472.23	478,626.72	779,718.85	32.313459	-103.561705	
15,400.00	90.00	359.55	9,750.00	5,440.59	-473.02	478,726.72	779,718.06	32.313734	-103.561705	
15,500.00	90.00	359.55	9,750.00	5,540.58	-473.80	478,826.71	779,717.28	32.314009	-103.561706	
15,600.00	90.00	359.55	9,750.00	5,640.58	-474.58	478,926.71	779,716.49	32.314283	-103.561706	
15,700.00	90.00	359.55	9,750.00	5,740.58	-475.37	479,026.71	779,715.71	32.314558	-103.561706	
15,800.00	90.00	359.55	9,750.00	5,840.57	-476.15	479,126.70	779,714.92	32.314833	-103.561706	
15,900.00	90.00	359.55	9,750.00	5,940.57	-476.94	479,226.70	779,714.14	32.315108	-103.561706	
16,000.00	90.00	359.55	9,750.00	6,040.57	-477.72	479,326.70	779,713.36	32.315383	-103.561707	
16,100.00	90.00	359.55	9,750.00	6,140.57	-478.51	479,426.69	779,712.57	32.315658	-103.561707	
16,200.00	90.00	359.55	9,750.00	6,240.56	-479.29	479,526.69	779,711.79	32.315933	-103.561707	
16,300.00	90.00	359.55	9,750.00	6,340.56	-480.08	479,626.69	779,711.00	32.316207	-103.561707	
16,400.00	90.00	359.55	9,750.00	6,440.56	-480.86	479,726.68	779,710.22	32.316482	-103.561708	
16,500.00	90.00	359.55	9,750.00	6,540.55	-481.65	479,826.68	779,709.43	32.316757	-103.561708	
16,600.00	90.00	359.55	9,750.00	6,640.55	-482.43	479,926.68	779,708.65	32.317032	-103.561708	
16,700.00	90.00	359.55	9,750.00	6,740.55	-483.21	480,026.67	779,707.86	32.317307	-103.561708	
16,800.00	90.00	359.55	9,750.00	6,840.54	-484.00	480,126.67	779,707.08	32.317582	-103.561708	
16,900.00	90.00	359.55	9,750.00	6,940.54	-484.78	480,226.67	779,706.30	32.317857	-103.561709	
17,000.00	90.00	359.55	9,750.00	7,040.54	-485.57	480,326.66	779,705.51	32.318132	-103.561709	
17,100.00	90.00	359.55	9,750.00	7,140.53	-486.35	480,426.66	779,704.73	32.318406	-103.561709	
17,200.00	90.00	359.55	9,750.00	7,240.53	-487.14	480,526.66	779,703.94	32.318681	-103.561709	
17,300.00	90.00	359.55	9,750.00	7,340.53	-487.92	480,626.65	779,703.16	32.318956	-103.561709	
17,400.00	90.00	359.55	9,750.00	7,440.53	-488.71	480,726.65	779,702.37	32.319231	-103.561710	
17,500.00	90.00	359.55	9,750.00	7,540.52	-489.49	480,826.65	779,701.59	32.319506	-103.561710	
17,600.00	90.00	359.55	9,7							

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Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well North Thistle 15-10 State Com 3H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3742.90ft
Project:	Lea County (NAD83 New Mexico East)	MD Reference:	RKB @ 3742.90ft
Site:	Sec 15-T23S-R33E	North Reference:	Grid
Well:	North Thistle 15-10 State Com 3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

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									
PBHL - North Thistle 15-	0.00	0.01	0.00	10,067.09	-509.31	483,353.21	779,681.77	32.326451	-103.561715
- plan misses target center by 9750.00ft at 20026.65ft MD (9750.00 TVD, 10067.09 N, -509.31 E)									
- Point									

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W	Comment	
(ft)	(ft)	(ft)	(ft)		
9,207.19	9,177.04	-425.00	-427.00	KOP @ 9207' MD, 50' FSL, 2188' FWL	
9,448.33	9,411.12	-375.00	-427.39	FTP @ 9448' MD, 100' FSL, 2188' FWL	
14,764.39	9,750.00	4,805.00	-468.03	Cross Section @ 14764' MD, 0' FSL, 2188' FWL	
19,946.64	9,750.00	9,987.09	-508.68	LTP @ 19947' MD, 100' FNL, 2188' FWL	
20,026.64	9,750.00	10,067.08	-509.31	PBHL; 20' FNL, 2188' FWL	