PERMIAN

NW DISTRICT - NM EZ NAD 28
PALMILLO 21 STATE PAD (228, 326)
Palmillo 21 State 228H

30-015-45280

Palmillo 21 State 228H

Plan: Design #1

Standard Planning Report

24 September, 2018

Database:	PEDM	**Local Co-ordinate Reference:**	Well Palmillo 21 State 228H
Company:	PERMIAN	**TVD Reference:**	WELL @ 3497.0ft (Original Well Elev)
Project:	NW DISTRICT - NM EZ NAD 28	**MD Reference:**	WELL @ 3497.0ft (Original Well Elev)
Site:	PALMILLO 21 STATE PAD (228, 326)	**North Reference:**	Grid
Well:	Palmillo 21 State 228H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Palmillo 21 State 228H		
Design:	Design #1		

Project	NW DISTRICT - NM EZ NAD 28		
Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	PALMILLO 21 STATE PAD (228, 326)				
Site Position:		**Northing:**	600,678.80 ft	**Latitude:**	32° 39' 4.415 N
From:	Map	**Easting:**	585,953.30 ft	**Longitude:**	104° 11' 18.153 W
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.08 °

Well	Palmillo 21 State 228H					
Well Position	**+N/-S**	0.0 ft	**Northing:**	600,678.80 ft	**Latitude:**	32° 39' 4.415 N
	+E/-W	0.0 ft	**Easting:**	585,953.30 ft	**Longitude:**	104° 11' 18.153 W
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	0.0 ft	**Ground Level:**	3,472.0 ft

Wellbore	Palmillo 21 State 228H			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	HDGM	9/20/2018	7.28	60.43	48,034

Design	Design #1			
Audit Notes:				
Version:	**Phase:**	PLAN	**Tie On Depth:**	0.0
Vertical Section:	**Depth From (TVD) (ft)**	**+N/-S (ft)**	**+E/-W (ft)**	**Direction (°)**
	0.0	0.0	0.0	84.89

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,800.0	8.00	318.06	1,797.4	41.5	-37.3	1.00	1.00	0.00	318.06	
4,331.4	8.00	318.06	4,304.1	303.5	-272.7	0.00	0.00	0.00	0.00	
5,131.4	0.00	0.00	5,101.5	345.0	-310.0	1.00	-1.00	0.00	180.00	
6,867.3	0.00	0.00	6,837.5	345.0	-310.0	0.00	0.00	0.00	0.00	
7,617.3	90.00	89.07	7,315.0	352.7	167.4	12.00	12.00	0.00	89.07	BHL Palmillo 21 State
7,893.9	90.00	89.07	7,315.0	357.2	444.0	0.00	0.00	0.00	0.00	
7,933.6	89.60	89.07	7,315.1	357.9	483.6	1.00	-1.00	0.00	179.97	
8,930.7	89.60	89.07	7,322.0	374.0	1,480.6	0.00	0.00	0.00	0.00	T2 Palmillo 21 State 2
9,138.8	91.68	89.07	7,319.7	377.4	1,688.7	1.00	1.00	0.00	-0.01	
10,215.6	91.68	89.07	7,288.0	394.9	2,764.8	0.00	0.00	0.00	0.00	T3 Palmillo 21 State 2
10,363.5	90.21	89.07	7,285.6	397.3	2,912.7	1.00	-1.00	0.00	179.99	
11,353.7	90.21	89.07	7,282.0	413.3	3,902.7	0.00	0.00	0.00	0.00	T4 Palmillo 21 State 2
11,394.7	89.80	89.07	7,282.0	414.0	3,943.7	1.00	-1.00	0.00	179.97	
12,235.3	89.80	89.07	7,285.0	427.6	4,784.2	0.00	0.00	0.00	0.00	BHL Palmillo 21 State

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Project:	NW DISTRICT - NM EZ NAD 28	**MD Reference:**	WELL @ 3497.0ft (Original Well Elev)
Site:	PALMILLO 21 STATE PAD (228, 326)	**North Reference:**	Grid
Well:	Palmillo 21 State 228H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Palmillo 21 State 228H		
Design:	Design #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	1.00	318.06	1,100.0	0.6	-0.6	-0.5	1.00	1.00	0.00
1,200.0	2.00	318.06	1,200.0	2.6	-2.3	-2.1	1.00	1.00	0.00
1,300.0	3.00	318.06	1,299.9	5.8	-5.2	-4.7	1.00	1.00	0.00
1,400.0	4.00	318.06	1,399.7	10.4	-9.3	-8.4	1.00	1.00	0.00
1,500.0	5.00	318.06	1,499.4	16.2	-14.6	-13.1	1.00	1.00	0.00
1,600.0	6.00	318.06	1,598.9	23.3	-21.0	-18.8	1.00	1.00	0.00
1,700.0	7.00	318.06	1,698.3	31.8	-28.5	-25.6	1.00	1.00	0.00
1,800.0	8.00	318.06	1,797.4	41.5	-37.3	-33.4	1.00	1.00	0.00
1,900.0	8.00	318.06	1,896.4	51.8	-46.6	-41.8	0.00	0.00	0.00
2,000.0	8.00	318.06	1,995.5	62.2	-55.9	-50.1	0.00	0.00	0.00
2,100.0	8.00	318.06	2,094.5	72.5	-65.2	-58.5	0.00	0.00	0.00
2,200.0	8.00	318.06	2,193.5	82.9	-74.5	-66.8	0.00	0.00	0.00
2,300.0	8.00	318.06	2,292.5	93.2	-83.8	-75.1	0.00	0.00	0.00
2,400.0	8.00	318.06	2,391.6	103.6	-93.1	-83.5	0.00	0.00	0.00
2,500.0	8.00	318.06	2,490.6	113.9	-102.4	-91.8	0.00	0.00	0.00
2,600.0	8.00	318.06	2,589.6	124.3	-111.7	-100.2	0.00	0.00	0.00
2,700.0	8.00	318.06	2,688.6	134.6	-121.0	-108.5	0.00	0.00	0.00
2,800.0	8.00	318.06	2,787.7	145.0	-130.3	-116.9	0.00	0.00	0.00
2,900.0	8.00	318.06	2,886.7	155.3	-139.6	-125.2	0.00	0.00	0.00
3,000.0	8.00	318.06	2,985.7	165.7	-148.9	-133.5	0.00	0.00	0.00
3,100.0	8.00	318.06	3,084.8	176.1	-158.2	-141.9	0.00	0.00	0.00
3,200.0	8.00	318.06	3,183.8	186.4	-167.5	-150.2	0.00	0.00	0.00
3,300.0	8.00	318.06	3,282.8	196.8	-176.8	-158.6	0.00	0.00	0.00
3,400.0	8.00	318.06	3,381.8	207.1	-186.1	-166.9	0.00	0.00	0.00
3,500.0	8.00	318.06	3,480.9	217.5	-195.4	-175.3	0.00	0.00	0.00
3,600.0	8.00	318.06	3,579.9	227.8	-204.7	-183.6	0.00	0.00	0.00
3,700.0	8.00	318.06	3,678.9	238.2	-214.0	-192.0	0.00	0.00	0.00
3,800.0	8.00	318.06	3,777.9	248.5	-223.3	-200.3	0.00	0.00	0.00
3,900.0	8.00	318.06	3,877.0	258.9	-232.6	-208.6	0.00	0.00	0.00
4,000.0	8.00	318.06	3,976.0	269.2	-241.9	-217.0	0.00	0.00	0.00
4,100.0	8.00	318.06	4,075.0	279.6	-251.2	-225.3	0.00	0.00	0.00
4,200.0	8.00	318.06	4,174.0	289.9	-260.5	-233.7	0.00	0.00	0.00
4,300.0	8.00	318.06	4,273.1	300.3	-269.8	-242.0	0.00	0.00	0.00
4,331.4	8.00	318.06	4,304.1	303.5	-272.7	-244.6	0.00	0.00	0.00
4,400.0	7.31	318.06	4,372.2	310.3	-278.8	-250.1	1.00	-1.00	0.00
4,500.0	6.31	318.06	4,471.4	319.2	-286.8	-257.2	1.00	-1.00	0.00
4,600.0	5.31	318.06	4,570.9	326.7	-293.5	-263.3	1.00	-1.00	0.00
4,700.0	4.31	318.06	4,670.6	332.9	-299.2	-268.3	1.00	-1.00	0.00
4,800.0	3.31	318.06	4,770.4	337.9	-303.6	-272.3	1.00	-1.00	0.00
4,900.0	2.31	318.06	4,870.2	341.5	-306.9	-275.3	1.00	-1.00	0.00
5,000.0	1.31	318.06	4,970.2	343.9	-309.0	-277.2	1.00	-1.00	0.00
5,100.0	0.31	318.06	5,070.2	344.9	-309.9	-278.0	1.00	-1.00	0.00
5,131.4	0.00	0.00	5,101.5	345.0	-310.0	-278.1	1.00	-1.00	0.00

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Wellbore:	Palmillo 21 State 228H		
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5,200.0	0.00	0.00	5,170.2	345.0	-310.0	-278.1	0.00	0.00	0.00
5,300.0	0.00	0.00	5,270.2	345.0	-310.0	-278.1	0.00	0.00	0.00
5,400.0	0.00	0.00	5,370.2	345.0	-310.0	-278.1	0.00	0.00	0.00
5,500.0	0.00	0.00	5,470.2	345.0	-310.0	-278.1	0.00	0.00	0.00
5,600.0	0.00	0.00	5,570.2	345.0	-310.0	-278.1	0.00	0.00	0.00
5,700.0	0.00	0.00	5,670.2	345.0	-310.0	-278.1	0.00	0.00	0.00
5,800.0	0.00	0.00	5,770.2	345.0	-310.0	-278.1	0.00	0.00	0.00
5,900.0	0.00	0.00	5,870.2	345.0	-310.0	-278.1	0.00	0.00	0.00
6,000.0	0.00	0.00	5,970.2	345.0	-310.0	-278.1	0.00	0.00	0.00
6,100.0	0.00	0.00	6,070.2	345.0	-310.0	-278.1	0.00	0.00	0.00
6,200.0	0.00	0.00	6,170.2	345.0	-310.0	-278.1	0.00	0.00	0.00
6,300.0	0.00	0.00	6,270.2	345.0	-310.0	-278.1	0.00	0.00	0.00
6,400.0	0.00	0.00	6,370.2	345.0	-310.0	-278.1	0.00	0.00	0.00
6,500.0	0.00	0.00	6,470.2	345.0	-310.0	-278.1	0.00	0.00	0.00
6,600.0	0.00	0.00	6,570.2	345.0	-310.0	-278.1	0.00	0.00	0.00
6,700.0	0.00	0.00	6,670.2	345.0	-310.0	-278.1	0.00	0.00	0.00
6,800.0	0.00	0.00	6,770.2	345.0	-310.0	-278.1	0.00	0.00	0.00
6,867.3	0.00	0.00	6,837.5	345.0	-310.0	-278.1	0.00	0.00	0.00
6,900.0	3.92	89.07	6,870.1	345.0	-308.9	-276.9	12.00	12.00	0.00
7,000.0	15.92	89.07	6,968.5	345.3	-291.7	-259.8	12.00	12.00	0.00
7,100.0	27.92	89.07	7,061.1	345.9	-254.4	-222.6	12.00	12.00	0.00
7,200.0	39.92	89.07	7,143.9	346.8	-198.7	-167.1	12.00	12.00	0.00
7,300.0	51.92	89.07	7,213.3	348.0	-127.0	-95.6	12.00	12.00	0.00
7,400.0	63.92	89.07	7,266.4	349.3	-42.5	-11.2	12.00	12.00	0.00
7,500.0	75.92	89.07	7,300.6	350.9	51.3	82.3	12.00	12.00	0.00
7,600.0	87.92	89.07	7,314.7	352.5	150.1	180.9	12.00	12.00	0.00
7,617.3	90.00	89.07	7,315.0	352.7	167.4	198.1	12.00	12.00	0.00
7,700.0	90.00	89.07	7,315.0	354.1	250.1	280.6	0.00	0.00	0.00
7,800.0	90.00	89.07	7,315.0	355.7	350.0	380.3	0.00	0.00	0.00
7,893.9	90.00	89.07	7,315.0	357.2	444.0	474.0	0.00	0.00	0.00
7,900.0	89.94	89.07	7,315.0	357.3	450.0	480.1	1.00	-1.00	0.00
7,933.6	89.60	89.07	7,315.1	357.9	483.6	513.5	1.00	-1.00	0.00
8,000.0	89.60	89.07	7,315.6	358.9	550.0	579.8	0.00	0.00	0.00
8,100.0	89.60	89.07	7,316.3	360.6	650.0	679.5	0.00	0.00	0.00
8,200.0	89.60	89.07	7,316.9	362.2	750.0	779.3	0.00	0.00	0.00
8,300.0	89.60	89.07	7,317.6	363.8	850.0	879.0	0.00	0.00	0.00
8,400.0	89.60	89.07	7,318.3	365.4	950.0	978.7	0.00	0.00	0.00
8,500.0	89.60	89.07	7,319.0	367.0	1,049.9	1,078.5	0.00	0.00	0.00
8,600.0	89.60	89.07	7,319.7	368.7	1,149.9	1,178.2	0.00	0.00	0.00
8,700.0	89.60	89.07	7,320.4	370.3	1,249.9	1,277.9	0.00	0.00	0.00
8,800.0	89.60	89.07	7,321.1	371.9	1,349.9	1,377.6	0.00	0.00	0.00
8,900.0	89.60	89.07	7,321.8	373.5	1,449.9	1,477.4	0.00	0.00	0.00
8,930.7	89.60	89.07	7,322.0	374.0	1,480.6	1,508.0	0.00	0.00	0.00
9,000.0	90.30	89.07	7,322.1	375.2	1,549.9	1,577.1	1.00	1.00	0.00
9,100.0	91.30	89.07	7,320.7	376.8	1,649.8	1,676.8	1.00	1.00	0.00
9,138.8	91.68	89.07	7,319.7	377.4	1,688.7	1,715.5	1.00	1.00	0.00
9,200.0	91.68	89.07	7,317.9	378.4	1,749.8	1,776.5	0.00	0.00	0.00
9,300.0	91.68	89.07	7,314.9	380.0	1,849.7	1,876.2	0.00	0.00	0.00
9,400.0	91.68	89.07	7,312.0	381.6	1,949.7	1,975.9	0.00	0.00	0.00
9,500.0	91.68	89.07	7,309.0	383.3	2,049.6	2,075.6	0.00	0.00	0.00
9,600.0	91.68	89.07	7,306.1	384.9	2,149.6	2,175.3	0.00	0.00	0.00
9,700.0	91.68	89.07	7,303.2	386.5	2,249.5	2,275.0	0.00	0.00	0.00
9,800.0	91.68	89.07	7,300.2	388.1	2,349.5	2,374.7	0.00	0.00	0.00
9,900.0	91.68	89.07	7,297.3	389.7	2,449.4	2,474.4	0.00	0.00	0.00

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Well:	Palmillo 21 State 228H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Palmillo 21 State 228H		
Design:	Design #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,000.0	91.68	89.07	7,294.3	391.4	2,549.3	2,574.1	0.00	0.00	0.00
10,100.0	91.68	89.07	7,291.4	393.0	2,649.3	2,673.7	0.00	0.00	0.00
10,200.0	91.68	89.07	7,288.5	394.6	2,749.2	2,773.4	0.00	0.00	0.00
10,215.6	91.68	89.07	7,288.0	394.9	2,764.8	2,789.0	0.00	0.00	0.00
10,300.0	90.84	89.07	7,286.1	396.2	2,849.2	2,873.1	1.00	-1.00	0.00
10,363.5	90.21	89.07	7,285.6	397.3	2,912.7	2,936.5	1.00	-1.00	0.00
10,400.0	90.21	89.07	7,285.4	397.8	2,949.2	2,972.9	0.00	0.00	0.00
10,500.0	90.21	89.07	7,285.1	399.5	3,049.2	3,072.6	0.00	0.00	0.00
10,600.0	90.21	89.07	7,284.7	401.1	3,149.1	3,172.3	0.00	0.00	0.00
10,700.0	90.21	89.07	7,284.3	402.7	3,249.1	3,272.1	0.00	0.00	0.00
10,800.0	90.21	89.07	7,284.0	404.3	3,349.1	3,371.8	0.00	0.00	0.00
10,900.0	90.21	89.07	7,283.6	406.0	3,449.1	3,471.5	0.00	0.00	0.00
11,000.0	90.21	89.07	7,283.3	407.6	3,549.1	3,571.3	0.00	0.00	0.00
11,100.0	90.21	89.07	7,282.9	409.2	3,649.1	3,671.0	0.00	0.00	0.00
11,200.0	90.21	89.07	7,282.6	410.8	3,749.1	3,770.7	0.00	0.00	0.00
11,300.0	90.21	89.07	7,282.2	412.4	3,849.0	3,870.5	0.00	0.00	0.00
11,353.7	90.21	89.07	7,282.0	413.3	3,902.7	3,924.0	0.00	0.00	0.00
11,394.7	89.80	89.07	7,282.0	414.0	3,943.7	3,964.9	1.00	-1.00	0.00
11,400.0	89.80	89.07	7,282.0	414.1	3,949.0	3,970.2	0.00	0.00	0.00
11,500.0	89.80	89.07	7,282.4	415.7	4,049.0	4,069.9	0.00	0.00	0.00
11,600.0	89.80	89.07	7,282.7	417.3	4,149.0	4,169.7	0.00	0.00	0.00
11,700.0	89.80	89.07	7,283.1	418.9	4,249.0	4,269.4	0.00	0.00	0.00
11,800.0	89.80	89.07	7,283.4	420.5	4,349.0	4,369.1	0.00	0.00	0.00
11,900.0	89.80	89.07	7,283.8	422.2	4,449.0	4,468.9	0.00	0.00	0.00
12,000.0	89.80	89.07	7,284.2	423.8	4,548.9	4,568.6	0.00	0.00	0.00
12,100.0	89.80	89.07	7,284.5	425.4	4,648.9	4,668.3	0.00	0.00	0.00
12,200.0	89.80	89.07	7,284.9	427.0	4,748.9	4,768.1	0.00	0.00	0.00
12,235.3	89.80	89.07	7,285.0	427.6	4,784.2	4,803.3	0.00	0.00	0.00

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
T4 Palmillo 21 State 228 - plan hits target center - Point	0.00	0.00	7,282.0	413.3	3,902.7	601,092.11	589,856.00	32° 39' 8.450 N	104° 10' 32.497 W
T5 Palmillo 21 State 228 - plan misses target center by 229.0ft at 12235.3ft MD (7285.0 TVD, 427.6 N, 4784.2 E) - Point	0.00	0.00	7,285.0	480.0	5,007.1	601,158.77	590,960.39	32° 39' 9.093 N	104° 10' 19.578 W
BHL Palmillo 21 State 2 - plan hits target center - Point	0.00	0.00	7,285.0	427.6	4,784.2	601,106.40	590,737.50	32° 39' 8.578 N	104° 10' 22.186 W
T3 Palmillo 21 State 228 - plan hits target center - Point	0.00	0.01	7,288.0	394.9	2,764.8	601,073.66	588,718.13	32° 39' 8.284 N	104° 10' 45.807 W
T2 Palmillo 21 State 228 - plan hits target center - Point	0.00	0.00	7,322.0	374.0	1,480.6	601,052.83	587,433.88	32° 39' 8.096 N	104° 11' 0.829 W

Database:	PEDM	**Local Co-ordinate Reference:**	Well Palmillo 21 State 228H
Company:	PERMIAN	**TVD Reference:**	WELL @ 3497.0ft (Original Well Elev)
Project:	NW DISTRICT - NM EZ NAD 28	**MD Reference:**	WELL @ 3497.0ft (Original Well Elev)
Site:	PALMILLO 21 STATE PAD (228, 326)	**North Reference:**	Grid
Well:	Palmillo 21 State 228H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Palmillo 21 State 228H		
Design:	Design #1		