

Scientific Drilling

Marathon Oil Permian, LLC

Eddy County, NM (NAD27)

Mariner Fee 23-28-20

WXY #18H

OH

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JUN 06 2019

DISTRICT II-ARTESIA O.C.D.

Survey: SDI Survey #1

Standard Survey Report

31 May, 2018



Scientific Drilling



Scientific Drilling, Intl Survey Report



Company:	Marathon Oil Permian, LLC	Local Co-ordinate Reference:	Well WXY #18H
Project:	Eddy County, NM (NAD27)	TVD Reference:	KB = 26.5' @ 3101.50usft (H&P 498)
Site:	Mariner Fee 23-28-20	MD Reference:	KB = 26.5' @ 3101.50usft (H&P 498)
Well:	WXY #18H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland District

Project	Eddy County, NM (NAD27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		Using geodetic scale factor

Site	Mariner Fee 23-28-20		
Site Position:		Northing:	467,045.08 usft
From:	Map	Easting:	567,982.27 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 17' 1.793 N
		Longitude:	104° 6' 48.067 W
		Grid Convergence:	0.12 °

Well	WXY #18H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 17' 1.793 N
		Longitude:	104° 6' 47.018 W
		Ground Level:	3,075.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM	11/3/2017	7.32
			Dip Angle (°)
			60.07
			Field Strength (nT)
			48,066

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (bearing)
			359.73

Survey Program	Date 5/31/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
200.00	14,304.00	SDI Survey #1 (OH)	MWD+HDGM
			Description
			OWSG MWD + HDGM

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	1.01	333.37	199.99	1.58	-0.79	1.58	0.51	0.51	0.00	
337.00	0.96	337.75	336.97	3.72	-1.77	3.72	0.07	-0.04	3.20	
432.00	0.39	268.24	431.96	4.44	-2.39	4.45	0.95	-0.60	-73.17	
606.00	0.57	153.21	605.96	3.65	-2.59	3.66	0.47	0.10	-66.11	
698.00	0.55	86.42	697.96	3.27	-1.95	3.28	0.67	-0.02	-72.60	
790.00	0.77	95.90	789.95	3.24	-0.89	3.24	0.27	0.24	10.30	
882.00	0.84	121.08	881.94	2.82	0.30	2.82	0.39	0.08	27.37	
974.00	0.71	83.91	973.93	2.54	1.45	2.53	0.55	-0.14	-40.40	
1,069.00	0.64	70.91	1,068.93	2.77	2.53	2.76	0.18	-0.07	-13.68	

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Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
1,163.00	0.42	42.05	1,162.92	3.20	3.26	3.19	0.36	-0.23	-30.70	
1,257.00	0.14	36.91	1,256.92	3.55	3.56	3.53	0.30	-0.30	-5.47	
1,352.00	0.28	324.76	1,351.92	3.83	3.50	3.82	0.29	0.15	-75.95	
1,541.00	0.81	315.56	1,540.91	5.16	2.29	5.15	0.28	0.28	-4.87	
1,636.00	1.23	303.17	1,635.90	6.20	0.97	6.20	0.50	0.44	-13.04	
1,731.00	0.84	320.74	1,730.88	7.30	-0.32	7.30	0.52	-0.41	18.49	
1,825.00	0.27	42.13	1,824.88	7.99	-0.61	8.00	0.90	-0.61	86.59	
1,920.00	0.48	92.07	1,919.88	8.15	-0.06	8.15	0.39	0.22	52.57	
2,014.00	0.96	97.97	2,013.87	8.02	1.11	8.02	0.52	0.51	6.28	
2,108.00	2.03	99.05	2,107.84	7.65	3.53	7.64	1.14	1.14	1.15	
2,202.00	3.03	105.94	2,201.74	6.71	7.57	6.68	1.11	1.06	7.33	
2,297.00	3.60	105.00	2,296.58	5.25	12.66	5.20	0.60	0.60	-0.99	
2,343.00	3.21	103.43	2,342.50	4.57	15.51	4.51	0.87	-0.85	-3.41	
2,488.00	2.85	102.32	2,487.30	2.86	22.98	2.77	0.25	-0.25	-0.77	
2,582.00	2.59	94.53	2,581.19	2.19	27.38	2.09	0.48	-0.28	-8.29	
2,676.00	2.74	90.07	2,675.09	2.02	31.75	1.90	0.27	0.16	-4.74	
2,771.00	2.90	87.55	2,769.98	2.12	36.42	1.98	0.21	0.17	-2.65	
2,865.00	3.14	86.04	2,863.85	2.40	41.36	2.24	0.27	0.26	-1.61	
2,959.00	2.81	86.04	2,957.72	2.74	46.23	2.56	0.35	-0.35	0.00	
3,053.00	2.71	83.01	3,051.61	3.17	50.73	2.97	0.19	-0.11	-3.22	
3,148.00	2.83	84.86	3,146.50	3.65	55.30	3.44	0.16	0.13	1.95	
3,242.00	2.70	79.15	3,240.39	4.28	59.78	4.05	0.32	-0.14	-6.07	
3,336.00	5.00	86.73	3,334.17	4.93	66.05	4.67	2.50	2.45	8.06	
3,431.00	5.02	88.01	3,428.81	5.31	74.33	5.02	0.12	0.02	1.35	
3,525.00	7.30	102.24	3,522.27	4.18	84.28	3.86	2.90	2.43	15.14	
3,619.00	7.01	100.98	3,615.53	1.83	95.75	1.46	0.35	-0.31	-1.34	
3,713.00	7.82	100.79	3,708.75	-0.46	107.66	-0.88	0.86	0.86	-0.20	
3,808.00	7.74	101.05	3,802.87	-2.90	120.29	-3.36	0.09	-0.08	0.27	
3,902.00	10.16	100.59	3,895.72	-5.64	134.65	-6.15	2.58	2.57	-0.49	
3,997.00	10.01	99.24	3,989.25	-8.50	151.04	-9.08	0.29	-0.16	-1.42	
4,091.00	12.71	102.25	4,081.40	-12.01	169.21	-12.66	2.94	2.87	3.20	
4,185.00	12.76	101.26	4,173.09	-16.23	189.50	-16.96	0.24	0.05	-1.05	
4,280.00	15.41	101.03	4,265.23	-20.69	212.18	-21.51	2.79	2.79	-0.24	
4,375.00	15.79	99.64	4,356.73	-25.27	237.31	-26.18	0.56	0.40	-1.46	
4,469.00	15.26	100.63	4,447.30	-29.70	262.08	-30.70	0.63	-0.56	1.05	
4,563.00	14.43	98.80	4,538.16	-33.77	285.81	-34.87	1.01	-0.88	-1.95	
4,658.00	13.93	97.80	4,630.27	-37.13	308.84	-38.32	0.59	-0.53	-1.05	
4,752.00	13.16	97.54	4,721.65	-40.07	330.66	-41.34	0.82	-0.82	-0.28	
4,847.00	13.47	96.28	4,814.10	-42.70	352.38	-44.06	0.45	0.33	-1.33	
4,941.00	13.42	97.26	4,905.52	-45.28	374.08	-46.72	0.25	-0.05	1.04	
5,036.00	14.87	97.11	4,997.64	-48.18	397.11	-49.71	1.53	1.53	-0.16	
5,130.00	15.56	98.58	5,088.34	-51.56	421.55	-53.17	0.84	0.73	1.56	
5,224.00	15.00	98.98	5,179.02	-55.33	446.03	-57.05	0.61	-0.60	0.43	
5,319.00	14.35	98.84	5,270.92	-59.06	469.81	-60.87	0.69	-0.68	-0.15	

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Design:	OH	Database:	Midland District

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,413.00	13.64	99.01	5,362.13	-62.59	492.26	-64.48	0.76	-0.76	0.18
5,507.00	13.37	100.33	5,453.53	-66.27	513.90	-68.25	0.44	-0.29	1.40
5,601.00	14.11	105.27	5,544.84	-71.24	535.65	-73.30	1.48	0.79	5.26
5,695.00	13.41	105.52	5,636.14	-77.17	557.21	-79.31	0.75	-0.74	0.27
5,790.00	13.73	102.26	5,728.49	-82.52	578.84	-84.74	0.87	0.34	-3.43
5,884.00	15.49	102.55	5,819.45	-87.61	601.99	-89.92	1.87	1.87	0.31
5,978.00	14.48	103.51	5,910.25	-93.09	625.67	-95.49	1.11	-1.07	1.02
6,073.00	13.71	104.82	6,002.39	-98.74	648.10	-101.23	0.88	-0.81	1.38
6,167.00	12.37	103.50	6,093.97	-103.94	668.66	-106.51	1.46	-1.43	-1.40
6,262.00	12.11	102.39	6,186.81	-108.45	688.29	-111.10	0.37	-0.27	-1.17
6,356.00	10.87	97.32	6,278.92	-111.70	706.72	-114.41	1.70	-1.32	-5.39
6,451.00	9.78	93.82	6,372.38	-113.38	723.65	-116.16	1.32	-1.15	-3.68
6,545.00	10.81	91.47	6,464.87	-114.14	740.43	-116.98	1.18	1.10	-2.50
6,639.00	9.43	89.56	6,557.41	-114.30	756.94	-117.21	1.51	-1.47	-2.03
6,733.00	11.65	84.39	6,649.82	-113.32	774.09	-116.29	2.56	2.36	-5.50
6,828.00	11.12	78.26	6,742.95	-110.51	792.61	-113.56	1.39	-0.56	-6.45
6,922.00	13.38	72.63	6,834.81	-105.42	811.87	-108.54	2.72	2.40	-5.99
7,017.00	11.61	71.68	6,927.55	-99.14	831.43	-102.33	1.88	-1.86	-1.00
7,111.00	10.71	72.07	7,019.78	-93.47	848.72	-96.73	0.96	-0.96	0.41
7,206.00	10.54	80.34	7,113.15	-89.30	865.69	-92.62	1.61	-0.18	8.71
7,300.00	9.20	86.39	7,205.76	-87.38	881.66	-90.77	1.80	-1.43	6.44
7,395.00	8.30	90.11	7,299.66	-86.92	896.10	-90.36	1.12	-0.95	3.92
7,489.00	8.63	103.05	7,392.64	-88.52	909.76	-92.01	2.05	0.35	13.77
7,583.00	7.36	115.22	7,485.73	-92.68	922.08	-96.22	2.24	-1.35	12.95
7,678.00	5.36	139.42	7,580.16	-98.64	930.47	-102.22	3.48	-2.11	25.47
7,772.00	4.08	144.45	7,673.84	-104.70	935.27	-108.29	1.43	-1.36	5.35
7,866.00	3.96	137.90	7,767.61	-109.83	939.39	-113.44	0.50	-0.13	-6.97
7,960.00	3.31	140.81	7,861.42	-114.34	943.28	-117.96	0.72	-0.69	3.10
8,055.00	1.76	181.71	7,956.33	-117.93	944.97	-121.55	2.41	-1.63	43.05
8,149.00	1.46	198.57	8,050.29	-120.50	944.55	-124.13	0.59	-0.32	17.94
8,244.00	1.34	219.36	8,145.26	-122.51	943.46	-126.13	0.55	-0.13	21.88
8,338.00	1.37	253.37	8,239.24	-123.68	941.68	-127.30	0.84	0.03	36.18
8,433.00	2.64	256.03	8,334.18	-124.53	938.47	-128.14	1.34	1.34	2.80
8,527.00	2.12	256.31	8,428.10	-125.47	934.68	-129.06	0.55	-0.55	0.30
8,622.00	2.06	262.22	8,523.03	-126.12	931.28	-129.69	0.24	-0.06	6.22
8,716.00	1.42	245.55	8,616.99	-126.83	928.55	-130.39	0.86	-0.68	-17.73
8,823.00	2.29	244.03	8,723.93	-128.31	925.42	-131.86	0.81	0.81	-1.42
8,898.00	2.93	250.45	8,798.86	-129.61	922.27	-133.15	0.94	0.85	8.56
8,992.00	2.49	278.41	8,892.75	-130.11	917.98	-133.64	1.46	-0.47	29.74
9,039.00	5.01	327.80	8,939.66	-128.23	915.88	-131.74	8.25	5.36	105.09
9,086.00	8.42	344.38	8,986.34	-123.17	913.86	-126.68	8.27	7.26	35.28
9,133.00	12.42	351.46	9,032.55	-114.86	912.18	-118.36	8.92	8.51	15.06
9,181.00	14.90	352.89	9,079.19	-103.63	910.65	-107.12	5.21	5.17	2.98

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Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,276.00	22.55	358.69	9,169.10	-73.25	908.72	-76.74	8.28	8.05	6.11
9,371.00	31.16	0.11	9,253.78	-30.38	908.35	-33.87	9.09	9.06	1.49
9,418.00	38.21	1.54	9,292.40	-3.66	908.76	-7.15	15.10	15.00	3.04
9,466.00	45.42	1.49	9,328.15	28.31	909.61	24.82	15.02	15.02	-0.10
9,513.00	52.94	357.02	9,358.86	63.84	909.06	60.35	17.54	16.00	-9.51
9,560.00	60.28	356.23	9,384.71	102.98	906.74	99.50	15.68	15.62	-1.68
9,586.27	62.14	354.47	9,397.37	125.93	904.88	122.45	9.19	7.07	-6.69
FTP [RL/WXY#18H]									
9,607.00	63.62	353.13	9,406.82	144.27	902.88	140.80	9.19	7.15	-6.48
9,655.00	66.97	348.96	9,426.88	187.32	896.08	183.88	10.53	6.98	-8.69
9,698.00	72.83	344.07	9,441.66	226.55	886.64	223.14	17.31	13.63	-11.37
9,749.00	79.37	342.38	9,453.91	273.92	872.35	270.57	13.22	12.82	-3.31
9,763.02	80.14	343.49	9,456.40	287.11	868.30	283.77	9.50	5.48	7.88
Well Exits Window (9763.02 MD / 9456.40 TVD)									
9,794.00	81.85	345.91	9,461.25	316.62	860.23	313.31	9.50	5.52	7.83
9,843.00	84.55	353.96	9,467.06	364.48	851.74	361.21	17.22	5.51	16.43
9,927.80	87.44	0.37	9,472.99	448.92	847.57	445.66	8.28	3.41	7.56
Max Left of Plan (9927.80 MD / 9472.99 TVD)									
9,928.00	87.45	0.39	9,473.00	449.12	847.57	445.86	8.28	3.44	7.54
10,022.00	87.07	0.29	9,477.49	543.01	848.13	539.75	0.42	-0.40	-0.11
10,117.00	89.63	1.05	9,480.22	637.95	849.24	634.69	2.81	2.69	0.80
10,212.00	91.41	2.36	9,479.36	732.90	852.07	729.63	2.33	1.87	1.38
10,306.00	90.20	1.72	9,478.04	826.83	855.41	823.54	1.46	-1.29	-0.68
10,400.00	92.22	3.51	9,476.06	920.70	859.70	917.40	2.87	2.15	1.90
10,479.12	92.56	3.50	9,472.76	999.61	864.53	996.28	0.43	0.43	-0.01
Well Re-enters Window (10479.12 MD / 9472.76 TVD)									
10,494.00	92.62	3.50	9,472.09	1,014.44	865.44	1,011.11	0.43	0.43	-0.01
10,589.00	92.12	3.12	9,468.16	1,109.20	870.92	1,105.85	0.66	-0.53	-0.40
10,683.00	92.56	3.29	9,464.32	1,202.98	876.17	1,199.61	0.50	0.47	0.18
10,778.00	92.76	3.33	9,459.91	1,297.72	881.65	1,294.32	0.21	0.21	0.04
10,873.00	91.38	2.19	9,456.48	1,392.54	886.22	1,389.13	1.88	-1.45	-1.20
10,967.00	91.34	2.24	9,454.25	1,486.44	889.85	1,483.02	0.07	-0.04	0.05
11,061.00	88.82	1.64	9,454.12	1,580.38	893.03	1,576.94	2.76	-2.68	-0.64
11,156.00	90.07	1.95	9,455.04	1,675.33	896.01	1,671.88	1.36	1.32	0.33
11,251.00	90.34	0.39	9,454.70	1,770.31	897.95	1,766.85	1.67	0.28	-1.64
11,345.00	90.44	0.63	9,454.06	1,864.30	898.79	1,860.84	0.28	0.11	0.26
11,439.00	89.66	359.62	9,453.98	1,958.30	898.99	1,954.83	1.36	-0.83	-1.07
11,533.00	90.13	359.84	9,454.15	2,052.30	898.55	2,048.83	0.55	0.50	0.23
11,628.00	91.51	0.28	9,452.79	2,147.28	898.65	2,143.82	1.52	1.45	0.46
11,722.00	87.72	359.52	9,453.42	2,241.26	898.48	2,237.80	4.11	-4.03	-0.81
11,816.00	90.00	359.50	9,455.29	2,335.24	897.68	2,331.77	2.43	2.43	-0.02
11,911.00	91.48	359.97	9,454.06	2,430.22	897.24	2,426.76	1.63	1.56	0.49
12,005.00	88.92	358.87	9,453.74	2,524.21	896.29	2,520.75	2.96	-2.72	-1.17
12,099.00	88.40	358.59	9,455.93	2,618.16	894.21	2,614.71	0.63	-0.55	-0.30

Company:	Marathon Oil Permian, LLC	Local Co-ordinate Reference:	Well WXY #18H
Project:	Eddy County, NM (NAD27)	TVD Reference:	KB = 26.5' @ 3101.50usft (H&P 498)
Site:	Mariner Fee 23-28-20	MD Reference:	KB = 26.5' @ 3101.50usft (H&P 498)
Well:	WXY #18H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland District

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
12,192.00	89.56	357.86	9,457.59	2,711.10	891.33	2,707.66	1.47	1.25	-0.78	
12,286.00	90.77	358.28	9,457.32	2,805.04	888.16	2,801.61	1.36	1.29	0.45	
12,381.00	91.31	358.65	9,455.59	2,899.99	885.62	2,896.57	0.69	0.57	0.39	
12,476.00	93.03	358.62	9,452.00	2,994.89	883.36	2,991.48	1.81	1.81	-0.03	
12,570.00	92.82	358.19	9,447.20	3,088.74	880.74	3,085.33	0.51	-0.22	-0.46	
12,664.00	93.06	358.54	9,442.38	3,182.57	878.06	3,179.18	0.45	0.26	0.37	
12,759.00	93.23	359.66	9,437.17	3,277.42	876.57	3,274.03	1.19	0.18	1.18	
12,854.00	89.73	359.85	9,434.71	3,372.37	876.17	3,368.98	3.69	-3.68	0.20	
12,949.00	88.15	358.93	9,436.47	3,467.34	875.16	3,463.96	1.92	-1.66	-0.97	
13,042.00	91.24	0.87	9,436.97	3,560.33	874.99	3,556.94	3.92	3.32	2.09	
13,137.00	89.97	1.14	9,435.96	3,655.30	876.66	3,651.91	1.37	-1.34	0.28	
13,231.00	88.52	0.38	9,437.20	3,749.29	877.91	3,745.89	1.74	-1.54	-0.81	
13,326.00	88.42	0.38	9,439.74	3,844.25	878.54	3,840.85	0.11	-0.11	0.00	
13,420.00	90.77	1.24	9,440.40	3,938.23	879.87	3,934.82	2.66	2.50	0.91	
13,514.00	88.79	0.29	9,440.76	4,032.21	881.12	4,028.80	2.34	-2.11	-1.01	
13,609.00	88.82	0.38	9,442.75	4,127.19	881.68	4,123.78	0.10	0.03	0.09	
13,703.00	90.10	0.20	9,443.63	4,221.19	882.15	4,217.77	1.38	1.36	-0.19	
13,798.00	91.88	0.28	9,441.99	4,316.17	882.55	4,312.75	1.88	1.87	0.08	
13,893.00	91.68	1.02	9,439.04	4,411.11	883.63	4,407.69	0.81	-0.21	0.78	
13,987.00	88.99	0.15	9,438.49	4,505.10	884.59	4,501.67	3.01	-2.86	-0.93	
14,081.00	87.65	1.18	9,441.25	4,599.05	885.68	4,595.61	1.80	-1.43	1.10	
14,176.00	91.14	2.97	9,442.25	4,693.96	889.12	4,690.51	4.13	3.67	1.88	
14,244.00	89.60	2.30	9,441.81	4,761.89	892.24	4,758.42	2.47	-2.26	-0.99	
FINAL MWD Survey (14244.00' MD) - BHL[RL/WXY#18H]										
14,304.00	89.60	2.30	9,442.23	4,821.84	894.65	4,818.37	0.00	0.00	0.00	
FINAL Proj. to Bit (14304.00' MD)										

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,763.02	9,456.40	287.11	868.30	Well Exits Window (9763.02 MD / 9456.40 TVD)
9,927.80	9,472.99	448.92	847.57	Max Left of Plan (9927.80 MD / 9472.99 TVD)
10,479.12	9,472.76	999.61	864.53	Well Re-enters Window (10479.12 MD / 9472.76 TVD)
14,244.00	9,441.81	4,761.89	892.24	FINAL MWD Survey (14244.00' MD)
14,304.00	9,442.23	4,821.84	894.65	FINAL Proj. to Bit (14304.00' MD)

Checked By: _____ Approved By: _____ Date: _____



EDDY COUNTY, NM (NAD27)
MARINER FEE 23-28-20
WXY #18H

FINAL AS-DRILLED
H&P 498

WELL DETAILS:

Ground Level: 3075.00		Latitude	Longitude
+N-S	+E-W	32° 17' 1.793 N	104° 6' 47.018 W
0.00	0.00	467045.09	568072.28

SECTION DETAILS

MD	INC	421	TVD	+N-S	+E-W	DLEG	TFACE	VSect	TAFGET
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3003.00	0.00	0.00	3003.00	0.00	0.00	0.00	0.00	0.00	
3700.00	16.00	99.00	3593.09	-13.31	84.05	2.00	99.00	-13.53	
5795.50	16.00	99.00	6699.03	-130.56	824.30	0.00	0.00	-133.72	
-58.00	0.00	0.00	7392.39	-143.67	939.34	2.00	100.00	-147.35	
5979.56	0.00	0.00	8574.16	-143.57	909.34	0.00	0.00	-147.35	
8579.44	90.00	359.78	9447.00	426.04	909.12	0.00	359.78	426.60	
14227.82	90.00	359.78	9447.00	4775.92	589.25	0.00	0.00	4775.47	BHL[RL/WXY#18H]
14272.32	90.00	359.78	9447.00	4821.92	589.08	0.01	90.00	4818.47	

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting
BHL[RL/WXY#18H]	9447.00	4776.92	889.25	471821.60	568961.45
FTP[RL/WXY#18H]	9447.00	99.57	907.17	467144.65	568979.37

DRILLING TARGET: 9447' TVD @ 0VS // 90.0° INC.

TARGET WINDOW: 15' UP // 15' DOWN - 40' L // 20' R

SITE DETAILS: MARINER FEE 23-28-20
SITE CENTRE NORTHING: 467045.09
EASTING: 567952.27

POSITIONAL UNCERTAINTY: 0.00
CONVERGENCE: 0.12
LOCAL NORTH: GRID

PROJECT DETAILS: EDDY COUNTY, NM (NAD27)
GEODETIC SYSTEM: US STATE PLANE 1927 (EXACT SOLUTION)
DATUM: NAD 1927 (NADCON CONUS)
ELLIPSOID: CLARKE 1866
ZONE: NEW MEXICO EAST 3001

SYSTEM DATUM: MEAN SEA LEVEL

FORMATION TOP DETAILS

TVD(PTH)	DEPTH	FORMATION
453.50	158.50	SALADO
563.50	268.50	CASTLE
2541.50	2541.50	BASE OF SALT
2504.50	2504.50	LANAP
2530.50	2530.50	BELL CANYON
3346.50	3370.53	CHEERY CANYON
4502.50	4524.22	EPICANY CANYON
6082.50	6102.59	BONE SPRING
6095.50	7093.31	1ST BONE SPRING SAND
7775.50	7579.41	2ND BONE SPRING SAND
8975.50	9091.95	3RD BONE SPRING SAND
9315.50	9430.31	WOLF CAMP

MAP SYSTEM: US STATE PLANE 1927 (EXACT SOLUTION)
DATUM: NAD 1927 (NADCON CONUS)
ELLIPSOID: CLARKE 1866
ZONE NAME: NEW MEXICO EAST 3001

LOCAL ORIGIN: WELL WAY #18H, GRID NORTH

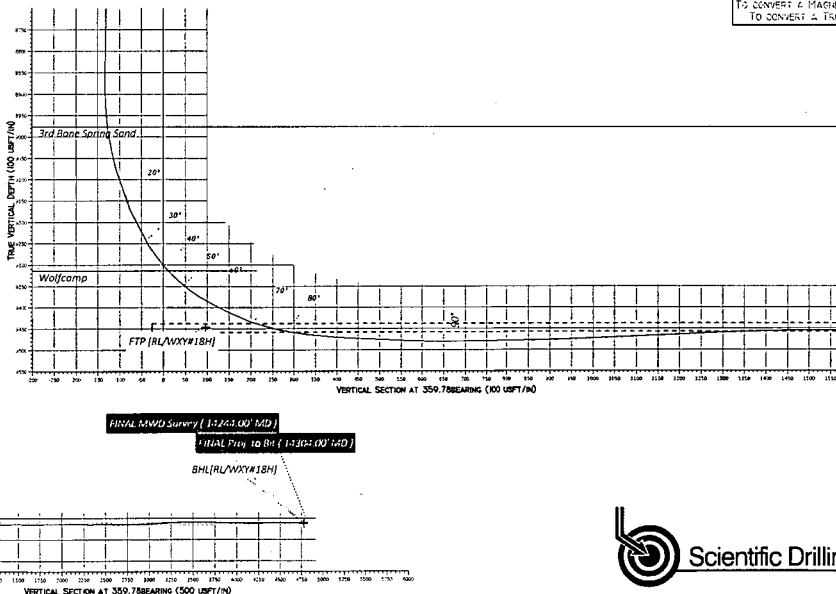
LATITUDE: 32° 17' 1.793 N
LONGITUDE: 104° 6' 47.018 W

GRID EAST: 568072.28
GRID NORTH: 467045.09
SCALE FACTOR: 1.0000

GEOMAGNETIC MODEL: HDGM
SAMPLE DATE: 03-NOV-17
MAGNETIC DECLINATION: 7.32°
DIP ANGLE FROM HORIZONTAL: 60.07°
MAGNETIC FIELD STRENGTH: 42066

TO CONVERT A MAGNETIC DIRECTION TO A GRID DIRECTION, ADD 7.20°
TO CONVERT A MAGNETIC DIRECTION TO A TRUE DIRECTION, ADD 7.32° EAST
TO CONVERT A TRUE DIRECTION TO A GRID DIRECTION, SUBTRACT 0.12°

CASING DETAILS
No casing data is available



Azimuths to Grid North
True North: -0.12°
Magnetic North: 7.20°

Magnetic Field
Strength: 48065.8nT
Dip Angle: 60.07°
Date: 11/3/2017
Model: HDGM

