

NM OIL CONSERVATION ARTESIA DISTRICT

NOV 17 2017

RECEIVED

Marathon Oil Corporation

EDDY COUNTY, NM (NAD27)
MARINER FFE
23-28-20 WXY #18H
OH
PLAN #1
PATTERSON 244

WELL DETAILS:					
		Ground Level	3075.00		
+N/S	+E/W	Northings	Eastings	Latitude	Longitude
0.00	0.00	467045.09	588072.27	32° 17' 1.793 N 104° 6' 47.018 W	

SECTION DETAILS									
TRD	INC	AZI	TVD	+N/S	+E/W	DIRC	TRAC	VZRT	TARGET
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2653.78	1.92	0.00	2653.78	0.32	0.00	0.00	0.30	0.00	
3100.28	2.95	94.00	3090.11	2.88	27.38	2.80	94.00	2.18	
4803.28	2.65	94.00	4803.28	43.19	8274.58	0.00	0.00	44.10	
9831.89	90.00	359.76	9831.89	474.03	113.71	11.00	90.18	662.84	
14127.82	90.00	359.76	14127.82	4776.07	489.28	11.00	90.18	6554.79	BR (18H)

DESIGN TARGET DETAILS					
Name	TVD	+N/S	+E/W	Northings	Eastings
BRIL (18H)	8442.00	4778.92	888.20	47182.80	588551.45
FTP (18H)	8442.00	99.57	801.18	487144.85	588979.37

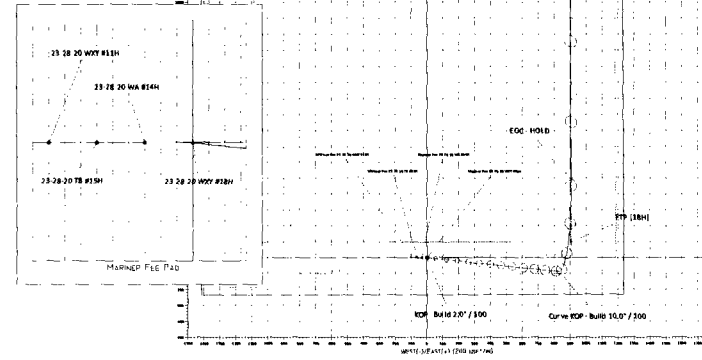
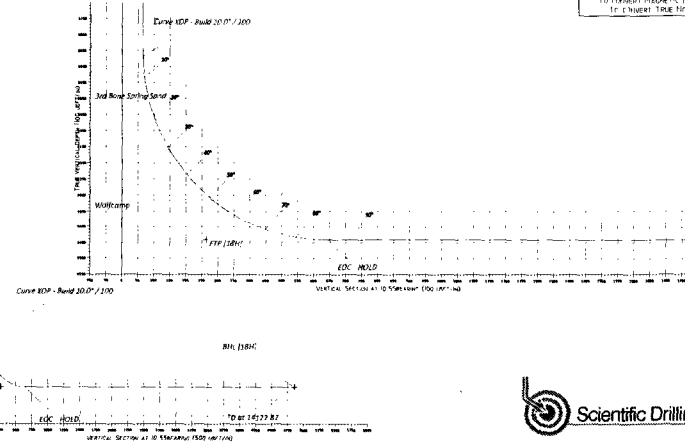
SITE DETAILS: MARINER FFE		PROJECT DETAILS: EDDY COUNTY, NM (NAD27)	
UTM CENTER POINTING: 627045.00	EASTING: 587047.27	SYSTEM: US STATE PLANE (27) (EAST SOLUTION)	
POSITIONAL UNCERTAINTY: 0.00		DATUM: NAD 1983 (NAD83 CONUS)	
CONVERSION: 0.00		FLIPSID: FLAME 1800	
UTM NORTH: 0.00		ZONE: NAD 1983 EAST 5001	
		SYSTEM DATUM: NAD 1983 SEA LEVEL	

FORMATION TOP DETAILS		MAP SYSTEM: US STATE PLANE (27) (EAST SOLUTION)	
T (OFF) IN	FEET IN	DATUM: NAD 1983 (NAD83 CONUS)	
480.00	480.00	FLIPSID: FLAME 1800	
840.00	840.00	ZONE: NAD 1983 EAST 5001	
2365.00	2365.00	LOCAL ORIGIN: WELL 23-28-20 WXY #18H, GRID NORTH	
2500.00	2500.00	LATITUDE: 32° 17' 1.793 N	
2532.00	2532.00	LONGITUDE: 104° 6' 47.018 W	
4331.00	4331.00	GRID EAST: 588072.27	
4501.00	4501.00	GRID NORTH: 627045.00	
6040.00	6040.00	SCALE FACTOR: 1.000	
6940.00	6940.00	GEOLGICAL: MOPEL HIGH	
7275.00	7275.00	SAMPLE DATE: 03 NOV 12	
8312.00	8312.00	MAGNETIC DECLINATION: 7.12°	
9115.00	9115.00	DI. SCALE NORTH-HORIZONTAL: 80.00"	
		MADE BY: FIELD SURVEY AND 6	
		TO CONVERT MAGNETIC NORTH TO GRID, ADD 7.12° EAST	
		TO CONVERT GRID NORTH TO GRID, SUBTRACT 0.12°	

CASING DETAILS
No casing data is available

GL ELEV: 3075.00
DEPTH FFE: 28 @ 3103.0000 FT (PATTERSON 244)

ROP: Build 1.0"/100



Scientific Drilling

NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 17 2017

RECEIVED

Marathon Oil Permian, LLC

Eddy County, NM (NAD27)

Mariner Fee

23-28-20 WXY #18H

OH

Plan: Plan#1

Standard Planning Report

10 November, 2017



www.scientificdrilling.com

Planning Report

Database:	Midland District	Local Coordinate Reference:	Well 23-28-20 WXY #18H
Company:	Marathon Oil Permian, LLC	TVD Reference:	KB = 28 @ 3103.00usf(Patterson 244)
Project:	Eddy County, NM (NAD27)	MD Reference:	KB = 28 @ 3103.00usf(Patterson 244)
Site:	Mariner Fee	North Reference:	Grid
Well:	23-28-20 WKY #18H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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				
Site Position:		Northing:	467,045.09 usft	Latitude:	32° 17'1.795 N
From:	Map	Easting:	567,982.27 usft	Longitude:	104° 6'48.067 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.12 °

Well	23-28-20 WKY #18H					
Well Position	+N/-S	0.00 usft	Northing:	467,045.09 usft	Latitude:	32° 17'1.793 N
	+E/-W	90.01 usft	Easting:	568,072.27 usft	Longitude:	104° 6'47.018 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,075.00 usft

Wellbore:	OH
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	11/3/2017	7.32	60.12	48,074

Design:	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (bearing)
	0.00	0.00	0.00	10.55

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Depth Rate ("/100usft)	Built 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	
2,693.78	0.00	0.00	2,693.78	0.00	0.00	0.00	0.00	0.00	0.00	
3,091.28	7.95	96.00	3,090.01	-2.88	27.38	2.00	2.00	0.00	96.00	
8,923.28	7.95	96.00	8,865.96	-87.19	829.58	0.00	0.00	0.00	0.00	
9,831.89	90.00	359.76	9,442.00	486.03	907.15	10.00	9.03	-10.59	-96.18	
14,122.82	90.00	359.76	9,442.00	4,776.92	889.26	0.00	0.00	0.00	88.47 BHL [8H]	

Planning Report

Database: Midland District
 Company: Marathon Oil Permian, LLC
 Project: Eddy County, NM (NAD27)
 Site: Mariner Fee
 Well: 23-28-20 WKY #18H
 Wellbore: OH
 Design: Plan #1

Local Coordinate Reference: Well 23-28-20 WKY #18H
 TVD Reference: KB = 28 @ 3103.00us(Patterson 244)
 MD Reference: KB = 28 @ 3103.00us(Patterson 244)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned 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
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
460.00	0.00	0.00	460.00	0.00	0.00	0.00	0.00	0.00	0.00
Salado									
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
865.00	0.00	0.00	865.00	0.00	0.00	0.00	0.00	0.00	0.00
Castile									
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	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
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,343.00	0.00	0.00	2,343.00	0.00	0.00	0.00	0.00	0.00	0.00
Base of Salt									
2,400.00	0.00	0.00	2,400.00	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
2,506.00	0.00	0.00	2,506.00	0.00	0.00	0.00	0.00	0.00	0.00
Iamar									
2,532.00	0.00	0.00	2,532.00	0.00	0.00	0.00	0.00	0.00	0.00
Bell Canyon									
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,693.78	0.00	0.00	2,693.78	0.00	0.00	0.00	0.00	0.00	0.00
KOP - Build 2.0° / 10									
2,700.00	0.12	96.00	2,700.00	0.00	0.01	0.00	2.00	2.00	0.00
2,800.00	2.12	96.00	2,799.98	-0.21	1.96	0.16	2.00	2.00	0.00
2,900.00	4.12	96.00	2,899.82	-0.78	7.38	0.59	2.00	2.00	0.00
3,000.00	6.12	96.00	2,999.42	-1.71	16.26	1.30	2.00	2.00	0.00
3,091.28	7.95	96.00	3,090.01	-2.88	27.38	2.18	2.00	2.00	0.00
EOB - MLD									
3,100.00	7.95	96.00	3,098.64	-3.00	28.58	2.28	0.00	0.00	0.00
3,200.00	7.95	96.00	3,197.68	-4.45	42.34	3.37	0.00	0.00	0.00
3,300.00	7.95	96.00	3,296.72	-5.90	56.09	4.47	0.00	0.00	0.00
3,375.00	7.95	96.00	3,371.00	-6.98	66.41	5.29	0.00	0.00	0.00
Cherry Canyon									
3,400.00	7.95	96.00	3,395.76	-7.34	69.85	5.57	0.00	0.00	0.00
3,500.00	7.95	96.00	3,494.80	-8.79	83.60	6.66	0.00	0.00	0.00
3,600.00	7.95	96.00	3,593.84	-10.23	97.36	7.76	0.00	0.00	0.00

Planning Report

Database: Midland District
 Company: Marathon Oil Permian, LLC
 Project: Eddy County, NM (NAD27)
 Site: Mariner Fee
 Well: 23-28-20 WKY #18H
 Wellbore: OH
 Design: Plan #1

Local Coordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:

Well 23-28-20 WKY #18H
 KB = 28 @ 3103.00us(Patterson 244)
 KB = 28 @ 3103.00us(Patterson 244)
 Grid
 Minimum Curvature

Planned 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)
3,700.00	7.95	96.00	3,692.88	-11.68	111.11	8.85	0.00	0.00	0.00
3,800.00	7.95	96.00	3,791.91	-13.12	124.87	9.95	0.00	0.00	0.00
3,900.00	7.95	96.00	3,890.95	-14.57	138.62	11.05	0.00	0.00	0.00
4,000.00	7.95	96.00	3,989.99	-16.02	152.38	12.14	0.00	0.00	0.00
4,100.00	7.95	96.00	4,089.03	-17.46	166.13	13.24	0.00	0.00	0.00
4,200.00	7.95	96.00	4,188.07	-18.91	179.89	14.33	0.00	0.00	0.00
4,300.00	7.95	96.00	4,287.11	-20.35	193.64	15.43	0.00	0.00	0.00
4,400.00	7.95	96.00	4,386.15	-21.80	207.40	16.53	0.00	0.00	0.00
4,500.00	7.95	96.00	4,485.19	-23.24	221.15	17.62	0.00	0.00	0.00
4,519.00	7.95	96.00	4,504.00	-23.52	223.77	17.83	0.00	0.00	0.00
Brushy Canyon									
4,600.00	7.95	96.00	4,584.23	-24.69	234.91	18.72	0.00	0.00	0.00
4,700.00	7.95	96.00	4,683.26	-26.14	248.66	19.81	0.00	0.00	0.00
4,800.00	7.95	96.00	4,782.30	-27.58	262.42	20.91	0.00	0.00	0.00
4,900.00	7.95	96.00	4,881.34	-29.03	276.17	22.01	0.00	0.00	0.00
5,000.00	7.95	96.00	4,980.38	-30.47	289.93	23.10	0.00	0.00	0.00
5,100.00	7.95	96.00	5,079.42	-31.92	303.68	24.20	0.00	0.00	0.00
5,200.00	7.95	96.00	5,178.46	-33.36	317.44	25.29	0.00	0.00	0.00
5,300.00	7.95	96.00	5,277.50	-34.81	331.19	26.39	0.00	0.00	0.00
5,400.00	7.95	96.00	5,376.54	-36.26	344.95	27.49	0.00	0.00	0.00
5,500.00	7.95	96.00	5,475.58	-37.70	358.70	28.58	0.00	0.00	0.00
5,600.00	7.95	96.00	5,574.61	-39.15	372.46	29.68	0.00	0.00	0.00
5,700.00	7.95	96.00	5,673.65	-40.59	386.21	30.78	0.00	0.00	0.00
5,800.00	7.95	96.00	5,772.69	-42.04	399.97	31.87	0.00	0.00	0.00
5,900.00	7.95	96.00	5,871.73	-43.48	413.73	32.97	0.00	0.00	0.00
6,000.00	7.95	96.00	5,970.77	-44.93	427.48	34.06	0.00	0.00	0.00
6,100.00	7.95	96.00	6,069.81	-46.38	441.24	35.16	0.00	0.00	0.00
6,114.33	7.95	96.00	6,084.00	-46.58	443.21	35.32	0.00	0.00	0.00
Bone Spring									
6,200.00	7.95	96.00	6,168.85	-47.82	454.99	36.26	0.00	0.00	0.00
6,300.00	7.95	96.00	6,267.89	-49.27	468.75	37.35	0.00	0.00	0.00
6,400.00	7.95	96.00	6,366.93	-50.71	482.50	38.45	0.00	0.00	0.00
6,500.00	7.95	96.00	6,465.97	-52.16	496.26	39.54	0.00	0.00	0.00
6,600.00	7.95	96.00	6,565.00	-53.60	510.01	40.64	0.00	0.00	0.00
6,700.00	7.95	96.00	6,664.04	-55.05	523.77	41.74	0.00	0.00	0.00
6,800.00	7.95	96.00	6,763.08	-56.50	537.52	42.83	0.00	0.00	0.00
6,900.00	7.95	96.00	6,862.12	-57.94	551.28	43.93	0.00	0.00	0.00
7,000.00	7.95	96.00	6,961.16	-59.39	565.03	45.02	0.00	0.00	0.00
7,004.89	7.95	96.00	6,966.00	-59.46	565.70	45.08	0.00	0.00	0.00
1st Bone Spring Sand									
7,100.00	7.95	96.00	7,060.20	-60.83	578.79	46.12	0.00	0.00	0.00
7,200.00	7.95	96.00	7,159.24	-62.28	592.54	47.22	0.00	0.00	0.00
7,300.00	7.95	96.00	7,258.28	-63.72	606.30	48.31	0.00	0.00	0.00
7,400.00	7.95	96.00	7,357.32	-65.17	620.05	49.41	0.00	0.00	0.00
7,500.00	7.95	96.00	7,456.35	-66.62	633.81	50.50	0.00	0.00	0.00
7,600.00	7.95	96.00	7,555.39	-68.06	647.56	51.60	0.00	0.00	0.00
7,700.00	7.95	96.00	7,654.43	-69.51	661.32	52.70	0.00	0.00	0.00
7,800.00	7.95	96.00	7,753.47	-70.95	675.07	53.79	0.00	0.00	0.00
7,821.74	7.95	96.00	7,775.00	-71.27	678.06	54.03	0.00	0.00	0.00
2nd Bone Spring Sand									
7,900.00	7.95	96.00	7,852.51	-72.40	688.83	54.89	0.00	0.00	0.00
8,000.00	7.95	96.00	7,951.55	-73.84	702.58	55.98	0.00	0.00	0.00
8,100.00	7.95	96.00	8,050.59	-75.29	716.34	57.08	0.00	0.00	0.00
8,200.00	7.95	96.00	8,149.63	-76.74	730.09	58.18	0.00	0.00	0.00

Planning Report

Database:	Midland District	Local Coordinate Reference:	Well 23-28-20 WXY #18H
Company:	Marathon Oil Permian, LLC	TVD Reference:	KB = 28 @ 3103.00us(Patterson 244)
Project:	Eddy County, NM (NAD27)	MD Reference:	KB = 28 @ 3103.00us(Patterson 244)
Site:	Mariner Fee	North Reference:	Grid
Well:	23-28-20 WKY #18H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned 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)
8,300.00	7.95	96.00	8,248.67	-78.18	743.85	59.27	0.00	0.00	0.00
8,400.00	7.95	96.00	8,347.70	-79.63	757.60	60.37	0.00	0.00	0.00
8,500.00	7.95	96.00	8,446.74	-81.07	771.36	61.46	0.00	0.00	0.00
8,600.00	7.95	96.00	8,545.78	-82.52	785.11	62.56	0.00	0.00	0.00
8,700.00	7.95	96.00	8,644.82	-83.96	798.87	63.66	0.00	0.00	0.00
8,800.00	7.95	96.00	8,743.86	-85.41	812.62	64.75	0.00	0.00	0.00
8,900.00	7.95	96.00	8,842.90	-86.86	826.38	65.85	0.00	0.00	0.00
8,923.28	7.95	96.00	8,865.96	-87.19	829.58	66.10	0.00	0.00	0.00
Curve KOP - Bld 0.0° / 00									
8,950.00	8.11	76.81	8,892.42	-86.96	833.25	67.01	10.00	0.59	-71.81
9,000.00	10.42	48.78	8,941.79	-83.17	840.09	71.98	10.00	4.62	-56.06
9,035.96	13.04	36.58	8,977.00	-77.77	844.96	78.18	10.00	7.29	-33.93
3rd Bone Spring Sand									
9,050.00	14.18	33.09	8,990.64	-75.05	846.84	81.20	10.00	8.11	-24.89
9,100.00	18.53	24.23	9,038.62	-62.67	853.45	94.58	10.00	8.69	-17.71
9,150.00	23.13	18.72	9,085.34	-46.12	859.87	112.03	10.00	9.21	-11.02
9,200.00	27.87	14.98	9,130.46	-25.51	866.04	133.42	10.00	9.47	-7.48
9,250.00	32.68	12.26	9,173.63	-1.02	871.93	158.57	10.00	9.62	-5.44
9,300.00	37.53	10.17	9,214.53	27.18	877.49	187.31	10.00	9.71	-4.18
9,350.00	42.42	8.50	9,252.83	58.87	882.68	219.42	10.00	9.77	-3.34
9,400.00	47.32	7.11	9,288.26	93.81	887.45	254.64	10.00	9.81	-2.77
9,441.05	51.36	6.13	9,315.00	124.73	891.03	285.69	10.00	9.83	-2.39
Wolfcamp									
9,450.00	52.24	5.93	9,320.54	131.72	891.77	292.71	10.00	9.85	-2.23
9,495.26	56.70	4.99	9,346.83	168.38	895.27	329.38	10.00	9.86	-2.08
FTP [18H]									
9,500.00	57.17	4.90	9,349.42	172.34	895.61	333.34	10.00	9.86	-1.96
9,550.00	62.10	3.97	9,374.69	215.34	898.94	376.22	10.00	9.87	-1.85
9,600.00	67.04	3.13	9,396.15	260.39	901.73	421.02	10.00	9.88	-1.69
9,650.00	71.99	2.35	9,413.64	307.16	903.96	467.41	10.00	9.89	-1.57
9,700.00	76.94	1.61	9,427.03	355.29	905.62	515.03	10.00	9.90	-1.48
9,750.00	81.89	0.89	9,436.22	404.41	906.69	563.52	10.00	9.90	-1.42
9,800.00	86.84	0.20	9,441.12	454.15	907.16	612.50	10.00	9.90	-1.39
9,831.89	90.00	359.76	9,442.00	486.03	907.15	643.84	10.00	9.90	-1.38
EOC - NLD									
9,900.00	90.00	359.76	9,442.00	554.14	906.86	710.74	0.00	0.00	0.00
10,000.00	90.00	359.76	9,442.00	654.14	906.45	808.98	0.00	0.00	0.00
10,100.00	90.00	359.76	9,442.00	754.13	906.03	907.21	0.00	0.00	0.00
10,200.00	90.00	359.76	9,442.00	854.13	905.61	1,005.45	0.00	0.00	0.00
10,300.00	90.00	359.76	9,442.00	954.13	905.19	1,103.68	0.00	0.00	0.00
10,400.00	90.00	359.76	9,442.00	1,054.13	904.77	1,201.91	0.00	0.00	0.00
10,500.00	90.00	359.76	9,442.00	1,154.13	904.35	1,300.15	0.00	0.00	0.00
10,600.00	90.00	359.76	9,442.00	1,254.13	903.93	1,398.38	0.00	0.00	0.00
10,700.00	90.00	359.76	9,442.00	1,354.13	903.52	1,496.61	0.00	0.00	0.00
10,800.00	90.00	359.76	9,442.00	1,454.13	903.10	1,594.85	0.00	0.00	0.00
10,900.00	90.00	359.76	9,442.00	1,554.13	902.68	1,693.08	0.00	0.00	0.00
11,000.00	90.00	359.76	9,442.00	1,654.13	902.26	1,791.31	0.00	0.00	0.00
11,100.00	90.00	359.76	9,442.00	1,754.13	901.84	1,889.55	0.00	0.00	0.00
11,200.00	90.00	359.76	9,442.00	1,854.12	901.43	1,987.78	0.00	0.00	0.00
11,300.00	90.00	359.76	9,442.00	1,954.12	901.01	2,086.02	0.00	0.00	0.00
11,400.00	90.00	359.76	9,442.00	2,054.12	900.59	2,184.25	0.00	0.00	0.00
11,500.00	90.00	359.76	9,442.00	2,154.12	900.17	2,282.48	0.00	0.00	0.00
11,600.00	90.00	359.76	9,442.00	2,254.12	899.76	2,380.72	0.00	0.00	0.00

Planning Report

Database: Midland District
Company: Marathon Oil Permian, LLC
Project: Eddy County, NM (NAD27)
Site: Mariner Fee
Well: 23-28-20 WXY #18H
Wellbore: OH
Design: Plan #1

Local Coordinate Reference: Well 23-28-20 WXY #18H
TVD Reference: KB = 28 @ 3103.00us(Patterson 244)
MD Reference: KB = 28 @ 3103.00us(Patterson 244)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
11,700.00	90.00	359.76	9,442.00	2,354.12	899.34	2,478.95	0.00	0.00	0.00
11,800.00	90.00	359.76	9,442.00	2,454.12	898.92	2,577.19	0.00	0.00	0.00
11,900.00	90.00	359.76	9,442.00	2,554.12	898.51	2,675.42	0.00	0.00	0.00
12,000.00	90.00	359.76	9,442.00	2,654.12	898.09	2,773.65	0.00	0.00	0.00
12,100.00	90.00	359.76	9,442.00	2,754.12	897.67	2,871.89	0.00	0.00	0.00
12,200.00	90.00	359.76	9,442.00	2,854.12	897.25	2,970.12	0.00	0.00	0.00
12,300.00	90.00	359.76	9,442.00	2,954.12	896.84	3,068.35	0.00	0.00	0.00
12,400.00	90.00	359.76	9,442.00	3,054.11	896.42	3,166.59	0.00	0.00	0.00
12,500.00	90.00	359.76	9,442.00	3,154.11	896.00	3,264.82	0.00	0.00	0.00
12,600.00	90.00	359.76	9,442.00	3,254.11	895.59	3,363.06	0.00	0.00	0.00
12,700.00	90.00	359.76	9,442.00	3,354.11	895.17	3,461.29	0.00	0.00	0.00
12,800.00	90.00	359.76	9,442.00	3,454.11	894.76	3,559.52	0.00	0.00	0.00
12,900.00	90.00	359.76	9,442.00	3,554.11	894.34	3,657.76	0.00	0.00	0.00
13,000.00	90.00	359.76	9,442.00	3,654.11	893.92	3,755.99	0.00	0.00	0.00
13,100.00	90.00	359.76	9,442.00	3,754.11	893.51	3,854.23	0.00	0.00	0.00
13,200.00	90.00	359.76	9,442.00	3,854.11	893.09	3,952.46	0.00	0.00	0.00
13,300.00	90.00	359.76	9,442.00	3,954.11	892.67	4,050.69	0.00	0.00	0.00
13,400.00	90.00	359.76	9,442.00	4,054.11	892.26	4,148.93	0.00	0.00	0.00
13,500.00	90.00	359.76	9,442.00	4,154.10	891.84	4,247.16	0.00	0.00	0.00
13,600.00	90.00	359.76	9,442.00	4,254.10	891.43	4,345.40	0.00	0.00	0.00
13,700.00	90.00	359.76	9,442.00	4,354.10	891.01	4,443.63	0.00	0.00	0.00
13,800.00	90.00	359.76	9,442.00	4,454.10	890.60	4,541.87	0.00	0.00	0.00
13,900.00	90.00	359.76	9,442.00	4,554.10	890.18	4,640.10	0.00	0.00	0.00
14,000.00	90.00	359.76	9,442.00	4,654.10	889.77	4,738.33	0.00	0.00	0.00
14,100.00	90.00	359.76	9,442.00	4,754.10	889.35	4,836.57	0.00	0.00	0.00
14,122.82	90.00	359.76	9,442.00	4,776.92	889.26	4,858.98	0.00	0.00	0.00

TD at 4122.82 -BHL [18H]

Design Targets

Target Name	Dip Angle (°)	Dip Dir (bearing)	TVD (usft)	+N-S (usft)	+E-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP [18H] - 10' miss target - 10' miss target center by 118.04usft at 9495.26usft MD (9346.83 TVD, 168.38 N, 895.27 E) - Point	0.00	0.00	9,442.00	99.57	907.18	467,144.65	568,979.37	32° 17' 2.760 N	104° 6' 36.449 W
BHL [18H] - plan hits target center - Point	0.00	0.00	9,442.00	4,776.92	889.26	471,821.60	568,961.45	32° 17' 49.045 N	104° 6' 36.544 W

Planning Report

Database: Midland District
Company: Marathon Oil Permian, LLC
Project: Eddy County, NM (NAD27)
Site: Mariner Fee
Well: 23-28-20 WKY #18H
Wellbore: OH
Design: Plan #1

Local Coordinate Reference: Well 23-28-20 WKY #18H
TVD Reference: KB = 28 @ 3103.00us(Patterson 244)
MD Reference: KB = 28 @ 3103.00us(Patterson 244)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (bearing)
460.00	460.00	Salado			
865.00	865.00	Castile			
2,343.00	2,343.00	Base of Salt			
2,506.00	2,506.00	Iamar			
2,532.00	2,532.00	Bell Canyon			
3,375.00	3,371.00	Cherry Canyon			
4,519.00	4,504.00	Brushy Canyon			
6,114.33	6,084.00	Bone Spring			
7,004.89	6,966.00	1st Bone Spring Sand			
7,821.74	7,775.00	2nd Bone Spring Sand			
9,035.96	8,977.00	3rd Bone Spring Sand			
9,441.05	9,315.00	Wolfcamp			

Plan Annotations

Measured	Vertical	Local Coordinates		
Depth	Depth	N-S	E-W	
(usft)	(usft)	(usft)	(usft)	Comment
2,693.78	2,693.78	0.00	0.00	KOP -Build 20° / 100
3,091.28	3,090.01	-2.88	27.38	EOB - HOLD
8,923.28	8,865.96	-87.19	829.58	Curve KOP - Build 10.0° /100
9,831.89	9,442.00	486.03	907.15	EOC -HOLD
14,122.82	9,442.00	4,776.92	889.26	TD at 14122.82

NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 17 2017

RECEIVED

Marathon Oil Permian, LLC

Eddy County, NM (NAD27)

Mariner Fee

23-28-20 WXY #18H

OH

Plan #1

Anticollision Report

10 November, 2017



Scientific Drilling

www.scientificdrilling.com

Anticollision Report

Company:	Marathon Oil Permian, LLC	Local Co-ordinate Reference:	Well 23-28-20 WXY #18H
Project:	Eddy County, NM (NAD27)	TVD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Reference Site:	Mariner Fee	MD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	23-28-20 WXY #18H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output Error Limit:	2.00 sigma
Reference Wellbore:	OH	Database:	Midland District
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00usft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 2,099.49 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program:	Date: 11/10/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	14,122.82	Plan #1 (OH)	MWD+HDGM	OWSG MWD + HDGM

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Mariner Fee						
23-28-20 TB #15H - OH - Plan #1	9,037.11	9,065.76	8.87	-55.57	0.138	Level 1, CC, ES, SF
23-28-20 WA #14H - OH - Plan #1	9,374.83	9,345.18	21.99	-44.65	0.330	Level 1, CC, ES, SF
23-28-20 WXY #11H - OH - Plan #1	1,000.00	1,000.00	90.01	83.30	13.413	CC, ES
23-28-20 WXY #11H - OH - Plan #1	14,122.82	14,096.05	1,751.16	1,596.31	11.309	SF

Offset Design: Mariner Fee - 23-28-20 TB #15H - OH - Plan #1														Offset Site Error
Survey Program: MWD+HDGM														0.00 usft
Reference	Offset	Swell Meter Axis		Horizontal		Vertical	Offset Vertical	Offset	Minimum	Separation	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Offset (usft)	Offset (usft)	Offset (usft)	Offset (usft)	Factor	Warning			
0.00	0.00	0.00	0.00	0.00	0.00	-90.00	0.00	-60.01	60.01	59.75	0.26	232.488		
100.00	100.00	100.00	100.00	0.13	0.13	-90.00	0.00	-60.01	60.01	59.03	0.98	61.541		
200.00	200.00	200.00	200.00	0.49	0.49	-90.00	0.00	-60.01	60.01	58.31	1.69	35.464		
300.00	300.00	300.00	300.00	0.85	0.85	-90.00	0.00	-60.01	60.01	57.60	2.41	24.909		
400.00	400.00	400.00	400.00	1.20	1.20	-90.00	0.00	-60.01	60.01	56.88	3.13	19.196		
500.00	500.00	500.00	500.00	1.56	1.56	-90.00	0.00	-60.01	60.01	56.16	3.84	15.615		
600.00	600.00	600.00	600.00	1.92	1.92	-90.00	0.00	-60.01	60.01	55.45	4.56	13.160		
700.00	700.00	700.00	700.00	2.28	2.28	-90.00	0.00	-60.01	60.01	54.73	5.28	11.372		
800.00	800.00	800.00	800.00	2.64	2.64	-90.00	0.00	-60.01	60.01	54.01	5.99	10.011		
900.00	900.00	900.00	900.00	3.00	3.00	-90.00	0.00	-60.01	60.01	53.29	6.71	8.942		
1,000.00	1,000.00	1,000.00	1,000.00	3.36	3.36	-90.00	0.00	-60.01	60.01	52.58	7.43	8.079		
1,100.00	1,100.00	1,100.00	1,100.00	3.71	3.71	-90.00	0.00	-60.01	60.01	51.86	8.14	7.368		
1,200.00	1,200.00	1,200.00	1,200.00	4.07	4.07	-90.00	0.00	-60.01	60.01	51.14	8.86	6.772		
1,300.00	1,300.00	1,300.00	1,300.00	4.43	4.43	-90.00	0.00	-60.01	60.01	50.43	9.58	6.265		
1,400.00	1,400.00	1,400.00	1,400.00	4.79	4.79	-90.00	0.00	-60.01	60.01	49.71	10.30	5.828		
1,500.00	1,500.00	1,500.00	1,500.00	5.15	5.15	-90.00	0.00	-60.01	60.01	48.99	11.01	5.449		
1,600.00	1,600.00	1,600.00	1,600.00	5.51	5.51	-90.00	0.00	-60.01	60.01	48.28	11.73	5.116		
1,700.00	1,700.00	1,700.00	1,700.00	5.86	5.86	-90.00	0.00	-60.01	60.01	47.56	12.45	4.821		
1,800.00	1,800.00	1,800.00	1,800.00	6.22	6.22	-90.00	0.00	-60.01	60.01	46.84	13.16	4.559		
1,900.00	1,900.00	1,900.00	1,900.00	6.58	6.58	-90.00	0.00	-60.01	60.01	46.13	13.88	4.323		
2,000.00	2,000.00	2,000.00	2,000.00	6.94	6.94	-90.00	0.00	-60.01	60.01	45.41	14.60	4.111		
2,100.00	2,100.00	2,100.00	2,100.00	7.30	7.30	-90.00	0.00	-60.01	60.01	44.69	15.31	3.918		
2,200.00	2,200.00	2,200.00	2,200.00	7.66	7.66	-90.00	0.00	-60.01	60.01					

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Marathon Oil Permian, LLC	Local Co-ordinate Reference:	Well 23-28-20 WXY #18H
Project:	Eddy County, NM (NAD27)	TVD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Reference Site:	Mariner Fee	MD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	23-28-20 WXY #18H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output Errors are in:	2.00 sigma
Reference Wellbore:	OH	Database:	Midland District
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Mariner Fee - 23-28-20 TB #15H - OH - Plan #1														Offset Site Error:	0.00 usft
Survey Program: 0-MWD-HOOD														Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference Depth (usft)	Offset Depth (usft)	Reference Depth (usft)	Offset Depth (usft)	Reference Depth (usft)	Offset Depth (usft)	Reference Depth (usft)	Offset Depth (usft)	Reference Depth (usft)	Offset Depth (usft)	Reference Depth (usft)	Offset Depth (usft)
2,300.00	2,300.00	2,300.00	2,300.00	8.02	8.02	-90.00	0.00	-60.01	60.01	43.97	16.03	3.743			
2,400.00	2,400.00	2,400.00	2,400.00	8.37	8.37	-90.00	0.00	-60.01	60.01	43.26	16.75	3.583			
2,500.00	2,500.00	2,500.00	2,500.00	8.73	8.73	-90.00	0.00	-60.01	60.01	42.54	17.46	3.436			
2,600.00	2,600.00	2,600.00	2,600.00	9.09	9.09	-90.00	0.00	-60.01	60.01	41.82	18.18	3.300			
2,664.46	2,664.46	2,664.46	2,664.46	9.32	9.32	174.00	0.00	-60.01	60.05	41.41	18.64	3.221			
2,700.00	2,700.00	2,700.00	2,700.00	9.45	9.45	174.00	0.00	-60.01	60.01	41.11	18.90	3.176			
2,800.00	2,799.98	2,799.98	2,799.98	9.79	9.81	174.19	0.00	-60.01	61.96	42.38	19.58	3.164			
2,900.00	2,899.82	2,899.82	2,899.82	10.13	10.17	174.65	0.00	-60.01	67.39	47.14	20.24	3.329			
3,000.00	2,999.42	2,999.42	2,999.42	10.47	10.52	175.26	0.00	-60.01	78.29	55.41	20.88	3.654			
3,100.00	3,098.64	3,098.64	3,098.64	10.82	10.88	175.90	0.00	-60.01	88.64	67.14	21.49	4.124			
3,200.00	3,197.68	3,197.68	3,197.68	11.17	11.23	176.46	0.00	-60.01	102.44	80.25	22.19	4.617			
3,300.00	3,296.72	3,296.72	3,296.72	11.53	11.59	176.88	0.00	-60.01	116.25	93.36	22.88	5.080			
3,400.00	3,395.76	3,395.76	3,395.76	11.89	11.94	177.21	0.00	-60.01	130.06	106.48	23.58	5.515			
3,500.00	3,494.80	3,495.71	3,495.71	12.25	12.30	177.48	-0.01	-59.95	143.82	119.54	24.28	5.923			
3,600.00	3,593.84	3,600.51	3,600.47	12.62	12.65	177.62	-0.41	-57.40	155.21	130.22	24.98	6.212			
3,700.00	3,692.88	3,706.05	3,705.81	12.99	13.01	177.62	-1.43	-51.01	162.96	137.27	25.69	6.344			
3,800.00	3,791.91	3,812.05	3,811.29	13.36	13.38	177.50	-3.05	-40.73	167.03	140.64	26.40	6.327			
3,900.00	3,890.95	3,918.22	3,916.48	13.73	13.75	177.25	-5.29	-26.59	167.43	140.32	27.11	6.175			
4,000.00	3,989.99	4,021.60	4,018.40	14.10	14.11	176.88	-8.01	-9.45	164.50	136.68	27.82	5.913			
4,100.00	4,089.03	4,121.53	4,116.81	14.48	14.47	176.49	-10.72	7.69	161.01	132.49	28.52	5.646			
4,200.00	4,188.07	4,221.47	4,215.23	14.86	14.83	176.08	-13.44	24.82	157.52	128.30	29.22	5.392			
4,300.00	4,287.11	4,321.40	4,313.64	15.23	15.19	175.65	-16.15	41.96	154.04	124.12	29.92	5.149			
4,400.00	4,386.15	4,421.33	4,412.06	15.62	15.56	175.20	-18.86	59.10	150.57	119.95	30.62	4.917			
4,500.00	4,485.19	4,521.27	4,510.47	16.00	15.93	174.73	-21.58	76.24	147.11	115.78	31.33	4.695			
4,600.00	4,584.23	4,621.20	4,608.88	16.38	16.31	174.24	-24.29	93.38	143.66	111.62	32.04	4.483			
4,700.00	4,683.26	4,721.13	4,707.30	16.77	16.68	173.73	-27.01	110.52	140.22	107.46	32.76	4.281			
4,800.00	4,782.30	4,821.06	4,805.71	17.15	17.06	173.19	-29.72	127.66	136.79	103.32	33.47	4.087			
4,900.00	4,881.34	4,921.00	4,904.13	17.54	17.45	172.62	-32.44	144.80	133.38	99.19	34.19	3.901			
5,000.00	4,980.38	5,020.93	5,002.54	17.92	17.83	172.02	-35.15	161.94	129.98	95.07	34.91	3.723			
5,100.00	5,079.42	5,120.86	5,100.96	18.31	18.22	171.39	-37.87	179.08	126.59	90.96	35.63	3.553			
5,200.00	5,178.46	5,220.79	5,199.37	18.70	18.61	170.72	-40.58	196.22	123.22	86.87	36.36	3.389			
5,300.00	5,277.50	5,320.73	5,297.79	19.09	19.00	170.02	-43.30	213.36	119.87	82.79	37.08	3.232			
5,400.00	5,376.54	5,420.66	5,396.20	19.48	19.40	169.28	-46.01	230.50	116.54	78.72	37.82	3.082			
5,500.00	5,475.58	5,520.59	5,494.61	19.87	19.79	168.49	-48.73	247.64	113.22	74.68	38.55	2.937			
5,600.00	5,574.61	5,620.53	5,593.03	20.27	20.19	167.66	-51.44	264.78	109.94	70.65	39.29	2.798			
5,700.00	5,673.65	5,720.46	5,691.44	20.66	20.59	166.78	-54.16	281.92	106.67	66.64	40.03	2.665			
5,800.00	5,772.69	5,820.39	5,789.86	21.05	20.99	165.83	-56.87	299.06	103.43	62.66	40.77	2.537			
5,900.00	5,871.73	5,920.32	5,888.27	21.44	21.39	164.83	-59.58	316.20	100.22	58.71	41.52	2.414			
6,000.00	5,970.77	6,020.26	5,966.69	21.84	21.79	163.77	-62.30	333.34	97.05	54.78	42.27	2.296			
6,100.00	6,069.81	6,120.19	6,085.10	22.23	22.20	162.63	-65.01	350.47	93.91	50.88	43.03	2.182			
6,200.00	6,168.85	6,220.12	6,183.52	22.63	22.60	161.41	-67.73	367.61	90.81	47.02	43.79	2.074			
6,300.00	6,267.89	6,320.05	6,281.93	23.02	23.01	160.11	-70.44	384.75	87.75	43.19	44.56	1.969			
6,400.00	6,366.93	6,419.99	6,380.35	23.42	23.42	158.72	-73.16	401.89	84.74	39.41	45.34	1.869			
6,500.00	6,465.97	6,519.92	6,478.76	23.82	23.83	157.22	-75.87	419.03	81.79	35.67	46.12	1.773			
6,600.00	6,565.00	6,619.85	6,577.17	24.21	24.24	155.61	-78.59	436.17	78.89	31.98	46.91	1.682			
6,700.00	6,664.04	6,719.79	6,675.59	24.61	24.65	153.88	-81.30	453.31	76.07	28.35	47.72	1.594			
6,800.00	6,763.08	6,819.72	6,774.00	25.01	25.06	152.02	-84.02	470.45	73.31	24.78	48.53	1.511			
6,900.00	6,862.12	6,919.65	6,872.42	25.41	25.47	150.02	-86.73	487.59	70.64	21.29	49.36	1.431 Level 3			
7,000.00	6,961.16	7,019.58	6,970.83	25.80	25.88	147.86	-89.45	504.73	68.07	17.87	50.20	1.356 Level 3			
7,100.00	7,060.20	7,119.52	7,069.25	26.20	26.30	145.54	-92.16	521.87	65.60	14.54	51.05	1.285 Level 3			
7,200.00	7,159.24	7,219.45	7,167.66	26.60	26.71	143.04	-94.87	539.01	63.24	11.31	51.93	1.218 Level 2			
7,300.00	7,258.28	7,319.38	7,266.08	27.00	27.13	140.35	-97.59	556.15	61.01	8.20	52.81	1.155 Level 2			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Marathon Oil Permian, LLC	Local Co-ordinate Reference:	Well 23-28-20 WXY #18H
Project:	Eddy County, NM (NAD27)	TVD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Reference Site:	Mariner Fee	MD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	23-28-20 WXY #18H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	OH	Database:	Midland District
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Mariner Fee - 23-28-20 TB #15H - OH - Plan #1														Offset Site Error:	0.00 usft
Survey Program: COMPASS														Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Horizontal Distance (usft)	Offset Wellbore Depth (usft)	Current Wellbore Depth (usft)	Distance (usft)	Separation (usft)	Minimum Separation (usft)	Separation Factor	Warning		
7,400.00	7,357.32	7,419.31	7,364.49	27.40	27.54	137.47	-100.30	573.29	58.93	5.21	53.72	1.097	Level 2		
7,500.00	7,456.35	7,519.25	7,462.91	27.80	27.96	134.38	-103.02	590.43	57.01	2.36	54.64	1.043	Level 2		
7,600.00	7,555.39	7,619.18	7,561.32	28.20	28.38	131.09	-105.73	607.57	55.26	-0.32	55.58	0.994	Level 1		
7,700.00	7,654.43	7,719.11	7,659.73	28.60	28.79	127.59	-108.45	624.71	53.71	-2.82	56.54	0.950	Level 1		
7,800.00	7,753.47	7,819.04	7,758.15	29.00	29.21	123.91	-111.16	641.85	52.37	-5.13	57.50	0.911	Level 1		
7,900.00	7,852.51	7,918.98	7,856.56	29.40	29.63	120.04	-113.88	658.99	51.26	-7.20	58.46	0.877	Level 1		
8,000.00	7,951.55	8,018.91	7,954.98	29.80	30.05	116.03	-116.59	676.13	50.39	-9.04	59.43	0.846	Level 1		
8,100.00	8,050.59	8,118.84	8,053.39	30.20	30.47	111.89	-119.31	693.26	49.78	-10.60	60.38	0.824	Level 1		
8,200.00	8,149.63	8,218.78	8,151.81	30.60	30.89	107.67	-122.02	710.40	49.43	-11.89	61.32	0.806	Level 1		
8,278.29	8,227.16	8,297.01	8,228.86	30.91	31.22	104.35	-124.15	723.82	49.34	-12.69	62.03	0.795	Level 1		
8,300.00	8,248.67	8,318.71	8,250.22	31.00	31.31	103.42	-124.74	727.54	49.35	-12.88	62.23	0.793	Level 1		
8,400.00	8,347.70	8,416.64	8,348.64	31.40	31.73	99.18	-127.45	744.68	49.55	-13.56	63.11	0.785	Level 1		
8,500.00	8,446.74	8,515.57	8,447.05	31.80	32.15	94.99	-130.16	761.82	50.01	-13.95	63.96	0.782	Level 1		
8,600.00	8,545.78	8,615.51	8,545.46	32.21	32.57	90.91	-132.88	778.96	50.74	-14.03	64.77	0.783	Level 1		
8,700.00	8,644.82	8,714.44	8,643.88	32.61	33.00	86.95	-135.59	796.10	51.71	-13.83	65.55	0.789	Level 1		
8,800.00	8,743.86	8,821.47	8,745.36	33.01	33.43	83.03	-137.39	813.77	52.01	-14.29	66.30	0.784	Level 1		
8,900.00	8,842.90	8,929.02	8,850.33	33.41	33.86	77.06	-123.89	831.99	38.19	-28.77	66.96	0.570	Level 1		
9,000.00	8,941.79	9,029.67	8,944.73	33.81	34.22	94.90	-93.45	848.29	13.48	-52.47	65.94	0.204	Level 1		
9,037.11	8,978.12	9,065.76	8,977.09	33.94	34.33	59.27	-78.51	853.87	8.87	-55.57	64.44	0.138	Level 1, CC, ES, SF		
9,100.00	9,038.62	9,125.54	9,028.48	34.18	34.51	9.10	-49.30	862.69	19.16	-46.51	65.66	0.292	Level 1		
9,200.00	9,130.46	9,217.47	9,100.91	34.50	34.75	0.87	5.76	875.08	43.96	-18.68	62.64	0.702	Level 1		
9,300.00	9,214.53	9,306.11	9,161.70	34.78	34.93	0.30	69.32	885.40	68.04	10.40	57.64	1.180	Level 2		
9,400.00	9,288.26	9,392.05	9,210.74	35.02	35.08	0.34	139.31	893.66	90.10	38.83	51.26	1.758			
9,500.00	9,349.42	9,475.80	9,248.11	35.20	35.19	0.36	213.92	899.86	109.60	65.68	43.92	2.495			
9,600.00	9,396.15	9,557.82	9,273.95	35.36	35.29	0.28	291.57	904.05	126.14	89.85	36.29	3.476			
9,700.00	9,427.03	9,638.49	9,288.46	35.51	35.40	0.08	370.83	906.25	139.44	109.91	29.54	4.721			
9,800.00	9,441.12	9,721.95	9,292.09	35.69	35.52	-0.23	454.15	906.55	149.04	123.42	25.62	5.817			
9,900.00	9,442.00	9,821.93	9,292.09	35.91	35.73	-0.27	554.13	906.15	149.92	124.11	25.81	5.809			
10,000.00	9,442.00	9,921.93	9,292.09	36.20	36.00	-0.27	654.13	905.75	149.92	123.42	26.50	5.657			
10,100.00	9,442.00	10,021.93	9,292.08	36.56	36.34	-0.26	754.13	905.35	149.92	122.65	27.27	5.498			
10,200.00	9,442.00	10,121.93	9,292.08	36.99	36.75	-0.25	854.13	904.95	149.92	121.82	28.10	5.335			
10,300.00	9,442.00	10,221.93	9,292.08	37.47	37.23	-0.25	954.13	904.55	149.92	120.93	28.99	5.171			
10,400.00	9,442.00	10,321.93	9,292.08	38.01	37.77	-0.24	1,054.13	904.14	149.92	119.98	29.94	5.007			
10,500.00	9,442.00	10,421.93	9,292.08	38.61	38.36	-0.23	1,154.13	903.74	149.92	118.98	30.94	4.845			
10,600.00	9,442.00	10,521.93	9,292.08	39.25	39.00	-0.23	1,254.13	903.34	149.92	117.93	31.99	4.687			
10,700.00	9,442.00	10,621.93	9,292.08	39.93	39.69	-0.22	1,354.13	902.94	149.92	116.85	33.07	4.533			
10,800.00	9,442.00	10,721.93	9,292.08	40.66	40.42	-0.21	1,454.12	902.54	149.92	115.72	34.20	4.384			
10,900.00	9,442.00	10,821.93	9,292.08	41.43	41.19	-0.21	1,554.12	902.14	149.92	114.57	35.36	4.240			
11,000.00	9,442.00	10,921.93	9,292.08	42.24	42.00	-0.20	1,654.12	901.74	149.92	113.38	36.55	4.102			
11,100.00	9,442.00	11,021.93	9,292.08	43.08	42.85	-0.19	1,754.12	901.34	149.93	112.16	37.77	3.970			
11,200.00	9,442.00	11,121.93	9,292.08	43.95	43.73	-0.19	1,854.12	900.94	149.93	110.92	39.01	3.843			
11,300.00	9,442.00	11,221.93	9,292.07	44.85	44.64	-0.18	1,954.12	900.54	149.93	109.65	40.27	3.723			
11,400.00	9,442.00	11,321.93	9,292.07	45.78	45.58	-0.17	2,054.12	900.14	149.93	108.37	41.56	3.607			
11,500.00	9,442.00	11,421.93	9,292.07	46.74	46.55	-0.17	2,154.12	899.74	149.93	107.06	42.87	3.498			
11,600.00	9,442.00	11,521.93	9,292.07	47.73	47.54	-0.16	2,254.12	899.34	149.93	105.74	44.19	3.393			
11,700.00	9,442.00	11,621.93	9,292.07	48.74	48.56	-0.15	2,354.12	898.94	149.93	104.40	45.53	3.293			
11,800.00	9,442.00	11,721.93	9,292.07	49.77	49.59	-0.15	2,454.12	898.54	149.94	103.05	46.88	3.198			
11,900.00	9,442.00	11,821.93	9,292.07	50.82	50.65	-0.14	2,554.11	898.14	149.94	101.69	48.25	3.108			
12,000.00	9,442.00	11,921.93	9,292.06	51.89	51.73	-0.13	2,654.11	897.74	149.94	100.31	49.63	3.021			
12,100.00	9,442.00	12,021.93	9,292.06	52.99	52.83	-0.13	2,754.11	897.34	149.94	98.92	51.02	2.939			
12,200.00	9,442.00	12,121.93	9,292.06	54.09	53.95	-0.12	2,854.11	896.94	149.94	97.53	52.42	2.861			
12,300.00	9,442.00	12,221.93	9,292.06	55.22	55.08	-0.12	2,954.11	896.54	149.95	96.12	53.83	2.786			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Marathon Oil Permian, LLC	Local Co-ordinate Reference:	Well 23-28-20 WXY #18H
Project:	Eddy County, NM (NAD27)	TVD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Reference Site:	Mariner Fee	MD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	23-28-20 WXY #18H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	OH	Database:	Midland District
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design														Offset Site Error:		0.00 usft
Survey Program: 5-MWD-HDDM														Offset Well Error:		0.00 usft
Reference		Offset		Boreal Inlet Axis		Distance										
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Inclination (°)	Offset Wellbore Centre (usft)	Well-Set (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning			
12,400.00	9,442.00	12,321.93	9,292.05	56.36	56.22	-0.11	3,054.11	896.14	149.95	94.70	55.24	2.714				
12,500.00	9,442.00	12,421.93	9,292.05	57.51	57.38	-0.10	3,154.11	895.74	149.95	93.28	56.67	2.646				
12,600.00	9,442.00	12,521.92	9,292.05	58.68	58.56	-0.10	3,254.11	895.34	149.95	91.85	58.10	2.581				
12,700.00	9,442.00	12,621.92	9,292.05	59.86	59.74	-0.09	3,354.11	894.94	149.95	90.41	59.55	2.518				
12,800.00	9,442.00	12,721.92	9,292.04	61.05	60.94	-0.08	3,454.11	894.54	149.96	88.96	60.99	2.459				
12,900.00	9,442.00	12,821.92	9,292.04	62.26	62.15	-0.08	3,554.11	894.14	149.96	87.51	62.45	2.401				
13,000.00	9,442.00	12,921.92	9,292.04	63.47	63.37	-0.07	3,654.10	893.74	149.96	86.06	63.90	2.347				
13,100.00	9,442.00	13,021.92	9,292.04	64.70	64.60	-0.06	3,754.10	893.34	149.97	84.60	65.37	2.294				
13,200.00	9,442.00	13,121.92	9,292.03	65.93	65.84	-0.06	3,854.10	892.94	149.97	83.13	66.84	2.244				
13,300.00	9,442.00	13,221.92	9,292.03	67.18	67.09	-0.05	3,954.10	892.54	149.97	81.66	68.31	2.195				
13,400.00	9,442.00	13,321.92	9,292.03	68.43	68.35	-0.05	4,054.10	892.14	149.97	80.19	69.79	2.149				
13,500.00	9,442.00	13,421.92	9,292.02	69.69	69.61	-0.04	4,154.10	891.74	149.98	78.71	71.27	2.104				
13,600.00	9,442.00	13,521.92	9,292.02	70.96	70.88	-0.03	4,254.10	891.34	149.98	77.23	72.75	2.061				
13,700.00	9,442.00	13,621.92	9,292.02	72.23	72.16	-0.03	4,354.10	890.94	149.98	75.74	74.24	2.020				
13,800.00	9,442.00	13,721.92	9,292.01	73.51	73.45	-0.02	4,454.10	890.54	149.99	74.25	75.74	1.980				
13,900.00	9,442.00	13,821.92	9,292.01	74.80	74.74	-0.01	4,554.10	890.14	149.99	72.76	77.23	1.942				
14,000.00	9,442.00	13,921.92	9,292.00	76.10	76.04	-0.01	4,654.09	889.75	150.00	71.27	78.73	1.905				
14,100.00	9,442.00	14,021.92	9,292.00	77.40	77.34	0.00	4,754.09	889.35	150.00	69.77	80.23	1.870				
14,122.82	9,442.00	14,044.74	9,292.00	77.70	77.64	0.00	4,776.91	889.26	150.00	69.43	80.57	1.862				

Anticollision Report

Company:	Marathon Oil Permian, LLC	Local Co-ordinate Reference:	Well 23-28-20 WXY #18H
Project:	Eddy County, NM (NAD27)	TVD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Reference Site:	Mariner Fee	MD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	23-28-20 WXY #18H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output sigma are at:	2.00 sigma
Reference Wellbore:	OH	Database:	Midland District
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Mariner Fee - 23-28-20 WA #14H - OH - Plan #1													Offset Site Error:
Survey Reference: CAMD PROD													0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference Depth (usft)	Offset Depth (usft)	Reference Angle (°)	Offset Angle (°)	Reference TVD (usft)	Offset TVD (usft)	Reference TVD (usft)	Offset TVD (usft)	Minimum Separation (usft)	Separation Factor
0.00	0.00	0.00	0.00	0.00	0.00	-90.00	0.00	-30.01	30.01				
100.00	100.00	100.00	100.00	0.13	0.13	-90.00	0.00	-30.01	30.01	29.75	0.26	116.264	
200.00	200.00	200.00	200.00	0.49	0.49	-90.00	0.00	-30.01	30.01	29.03	0.98	30.776	
300.00	300.00	300.00	300.00	0.85	0.85	-90.00	0.00	-30.01	30.01	28.32	1.69	17.735	
400.00	400.00	400.00	400.00	1.20	1.20	-90.00	0.00	-30.01	30.01	27.60	2.41	12.457	
500.00	500.00	500.00	500.00	1.56	1.56	-90.00	0.00	-30.01	30.01	26.88	3.13	9.600	
600.00	600.00	600.00	600.00	1.92	1.92	-90.00	0.00	-30.01	30.01	26.16	3.84	7.809	
700.00	700.00	700.00	700.00	2.28	2.28	-90.00	0.00	-30.01	30.01	25.45	4.56	6.581	
800.00	800.00	800.00	800.00	2.64	2.64	-90.00	0.00	-30.01	30.01	24.73	5.28	5.687	
900.00	900.00	900.00	900.00	3.00	3.00	-90.00	0.00	-30.01	30.01	24.01	5.99	5.007	
1,000.00	1,000.00	1,000.00	1,000.00	3.36	3.36	-90.00	0.00	-30.01	30.01	23.30	6.71	4.472	
1,100.00	1,100.00	1,100.00	1,100.00	3.71	3.71	-90.00	0.00	-30.01	30.01	22.58	7.43	4.040	
1,200.00	1,200.00	1,200.00	1,200.00	4.07	4.07	-90.00	0.00	-30.01	30.01	21.86	8.14	3.684	
1,300.00	1,300.00	1,300.00	1,300.00	4.43	4.43	-90.00	0.00	-30.01	30.01	21.15	8.86	3.386	
1,400.00	1,400.00	1,400.00	1,400.00	4.79	4.79	-90.00	0.00	-30.01	30.01	20.43	9.58	3.133	
1,500.00	1,500.00	1,500.00	1,500.00	5.15	5.15	-90.00	0.00	-30.01	30.01	19.71	10.30	2.915	
1,600.00	1,600.00	1,600.00	1,600.00	5.51	5.51	-90.00	0.00	-30.01	30.01	19.00	11.01	2.725	
1,700.00	1,700.00	1,700.00	1,700.00	5.86	5.86	-90.00	0.00	-30.01	30.01	18.28	11.73	2.558	
1,800.00	1,800.00	1,800.00	1,800.00	6.22	6.22	-90.00	0.00	-30.01	30.01	17.56	12.45	2.411	
1,900.00	1,900.00	1,900.00	1,900.00	6.58	6.58	-90.00	0.00	-30.01	30.01	16.84	13.16	2.280	
2,000.00	2,000.00	2,000.00	2,000.00	6.94	6.94	-90.00	0.00	-30.01	30.01	16.13	13.88	2.162	
2,100.00	2,100.00	2,100.00	2,100.00	7.30	7.30	-90.00	0.00	-30.01	30.01	15.41	14.60	2.056	
2,200.00	2,200.00	2,200.00	2,200.00	7.66	7.66	-90.00	0.00	-30.01	30.01	14.69	15.31	1.960	
2,300.00	2,300.00	2,300.00	2,300.00	8.02	8.02	-90.00	0.00	-30.01	30.01	13.98	16.03	1.872	
2,400.00	2,400.00	2,400.00	2,400.00	8.37	8.37	-90.00	0.00	-30.01	30.01	13.26	16.75	1.792	
2,500.00	2,500.00	2,500.00	2,500.00	8.73	8.73	-90.00	0.00	-30.01	30.01	12.54	17.46	1.718	
2,600.00	2,600.00	2,600.00	2,600.00	9.09	9.09	-90.00	0.00	-30.01	30.01	11.83	18.18	1.650	
2,664.46	2,664.46	2,664.46	2,664.46	9.32	9.32	174.01	0.00	-30.01	30.05	11.41	18.64	1.612	
2,700.00	2,700.00	2,700.00	2,700.00	9.45	9.45	174.00	0.00	-30.01	30.01	11.12	18.90	1.588	
2,800.00	2,799.98	2,800.91	2,800.90	9.79	9.80	174.43	0.02	-28.70	30.68	11.10	19.58	1.567	
2,900.00	2,899.82	2,902.00	2,901.87	10.13	10.15	175.63	0.11	-23.87	31.33	11.11	20.23	1.549	
3,000.00	2,999.42	3,003.11	3,002.62	10.47	10.50	177.55	0.25	-15.48	31.97	11.12	20.85	1.533	
3,100.00	3,098.64	3,104.23	3,103.03	10.82	10.85	-179.84	0.46	-3.54	32.61	11.15	21.46	1.519	
3,200.00	3,197.68	3,204.33	3,202.16	11.17	11.21	-176.87	0.70	10.37	32.69	10.54	22.15	1.476 Level 3	
3,300.00	3,296.72	3,304.32	3,301.17	11.53	11.56	-173.92	0.95	24.28	32.84	10.00	22.84	1.438 Level 3	
3,400.00	3,395.76	3,404.30	3,400.19	11.89	11.92	-171.00	1.19	38.19	33.08	9.54	23.54	1.405 Level 3	
3,500.00	3,494.80	3,504.29	3,499.20	12.25	12.28	-168.13	1.43	52.11	33.40	9.16	24.24	1.378 Level 3	
3,600.00	3,593.84	3,604.28	3,598.21	12.62	12.65	-165.32	1.68	66.02	33.81	8.86	24.95	1.355 Level 3	
3,700.00	3,692.88	3,704.26	3,697.22	12.99	13.02	-162.58	1.92	79.93	34.29	8.63	25.66	1.336 Level 3	
3,800.00	3,791.91	3,804.25	3,796.24	13.36	13.39	-159.93	2.16	93.85	34.85	8.47	26.38	1.321 Level 3	
3,900.00	3,890.95	3,904.23	3,895.25	13.73	13.76	-157.37	2.40	107.76	35.48	8.38	27.10	1.309 Level 3	
4,000.00	3,989.99	4,004.22	3,994.26	14.10	14.14	-154.90	2.65	121.67	36.18	8.35	27.83	1.300 Level 3	
4,100.00	4,089.03	4,104.20	4,093.27	14.46	14.51	-152.52	2.89	135.59	36.95	8.38	28.57	1.293 Level 3	
4,200.00	4,188.07	4,204.19	4,192.29	14.86	14.89	-150.25	3.13	149.50	37.78	8.47	29.31	1.289 Level 3	
4,300.00	4,287.11	4,304.17	4,291.30	15.23	15.27	-148.08	3.38	163.41	38.66	8.60	30.05	1.286 Level 3	
4,400.00	4,386.15	4,404.16	4,390.31	15.62	15.65	-146.01	3.62	177.33	39.59	8.79	30.80	1.285 Level 3	
4,500.00	4,485.19	4,504.15	4,489.32	16.00	16.03	-144.03	3.86	191.24	40.58	9.02	31.56	1.286 Level 3	
4,600.00	4,584.23	4,604.13	4,588.34	16.38	16.42	-142.16	4.10	205.15	41.61	9.29	32.32	1.288 Level 3	
4,700.00	4,683.26	4,704.12	4,687.35	16.77	16.80	-140.37	4.35	219.07	42.68	9.61	33.08	1.290 Level 3	
4,800.00	4,782.30	4,804.10	4,786.36	17.15	17.19	-138.68	4.59	232.98	43.80	9.95	33.84	1.294 Level 3	
4,900.00	4,881.34	4,904.09	4,885.37	17.54	17.57	-137.06	4.83	246.89	44.95	10.33	34.61	1.299 Level 3	
5,000.00	4,980.38	5,004.07	4,984.39	17.92	17.96	-135.54	5.08	260.81	46.13	10.74	35.39	1.304 Level 3	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Marathon Oil Permian, LLC	Local Co-ordinate Reference:	Well 23-28-20 WXY #18H
Project:	Eddy County, NM (NAD27)	TVD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Reference Site:	Mariner Fee	MD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	23-28-20 WXY #18H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	OH	Database:	Midland District
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Mariner Fee - 23-28-20 WA #14H - OH - Plan #1														Offset Site Error:	0.00 usft
Survey Program: MWD-HDOM														Offset Well Error:	0.00 usft
Reference	Offset	South Major Axis		Distance		Minimum		Separation		Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Horizontal Footcandle (°)	Offset Wellbore Depth (usft)	Wellbore Depth (usft)	Offset Wellbore Depth (usft)	Minimum Separation (usft)	Separation Factor	Warning	Warning	Warning	Warning
5,100.00	5,079.42	5,104.06	5,083.40	18.31	18.35	-134.08	5.32	274.72	47.34	11.18	36.16	1.309 Level 3			
5,200.00	5,178.46	5,204.05	5,182.41	18.70	18.74	-132.70	5.56	288.63	48.59	11.65	36.94	1.315 Level 3			
5,300.00	5,277.50	5,304.03	5,281.42	19.09	19.13	-131.40	5.80	302.55	49.86	12.14	37.72	1.322 Level 3			
5,400.00	5,376.54	5,404.02	5,380.44	19.48	19.52	-130.15	6.05	316.46	51.15	12.65	38.50	1.329 Level 3			
5,500.00	5,475.58	5,504.00	5,479.45	19.87	19.91	-128.97	6.29	330.37	52.47	13.18	39.29	1.336 Level 3			
5,600.00	5,574.61	5,603.99	5,578.46	20.27	20.30	-127.85	6.53	344.28	53.81	13.74	40.07	1.343 Level 3			
5,700.00	5,673.65	5,703.97	5,677.47	20.66	20.69	-126.78	6.78	358.20	55.17	14.31	40.86	1.350 Level 3			
5,800.00	5,772.69	5,803.96	5,776.49	21.05	21.09	-125.76	7.02	372.11	56.54	14.89	41.65	1.358 Level 3			
5,900.00	5,871.73	5,903.94	5,875.50	21.44	21.48	-124.80	7.26	386.02	57.94	15.50	42.44	1.365 Level 3			
6,000.00	5,970.77	6,003.93	5,974.51	21.84	21.87	-123.87	7.50	399.94	59.35	16.11	43.23	1.373 Level 3			
6,100.00	6,069.81	6,103.92	6,073.52	22.23	22.27	-122.99	7.75	413.85	60.77	16.74	44.03	1.380 Level 3			
6,200.00	6,168.85	6,203.90	6,172.54	22.63	22.66	-122.16	7.99	427.76	62.21	17.39	44.82	1.388 Level 3			
6,300.00	6,267.89	6,303.89	6,271.55	23.02	23.06	-121.36	8.23	441.68	63.66	18.04	45.62	1.396 Level 3			
6,400.00	6,366.93	6,403.87	6,370.56	23.42	23.46	-120.59	8.48	455.59	65.12	18.71	46.41	1.403 Level 3			
6,500.00	6,465.97	6,503.86	6,469.58	23.82	23.85	-119.86	8.72	469.50	66.59	19.39	47.21	1.411 Level 3			
6,600.00	6,565.00	6,603.84	6,568.59	24.21	24.25	-119.16	8.96	483.42	68.08	20.07	48.01	1.418 Level 3			
6,700.00	6,664.04	6,703.83	6,667.60	24.61	24.65	-118.49	9.20	497.33	69.57	20.77	48.81	1.425 Level 3			
6,800.00	6,763.08	6,803.82	6,766.61	25.01	25.04	-117.85	9.45	511.24	71.07	21.47	49.61	1.433 Level 3			
6,900.00	6,862.12	6,903.80	6,865.63	25.41	25.44	-117.23	9.69	525.16	72.59	22.18	50.41	1.440 Level 3			
7,000.00	6,961.16	7,003.79	6,964.64	25.80	25.84	-116.64	9.93	539.07	74.10	22.90	51.21	1.447 Level 3			
7,100.00	7,060.20	7,103.77	7,063.65	26.20	26.24	-116.08	10.18	552.98	75.63	23.62	52.01	1.454 Level 3			
7,200.00	7,159.24	7,203.76	7,162.66	26.60	26.64	-115.54	10.42	566.90	77.16	24.35	52.81	1.461 Level 3			
7,300.00	7,258.28	7,303.74	7,261.68	27.00	27.04	-115.01	10.66	580.81	78.71	25.09	53.61	1.468 Level 3			
7,400.00	7,357.32	7,403.73	7,360.69	27.40	27.44	-114.51	10.90	594.72	80.25	25.84	54.42	1.475 Level 3			
7,500.00	7,456.35	7,503.71	7,459.70	27.80	27.84	-114.03	11.15	608.64	81.80	26.59	55.22	1.481 Level 3			
7,600.00	7,555.39	7,603.70	7,558.71	28.20	28.23	-113.56	11.39	622.55	83.36	27.34	56.02	1.488 Level 3			
7,700.00	7,654.43	7,703.69	7,657.73	28.60	28.63	-113.12	11.63	636.46	84.93	28.10	56.83	1.494 Level 3			
7,800.00	7,753.47	7,803.67	7,756.74	29.00	29.03	-112.68	11.88	650.38	86.49	28.86	57.63	1.501			
7,900.00	7,852.51	7,903.66	7,855.75	29.40	29.44	-112.27	12.12	664.29	88.07	29.63	58.44	1.507			
8,000.00	7,951.55	8,003.64	7,954.76	29.80	29.84	-111.87	12.36	678.20	89.65	30.40	59.24	1.513			
8,100.00	8,050.59	8,103.63	8,053.78	30.20	30.24	-111.48	12.60	692.11	91.23	31.18	60.05	1.519			
8,200.00	8,149.63	8,203.61	8,152.79	30.60	30.64	-111.10	12.85	706.03	92.81	31.96	60.85	1.525			
8,300.00	8,248.67	8,303.60	8,251.80	31.00	31.04	-110.74	13.09	719.94	94.40	32.74	61.66	1.531			
8,400.00	8,347.70	8,403.59	8,350.81	31.40	31.44	-110.39	13.33	733.85	96.00	33.53	62.47	1.537			
8,500.00	8,446.74	8,503.57	8,449.83	31.80	31.84	-110.05	13.58	747.77	97.59	34.32	63.27	1.542			
8,600.00	8,545.78	8,603.56	8,548.84	32.21	32.24	-109.73	13.82	761.68	99.19	35.11	64.08	1.548			
8,700.00	8,644.82	8,703.54	8,647.85	32.61	32.64	-109.41	14.06	775.59	100.80	35.91	64.89	1.553			
8,800.00	8,743.86	8,803.53	8,746.86	33.01	33.05	-109.10	14.30	789.51	102.40	36.71	65.69	1.559			
8,900.00	8,842.90	8,903.51	8,845.88	33.41	33.45	-108.80	14.55	803.42	104.01	37.51	66.50	1.564			
9,000.00	8,941.99	9,003.36	8,944.75	33.81	33.85	-62.54	14.79	817.31	105.62	38.31	67.31	1.569			
9,100.00	9,038.62	9,098.68	9,039.14	34.18	34.23	-42.17	15.31	830.58	81.27	15.58	65.69	1.237 Level 2			
9,200.00	9,130.46	9,185.21	9,124.24	34.50	34.57	-41.45	24.77	842.50	55.87	-7.38	63.25	0.883 Level 1			
9,300.00	9,214.53	9,275.17	9,210.17	34.78	34.91	-59.00	48.20	854.48	31.46	-31.36	62.82	0.501 Level 1			
9,374.83	9,270.80	9,345.18	9,273.91	34.96	35.15	-101.55	75.65	863.34	21.99	-44.65	66.64	0.330 Level 1, CC, ES, SF			
9,400.00	9,288.26	9,369.31	9,295.05	35.02	35.23	-119.50	86.91	866.26	23.29	-41.51	64.80	0.359 Level 1			
9,500.00	9,349.42	9,468.50	9,376.43	35.20	35.53	-158.72	142.28	877.49	44.29	-5.49	49.77	0.890 Level 1			
9,600.00	9,396.15	9,573.67	9,451.03	35.36	35.80	-170.39	215.49	887.69	72.28	33.07	39.21	1.844			
9,700.00	9,427.03	9,685.77	9,514.55	35.51	36.05	-175.24	307.24	896.26	100.28	68.99	31.29	3.205			
9,800.00	9,441.12	9,805.55	9,561.53	35.69	36.30	-177.85	417.01	902.44	126.09	99.48	26.60	4.739			
9,900.00	9,442.00	9,933.97	9,585.67	35.91	36.59	-179.38	542.84	905.35	144.11	117.93	26.19	5.503			
10,000.00	9,442.00	10,045.31	9,587.45	36.20	36.88	-179.50	654.13	905.18	145.45	118.67	26.79	5.430			
10,100.00	9,442.00	10,145.31	9,587.45	36.56	37.22	-179.51	754.13	904.79	145.45	117.99	27.46	5.296			

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Marathon Oil Permian, LLC	Local Co-ordinate Reference:	Well 23-28-20 WXY #18H
Project:	Eddy County, NM (NAD27)	TVD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Reference Site:	Mariner Fee	MD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	23-28-20 WXY #18H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	OH	Database:	Midland District
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Mariner Fee - 23-28-20 WA #14H - OH - Plan #1														Offset Site Error
Survey Program: D-MWD-HDDM														0.00 usft
Reference: Offset														Offset Well Error
Borehole Major Axis														0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	High/Low	Offset Wellbore Depth	Reference	Offset	Reference	Offset	Minimum Separation	Separation Factor	Warning
10,200.00	9,442.00	10,245.31	9,587.45	36.99	37.61	-179.53	854.13	904.41	145.45	117.24	28.21	5.156		
10,300.00	9,442.00	10,345.31	9,587.45	37.47	38.06	-179.54	954.13	904.02	145.45	116.43	29.02	5.012		
10,400.00	9,442.00	10,445.31	9,587.44	38.01	38.57	-179.55	1,054.13	903.64	145.45	115.55	29.89	4.866		
10,500.00	9,442.00	10,545.31	9,587.44	38.61	39.13	-179.57	1,154.13	903.26	145.44	114.62	30.82	4.719		
10,600.00	9,442.00	10,645.32	9,587.44	39.25	39.73	-179.58	1,254.13	902.87	145.44	113.64	31.80	4.574		
10,700.00	9,442.00	10,745.32	9,587.43	39.93	40.39	-179.59	1,354.13	902.49	145.44	112.61	32.82	4.431		
10,800.00	9,442.00	10,845.32	9,587.43	40.66	41.09	-179.61	1,454.13	902.10	145.43	111.55	33.89	4.292		
10,900.00	9,442.00	10,945.32	9,587.43	41.43	41.82	-179.62	1,554.13	901.72	145.43	110.44	34.99	4.157		
11,000.00	9,442.00	11,045.32	9,587.42	42.24	42.60	-179.63	1,654.13	901.33	145.42	109.30	36.12	4.026		
11,100.00	9,442.00	11,145.32	9,587.41	43.08	43.41	-179.65	1,754.13	900.95	145.41	108.12	37.29	3.899		
11,200.00	9,442.00	11,245.32	9,587.41	43.95	44.26	-179.66	1,854.13	900.56	145.41	106.92	38.49	3.778		
11,300.00	9,442.00	11,345.32	9,587.40	44.85	45.14	-179.67	1,954.13	900.18	145.40	105.69	39.71	3.662		
11,400.00	9,442.00	11,445.32	9,587.39	45.78	46.05	-179.68	2,054.13	899.79	145.39	104.44	40.96	3.550		
11,500.00	9,442.00	11,545.32	9,587.39	46.74	46.98	-179.70	2,154.13	899.40	145.39	103.16	42.22	3.443		
11,600.00	9,442.00	11,645.32	9,587.38	47.73	47.95	-179.71	2,254.13	899.02	145.38	101.87	43.51	3.341		
11,700.00	9,442.00	11,745.32	9,587.37	48.74	48.93	-179.72	2,354.13	898.63	145.37	100.56	44.81	3.244		
11,800.00	9,442.00	11,845.32	9,587.36	49.77	49.95	-179.73	2,454.13	898.25	145.36	99.23	46.13	3.151		
11,900.00	9,442.00	11,945.32	9,587.35	50.82	50.98	-179.75	2,554.13	897.86	145.35	97.88	47.47	3.062		
12,000.00	9,442.00	12,045.33	9,587.34	51.89	52.03	-179.76	2,654.13	897.48	145.34	96.52	48.82	2.977		
12,100.00	9,442.00	12,145.33	9,587.33	52.99	53.11	-179.77	2,754.13	897.09	145.33	95.15	50.18	2.896		
12,200.00	9,442.00	12,245.33	9,587.32	54.09	54.20	-179.78	2,854.13	896.70	145.32	93.76	51.56	2.819		
12,300.00	9,442.00	12,345.33	9,587.31	55.22	55.30	-179.79	2,954.13	896.32	145.31	92.37	52.94	2.745		
12,400.00	9,442.00	12,445.33	9,587.29	56.36	56.43	-179.81	3,054.13	895.93	145.29	90.96	54.33	2.674		
12,500.00	9,442.00	12,545.33	9,587.28	57.51	57.57	-179.82	3,154.13	895.54	145.28	89.54	55.74	2.606		
12,600.00	9,442.00	12,645.33	9,587.27	58.68	58.72	-179.83	3,254.13	895.16	145.27	88.12	57.15	2.542		
12,700.00	9,442.00	12,745.33	9,587.25	59.86	59.89	-179.84	3,354.13	894.77	145.25	86.68	58.57	2.480		
12,800.00	9,442.00	12,845.33	9,587.24	61.05	61.07	-179.85	3,454.13	894.38	145.24	85.24	60.00	2.421		
12,900.00	9,442.00	12,945.33	9,587.22	62.26	62.26	-179.86	3,554.13	894.00	145.22	83.79	61.43	2.364		
13,000.00	9,442.00	13,045.33	9,587.21	63.47	63.46	-179.88	3,654.13	893.61	145.21	82.34	62.87	2.310		
13,100.00	9,442.00	13,145.33	9,587.19	64.70	64.68	-179.89	3,754.13	893.22	145.19	80.87	64.32	2.257		
13,200.00	9,442.00	13,245.33	9,587.18	65.93	65.90	-179.90	3,854.13	892.83	145.18	79.41	65.77	2.207		
13,300.00	9,442.00	13,345.34	9,587.16	67.18	67.13	-179.91	3,954.13	892.45	145.16	77.93	67.23	2.159		
13,400.00	9,442.00	13,445.34	9,587.14	68.43	68.37	-179.92	4,054.13	892.06	145.14	76.45	68.69	2.113		
13,500.00	9,442.00	13,545.34	9,587.12	69.69	69.62	-179.93	4,154.13	891.67	145.12	74.97	70.16	2.069		
13,600.00	9,442.00	13,645.34	9,587.11	70.96	70.88	-179.94	4,254.13	891.28	145.10	73.48	71.63	2.026		
13,700.00	9,442.00	13,745.34	9,587.09	72.23	72.15	-179.95	4,354.13	890.90	145.09	71.98	73.10	1.985		
13,800.00	9,442.00	13,845.34	9,587.07	73.51	73.42	-179.97	4,454.13	890.51	145.07	70.49	74.58	1.945		
13,900.00	9,442.00	13,945.34	9,587.05	74.80	74.70	-179.98	4,554.13	890.12	145.05	68.98	76.06	1.907		
14,000.00	9,442.00	14,045.34	9,587.03	76.10	75.99	-179.99	4,654.13	889.73	145.03	67.46	77.55	1.870		
14,100.00	9,442.00	14,145.34	9,587.01	77.40	77.22	-180.00	4,754.13	889.34	145.00	66.14	78.87	1.839		
14,122.82	9,442.00	14,168.13	9,587.00	77.70	77.49	180.00	4,776.92	889.26	145.00	65.88	79.12	1.833		
14,122.82	9,442.00	14,168.13	9,587.00	77.70	77.49	180.00	4,776.92	889.26	145.00	65.88	79.12	1.833		

Anticollision Report

Company:	Marathon Oil Permian, LLC	Local Co-ordinate Reference:	Well 23-28-20 WXY #18H
Project:	Eddy County, NM (NAD27)	TVD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Reference Site:	Mariner Fee	MD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	23-28-20 WXY #18H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	OH	Database:	Midland District
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Mariner Fee - 23-28-20 WXY #11H - OH - Plan #1														Offset Site Error: 0.00 usft
Survey Program: 2-MWD-HDDGM														Offset Well Error: 0.00 usft
Measured Depth (usft)		Vertical Depth (usft)		Reference		Offset	Horizontal Toolface (°)	Offset Wellbore Depth (usft)	Offset Wellbore Depth (usft)	Reference	Offset	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-90.00	0.00	-90.01	90.01					
100.00	100.00	100.00	100.00	0.13	0.13	-90.00	0.00	-90.01	90.01	89.75	0.26	348.732		
200.00	200.00	200.00	200.00	0.49	0.49	-90.00	0.00	-90.01	90.01	89.03	0.98	92.312		
300.00	300.00	300.00	300.00	0.85	0.85	-90.00	0.00	-90.01	90.01	88.32	1.69	53.196		
400.00	400.00	400.00	400.00	1.20	1.20	-90.00	0.00	-90.01	90.01	87.60	2.41	37.364		
500.00	500.00	500.00	500.00	1.56	1.56	-90.00	0.00	-90.01	90.01	86.88	3.13	28.794		
600.00	600.00	600.00	600.00	1.92	1.92	-90.00	0.00	-90.01	90.01	86.16	3.84	23.422		
700.00	700.00	700.00	700.00	2.28	2.28	-90.00	0.00	-90.01	90.01	85.45	4.56	19.740		
800.00	800.00	800.00	800.00	2.64	2.64	-90.00	0.00	-90.01	90.01	84.73	5.28	17.058		
900.00	900.00	900.00	900.00	3.00	3.00	-90.00	0.00	-90.01	90.01	84.01	5.99	15.017		
1,000.00	1,000.00	1,000.00	1,000.00	3.36	3.36	-90.00	0.00	-90.01	90.01	83.30	6.71	13.413 CC, ES		
1,100.00	1,100.00	1,096.96	1,096.94	3.71	3.69	-90.18	-0.28	-91.62	91.67	84.27	7.41	12.377		
1,200.00	1,200.00	1,193.70	1,193.55	4.07	4.02	-90.68	-1.14	-96.45	96.68	88.58	8.10	11.940		
1,300.00	1,300.00	1,290.71	1,290.22	4.43	4.36	-91.40	-2.55	-104.45	104.94	96.15	8.79	11.935		
1,400.00	1,400.00	1,390.26	1,389.33	4.79	4.71	-92.10	-4.18	-113.69	114.27	104.77	9.50	12.025		
1,500.00	1,500.00	1,489.82	1,488.44	5.15	5.07	-92.70	-5.81	-122.94	123.62	113.40	10.22	12.099		
1,600.00	1,600.00	1,589.37	1,587.55	5.51	5.43	-93.22	-7.44	-132.18	132.98	122.04	10.93	12.161		
1,700.00	1,700.00	1,688.93	1,686.66	5.86	5.79	-93.67	-9.07	-141.43	142.34	130.69	11.66	12.213		
1,800.00	1,800.00	1,788.48	1,785.77	6.22	6.15	-94.06	-10.70	-150.67	151.72	139.34	12.38	12.257		
1,900.00	1,900.00	1,888.04	1,884.88	6.58	6.52	-94.41	-12.33	-159.91	161.10	148.00	13.10	12.295		
2,000.00	2,000.00	1,987.59	1,983.99	6.94	6.89	-94.72	-13.96	-169.16	170.48	156.66	13.83	12.328		
2,100.00	2,100.00	2,087.14	2,083.11	7.30	7.26	-94.99	-15.59	-178.40	179.87	165.32	14.56	12.357		
2,200.00	2,200.00	2,166.70	2,162.22	7.66	7.63	-95.24	-17.22	-187.64	189.27	173.98	15.28	12.383		
2,300.00	2,300.00	2,286.25	2,281.33	8.02	8.00	-95.47	-18.85	-196.89	198.67	182.65	16.01	12.406		
2,400.00	2,400.00	2,365.81	2,360.44	8.37	8.37	-95.67	-20.48	-206.13	208.07	191.32	16.74	12.426		
2,500.00	2,500.00	2,485.36	2,479.55	8.73	8.74	-95.86	-22.11	-215.37	217.47	199.99	17.48	12.444		
2,600.00	2,600.00	2,584.92	2,578.66	9.09	9.12	-96.03	-23.74	-224.62	226.87	208.67	18.21	12.461		
2,700.00	2,700.00	2,684.47	2,677.77	9.45	9.49	-96.81	-25.37	-233.86	236.29	217.55	18.74	12.610		
2,800.00	2,799.98	2,783.82	2,776.68	9.79	9.86	-97.71	-26.99	-243.09	247.60	226.20	19.40	12.761		
2,900.00	2,899.82	2,882.73	2,875.15	10.13	10.24	-97.77	-28.61	-252.27	262.30	242.26	20.04	13.086		
3,000.00	2,999.42	2,981.07	2,973.05	10.47	10.61	-97.95	-30.22	-261.40	280.36	259.71	20.66	13.572		
3,100.00	3,098.64	3,078.73	3,070.28	10.82	10.98	-98.23	-31.82	-270.47	301.77	280.52	21.25	14.201		
3,200.00	3,197.68	3,176.08	3,167.19	11.17	11.34	-98.60	-33.41	-279.51	324.58	302.64	21.94	14.796		
3,300.00	3,296.72	3,273.42	3,264.10	11.53	11.71	-98.92	-35.01	-288.55	347.40	324.77	22.63	15.354		
3,400.00	3,395.76	3,370.77	3,361.01	11.89	12.08	-99.21	-36.60	-297.58	370.23	346.91	23.32	15.879		
3,500.00	3,494.80	3,468.11	3,457.92	12.25	12.45	-99.45	-38.20	-306.62	393.07	369.06	24.01	16.372		
3,600.00	3,593.84	3,565.45	3,554.83	12.62	12.82	-99.68	-39.79	-315.66	415.91	391.21	24.70	16.837		
3,700.00	3,692.88	3,662.80	3,651.74	12.99	13.18	-99.87	-41.38	-324.70	438.76	413.36	25.40	17.276		
3,800.00	3,791.91	3,760.14	3,748.65	13.36	13.55	-100.05	-42.98	-333.74	461.61	435.51	26.09	17.690		
3,900.00	3,890.95	3,857.49	3,845.56	13.73	13.92	-100.22	-44.57	-342.78	484.46	457.67	26.79	18.082		
4,000.00	3,989.99	3,954.83	3,942.47	14.10	14.29	-100.36	-46.16	-351.81	507.32	479.83	27.49	18.454		
4,100.00	4,089.03	4,052.18	4,039.38	14.48	14.66	-100.50	-47.76	-360.85	530.19	501.99	28.19	18.806		
4,200.00	4,188.07	4,149.52	4,136.29	14.86	15.03	-100.62	-49.35	-369.89	553.05	524.16	28.89	19.141		
4,300.00	4,287.11	4,246.86	4,233.20	15.23	15.40	-100.73	-50.94	-378.93	575.92	546.32	29.60	19.460		
4,400.00	4,386.15	4,344.21	4,330.12	15.62	15.77	-100.84	-52.54	-387.97	598.79	568.49	30.30	19.763		
4,500.00	4,485.19	4,441.55	4,427.03	16.00	16.14	-100.94	-54.13	-397.01	621.66	590.65	31.00	20.052		
4,600.00	4,584.23	4,538.90	4,523.94	16.38	16.51	-101.03	-55.73	-406.04	644.53	612.82	31.71	20.327		
4,700.00	4,683.26	4,636.24	4,620.85	16.77	16.88	-101.11	-57.32	-415.08	667.40	634.99	32.41	20.591		
4,800.00	4,782.30	4,733.59	4,717.76	17.15	17.25	-101.19	-58.91	-424.12	690.28	657.16	33.12	20.842		
4,900.00	4,881.34	4,830.93	4,814.67	17.54	17.62	-101.26	-60.51	-433.16	713.16	679.33	33.83	21.083		
5,000.00	4,980.38	4,928.27	4,911.58	17.92	17.99	-101.33	-62.10	-442.20	736.03	701.50	34.53	21.314		
5,100.00	5,079.42	5,025.62	5,008.49	18.31	18.36	-101.40	-63.69	-451.24	758.91	723.67	35.24	21.535		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Marathon Oil Permian, LLC	Local Co-ordinate Reference:	Well 23-28-20 WXY #18H
Project:	Eddy County, NM (NAD27)	TVD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Reference Site:	Mariner Fee	MD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	23-28-20 WXY #18H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	OH	Database:	Midland District
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design: Mariner Fee - 23-28-20 WXY #11H - OH - Plan #1														Offset Site Error:	0.00 usft
Survey Program: 3-MWD-HOQM														Offset Well Error:	0.00 usft
Reference	Offset	East		North		Vertical		Curvature		Separation		Factor		Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Horizontal (ft)	Offset Vertical (usft)	Curvature (usft)	Offset Curvature (usft)	Separation (usft)	Offset Separation (usft)	Factor	Offset Factor		
5,200.00	5,178.46	5,122.96	5,105.40	18.70	18.73	171.46	-65.29	-460.28	781.79	745.84	35.95	21.746			
5,300.00	5,277.50	5,220.31	5,202.31	18.09	19.10	171.52	-66.88	-469.31	804.67	768.01	36.66	21.950			
5,400.00	5,376.54	5,317.65	5,299.22	19.48	19.47	171.57	-68.48	-478.35	827.55	790.18	37.37	22.146			
5,500.00	5,475.58	5,415.00	5,396.13	19.87	19.84	171.62	-70.07	-487.39	850.43	812.35	38.08	22.334			
5,600.00	5,574.61	5,512.34	5,493.04	20.27	20.21	171.67	-71.66	-496.43	873.31	834.53	38.79	22.514			
5,700.00	5,673.65	5,609.68	5,589.95	20.66	20.58	171.72	-73.26	-505.47	896.20	856.70	39.50	22.689			
5,800.00	5,772.69	5,707.03	5,686.86	21.05	20.96	171.76	-74.85	-514.51	919.08	878.87	40.21	22.856			
5,900.00	5,871.73	5,804.37	5,783.78	21.44	21.33	171.80	-76.44	-523.54	941.96	901.04	40.92	23.018			
6,000.00	5,970.77	5,901.72	5,880.69	21.84	21.70	171.84	-78.04	-532.58	964.85	923.21	41.63	23.174			
6,100.00	6,069.81	5,999.06	5,977.60	22.23	22.07	171.88	-79.63	-541.62	987.73	945.39	42.35	23.325			
6,200.00	6,168.85	6,096.41	6,074.51	22.63	22.44	171.92	-81.23	-550.66	1,010.62	967.56	43.06	23.470			
6,300.00	6,267.89	6,193.75	6,171.42	23.02	22.81	171.95	-82.82	-559.70	1,033.50	989.73	43.77	23.611			
6,400.00	6,366.93	6,291.09	6,268.33	23.42	23.18	171.98	-84.41	-568.74	1,056.39	1,011.90	44.49	23.747			
6,500.00	6,465.97	6,388.44	6,365.24	23.82	23.55	172.02	-86.01	-577.77	1,079.27	1,034.07	45.20	23.878			
6,600.00	6,565.00	6,485.78	6,462.15	24.21	23.92	172.05	-87.60	-586.81	1,102.16	1,056.25	45.91	24.005			
6,700.00	6,664.04	6,583.13	6,559.06	24.61	24.29	172.08	-89.19	-595.85	1,125.05	1,078.42	46.63	24.129			
6,800.00	6,763.08	6,680.47	6,655.97	25.01	24.67	172.10	-90.79	-604.89	1,147.93	1,100.59	47.34	24.248			
6,900.00	6,862.12	6,777.82	6,752.88	25.41	25.04	172.13	-92.38	-613.93	1,170.82	1,122.76	48.06	24.364			
7,000.00	6,961.16	6,875.16	6,849.79	25.80	25.41	172.16	-93.97	-622.97	1,193.71	1,144.94	48.77	24.476			
7,100.00	7,060.20	6,972.50	6,946.70	26.20	25.78	172.18	-95.57	-632.00	1,216.59	1,167.11	49.49	24.585			
7,200.00	7,159.24	7,069.85	7,043.61	26.60	26.15	172.21	-97.16	-641.04	1,239.48	1,189.28	50.20	24.690			
7,300.00	7,258.28	7,167.19	7,140.52	27.00	26.52	172.23	-98.76	-650.08	1,262.37	1,211.45	50.92	24.793			
7,400.00	7,357.32	7,264.54	7,237.43	27.40	26.89	172.25	-100.35	-659.12	1,285.26	1,233.63	51.63	24.893			
7,500.00	7,456.35	7,361.88	7,334.35	27.80	27.26	172.27	-101.94	-668.16	1,308.15	1,255.80	52.35	24.989			
7,600.00	7,555.39	7,459.23	7,431.26	28.20	27.64	172.29	-103.54	-677.20	1,331.03	1,277.97	53.06	25.083			
7,700.00	7,654.43	7,556.57	7,528.17	28.60	28.01	172.31	-105.13	-686.23	1,353.92	1,300.14	53.78	25.175			
7,800.00	7,753.47	7,653.91	7,625.08	29.00	28.38	172.33	-106.72	-695.27	1,376.81	1,322.32	54.50	25.264			
7,900.00	7,852.51	7,751.26	7,721.99	29.40	28.75	172.35	-108.32	-704.31	1,399.70	1,344.49	55.21	25.351			
8,000.00	7,951.55	7,848.60	7,818.90	29.80	29.12	172.37	-109.91	-713.35	1,422.59	1,366.66	55.93	25.435			
8,100.00	8,050.59	7,945.95	7,915.81	30.20	29.49	172.39	-111.51	-722.39	1,445.48	1,388.83	56.65	25.517			
8,200.00	8,149.63	8,043.29	8,012.72	30.60	29.86	172.40	-113.10	-731.43	1,468.37	1,411.00	57.36	25.597			
8,300.00	8,248.67	8,140.64	8,109.63	31.00	30.24	172.42	-114.69	-740.47	1,491.26	1,433.18	58.08	25.675			
8,400.00	8,347.70	8,237.98	8,206.54	31.40	30.61	172.44	-116.29	-749.50	1,514.15	1,455.35	58.80	25.751			
8,500.00	8,446.74	8,335.32	8,303.45	31.80	30.98	172.45	-117.88	-758.54	1,537.04	1,477.52	59.52	25.825			
8,600.00	8,545.78	8,432.67	8,400.36	32.21	31.35	172.47	-119.47	-767.58	1,559.93	1,499.69	60.24	25.897			
8,700.00	8,644.82	8,530.01	8,497.27	32.61	31.72	172.48	-121.07	-776.62	1,582.82	1,521.86	60.95	25.968			
8,800.00	8,743.86	8,627.36	8,594.18	33.01	32.09	172.50	-122.66	-785.66	1,605.71	1,544.03	61.67	26.036			
8,900.00	8,842.90	8,724.70	8,691.09	33.41	32.46	172.51	-124.26	-794.70	1,628.60	1,566.21	62.39	26.103			
9,000.00	8,941.79	8,821.82	8,787.78	33.81	32.84	172.52	-125.85	-803.71	1,651.55	1,588.45	63.11	26.170			
9,100.00	9,038.62	8,923.98	8,889.39	34.18	33.22	172.53	-127.45	-812.75	1,674.41	1,610.52	63.83	26.237			
9,200.00	9,130.46	9,033.38	8,996.05	34.50	33.59	172.54	-129.05	-821.79	1,697.26	1,632.59	64.55	26.304			
9,300.00	9,214.53	9,147.70	9,101.05	34.78	33.93	172.55	-130.65	-830.83	1,720.11	1,654.66	65.27	26.371			
9,400.00	9,288.26	9,266.98	9,199.15	35.02	34.21	172.56	-132.25	-839.87	1,742.96	1,676.73	66.00	26.438			
9,500.00	9,349.42	9,390.77	9,284.12	35.20	34.44	172.57	-133.85	-848.91	1,765.81	1,698.80	66.72	26.505			
9,600.00	9,396.15	9,517.96	9,349.48	35.36	34.61	172.58	-135.45	-857.95	1,788.66	1,720.87	67.44	26.572			
9,700.00	9,427.03	9,646.86	9,389.76	35.51	34.80	172.59	-137.05	-866.99	1,811.51	1,742.94	68.16	26.639			
9,800.00	9,441.12	9,773.28	9,402.00	35.69	35.08	172.60	-138.65	-876.03	1,834.36	1,765.01	68.88	26.706			
9,900.00	9,442.00	9,873.26	9,402.00	35.91	35.38	172.61	-140.25	-885.07	1,857.21	1,787.08	69.60	26.773			
10,000.00	9,442.00	9,973.26	9,402.00	36.20	35.75	172.62	-141.85	-894.11	1,880.06	1,809.15	70.32	26.840			
10,100.00	9,442.00	10,073.26	9,402.00	36.56	36.18	172.63	-143.45	-903.15	1,902.91	1,831.22	71.04	26.907			
10,200.00	9,442.00	10,173.26	9,402.00	36.99	36.67	172.64	-145.05	-912.19	1,925.76	1,853.29	71.76	26.974			
10,300.00	9,442.00	10,273.26	9,402.00	37.47	37.22	172.65	-146.65	-921.23	1,948.61	1,875.36	72.48	27.041			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Marathon Oil Permian, LLC	Local Co-ordinate Reference:	Well 23-28-20 WXY #18H
Project:	Eddy County, NM (NAD27)	TVD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Reference Site:	Mariner Fee	MD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	23-28-20 WXY #18H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	OH	Database:	Midland District
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

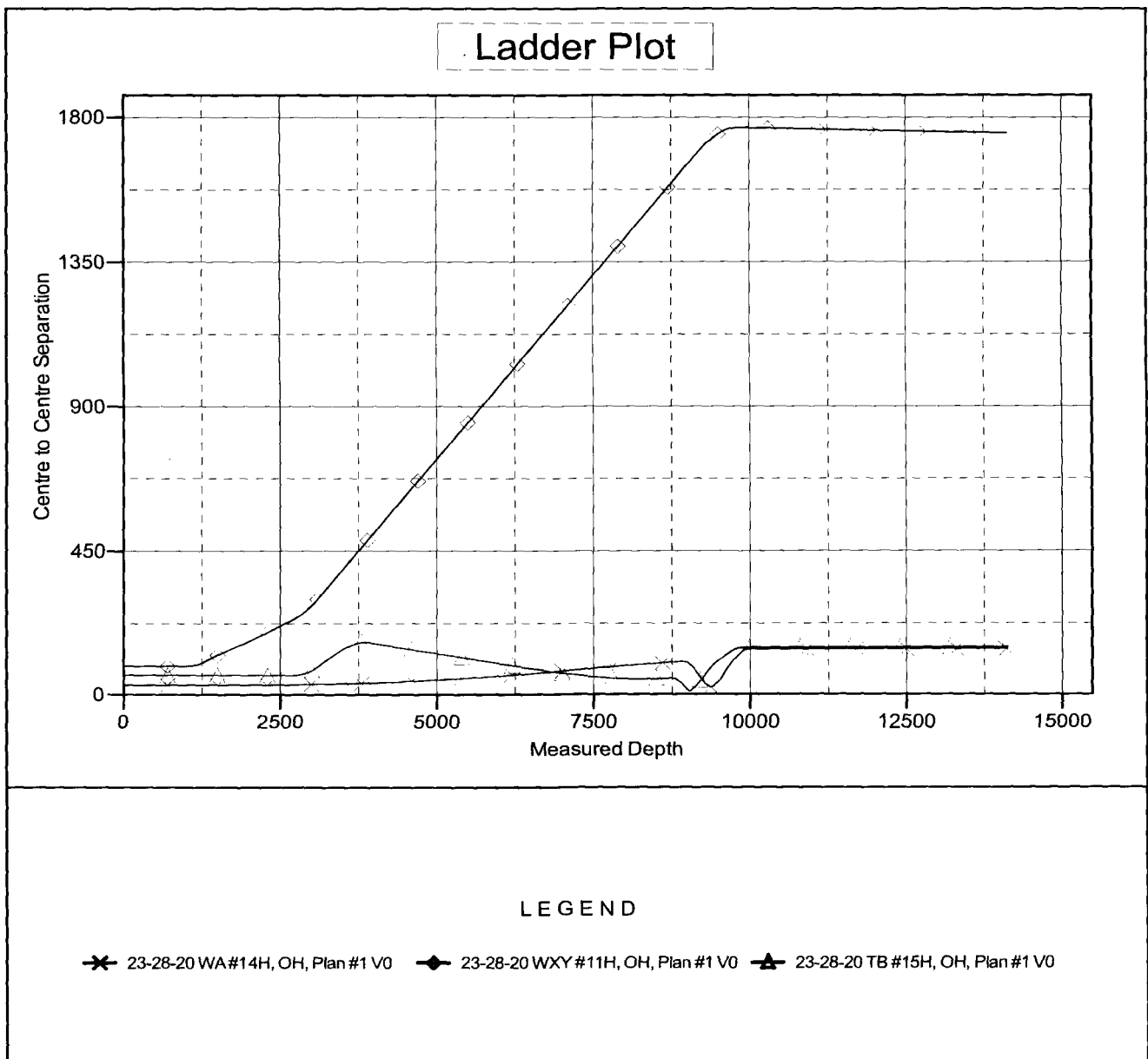
Offset Design Mariner Fee - 23-28-20 WXY #11H - OH - Plan #1														Offset Site Error	0.00 usft
Survey Program: DMWDHDDM														Offset Well Error	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Horizontal (ft)	Offset Wellbore (usft)	Depth (usft)	Offset Wellbore (usft)	Minimum Separation (usft)	Separation Factor	Warning			
10,400.00	9,442.00	10,373.26	9,402.00	38.01	37.81	-88.70	1,053.97	-861.11	1,766.33	1,692.19	74.14	23.823			
10,500.00	9,442.00	10,473.26	9,402.00	38.61	38.44	-88.70	1,153.97	-861.11	1,765.92	1,690.52	75.40	23.420			
10,600.00	9,442.00	10,573.26	9,402.00	39.25	39.12	-88.70	1,253.97	-861.12	1,765.51	1,688.76	76.75	23.004			
10,700.00	9,442.00	10,673.26	9,402.00	39.93	39.84	-88.70	1,353.97	-861.13	1,765.10	1,686.92	78.18	22.577			
10,800.00	9,442.00	10,773.26	9,402.00	40.66	40.61	-88.70	1,453.97	-861.14	1,764.69	1,685.00	79.70	22.143			
10,900.00	9,442.00	10,873.25	9,402.00	41.43	41.40	-88.70	1,553.97	-861.15	1,764.29	1,683.00	81.29	21.704			
11,000.00	9,442.00	10,973.25	9,402.00	42.24	42.24	-88.70	1,653.97	-861.16	1,763.88	1,680.93	82.95	21.264			
11,100.00	9,442.00	11,073.25	9,402.00	43.08	43.10	-88.70	1,753.97	-861.17	1,763.47	1,678.79	84.68	20.825			
11,200.00	9,442.00	11,173.25	9,402.00	43.95	44.00	-88.70	1,853.97	-861.18	1,763.06	1,676.58	86.48	20.388			
11,300.00	9,442.00	11,273.25	9,402.00	44.85	44.92	-88.70	1,953.96	-861.19	1,762.65	1,674.32	88.33	19.955			
11,400.00	9,442.00	11,373.25	9,402.00	45.78	45.88	-88.70	2,053.96	-861.20	1,762.24	1,672.00	90.24	19.528			
11,500.00	9,442.00	11,473.25	9,402.00	46.74	46.85	-88.70	2,153.96	-861.21	1,761.83	1,669.63	92.21	19.108			
11,600.00	9,442.00	11,573.25	9,402.00	47.73	47.86	-88.70	2,253.96	-861.21	1,761.43	1,667.21	94.22	18.695			
11,700.00	9,442.00	11,673.25	9,402.00	48.74	48.88	-88.70	2,353.96	-861.22	1,761.02	1,664.74	96.28	18.291			
11,800.00	9,442.00	11,773.25	9,402.00	49.77	49.93	-88.70	2,453.96	-861.23	1,760.61	1,662.23	98.38	17.896			
11,900.00	9,442.00	11,873.25	9,402.00	50.82	51.00	-88.70	2,553.96	-861.24	1,760.20	1,659.68	100.52	17.510			
12,000.00	9,442.00	11,973.25	9,402.00	51.89	52.08	-88.70	2,653.96	-861.25	1,759.79	1,657.09	102.71	17.134			
12,100.00	9,442.00	12,073.24	9,402.00	52.99	53.19	-88.70	2,753.96	-861.26	1,759.39	1,654.46	104.92	16.768			
12,200.00	9,442.00	12,173.24	9,402.00	54.09	54.31	-88.70	2,853.96	-861.27	1,758.98	1,651.80	107.17	16.412			
12,300.00	9,442.00	12,273.24	9,402.00	55.22	55.44	-88.70	2,953.96	-861.28	1,758.57	1,649.11	109.46	16.066			
12,400.00	9,442.00	12,373.24	9,402.00	56.36	56.59	-88.70	3,053.96	-861.29	1,758.16	1,646.39	111.77	15.730			
12,500.00	9,442.00	12,473.24	9,402.00	57.51	57.76	-88.70	3,153.95	-861.30	1,757.76	1,643.65	114.11	15.404			
12,600.00	9,442.00	12,573.24	9,402.00	58.68	58.93	-88.70	3,253.95	-861.31	1,757.35	1,640.87	116.48	15.088			
12,700.00	9,442.00	12,673.24	9,402.00	59.86	60.12	-88.70	3,353.95	-861.31	1,756.94	1,638.08	118.87	14.781			
12,800.00	9,442.00	12,773.24	9,402.00	61.05	61.32	-88.70	3,453.95	-861.32	1,756.53	1,635.25	121.28	14.483			
12,900.00	9,442.00	12,873.24	9,402.00	62.26	62.53	-88.69	3,553.95	-861.33	1,756.13	1,632.41	123.71	14.195			
13,000.00	9,442.00	12,973.24	9,402.00	63.47	63.76	-88.69	3,653.95	-861.34	1,755.72	1,629.55	126.17	13.916			
13,100.00	9,442.00	13,073.24	9,402.00	64.70	64.99	-88.69	3,753.95	-861.35	1,755.31	1,626.67	128.65	13.645			
13,200.00	9,442.00	13,173.24	9,402.00	65.93	66.23	-88.69	3,853.95	-861.36	1,754.91	1,623.77	131.14	13.382			
13,300.00	9,442.00	13,273.23	9,402.00	67.18	67.48	-88.69	3,953.95	-861.37	1,754.50	1,620.85	133.65	13.128			
13,400.00	9,442.00	13,373.23	9,402.00	68.43	68.74	-88.69	4,053.95	-861.38	1,754.09	1,617.92	136.18	12.881			
13,500.00	9,442.00	13,473.23	9,402.00	69.69	70.00	-88.69	4,153.95	-861.39	1,753.69	1,614.97	138.72	12.642			
13,600.00	9,442.00	13,573.23	9,402.00	70.96	71.27	-88.69	4,253.95	-861.40	1,753.28	1,612.01	141.27	12.411			
13,700.00	9,442.00	13,673.23	9,402.00	72.23	72.55	-88.69	4,353.94	-861.40	1,752.87	1,609.03	143.84	12.186			
13,800.00	9,442.00	13,773.23	9,402.00	73.51	73.84	-88.69	4,453.94	-861.41	1,752.47	1,606.04	146.43	11.968			
13,900.00	9,442.00	13,873.23	9,402.00	74.80	75.13	-88.69	4,553.94	-861.42	1,752.06	1,603.04	149.02	11.757			
14,000.00	9,442.00	13,973.23	9,402.00	76.10	76.43	-88.69	4,653.94	-861.43	1,751.65	1,600.02	151.63	11.552			
14,100.00	9,442.00	14,073.23	9,402.00	77.40	77.74	-88.69	4,753.94	-861.44	1,751.25	1,597.00	154.25	11.353			
14,122.82	9,442.00	14,096.05	9,402.00	77.70	78.03	-88.69	4,776.76	-861.44	1,751.16	1,596.31	154.85	11.309 SF			

Anticollision Report

Company:	Marathon Oil Permian, LLC	Local Co-ordinate Reference:	Well 23-28-20 WXY #18H
Project:	Eddy County, NM (NAD27)	TVD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Reference Site:	Mariner Fee	MD Reference:	KB = 28 @ 3103.00usft (Patterson 244)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	23-28-20 WXY #18H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	OH	Database:	Midland District
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB = 28 @ 3103.00usft (Patterson 24)
 Offset Depths are relative to Offset Datum
 Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: 23-28-20 WXY #18H
 Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
 Grid Convergence at Surface is: 0.12°



Anticollision Report

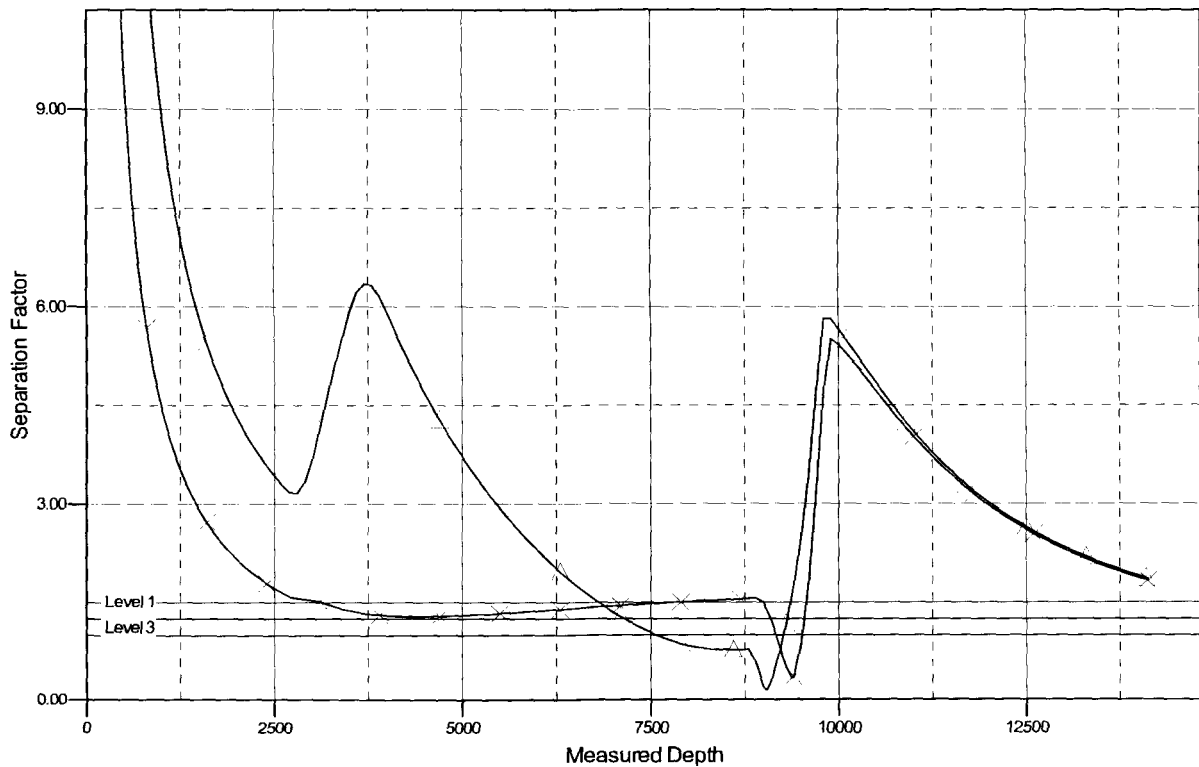
Company: Marathon Oil Permian, LLC
 Project: Eddy County, NM (NAD27)
 Reference Site: Mariner Fee
 Site Error: 0.00 usft
 Reference Well: 23-28-20 WXY #18H
 Well Error: 0.00 usft
 Reference Wellbore: OH
 Reference Design: Plan #1

Local Co-ordinate Reference: Well 23-28-20 WXY #18H
 TVD Reference: KB = 28 @ 3103.00usft (Patterson 244)
 MD Reference: KB = 28 @ 3103.00usft (Patterson 244)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: Midland District
 Offset TVD Reference: Offset Datum

Reference Depths are relative to KB = 28 @ 3103.00usft (Patterson 24)
 Offset Depths are relative to Offset Datum
 Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: 23-28-20 WXY #18H
 Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
 Grid Convergence at Surface is: 0.12°

Separation Factor Plot



LEGEND

✕ 23-28-20 WA#14H, OH, Plan #1 V0 ◆ 23-28-20 WXY #11H, OH, Plan #1 V0 ▲ 23-28-20 TB #15H, OH, Plan #1 V0