

Marathon Oil Permian, LLC

Eddy County, NM (NAD27)

Macho Grande State 23-29-32

WA #5H

30-015-44786

OH

NM OIL CONSERVATION
ARTESIA DISTRICT

FEB 27 2018

Plan: Plan #1

RECEIVED

Standard Planning Report

20 February, 2018



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Planning Report

Database:	Midland District	Local Co-ordinate Reference:	Well WA #5H
Company:	Marathon Oil Permian, LLC	TVD Reference:	KB = 26.5' @ 3015.50usft (H&P # X)
Project:	Eddy County, NM (NAD27)	MD Reference:	KB = 26.5' @ 3015.50usft (H&P # X)
Site:	Macho Grande State 23-29-32	North Reference:	Grid
Well:	WA #5H	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		Macho Grande State 23-29-32			
Site Position:		Northing:	456,528.72 usft	Latitude:	32° 15' 16.828 N
From:	Map	Easting:	603,060.91 usft	Longitude:	103° 59' 59.817 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.18 °

Well:	WA #5H					
Well Position	+N/-S	0.00 usft	Northing:	456,528.72 usft	Latitude:	32° 15' 16.828 N
	+E/-W	0.00 usft	Easting:	603,060.91 usft	Longitude:	103° 59' 59.817 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	2,989.00 usft

Wellbore:	OH				
Magnetic:	Model Name	Date/Time	Declination (T)	DB/Anch (ft)	Field Strength (nT)
	HDGM	2/20/2018	7.15	60.05	48,048

Design:	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section	Depth From (TVD)	True	MD	Direction
	(usft)	(ft)	(usft)	(Degrees)
	0.00	0.00	0.00	0.00

Measured Depth (ft)	Interval (ft)	Interval (m)	Interval (ft)	Interval (m)	Interval (ft)	Interval (m)	Interval (ft)	Interval (m)	Tie On (ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	8.00	235.00	3,398.70	-15.99	-22.84	2.00	2.00	0.00	235.00
5,380.00	8.00	235.00	5,359.43	-174.05	-248.57	0.00	0.00	0.00	0.00
5,780.00	0.00	0.00	5,758.13	-190.04	-271.40	2.00	-2.00	0.00	180.00
9,535.92	0.00	0.00	9,514.05	-190.04	-271.40	0.00	0.00	0.00	0.00
10,437.92	90.20	358.79	10,087.00	384.79	-283.54	10.00	10.00	0.00	358.79
14,736.16	90.20	358.79	10,072.00	4,682.05	-374.25	0.00	0.00	0.00	0.00 BHL[MGS/WA#5H]
14,781.17	90.20	358.79	10,071.84	4,727.05	-375.20	0.00	0.00	0.00	0.00

Planning Report

Midland District	Well WA #5H
Marathon Oil Permian, LLC	KB = 26.5' @ 3015.50usft (H&P # X)
Eddy County, NM (NAD27)	KB = 26.5' @ 3015.50usft (H&P # X)
Macho Grande State 23-29-32	Grid
WA #5H	Minimum Curvature
OH	
Plan #1	

Station	Offset	Area	Volume	Area	Volume	Area	Volume	Area	Volume
(ft)	(ft)	(sq ft)	(cu ft)	(sq ft)	(cu ft)	(sq ft)	(cu ft)	(sq ft)	(cu ft)
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
182.00	0.00	0.00	182.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
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
325.00	0.00	0.00	325.00	0.00	0.00	0.00	0.00	0.00	0.00
Salado/Castle									
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
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
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
2,400.00	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
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,816.00	0.00	0.00	2,816.00	0.00	0.00	0.00	0.00	0.00	0.00
Base of Salt									
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,945.00	0.00	0.00	2,945.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamar									
2,974.00	0.00	0.00	2,974.00	0.00	0.00	0.00	0.00	0.00	0.00
Bell Canyon									
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP - Build 2.0° / 100									
3,056.00	1.12	235.00	3,056.00	-0.31	-0.45	-0.31	2.00	2.00	0.00
Cherry Canyon									
3,100.00	2.00	235.00	3,099.98	-1.00	-1.43	-1.00	2.00	2.00	0.00
3,200.00	4.00	235.00	3,199.84	-4.00	-5.72	-4.00	2.00	2.00	0.00
3,300.00	6.00	235.00	3,299.45	-9.00	-12.86	-9.00	2.00	2.00	0.00
3,400.00	8.00	235.00	3,398.70	-15.99	-22.84	-15.99	2.00	2.00	0.00
EOB - HOLD									
3,500.00	8.00	235.00	3,497.73	-23.97	-34.24	-23.97	0.00	0.00	0.00
3,600.00	8.00	235.00	3,596.76	-31.96	-45.64	-31.96	0.00	0.00	0.00
3,700.00	8.00	235.00	3,695.78	-39.94	-57.04	-39.94	0.00	0.00	0.00
3,800.00	8.00	235.00	3,794.81	-47.92	-68.44	-47.92	0.00	0.00	0.00

Planning Report

Database	Midland District	Local Co-ordinate Reference	Well WA #5H
Company	Marathon Oil Permian, LLC	Top of Well	KB = 26.5' @ 3015.50usft (H&P # X)
Project	Eddy County, NM (NAD27)	Min. Curvature	KB = 26.5' @ 3015.50usft (H&P # X)
Site	Macho Grande State 23-29-32	NAD27 Reference	Grid
Well	WA #5H	Survey Station	Minimum Curvature
Well ID	OH		
Design	Plan #1		

Interval	Interval Length (ft)	Assumed Depth (ft)	Vertical Depth (ft)	True Depth (ft)	True Depth (ft)	True Depth (ft)	Depth Error (ft)	Depth Error (ft)	Depth Error (ft)
3,900.00	8.00	235.00	3,893.84	-55.90	-79.84	-55.90	0.00	0.00	0.00
4,000.00	8.00	235.00	3,992.86	-63.89	-91.24	-63.89	0.00	0.00	0.00
4,100.00	8.00	235.00	4,091.89	-71.87	-102.64	-71.87	0.00	0.00	0.00
4,200.00	8.00	235.00	4,190.92	-79.85	-114.04	-79.85	0.00	0.00	0.00
4,300.00	8.00	235.00	4,289.94	-87.84	-125.44	-87.84	0.00	0.00	0.00
4,400.00	8.00	235.00	4,388.97	-95.82	-136.84	-95.82	0.00	0.00	0.00
4,500.00	8.00	235.00	4,488.00	-103.80	-148.24	-103.80	0.00	0.00	0.00
4,600.00	8.00	235.00	4,587.02	-111.78	-159.64	-111.78	0.00	0.00	0.00
4,700.00	8.00	235.00	4,686.05	-119.77	-171.04	-119.77	0.00	0.00	0.00
4,800.00	8.00	235.00	4,785.08	-127.75	-182.44	-127.75	0.00	0.00	0.00
4,900.00	8.00	235.00	4,884.10	-135.73	-193.84	-135.73	0.00	0.00	0.00
5,000.00	8.00	235.00	4,983.13	-143.71	-205.24	-143.71	0.00	0.00	0.00
5,001.89	8.00	235.00	4,985.00	-143.86	-205.46	-143.86	0.00	0.00	0.00
Brushy Canyon									
5,100.00	8.00	235.00	5,082.16	-151.70	-216.64	-151.70	0.00	0.00	0.00
5,200.00	8.00	235.00	5,181.18	-159.68	-228.04	-159.68	0.00	0.00	0.00
5,300.00	8.00	235.00	5,280.21	-167.66	-239.45	-167.66	0.00	0.00	0.00
5,380.00	8.00	235.00	5,359.43	-174.05	-248.57	-174.05	0.00	0.00	0.00
DROP 2.0' / 100									
5,400.00	7.60	235.00	5,379.25	-175.60	-250.79	-175.60	2.00	-2.00	0.00
5,500.00	5.60	235.00	5,478.58	-182.20	-260.20	-182.20	2.00	-2.00	0.00
5,600.00	3.60	235.00	5,578.25	-186.80	-266.77	-186.80	2.00	-2.00	0.00
5,700.00	1.60	235.00	5,678.14	-189.40	-270.49	-189.40	2.00	-2.00	0.00
5,780.00	0.00	0.00	5,758.13	-190.04	-271.40	-190.04	2.00	-2.00	0.00
EOD - HOLD									
5,800.00	0.00	0.00	5,778.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
5,900.00	0.00	0.00	5,878.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
6,000.00	0.00	0.00	5,978.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
6,100.00	0.00	0.00	6,078.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
6,200.00	0.00	0.00	6,178.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
6,300.00	0.00	0.00	6,278.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
6,400.00	0.00	0.00	6,378.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
6,500.00	0.00	0.00	6,478.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
6,600.00	0.00	0.00	6,578.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
6,643.87	0.00	0.00	6,622.00	-190.04	-271.40	-190.04	0.00	0.00	0.00
Bone Spring									
6,700.00	0.00	0.00	6,678.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
6,800.00	0.00	0.00	6,778.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
6,900.00	0.00	0.00	6,878.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
7,000.00	0.00	0.00	6,978.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
7,100.00	0.00	0.00	7,078.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
7,200.00	0.00	0.00	7,178.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
7,300.00	0.00	0.00	7,278.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
7,400.00	0.00	0.00	7,378.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
7,500.00	0.00	0.00	7,478.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
7,600.00	0.00	0.00	7,578.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
7,645.87	0.00	0.00	7,624.00	-190.04	-271.40	-190.04	0.00	0.00	0.00
1st Bone Spring Sand									
7,700.00	0.00	0.00	7,678.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
7,800.00	0.00	0.00	7,778.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
7,900.00	0.00	0.00	7,878.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
8,000.00	0.00	0.00	7,978.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
8,100.00	0.00	0.00	8,078.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
8,200.00	0.00	0.00	8,178.13	-190.04	-271.40	-190.04	0.00	0.00	0.00

Planning Report

Database:	Midland District	Local Coordinate Reference:	Well WA #5H
Company:	Marathon Oil Permian, LLC	MD: MARATHON	KB = 26.5' @ 3015.50usft (H&P # X)
Project:	Eddy County, NM (NAD27)	MD: MARATHON	KB = 26.5' @ 3015.50usft (H&P # X)
Site:	Macho Grande State 23-29-32	North Arrow:	Grid
Well:	WA #5H	Survey:	Minimum Curvature
Wellbox:	OH		
Drawn:	Plan #1		

Station	Offset	Station	Offset	Station	Offset	Station	Offset	Station	Offset
(US/1000)	(ft)	(US/1000)	(ft)	(US/1000)	(ft)	(US/1000)	(ft)	(US/1000)	(ft)
8,300.00	0.00	0.00	8,278.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
8,400.00	0.00	0.00	8,378.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
8,416.87	0.00	0.00	8,395.00	-190.04	-271.40	-190.04	0.00	0.00	0.00
2nd Bone Spring Sand									
8,500.00	0.00	0.00	8,478.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
8,600.00	0.00	0.00	8,578.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
8,700.00	0.00	0.00	8,678.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
8,800.00	0.00	0.00	8,778.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
8,900.00	0.00	0.00	8,878.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
9,000.00	0.00	0.00	8,978.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
9,100.00	0.00	0.00	9,078.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
9,200.00	0.00	0.00	9,178.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
9,300.00	0.00	0.00	9,278.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
9,400.00	0.00	0.00	9,378.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
9,500.00	0.00	0.00	9,478.13	-190.04	-271.40	-190.04	0.00	0.00	0.00
9,535.92	0.00	0.00	9,514.05	-190.04	-271.40	-190.04	0.00	0.00	0.00
Curve KOP - Build 10.0° / 100									
9,550.00	1.41	358.79	9,528.13	-189.87	-271.41	-189.87	10.00	10.00	0.00
9,568.88	3.30	358.79	9,547.00	-189.09	-271.42	-189.09	10.00	10.00	0.00
3rd Bone Spring Sand									
9,600.00	6.41	358.79	9,578.00	-186.46	-271.48	-186.46	10.00	10.00	0.00
9,650.00	11.41	358.79	9,627.38	-178.72	-271.64	-178.72	10.00	10.00	0.00
9,700.00	16.41	358.79	9,675.90	-166.71	-271.90	-166.71	10.00	10.00	0.00
9,750.00	21.41	358.79	9,723.19	-150.51	-272.24	-150.51	10.00	10.00	0.00
9,800.00	26.41	358.79	9,768.88	-130.26	-272.67	-130.26	10.00	10.00	0.00
9,850.00	31.41	358.79	9,812.64	-106.10	-273.18	-106.10	10.00	10.00	0.00
9,900.00	36.41	358.79	9,854.12	-78.23	-273.76	-78.23	10.00	10.00	0.00
9,944.67	40.88	358.79	9,889.00	-50.35	-274.35	-50.35	10.00	10.00	0.00
Wolfcamp									
9,950.00	41.41	358.79	9,893.02	-46.84	-274.43	-46.84	10.00	10.00	0.00
9,978.62	44.27	358.79	9,914.00	-27.39	-274.84	-27.39	10.00	10.00	0.00
Wolfcamp X Sand									
10,000.00	46.41	358.79	9,929.03	-12.18	-275.16	-12.18	10.00	10.00	0.00
10,050.00	51.41	358.79	9,961.88	25.48	-275.95	25.48	10.00	10.00	0.00
10,100.00	56.41	358.79	9,991.33	65.86	-276.81	65.86	10.00	10.00	0.00
10,127.53	59.16	358.79	10,006.00	89.15	-277.30	89.15	10.00	10.00	0.00
Wolfcamp Y Sand									
10,142.69	60.68	358.79	10,013.60	102.26	-277.57	102.26	10.00	10.00	0.00
FTP[MGS/WA#5H]									
10,150.00	61.41	358.79	10,017.14	108.66	-277.71	108.66	10.00	10.00	0.00
10,200.00	66.41	358.79	10,039.12	153.54	-278.66	153.54	10.00	10.00	0.00
10,209.89	67.40	358.79	10,043.00	162.63	-278.85	162.63	10.00	10.00	0.00
Wolfcamp A									
10,250.00	71.41	358.79	10,057.11	200.16	-279.64	200.16	10.00	10.00	0.00
10,300.00	76.41	358.79	10,070.96	248.18	-280.65	248.18	10.00	10.00	0.00
10,350.00	81.41	358.79	10,080.58	297.22	-281.69	297.22	10.00	10.00	0.00
10,400.00	86.41	358.79	10,085.88	346.91	-282.74	346.91	10.00	10.00	0.00
10,437.92	90.20	358.79	10,087.00	384.79	-283.54	384.79	10.00	10.00	0.00
EOC - HOLD									
10,500.00	90.20	358.79	10,086.79	446.86	-284.85	446.86	0.00	0.00	0.00
10,600.00	90.20	358.79	10,086.44	546.84	-286.96	546.84	0.00	0.00	0.00
10,700.00	90.20	358.79	10,086.09	646.82	-289.07	646.82	0.00	0.00	0.00
10,800.00	90.20	358.79	10,085.74	746.79	-291.18	746.79	0.00	0.00	0.00

Planning Report

Database:	Midland District	Local Co-ordinate Reference:	Well WA #5H
Company:	Marathon Oil Permian, LLC	North Arrow:	KB = 26.5' @ 3015.50usft (H&P # X)
Project:	Eddy County, NM (NAD27)	Mag. Magnetic:	KB = 26.5' @ 3015.50usft (H&P # X)
Site:	Macho Grande State 23-29-32	North Magnetic:	Grid
Well:	WA #5H	Gravity Calculation Method:	Minimum Curvature
Wellbore:	OH		
Plan #:	Plan #1		

Depth (ft)	Interval (ft)	Length (ft)	Depth (ft)	Length (ft)	Depth (ft)	Length (ft)	Depth (ft)	Length (ft)	Depth (ft)
10,900.00	90.20	358.79	10,085.39	846.77	-293.29	846.77	0.00	0.00	0.00
11,000.00	90.20	358.79	10,085.04	946.75	-295.40	946.75	0.00	0.00	0.00
11,100.00	90.20	358.79	10,084.69	1,046.72	-297.51	1,046.72	0.00	0.00	0.00
11,200.00	90.20	358.79	10,084.34	1,146.70	-299.62	1,146.70	0.00	0.00	0.00
11,300.00	90.20	358.79	10,083.99	1,246.68	-301.73	1,246.68	0.00	0.00	0.00
11,400.00	90.20	358.79	10,083.65	1,346.66	-303.84	1,346.66	0.00	0.00	0.00
11,500.00	90.20	358.79	10,083.30	1,446.63	-305.95	1,446.63	0.00	0.00	0.00
11,600.00	90.20	358.79	10,082.95	1,546.61	-308.06	1,546.61	0.00	0.00	0.00
11,700.00	90.20	358.79	10,082.60	1,646.59	-310.17	1,646.59	0.00	0.00	0.00
11,800.00	90.20	358.79	10,082.25	1,746.56	-312.28	1,746.56	0.00	0.00	0.00
11,900.00	90.20	358.79	10,081.90	1,846.54	-314.39	1,846.54	0.00	0.00	0.00
12,000.00	90.20	358.79	10,081.55	1,946.52	-316.50	1,946.52	0.00	0.00	0.00
12,100.00	90.20	358.79	10,081.20	2,046.50	-318.62	2,046.50	0.00	0.00	0.00
12,200.00	90.20	358.79	10,080.85	2,146.47	-320.73	2,146.47	0.00	0.00	0.00
12,300.00	90.20	358.79	10,080.50	2,246.45	-322.84	2,246.45	0.00	0.00	0.00
12,400.00	90.20	358.79	10,080.15	2,346.43	-324.95	2,346.43	0.00	0.00	0.00
12,500.00	90.20	358.79	10,079.81	2,446.40	-327.06	2,446.40	0.00	0.00	0.00
12,600.00	90.20	358.79	10,079.46	2,546.38	-329.17	2,546.38	0.00	0.00	0.00
12,700.00	90.20	358.79	10,079.11	2,646.36	-331.28	2,646.36	0.00	0.00	0.00
12,800.00	90.20	358.79	10,078.76	2,746.34	-333.39	2,746.34	0.00	0.00	0.00
12,900.00	90.20	358.79	10,078.41	2,846.31	-335.50	2,846.31	0.00	0.00	0.00
13,000.00	90.20	358.79	10,078.06	2,946.29	-337.61	2,946.29	0.00	0.00	0.00
13,100.00	90.20	358.79	10,077.71	3,046.27	-339.72	3,046.27	0.00	0.00	0.00
13,200.00	90.20	358.79	10,077.36	3,146.24	-341.83	3,146.24	0.00	0.00	0.00
13,300.00	90.20	358.79	10,077.01	3,246.22	-343.94	3,246.22	0.00	0.00	0.00
13,400.00	90.20	358.79	10,076.66	3,346.20	-346.05	3,346.20	0.00	0.00	0.00
13,500.00	90.20	358.79	10,076.32	3,446.17	-348.16	3,446.17	0.00	0.00	0.00
13,600.00	90.20	358.79	10,075.97	3,546.15	-350.27	3,546.15	0.00	0.00	0.00
13,700.00	90.20	358.79	10,075.62	3,646.13	-352.38	3,646.13	0.00	0.00	0.00
13,800.00	90.20	358.79	10,075.27	3,746.11	-354.49	3,746.11	0.00	0.00	0.00
13,900.00	90.20	358.79	10,074.92	3,846.08	-356.60	3,846.08	0.00	0.00	0.00
14,000.00	90.20	358.79	10,074.57	3,946.06	-358.71	3,946.06	0.00	0.00	0.00
14,100.00	90.20	358.79	10,074.22	4,046.04	-360.82	4,046.04	0.00	0.00	0.00
14,200.00	90.20	358.79	10,073.87	4,146.01	-362.93	4,146.01	0.00	0.00	0.00
14,300.00	90.20	358.79	10,073.52	4,245.99	-365.04	4,245.99	0.00	0.00	0.00
14,400.00	90.20	358.79	10,073.17	4,345.97	-367.16	4,345.97	0.00	0.00	0.00
14,500.00	90.20	358.79	10,072.82	4,445.95	-369.27	4,445.95	0.00	0.00	0.00
14,600.00	90.20	358.79	10,072.48	4,545.92	-371.38	4,545.92	0.00	0.00	0.00
14,700.00	90.20	358.79	10,072.13	4,645.90	-373.49	4,645.90	0.00	0.00	0.00
14,736.16	90.20	358.79	10,072.00	4,682.05	-374.25	4,682.05	0.00	0.00	0.00
TD at 14736.16 - BHL[MGS/WA#5H]									
14,781.17	90.20	358.79	10,071.84	4,727.05	-375.20	4,727.05	0.00	0.00	0.00
TD + 45' VS									

Planning Report

Database:	Midland District	Local Coordinate Reference:	Well WA #5H
Company:	Marathon Oil Permian, LLC	North Magnetic:	KB = 26.5' @ 3015.50usft (H&P # X)
Project:	Eddy County, NM (NAD27)	North True:	KB = 26.5' @ 3015.50usft (H&P # X)
File:	Macho Grande State 23-29-32	North Grid:	Grid
Well:	WA #5H	North Projection:	Minimum Curvature
Wellport:	OH		
Operator:	Plan #1		

Point Name	Depth (ft)	Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)
Shape									
BHL[MGS/WA#5H]	0.00	0.00	10,072.00	4,682.05	-374.25	461,210.40	602,686.69	32° 16' 3.170 N	104° 0' 4.006 W
- plan hits target center									
- Point									
FTP[MGS/WA#5H]	0.00	0.00	10,087.00	60.37	-276.61	456,589.09	602,784.32	32° 15' 17.434 N	104° 0' 3.036 W
- plan misses target center by 84.52usft at 10142.69usft MD (10013.60 TVD, 102.26 N, -277.57 E)									
- Point									

Depth (ft)	Depth (usft)	Name
182.00	182.00	Rustler
325.00	325.00	Salado/Castile
2,816.00	2,816.00	Base of Salt
2,945.00	2,945.00	Lamar
2,974.00	2,974.00	Bell Canyon
3,056.00	3,056.00	Cherry Canyon
5,001.89	4,985.00	Brushy Canyon
6,643.87	6,622.00	Bone Spring
7,645.87	7,624.00	1st Bone Spring Sand
8,416.87	8,395.00	2nd Bone Spring Sand
9,568.88	9,547.00	3rd Bone Spring Sand
9,944.67	9,889.00	Wolfcamp
9,978.62	9,914.00	Wolfcamp X Sand
10,127.53	10,006.00	Wolfcamp Y Sand
10,209.89	10,043.00	Wolfcamp A

Depth (ft)	Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	Comment
3,000.00	3,000.00	0.00	0.00		KOP - Build 2.0° / 100
3,400.00	3,398.70	-15.99	-22.84		EOB - HOLD
5,380.00	5,359.43	-174.05	-248.57		DROP 2.0° / 100
5,780.00	5,758.13	-190.04	-271.40		EOD - HOLD
9,535.92	9,514.05	-190.04	-271.40		Curve KOP - Build 10.0° / 100
10,437.92	10,087.00	384.79	-283.54		EOC - HOLD
14,736.16	10,072.00	4,682.05	-374.25		TD at 14736.16
14,781.17	10,071.84	4,727.05	-375.20		TD + 45' VS



入 出 入

	Ground Level	2989.00			
	Northing	Easting	Latitude	Longitude	
+N/-S	0.00	456528.72	603080.91	32° 15' 16.828 N	03° 59' 59.817 W
+E/-W	0.00				

[illegible]

BHL(MGSWA#SH)	10072.00	4682.05	-374.25	461210.40	602688.69
FTP(MGSWA#SH)	10087.00	50.37	-276.61	456589.09	602784.32

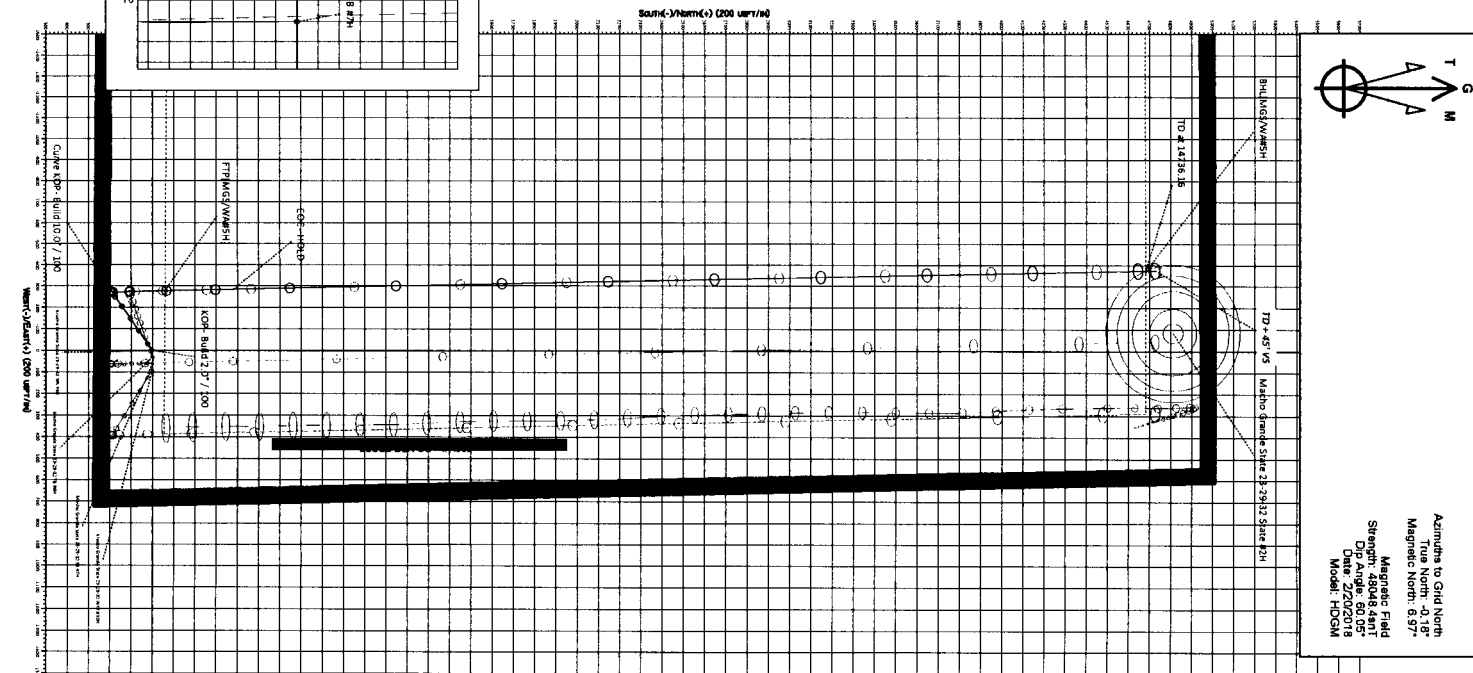
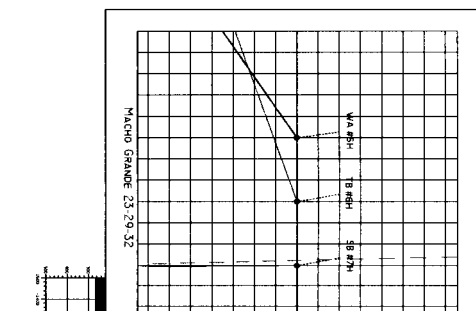
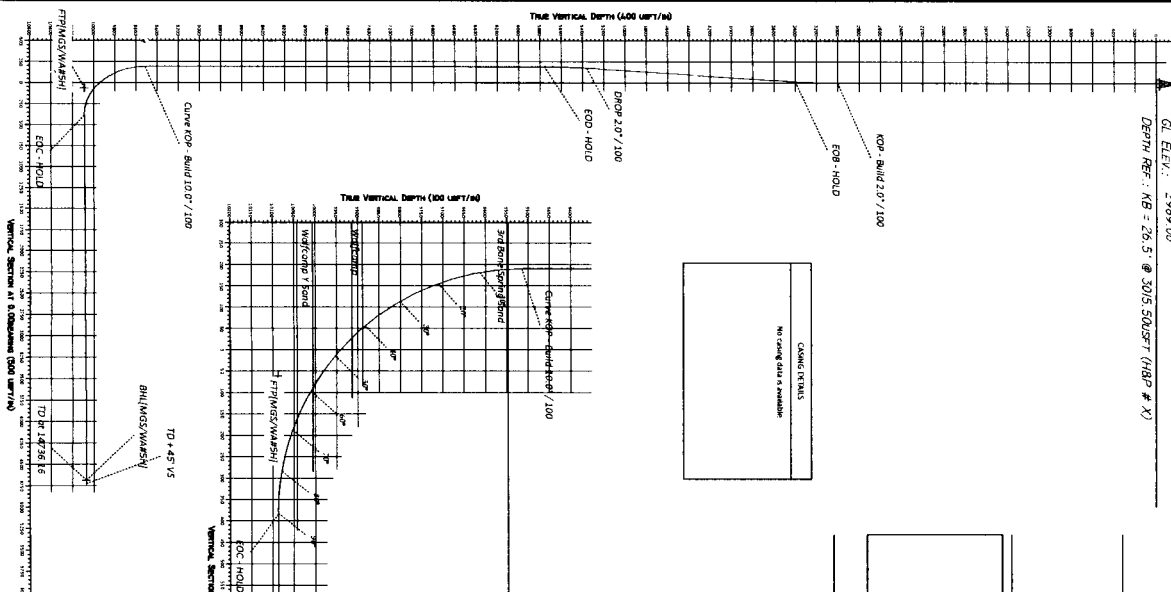
DRILLING TARGET: 1008" IVD @ 0VS // 90.2" INC

TARGET WINDOW: 15' UP // 15' DOWN

Typical	Moisture
1.79.00	182.30
5.22.00	3.25.00
28.15.00	28.6.00
29.62.00	29.65.00
29.71.00	29.74.00
31.65.00	31.66.00
4.98.00	5.00.89
66.19.00	66.33.87
7.21.00	7.15.87
83.92.00	84.6.87
93.96.00	93.98.86
99.61.00	99.64.87
103.95.00	104.9.82
107.29.00	107.29.82
107.00.39	107.00.39

SYSTEM: US STATE PLANE 1927 (EARTH SPLIT ON
Datum: NAD 1927 (NADCON CONUS)
IPSOID: CLARKE 1866
ZONE: NEW MEXICO EAST 3001
Datum: MEAN SEA LEVEL

TO CONVERT MAGNETIC NORTH TO GRID, ADD 6.97°
TO CONVERT MAGNETIC NORTH TO TRUE, ADD 7.15° East
TO CONVERT TRUE NORTH TO GRID, SUBTRACT 0.18°



Marathon Oil Permian, LLC
WA #5H - Plan #1

Eddy County, NM (NAD27)

Macho Grande State 23-29-32

Your Ref:

2/20/2018

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Grid X	Grid Y
0	0	0	0	0	0	0	0	603060.9	456528.7
3000	0	0	3000	0	0	0	0	603060.9	456528.7
3100	2	235	3099.98	-1	-1.43	-1	2	603059.5	456527.7
3200	4	235	3199.84	-4	-5.72	-4	2	603055.2	456524.7
3300	6	235	3299.45	-9	-12.86	-9	2	603048.1	456519.7
3400	8	235	3398.7	-15.99	-22.84	-15.99	2	603038.1	456512.7
3500	8	235	3497.73	-23.97	-34.24	-23.97	0	603026.7	456504.8
3600	8	235	3596.76	-31.96	-45.64	-31.96	0	603015.3	456496.8
3700	8	235	3695.78	-39.94	-57.04	-39.94	0	603003.9	456488.8
3800	8	235	3794.81	-47.92	-68.44	-47.92	0	602992.5	456480.8
3900	8	235	3893.84	-55.9	-79.84	-55.9	0	602981.1	456472.8
4000	8	235	3992.86	-63.89	-91.24	-63.89	0	602969.7	456464.8
4100	8	235	4091.89	-71.87	-102.64	-71.87	0	602958.3	456456.9
4200	8	235	4190.92	-79.85	-114.04	-79.85	0	602946.9	456448.9
4300	8	235	4289.94	-87.84	-125.44	-87.84	0	602935.5	456440.9
4400	8	235	4388.97	-95.82	-136.84	-95.82	0	602924.1	456432.9
4500	8	235	4488	-103.8	-148.24	-103.8	0	602912.7	456424.9

4600	8	235	4587.02	-111.78	-159.64	-111.78	0	602901.3	456417
4700	8	235	4686.05	-119.77	-171.04	-119.77	0	602889.9	456409
4800	8	235	4785.08	-127.75	-182.44	-127.75	0	602878.5	456401
4900	8	235	4884.1	-135.73	-193.84	-135.73	0	602867.1	456393
5000	8	235	4983.13	-143.71	-205.24	-143.71	0	602855.7	456385
5100	8	235	5082.16	-151.7	-216.64	-151.7	0	602844.3	456377
5200	8	235	5181.18	-159.68	-228.04	-159.68	0	602832.9	456369.1
5300	8	235	5280.21	-167.66	-239.45	-167.66	0	602821.5	456361.1
5380	8	235	5359.43	-174.05	-248.57	-174.05	0	602812.4	456354.7
5400	7.6	235	5379.25	-175.6	-250.79	-175.6	2	602810.1	456353.1
5500	5.6	235	5478.58	-182.2	-260.2	-182.2	2	602800.7	456346.5
5600	3.6	235	5578.25	-186.8	-266.77	-186.8	2	602794.2	456341.9
5700	1.6	235	5678.14	-189.4	-270.49	-189.4	2	602790.4	456339.3
5780	0	0	5758.13	-190.04	-271.4	-190.04	2	602789.5	456338.7
5800	0	0	5778.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
5900	0	0	5878.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
6000	0	0	5978.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
6100	0	0	6078.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
6200	0	0	6178.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
6300	0	0	6278.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
6400	0	0	6378.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
6500	0	0	6478.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
6600	0	0	6578.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
6700	0	0	6678.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
6800	0	0	6778.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
6900	0	0	6878.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
7000	0	0	6978.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
7100	0	0	7078.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
7200	0	0	7178.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
7300	0	0	7278.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
7400	0	0	7378.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
7500	0	0	7478.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
7600	0	0	7578.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
7700	0	0	7678.13	-190.04	-271.4	-190.04	0	602789.5	456338.7

7800	0	0	7778.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
7900	0	0	7878.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
8000	0	0	7978.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
8100	0	0	8078.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
8200	0	0	8178.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
8300	0	0	8278.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
8400	0	0	8378.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
8500	0	0	8478.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
8600	0	0	8578.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
8700	0	0	8678.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
8800	0	0	8778.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
8900	0	0	8878.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
9000	0	0	8978.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
9100	0	0	9078.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
9200	0	0	9178.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
9300	0	0	9278.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
9400	0	0	9378.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
9500	0	0	9478.13	-190.04	-271.4	-190.04	0	602789.5	456338.7
9535.92	0	0	9514.05	-190.04	-271.4	-190.04	0	602789.5	456338.7
9550	1.408	358.791	9528.13	-189.87	-271.41	-189.87	10	602789.5	456338.9
9600	6.408	358.791	9578	-186.46	-271.48	-186.46	10	602789.5	456342.3
9650	11.408	358.791	9627.38	-178.72	-271.64	-178.72	10	602789.3	456350
9700	16.408	358.791	9675.9	-166.71	-271.9	-166.71	10	602789	456362
9750	21.408	358.791	9723.19	-150.51	-272.24	-150.51	10	602788.7	456378.2
9800	26.408	358.791	9768.88	-130.26	-272.67	-130.26	10	602788.3	456398.5
9850	31.408	358.791	9812.64	-106.1	-273.18	-106.1	10	602787.8	456422.6
9900	36.408	358.791	9854.12	-78.23	-273.76	-78.23	10	602787.2	456450.5
9950	41.408	358.791	9893.02	-46.84	-274.43	-46.84	10	602786.5	456481.9
10000	46.408	358.791	9929.03	-12.18	-275.16	-12.18	10	602785.8	456516.5
10050	51.408	358.791	9961.88	25.48	-275.95	25.48	10	602785	456554.2
10100	56.408	358.791	9991.32	65.86	-276.81	65.86	10	602784.1	456594.6
10150	61.408	358.791	10017.14	108.66	-277.71	108.66	10	602783.2	456637.4
10200	66.408	358.791	10039.12	153.54	-278.66	153.54	10	602782.3	456682.2
10250	71.408	358.791	10057.11	200.16	-279.64	200.16	10	602781.3	456728.9

10300	76.408	358.791	10070.96	248.18	-280.65	248.18	10	602780.3	456776.9
10350	81.408	358.791	10080.58	297.22	-281.69	297.22	10	602779.2	456825.9
10400	86.408	358.791	10085.88	346.91	-282.74	346.91	10	602778.2	456875.6
10437.92	90.2	358.791	10087	384.79	-283.54	384.79	10	602777.4	456913.5
10500	90.2	358.791	10086.79	446.86	-284.85	446.86	0	602776.1	456975.6
10600	90.2	358.791	10086.44	546.84	-286.96	546.84	0	602774	457075.5
10700	90.2	358.791	10086.09	646.82	-289.07	646.82	0	602771.9	457175.5
10800	90.2	358.791	10085.74	746.79	-291.18	746.79	0	602769.8	457275.5
10900	90.2	358.791	10085.39	846.77	-293.29	846.77	0	602767.6	457375.4
11000	90.2	358.791	10085.04	946.75	-295.4	946.75	0	602765.5	457475.4
11100	90.2	358.791	10084.69	1046.72	-297.51	1046.72	0	602763.4	457575.4
11200	90.2	358.791	10084.34	1146.7	-299.62	1146.7	0	602761.3	457675.3
11300	90.2	358.791	10083.99	1246.68	-301.73	1246.68	0	602759.2	457775.3
11400	90.2	358.791	10083.65	1346.66	-303.84	1346.66	0	602757.1	457875.3
11500	90.2	358.791	10083.3	1446.63	-305.95	1446.63	0	602755	457975.2
11600	90.2	358.791	10082.95	1546.61	-308.06	1546.61	0	602752.9	458075.2
11700	90.2	358.791	10082.6	1646.59	-310.17	1646.59	0	602750.8	458175.2
11800	90.2	358.791	10082.25	1746.56	-312.28	1746.56	0	602748.7	458275.2
11900	90.2	358.791	10081.9	1846.54	-314.39	1846.54	0	602746.5	458375.1
12000	90.2	358.791	10081.55	1946.52	-316.5	1946.52	0	602744.4	458475.1
12100	90.2	358.791	10081.2	2046.5	-318.62	2046.5	0	602742.3	458575.1
12200	90.2	358.791	10080.85	2146.47	-320.73	2146.47	0	602740.2	458675
12300	90.2	358.791	10080.5	2246.45	-322.84	2246.45	0	602738.1	458775
12400	90.2	358.791	10080.15	2346.43	-324.95	2346.43	0	602736	458875
12500	90.2	358.791	10079.81	2446.4	-327.06	2446.4	0	602733.9	458974.9
12600	90.2	358.791	10079.46	2546.38	-329.17	2546.38	0	602731.8	459074.9
12700	90.2	358.791	10079.11	2646.36	-331.28	2646.36	0	602729.7	459174.9
12800	90.2	358.791	10078.76	2746.33	-333.39	2746.33	0	602727.6	459274.8
12900	90.2	358.791	10078.41	2846.31	-335.5	2846.31	0	602725.4	459374.8
13000	90.2	358.791	10078.06	2946.29	-337.61	2946.29	0	602723.3	459474.8
13100	90.2	358.791	10077.71	3046.27	-339.72	3046.27	0	602721.2	459574.8
13200	90.2	358.791	10077.36	3146.24	-341.83	3146.24	0	602719.1	459674.7
13300	90.2	358.791	10077.01	3246.22	-343.94	3246.22	0	602717	459774.7
13400	90.2	358.791	10076.66	3346.2	-346.05	3346.2	0	602714.9	459874.7

13500	90.2	358.791	10076.31	3446.17	-348.16	3446.17	0	602712.8	459974.6
13600	90.2	358.791	10075.97	3546.15	-350.27	3546.15	0	602710.7	460074.6
13700	90.2	358.791	10075.62	3646.13	-352.38	3646.13	0	602708.6	460174.6
13800	90.2	358.791	10075.27	3746.11	-354.49	3746.11	0	602706.5	460274.5
13900	90.2	358.791	10074.92	3846.08	-356.6	3846.08	0	602704.3	460374.5
14000	90.2	358.791	10074.57	3946.06	-358.71	3946.06	0	602702.2	460474.5
14100	90.2	358.791	10074.22	4046.04	-360.82	4046.04	0	602700.1	460574.4
14200	90.2	358.791	10073.87	4146.01	-362.93	4146.01	0	602698	460674.4
14300	90.2	358.791	10073.52	4245.99	-365.04	4245.99	0	602695.9	460774.4
14400	90.2	358.791	10073.17	4345.97	-367.16	4345.97	0	602693.8	460874.4
14500	90.2	358.791	10072.82	4445.95	-369.27	4445.95	0	602691.7	460974.3
14600	90.2	358.791	10072.48	4545.92	-371.38	4545.92	0	602689.6	461074.3
14700	90.2	358.791	10072.13	4645.9	-373.49	4645.9	0	602687.5	461174.3
14736.16	90.2	358.791	10072	4682.05	-374.25	4682.05	0	602686.7	461210.4
14781.17	90.2	358.791	10071.84	4727.05	-375.2	4727.05	0	602685.7	461255.4

All data are in feet unless otherwise stated. Directions and coordinates are relative to Grid North.
Vertical depths are relative to KB = 26.5'. Northings and Eastings are relative to Well.

The Dogleg Severity is in Degrees per 100 feet.

Vertical Section is from Slot and calculated along an Azimuth of 0.000° (Grid).

Coordinate System is NAD 1927 (NADCON CONUS) US State Plane 1927 (Exact solution), New Mexico East 3001.

Central meridian is -104.333°.

Grid Convergence at Surface is 0.178°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 14781.17ft.,
the Bottom Hole Displacement is 4741.92ft., in the Direction of 0.000° (Grid).