

ANADARKO PETROLEUM CORP

Project: Weld County, CO (UTM-NAD83)
 Site: MAE J 14-8HZ
 Well: MAE J 8-11HZ
 Wellbore: OH
 Design: OH

20' KB + 5083' GE @ 5103.00usft



Azimuths to True North
 Magnetic North: 8.08°

Magnetic Field
 Strength: 51928.6nT
 Dip Angle: 66.49°
 Date: 9/19/2019
 Model: IGRF2015

PROJECT DETAILS: Weld County, CO (UTM-NAD83)

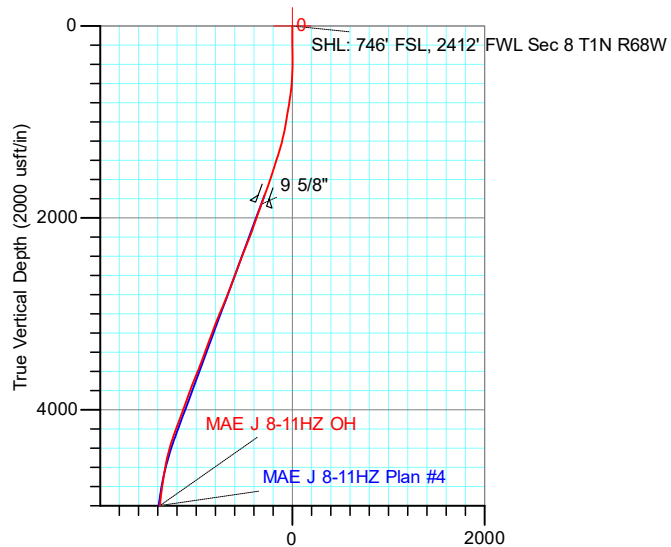
Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Zone 13N (108 W to 102 W)



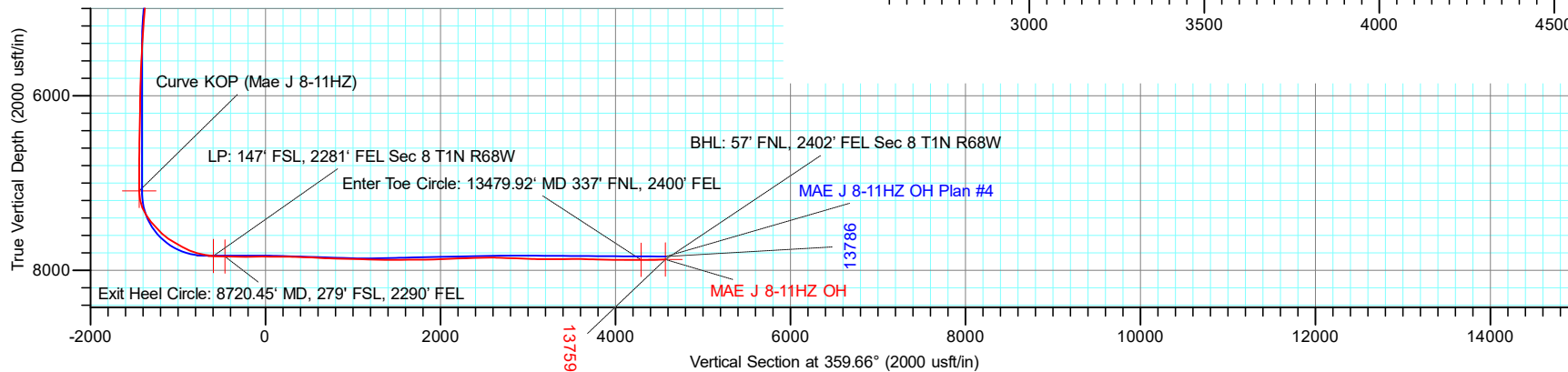
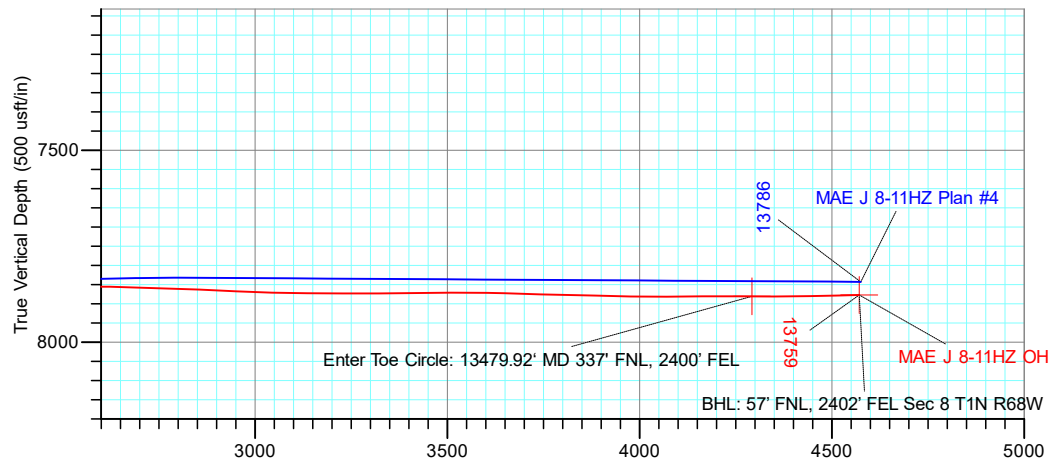
1N-68W-8

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
BHL: 57' FNL, 2402' FEL Sec 8 T1N R68W	7877.39	4574.91	620.53	40.072862	-105.026384
Curve KOP (Mae J 8-11HZ)	7091.79	-1439.62	659.52	40.056346	-105.026245
Enter Toe Circle: 13479.92' MD 337' FNL, 2400' FEL	7880.97	4295.89	616.99	40.072096	-105.026397
Exit Heel Circle: 8720.45' MD, 279' FSL, 2290' FEL	7842.28	-459.68	633.31	40.059037	-105.026339
LP: 147' FSL, 2281' FEL Sec 8 T1N R68W	7836.81	-591.88	639.25	40.058674	-105.026317
SHL: 746' FSL, 2412' FWL Sec 8 T1N R68W	0.00	0.00	0.00	40.060299	-105.028602



ACTUAL LINE CALLS
SHL: 746' FSL, 2412' FWL Sec 8 T1N R68W
HEEL: 147' FSL, 2281' FEL Sec 8 T1N R68W
BHL: 57' FNL, 2402' FEL Sec 8 T1N R68W



TOTAL DIRECTIONAL SERVICES LLC
 671 Academy Ct, Windsor, CO 80550
 Phone: (970) 460-9402

Design: OH (MAE J 8-11HZ/OH)
 MAE J 14-8HZ
 Created By: Dustin Ault
 Date: 12:57, April 15 2020
 Approved: _____ Date: _____

ANADARKO PETROLEUM CORP

Project: Weld County, CO (UTM-NAD83)
 Site: MAE J 14-8HZ
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PROJECT DETAILS: Weld County, CO (UTM-NAD83)
 Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Zone 13N (108 W to 102 W)



Azimuths to True North
 Magnetic North: 8.08°

Magnetic Field
 Strength: 51928.6nT
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 Date: 9/19/2019
 Model: IGRF2015



DESIGN TARGET DETAILS

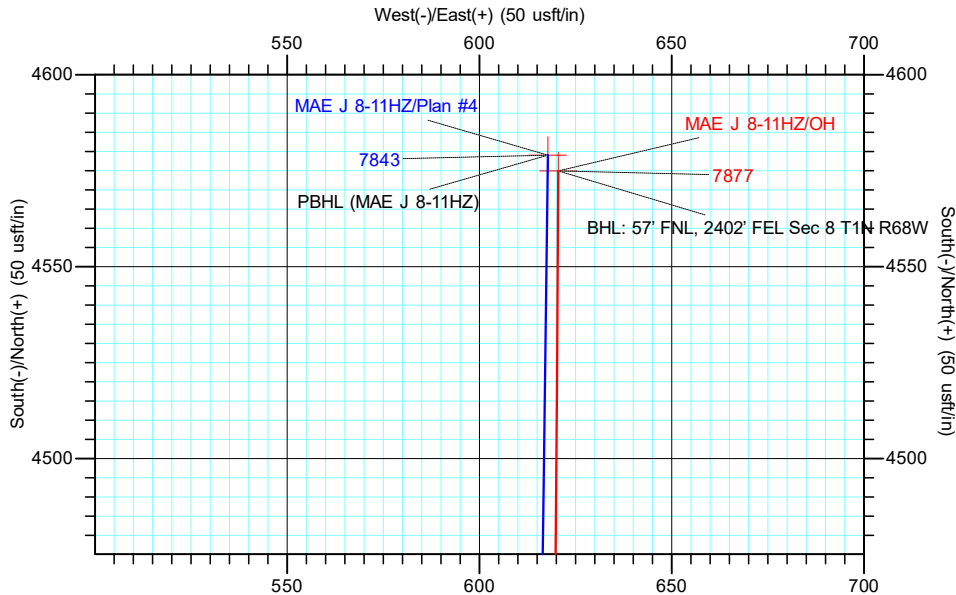
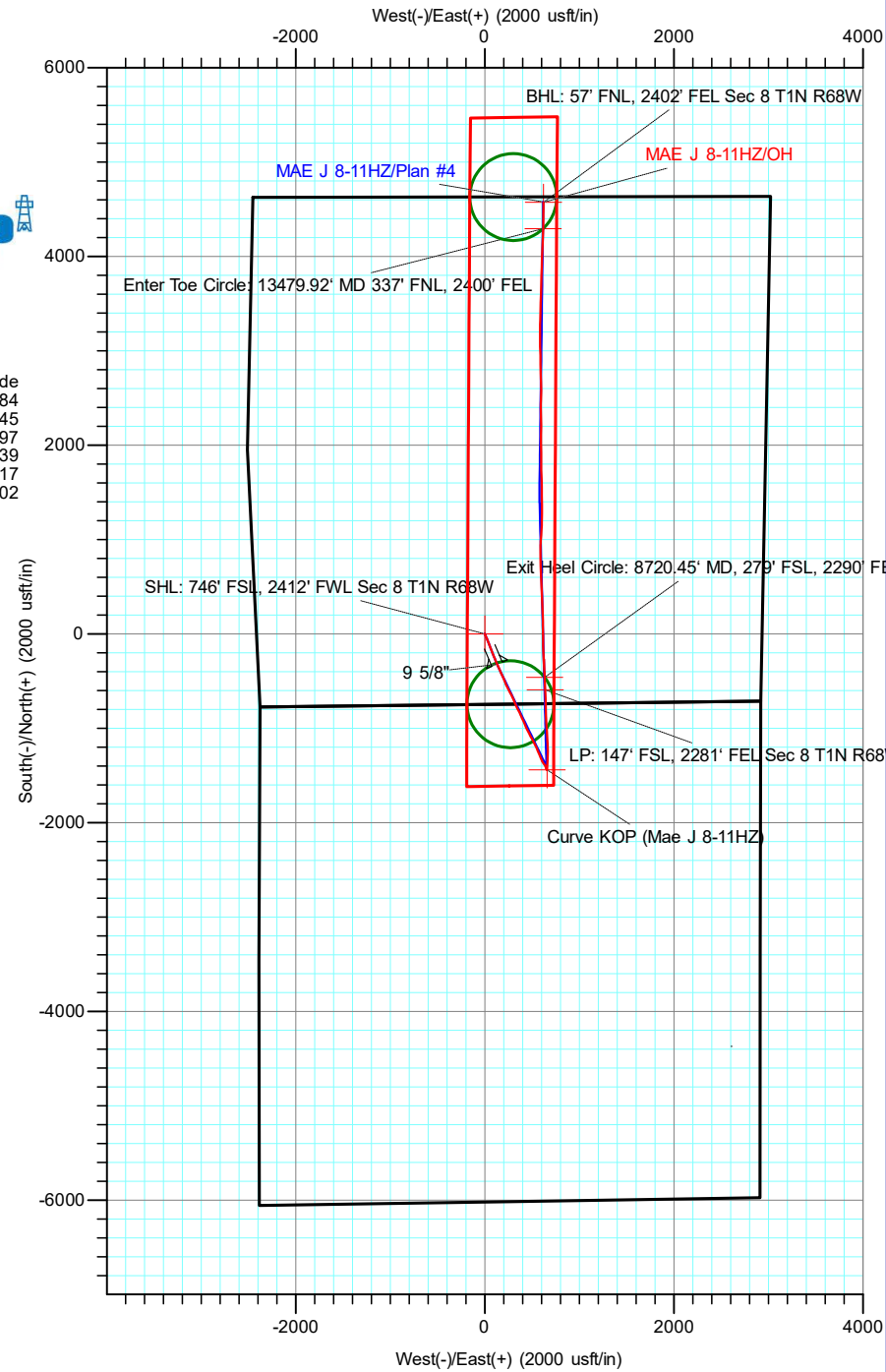
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL: 57' FNL, 2402' FEL Sec 8 T1N R68W	7877.39	4574.91	620.53	14553266.88	1633035.70	40.072862	-105.026384
Curve KOP (Mae J 8-11HZ)	7091.79	-1439.62	659.52	14547252.34	1633072.76	40.056346	-105.026245
Enter Toe Circle: 13479.92' MD 337' FNL, 2400' FEL	880.97	4295.89	616.99	14552987.86	1633032.07	40.072096	-105.026397
Exit Heel Circle: 8720.45' MD, 279' FSL, 2290' FEL	7842.28	-459.68	633.31	14548232.29	1633046.86	40.059037	-105.026339
LP: 147' FSL, 2281' FEL Sec 8 T1N R68W	7836.81	-591.88	639.25	14548100.08	1633052.76	40.058674	-105.026317
SHL: 746' FSL, 2412' FWL Sec 8 T1N R68W	0.00	0.00	0.00	14548692.17	1632413.70	40.060299	-105.028602

ACTUAL LINE CALLS

SHL: 746' FSL, 2412' FWL Sec 8 T1N R68W

HEEL: 147' FSL, 2281' FEL Sec 8 T1N R68W

BHL: 57' FNL, 2402' FEL Sec 8 T1N R68W



TOTAL DIRECTIONAL SERVICES LLC
 671 Academy Ct, Windsor, CO 80550
 Phone: (970) 460-9402

Design: OH (MAE J 8-11HZ/OH)
 MAE J 14-8HZ
 Created By: Dustin Ault
 Date: _____
 Approved: _____
 Date: 12:59, April 15 2020

ANADARKO PETROLEUM CORP

Weld County, CO (UTM-NAD83)

MAE J 14-8HZ

MAE J 8-11HZ

OH

Design: OH

Standard Survey Report

15 April, 2020

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-11HZ
Project:	Weld County, CO (UTM-NAD83)	TVD Reference:	20' KB + 5083' GE @ 5103.00usft
Site:	MAE J 14-8HZ	MD Reference:	20' KB + 5083' GE @ 5103.00usft
Well:	MAE J 8-11HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.15 Single User Db

Project	Weld County, CO (UTM-NAD83)		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Zone 13N (108 W to 102 W)		

Site	MAE J 14-8HZ				
Site Position:		Northing:	14,548,842.20 usft	Latitude:	40.060711
From:	Map	Easting:	1,632,414.30 usft	Longitude:	-105.028600
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.02 °

Well	MAE J 8-11HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,548,692.17 usft	Latitude:	40.060299
	+E/-W	0.00 usft	Easting:	1,632,413.70 usft	Longitude:	-105.028602
Position Uncertainty		3.28 usft	Wellhead Elevation:	usft	Ground Level:	5,083.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/19/2019	8.08	66.49	51,928.58346951

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	359.66	

Survey Program	Date	4/15/2020			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
120.00	1,791.90	Survey #2 - Gyro (OH)	APC_NS-GYRO-MS	North sensing gyrocompassing m/s	
1,791.90	13,701.00	Survey #3 - MWD+IFR (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
13,759.00	13,759.00	Survey #4 - Proj to TD (OH)	BLIND	OWSG BLIND	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	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	0.00
SHL: 746' FSL, 2412' FWL Sec 8 T1N R68W - SHL (MAE J 8-11HZ)										
120.00	0.75	348.30	120.00	0.77	-0.16	0.77	0.63	0.63	0.00	
220.00	0.78	326.50	219.99	1.98	-0.67	1.98	0.29	0.03	-21.80	
320.00	0.43	323.06	319.98	2.85	-1.27	2.86	0.35	-0.35	-3.45	
420.00	0.81	126.99	419.98	2.73	-0.94	2.73	1.23	0.38	163.93	
520.00	3.45	146.29	519.90	-0.20	1.30	-0.21	2.70	2.65	19.30	
620.00	5.70	158.84	619.58	-7.34	4.76	-7.36	2.44	2.24	12.55	
720.00	8.54	157.12	718.80	-18.81	9.44	-18.86	2.85	2.85	-1.72	

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-11HZ
Project:	Weld County, CO (UTM-NAD83)	TVD Reference:	20' KB + 5083' GE @ 5103.00usft
Site:	MAE J 14-8HZ	MD Reference:	20' KB + 5083' GE @ 5103.00usft
Well:	MAE J 8-11HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.15 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
820.00	10.13	156.17	817.47	-33.69	15.88	-33.79	1.60	1.59	-0.95	
920.00	10.06	158.93	915.92	-49.89	22.58	-50.02	0.49	-0.07	2.76	
1,020.00	10.73	158.79	1,014.28	-66.71	29.08	-66.89	0.67	0.67	-0.14	
1,120.00	12.64	159.03	1,112.21	-85.61	36.37	-85.82	1.91	1.91	0.24	
1,220.00	14.71	157.41	1,209.37	-107.54	45.16	-107.81	2.11	2.07	-1.62	
1,320.00	18.17	158.16	1,305.27	-133.75	55.84	-134.08	3.47	3.46	0.75	
1,420.00	19.37	159.17	1,399.95	-163.72	67.54	-164.12	1.24	1.20	1.01	
1,520.00	19.11	159.22	1,494.36	-194.53	79.24	-194.99	0.26	-0.26	0.05	
1,620.00	19.63	157.79	1,588.70	-225.38	91.40	-225.92	0.70	0.52	-1.43	
1,720.00	21.01	156.51	1,682.47	-257.38	104.90	-258.00	1.44	1.38	-1.28	
1,811.90	21.95	157.77	1,767.99	-288.39	117.96	-289.08	1.14	1.03	1.37	
1,910.00	21.19	156.97	1,859.22	-321.67	131.84	-322.45	0.84	-0.78	-0.82	
9 5/8"										
2,027.00	20.28	155.93	1,968.64	-359.64	148.38	-360.52	0.84	-0.77	-0.88	
2,119.00	21.16	156.14	2,054.69	-389.39	161.60	-390.34	0.96	0.96	0.23	
2,213.00	21.77	155.70	2,142.17	-420.79	175.64	-421.82	0.67	0.65	-0.47	
2,307.00	22.83	155.65	2,229.14	-453.29	190.33	-454.41	1.13	1.13	-0.05	
2,401.00	23.34	157.60	2,315.61	-487.12	204.94	-488.33	0.98	0.54	2.07	
2,494.00	23.09	158.97	2,401.08	-521.18	218.51	-522.46	0.64	-0.27	1.47	
2,587.00	22.11	153.83	2,486.95	-553.91	232.77	-555.28	2.37	-1.05	-5.53	
2,680.00	22.58	151.74	2,572.97	-585.34	248.95	-586.81	0.99	0.51	-2.25	
2,773.00	22.79	152.48	2,658.77	-617.05	265.72	-618.61	0.38	0.23	0.80	
2,867.00	23.60	151.98	2,745.18	-649.80	282.97	-651.47	0.89	0.86	-0.53	
2,960.00	23.73	156.33	2,830.36	-683.38	299.23	-685.14	1.88	0.14	4.68	
3,056.00	24.36	159.45	2,918.03	-719.61	313.94	-721.46	1.48	0.66	3.25	
3,150.00	24.50	155.42	3,003.62	-755.49	328.85	-757.43	1.78	0.15	-4.29	
3,246.00	23.28	152.51	3,091.40	-790.42	345.89	-792.46	1.77	-1.27	-3.03	
3,338.00	22.66	153.19	3,176.11	-822.37	362.28	-824.50	0.73	-0.67	0.74	
3,431.00	22.11	157.25	3,262.10	-854.50	377.12	-856.72	1.76	-0.59	4.37	
3,524.00	22.45	153.67	3,348.16	-886.56	391.77	-888.86	1.50	0.37	-3.85	
3,619.00	22.08	155.55	3,436.08	-919.07	407.21	-921.47	0.84	-0.39	1.98	
3,713.00	21.57	157.09	3,523.34	-951.07	421.24	-953.55	0.82	-0.54	1.64	
3,806.00	23.81	157.66	3,609.14	-984.18	435.04	-986.75	2.42	2.41	0.61	
3,899.00	24.78	152.62	3,693.91	-1,018.86	451.14	-1,021.51	2.46	1.04	-5.42	
3,993.00	22.42	153.51	3,780.05	-1,052.40	468.20	-1,055.16	2.54	-2.51	0.95	
4,087.00	21.01	153.33	3,867.37	-1,083.50	483.75	-1,086.35	1.50	-1.50	-0.19	
4,180.00	23.00	149.08	3,953.60	-1,113.99	500.58	-1,116.94	2.74	2.14	-4.57	
4,273.00	22.13	153.43	4,039.48	-1,145.25	517.75	-1,148.30	2.02	-0.94	4.68	
4,365.00	23.18	154.31	4,124.38	-1,177.06	533.35	-1,180.21	1.20	1.14	0.96	
4,458.00	22.50	155.86	4,210.09	-1,209.80	548.56	-1,213.03	0.98	-0.73	1.67	
4,551.00	19.56	156.78	4,296.89	-1,240.35	561.98	-1,243.66	3.18	-3.16	0.99	
4,644.00	17.45	158.08	4,385.08	-1,267.59	573.33	-1,270.97	2.31	-2.27	1.40	
4,738.00	14.60	157.90	4,475.41	-1,291.65	583.05	-1,295.09	3.03	-3.03	-0.19	

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Well:	MAE J 8-11HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.15 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,832.00	12.02	157.94	4,566.88	-1,311.70	591.18	-1,315.19	2.74	-2.74	0.04	
4,925.00	10.25	156.96	4,658.13	-1,328.29	598.06	-1,331.82	1.91	-1.90	-1.05	
5,019.00	8.46	156.09	4,750.87	-1,342.31	604.13	-1,345.87	1.91	-1.90	-0.93	
5,113.00	9.70	147.66	4,843.70	-1,355.32	611.17	-1,358.93	1.93	1.32	-8.97	
5,232.00	7.39	145.42	4,961.37	-1,370.10	620.88	-1,373.76	1.96	-1.94	-1.88	
5,324.00	5.96	145.44	5,052.74	-1,378.90	626.95	-1,382.60	1.55	-1.55	0.02	
5,418.00	5.31	147.49	5,146.29	-1,386.59	632.05	-1,390.32	0.72	-0.69	2.18	
5,511.00	4.70	149.79	5,238.93	-1,393.51	636.28	-1,397.26	0.69	-0.66	2.47	
5,603.00	4.00	150.13	5,330.67	-1,399.55	639.78	-1,403.32	0.76	-0.76	0.37	
5,697.00	3.57	153.68	5,424.46	-1,405.02	642.71	-1,408.81	0.52	-0.46	3.78	
5,791.00	3.14	160.55	5,518.30	-1,410.07	644.86	-1,413.87	0.63	-0.46	7.31	
5,884.00	2.74	170.59	5,611.18	-1,414.66	646.08	-1,418.47	0.70	-0.43	10.80	
5,976.00	2.35	165.76	5,703.09	-1,418.66	646.90	-1,422.48	0.48	-0.42	-5.25	
6,068.00	2.03	164.42	5,795.02	-1,422.06	647.80	-1,425.88	0.35	-0.35	-1.46	
6,162.00	1.52	160.26	5,888.98	-1,424.84	648.67	-1,428.66	0.56	-0.54	-4.43	
6,254.00	1.01	154.15	5,980.95	-1,426.71	649.43	-1,430.54	0.57	-0.55	-6.64	
6,348.00	1.07	144.08	6,074.94	-1,428.17	650.31	-1,432.00	0.20	0.06	-10.71	
6,441.00	1.30	144.90	6,167.92	-1,429.74	651.43	-1,433.58	0.25	0.25	0.88	
6,535.00	1.48	153.03	6,261.89	-1,431.69	652.59	-1,435.54	0.28	0.19	8.65	
6,628.00	1.27	153.20	6,354.86	-1,433.68	653.60	-1,437.54	0.23	-0.23	0.18	
6,720.00	1.18	146.98	6,446.84	-1,435.39	654.58	-1,439.25	0.17	-0.10	-6.76	
6,814.00	1.00	130.94	6,540.83	-1,436.74	655.72	-1,440.60	0.38	-0.19	-17.06	
6,907.00	0.86	140.82	6,633.81	-1,437.81	656.78	-1,441.68	0.23	-0.15	10.62	
7,000.00	0.77	120.77	6,726.80	-1,438.67	657.75	-1,442.55	0.32	-0.10	-21.56	
7,093.00	0.54	118.85	6,819.80	-1,439.20	658.68	-1,443.08	0.25	-0.25	-2.06	
7,186.00	0.40	121.50	6,912.80	-1,439.58	659.34	-1,443.47	0.15	-0.15	2.85	
7,280.00	0.24	141.87	7,006.79	-1,439.91	659.74	-1,443.80	0.21	-0.17	21.67	
7,365.00	0.72	322.67	7,091.79	-1,439.62	659.52	-1,443.51	1.13	0.56	-210.82	
Curve KOP (Mae J 8-11HZ)										
7,374.00	0.82	322.65	7,100.79	-1,439.53	659.45	-1,443.42	1.13	1.13	-0.28	
7,469.00	12.13	359.86	7,195.04	-1,428.97	659.01	-1,432.86	12.09	11.91	39.17	
7,562.00	21.37	5.31	7,284.00	-1,402.27	660.56	-1,406.16	10.07	9.94	5.86	
7,654.00	32.25	2.50	7,366.00	-1,360.93	663.19	-1,364.84	11.90	11.83	-3.05	
7,748.00	38.87	2.73	7,442.42	-1,306.35	665.69	-1,310.28	7.04	7.04	0.24	
7,843.00	43.34	359.72	7,513.99	-1,243.94	666.95	-1,247.87	5.14	4.71	-3.17	
7,936.00	46.17	357.09	7,580.04	-1,178.50	665.09	-1,182.43	3.64	3.04	-2.83	
8,029.00	55.69	356.64	7,638.58	-1,106.49	661.13	-1,110.40	10.24	10.24	-0.48	
8,122.00	60.94	356.14	7,687.41	-1,027.54	656.14	-1,031.42	5.66	5.65	-0.54	
8,215.00	60.62	356.06	7,732.81	-946.56	650.62	-950.41	0.35	-0.34	-0.09	
8,309.00	67.02	358.23	7,774.27	-862.36	646.46	-866.18	7.12	6.81	2.31	
8,402.00	74.25	359.70	7,805.09	-774.70	644.90	-778.51	7.92	7.77	1.58	
8,490.62	79.72	358.06	7,825.04	-688.41	643.20	-692.21	6.43	6.17	-1.85	
Heel (MAE J 8-11HZ)										
8,495.00	79.99	357.98	7,825.81	-684.10	643.05	-687.90	6.43	6.18	-1.81	

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-11HZ
Project:	Weld County, CO (UTM-NAD83)	TVD Reference:	20' KB + 5083' GE @ 5103.00usft
Site:	MAE J 14-8HZ	MD Reference:	20' KB + 5083' GE @ 5103.00usft
Well:	MAE J 8-11HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.15 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,588.00	86.42	357.30	7,836.81	-591.88	639.25	-595.66	6.95	6.91	-0.73	
LP: 147' FSL, 2281' FEL Sec 8 T1N R68W										
8,681.00	88.25	357.54	7,841.13	-499.08	635.07	-502.84	1.98	1.97	0.26	
8,720.45	88.42	357.34	7,842.28	-459.68	633.31	-463.43	0.66	0.43	-0.49	
Exit Heel Circle: 8720.45' MD, 279' FSL, 2290' FEL										
8,774.00	88.65	357.08	7,843.65	-406.21	630.71	-409.95	0.66	0.43	-0.49	
8,868.00	88.84	356.14	7,845.71	-312.40	625.15	-316.10	1.02	0.20	-1.00	
8,962.00	90.57	357.87	7,846.19	-218.54	620.24	-222.21	2.60	1.84	1.84	
9,054.00	91.12	358.55	7,844.83	-126.59	617.36	-130.25	0.95	0.60	0.74	
9,148.00	90.03	359.96	7,843.89	-32.61	616.14	-36.27	1.90	-1.16	1.50	
9,241.00	89.10	359.69	7,844.60	60.39	615.86	56.73	1.04	-1.00	-0.29	
9,335.00	90.76	358.54	7,844.71	154.37	614.41	150.72	2.15	1.77	-1.22	
9,430.00	89.18	358.11	7,844.76	249.33	611.63	245.69	1.72	-1.66	-0.45	
9,524.00	87.28	357.30	7,847.66	343.20	607.87	339.59	2.20	-2.02	-0.86	
9,617.00	88.41	357.28	7,851.16	436.03	603.47	432.44	1.22	1.22	-0.02	
9,710.00	88.17	357.41	7,853.94	528.89	599.17	525.32	0.29	-0.26	0.14	
9,804.00	86.17	357.40	7,858.58	622.67	594.92	619.13	2.13	-2.13	-0.01	
9,898.00	87.38	359.03	7,863.87	716.47	592.00	712.95	2.16	1.29	1.73	
9,992.00	88.92	358.47	7,866.90	810.40	589.95	806.88	1.74	1.64	-0.60	
10,086.00	89.30	0.14	7,868.36	904.38	588.81	900.87	1.82	0.40	1.78	
10,180.00	88.62	5.02	7,870.07	998.24	593.03	994.70	5.24	-0.72	5.19	
10,272.00	88.08	3.29	7,872.72	1,089.95	599.70	1,086.38	1.97	-0.59	-1.88	
10,364.00	87.68	0.93	7,876.12	1,181.82	603.08	1,178.22	2.60	-0.43	-2.57	
10,458.00	88.61	0.28	7,879.16	1,275.77	604.07	1,272.16	1.21	0.99	-0.69	
10,550.00	89.40	359.99	7,880.76	1,367.75	604.29	1,364.14	0.91	0.86	-0.32	
10,644.00	90.35	359.35	7,880.97	1,461.75	603.75	1,458.14	1.22	1.01	-0.68	
10,736.00	89.97	359.00	7,880.71	1,553.74	602.42	1,550.13	0.56	-0.41	-0.38	
10,828.00	91.02	358.34	7,879.91	1,645.71	600.29	1,642.12	1.35	1.14	-0.72	
10,921.00	90.39	358.70	7,878.77	1,738.67	597.89	1,735.09	0.78	-0.68	0.39	
11,014.00	90.27	359.92	7,878.23	1,831.66	596.77	1,828.08	1.32	-0.13	1.31	
11,106.00	91.12	359.43	7,877.12	1,923.65	596.25	1,920.08	1.07	0.92	-0.53	
11,200.00	92.82	359.90	7,873.89	2,017.59	595.70	2,014.02	1.88	1.81	0.50	
11,293.00	92.63	0.46	7,869.47	2,110.48	595.99	2,106.91	0.64	-0.20	0.60	
11,386.00	91.76	0.33	7,865.90	2,203.41	596.63	2,199.83	0.95	-0.94	-0.14	
11,481.00	91.99	358.41	7,862.80	2,298.35	595.59	2,294.77	2.03	0.24	-2.02	
11,575.00	92.42	359.59	7,859.18	2,392.26	593.95	2,388.70	1.34	0.46	1.26	
11,668.00	91.18	0.97	7,856.26	2,485.21	594.40	2,481.64	1.99	-1.33	1.48	
11,762.00	89.83	1.96	7,855.43	2,579.18	596.80	2,575.59	1.78	-1.44	1.05	
11,855.00	87.98	356.60	7,857.21	2,672.11	595.64	2,668.53	6.10	-1.99	-5.76	
11,949.00	88.49	358.37	7,860.10	2,765.97	591.51	2,762.41	1.96	0.54	1.88	
12,043.00	87.55	359.72	7,863.35	2,859.90	589.95	2,856.35	1.75	-1.00	1.44	
12,137.00	87.31	358.62	7,867.57	2,953.80	588.59	2,950.25	1.20	-0.26	-1.17	
12,231.00	88.28	358.03	7,871.18	3,047.68	585.84	3,044.15	1.21	1.03	-0.63	
12,323.00	89.75	359.97	7,872.76	3,139.65	584.24	3,136.13	2.65	1.60	2.11	

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-11HZ
Project:	Weld County, CO (UTM-NAD83)	TVD Reference:	20' KB + 5083' GE @ 5103.00usft
Site:	MAE J 14-8HZ	MD Reference:	20' KB + 5083' GE @ 5103.00usft
Well:	MAE J 8-11HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.15 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
12,415.00	89.81	0.45	7,873.12	3,231.65	584.57	3,228.12	0.53	0.07	0.52	
12,509.00	90.12	1.57	7,873.17	3,325.63	586.23	3,322.09	1.24	0.33	1.19	
12,603.00	90.96	1.26	7,872.29	3,419.60	588.55	3,416.05	0.95	0.89	-0.33	
12,697.00	90.22	1.92	7,871.32	3,513.56	591.16	3,509.99	1.05	-0.79	0.70	
12,791.00	89.36	2.28	7,871.66	3,607.49	594.61	3,603.90	0.99	-0.91	0.38	
12,884.00	87.69	1.64	7,874.06	3,700.40	597.79	3,696.79	1.92	-1.80	-0.69	
12,976.00	89.05	0.81	7,876.68	3,792.34	599.75	3,788.71	1.73	1.48	-0.90	
13,070.00	88.23	2.20	7,878.91	3,886.28	602.22	3,882.64	1.72	-0.87	1.48	
13,164.00	89.20	2.21	7,881.01	3,980.18	605.83	3,976.52	1.03	1.03	0.01	
13,258.00	90.04	1.99	7,881.64	4,074.12	609.28	4,070.43	0.92	0.89	-0.23	
13,352.00	90.87	2.32	7,880.89	4,168.05	612.81	4,164.34	0.95	0.88	0.35	
13,445.00	89.40	1.66	7,880.67	4,260.99	616.04	4,257.26	1.73	-1.58	-0.71	
13,479.92	89.62	1.46	7,880.97	4,295.89	616.99	4,292.15	0.86	0.63	-0.59	
Enter Toe Circle: 13479.92' MD 337' FNL, 2400' FEL										
13,537.00	89.98	1.12	7,881.17	4,352.96	618.27	4,349.21	0.86	0.63	-0.59	
13,631.00	91.09	0.54	7,880.29	4,446.94	619.64	4,443.19	1.33	1.18	-0.62	
13,701.00	91.38	0.35	7,878.78	4,516.92	620.18	4,513.17	0.50	0.41	-0.27	
13,759.00	91.38	0.35	7,877.39	4,574.91	620.53	4,571.14	0.00	0.00	0.00	
BHL: 57' FNL, 2402' FEL Sec 8 T1N R68W - PBHL (MAE J 8-11HZ)										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
SHL: 746' FSL, 2412' FV - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	14,548,692.17	1,632,413.70	40.060299	-105.028602	
Curve KOP (Mae J 8-11) - actual wellpath misses target center by 0.01usft at 7365.00usft MD (7091.79 TVD, -1439.62 N, 659.52 E) - Point	0.00	0.00	7,091.79	-1,439.62	659.52	14,547,252.33	1,633,072.75	40.056346	-105.026245	
LP: 147' FSL, 2281' FEL - actual wellpath hits target center - Point	0.00	0.00	7,836.81	-591.88	639.25	14,548,100.08	1,633,052.76	40.058674	-105.026318	
Exit Heel Circle: 8720.4¢ - actual wellpath hits target center - Point	0.00	0.00	7,842.28	-459.68	633.31	14,548,232.28	1,633,046.86	40.059037	-105.026339	
BHL: 57' FNL, 2402' FEL - actual wellpath misses target center by 0.01usft at 13759.00usft MD (7877.39 TVD, 4574.91 N, 620.53 E) - Point	0.00	0.00	7,877.39	4,574.91	620.53	14,553,266.88	1,633,035.70	40.072863	-105.026384	
Enter Toe Circle: 13479. - actual wellpath hits target center - Point	0.00	0.00	7,880.97	4,295.89	616.99	14,552,987.86	1,633,032.07	40.072096	-105.026397	

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-11HZ
Project:	Weld County, CO (UTM-NAD83)	TVD Reference:	20' KB + 5083' GE @ 5103.00usft
Site:	MAE J 14-8HZ	MD Reference:	20' KB + 5083' GE @ 5103.00usft
Well:	MAE J 8-11HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.15 Single User Db

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)		Name	Casing Diameter (")	Hole Diameter (")
1,910.00	1,859.22	9 5/8"		9-5/8	13-1/2

Checked By: _____ Approved By: _____ Date: _____