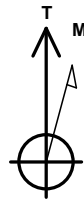


ANADARKO PETROLEUM CORP

Project: Weld County, CO (UTM-NAD83)
 Site: MAE J 14-8HZ
 Well: MAE J 8-3HZ
 Wellbore: OH
 Design: OH

20' KB + 5083' GE @ 5103.00usft



Azimuths to True North
 Magnetic North: 8.08°

Magnetic Field
 Strength: 51928.8nT
 Dip Angle: 66.49°
 Date: 9/19/2019
 Model: IGRF2015

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

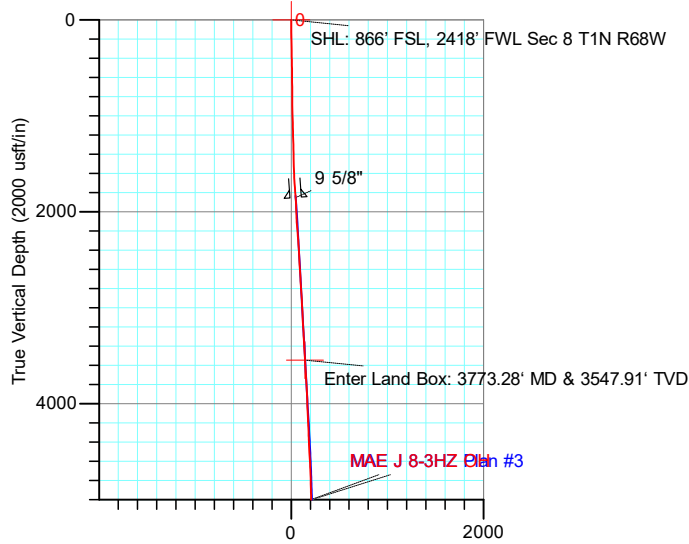
Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Zone 13N (108 W to 102 W)



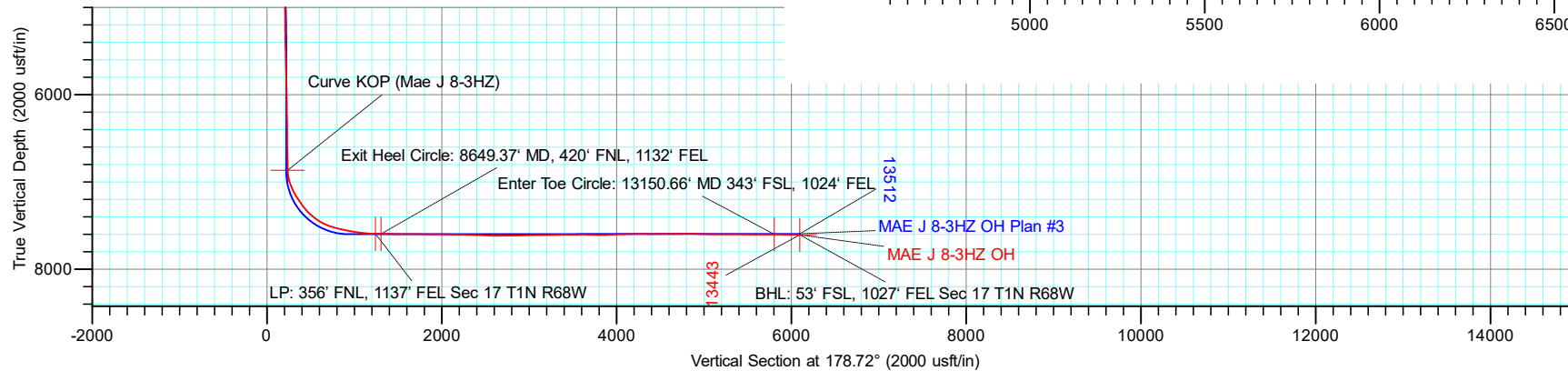
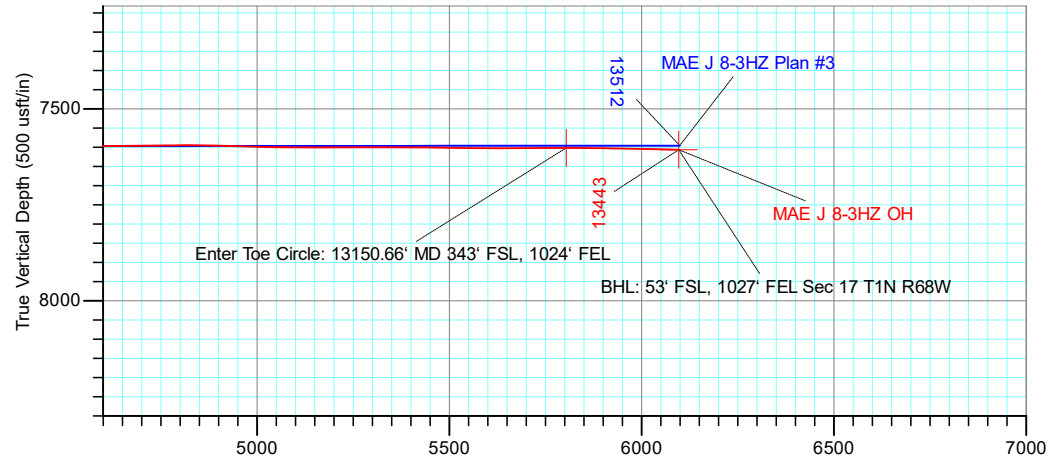
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
BHL: 53' FSL, 1027' FEL Sec 17 T1N R68W	7606.65	-6056.04	1883.02	40.043998	-105.021872
Curve KOP (Mae J 8-3HZ)	6866.10	-197.69	1763.79	40.060086	-105.022296
Enter Land Box: 3773.28' MD & 3547.91' TVD	3547.91	-118.29	1142.88	40.060304	-105.024515
Enter Toe Circle: 13150.66' MD 343' FSL, 1024' FEL	7601.54	-5763.75	1884.27	40.044801	-105.021867
Exit Heel Circle: 8649.37' MD, 420' FNL, 1132' FEL	7596.79	-1265.23	1784.40	40.057154	-105.022223
LP: 356' FNL, 1137' FEL Sec 17 T1N R68W	7595.19	-1201.00	1780.54	40.057331	-105.022237
SHL: 866' FSL, 2418' FWL Sec 8 T1N R68W	0.00	0.00	0.00	40.060629	-105.028600

1N-68W-17



ACTUAL LINE CALLS
SHL: 866' FSL, 2418' FWL Sec 8 T1N R68W
HEEL: 356' FNL, 1137' FEL Sec 17 T1N R68W
BHL: 53' FSL, 1027' FEL Sec 17 T1N R68W



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

Design: OH (MAE J 8-3HZ/OH)
 MAE J 14-8HZ
 Created By: Dustin Ault Date: 11:19, March 09 2020
 Approved: _____ Date: _____

ANADARKO PETROLEUM CORP

Project: Weld County, CO (UTM-NAD83)
 Site: MAE J 14-8HZ
 Well: MAE J 8-3HZ
 Wellbore: OH
 Design: OH

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°

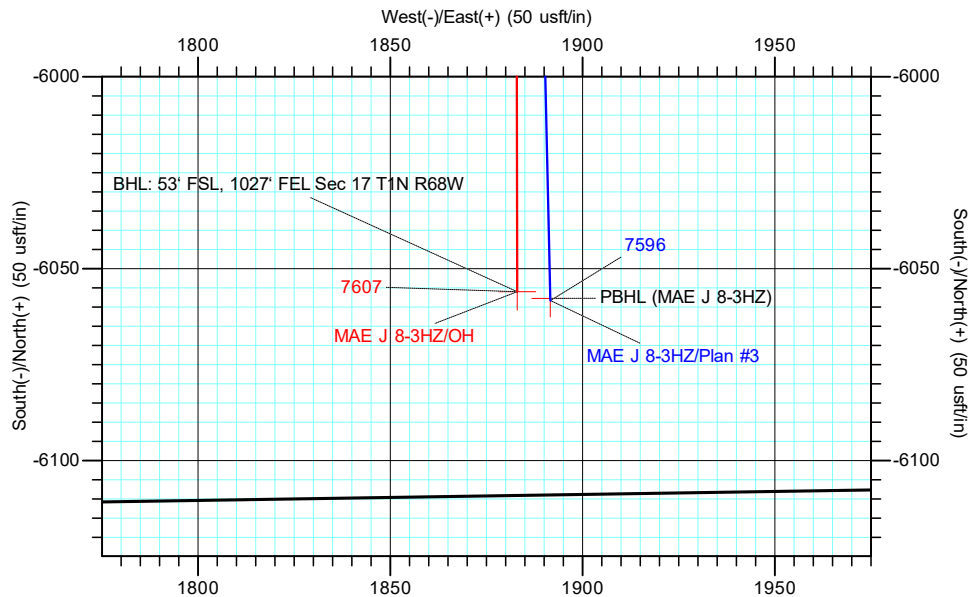
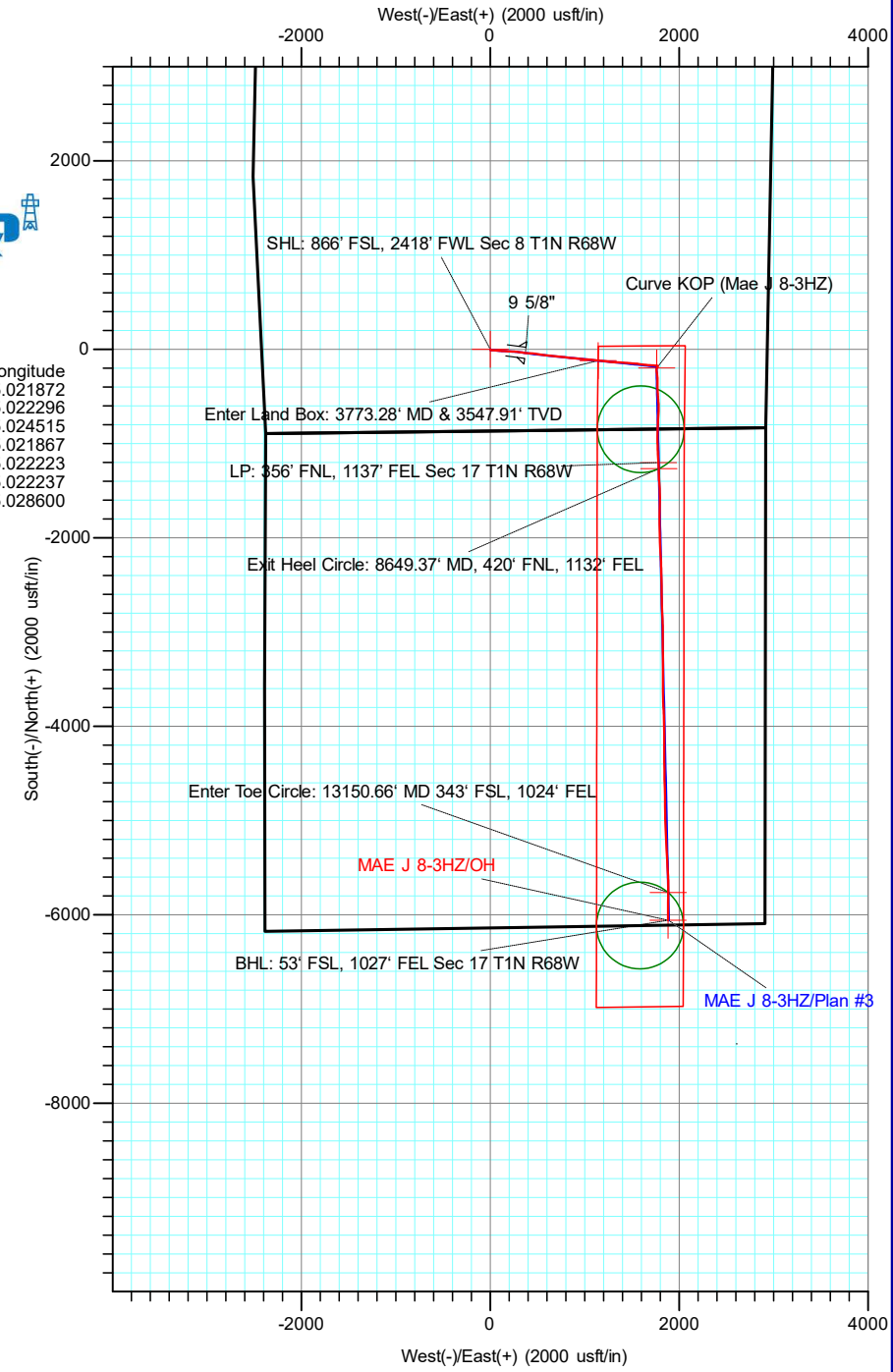
Magnetic Field
 Strength: 51928.8nT
 Dip Angle: 66.49°
 Date: 9/19/2019
 Model: IGRF2015



DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL: 53' FSL, 1027' FEL Sec 17 T1N R68W	7606.65	-6056.04	1883.02	14542755.70	1634295.36	40.043998	-105.021872
Curve KOP (Mae J 8-3HZ)	6866.10	-197.69	1763.79	14548614.08	1634178.02	40.060086	-105.022296
Enter Land Box: 3773.28' MD & 3547.91' TVD	3547.91	-118.29	1142.88	14548693.68	1633557.13	40.060304	-105.024515
Enter Toe Circle: 13150.66' MD 343' FSL, 1024' FEL	7601.54	-5763.75	1884.27	14543047.98	1634296.71	40.044801	-105.021867
Exit Heel Circle: 8649.37' MD, 420' FNL, 1132' FEL	7596.79	-1265.23	1784.40	14547546.54	1634198.28	40.057154	-105.022223
LP: 356' FNL, 1137' FEL Sec 17 T1N R68W	7595.19	-1201.00	1780.54	14547610.77	1634194.44	40.057331	-105.022237
SHL: 866' FSL, 2418' FWL Sec 8 T1N R68W	0.00	0.00	0.00	14548812.34	1632414.29	40.060629	-105.028600

ACTUAL LINE CALLS
SHL: 866' FSL, 2418' FWL Sec 8 T1N R68W
HEEL: 356' FNL, 1137' FEL Sec 17 T1N R68W
BHL: 53' FSL, 1027' FEL Sec 17 T1N R68W



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

Design: OH (MAE J 8-3HZ/OH)
 MAE J 14-8HZ
 Created By: Dustin Ault
 Date: 11:22, March 09 2020
 Approved: _____ Date: _____

ANADARKO PETROLEUM CORP

Weld County, CO (UTM-NAD83)

MAE J 14-8HZ

MAE J 8-3HZ

OH

Design: OH

Standard Survey Report

09 March, 2020

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-3HZ
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 8-3HZ	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 8-3HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,548,812.34 usft	Latitude:	40.060629
	+E/-W	0.00 usft	Easting:	1,632,414.29 usft	Longitude:	-105.028600
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	51,928.75578011

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	178.72	

Survey Program	Date	3/9/2020			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
130.00	1,887.00	Survey #1 - Surface MWD (OH)	APC_ISCWSA REV 2 MWD	Fixed:v2:standard declination	
2,026.00	13,387.00	Survey #2 - MWD+IFR (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
13,443.00	13,443.00	Survey #3 - 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 (MAE J 8-3HZ) - SHL: 866' FSL, 2418' FWL Sec 8 T1N R68W										
130.00	1.01	164.96	129.99	-1.11	0.30	1.11	0.78	0.78	0.00	
225.00	1.14	210.05	224.98	-2.73	0.04	2.73	0.88	0.14	47.46	
320.00	1.27	152.66	319.96	-4.49	0.05	4.49	1.22	0.14	-60.41	
415.00	3.03	117.50	414.89	-6.58	2.76	6.64	2.23	1.85	-37.01	
510.00	4.48	92.89	509.69	-7.93	8.70	8.12	2.25	1.53	-25.91	
606.00	6.81	95.09	605.22	-8.62	18.11	9.02	2.44	2.43	2.29	
701.00	7.91	92.89	699.44	-9.45	30.25	10.12	1.20	1.16	-2.32	

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-3HZ
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 8-3HZ	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)	
796.00	8.31	89.64	793.49	-9.74	43.64	10.71	0.64	0.42	-3.42	
891.00	11.07	95.18	887.12	-10.52	59.60	11.85	3.06	2.91	5.83	
986.00	11.87	95.27	980.23	-12.24	78.41	13.99	0.84	0.84	0.09	
1,081.00	13.71	95.88	1,072.87	-14.29	99.34	16.51	1.94	1.94	0.64	
1,176.00	14.99	92.81	1,164.90	-16.05	122.81	18.78	1.57	1.35	-3.23	
1,271.00	16.08	93.96	1,256.43	-17.56	148.21	20.86	1.19	1.15	1.21	
1,366.00	17.58	93.42	1,347.36	-19.32	175.65	23.24	1.59	1.58	-0.57	
1,462.00	19.29	91.93	1,438.43	-20.72	205.98	25.32	1.85	1.78	-1.55	
1,557.00	19.51	93.42	1,528.03	-22.19	237.49	27.49	0.57	0.23	1.57	
1,652.00	20.65	95.09	1,617.26	-24.63	270.02	30.65	1.34	1.20	1.76	
1,746.00	23.33	97.03	1,704.41	-28.38	305.01	35.18	2.95	2.85	2.06	
1,842.00	24.57	98.43	1,792.15	-33.63	343.62	41.30	1.42	1.29	1.46	
1,887.00	25.49	98.26	1,832.92	-36.39	362.45	44.48	2.05	2.04	-0.38	
1,910.00	25.15	97.39	1,853.71	-37.73	372.20	46.04	2.19	-1.48	-3.79	
9 5/8"										
2,026.00	23.52	92.64	1,959.41	-41.97	419.77	51.33	2.19	-1.41	-4.09	
2,118.00	23.61	93.62	2,043.74	-43.98	456.50	54.16	0.44	0.10	1.07	
2,211.00	26.21	98.98	2,128.09	-48.36	495.38	59.41	3.70	2.80	5.76	
2,305.00	25.05	98.27	2,212.84	-54.46	535.58	66.41	1.28	-1.23	-0.76	
2,399.00	26.61	97.44	2,297.45	-60.05	576.15	72.91	1.70	1.66	-0.88	
2,492.00	25.50	96.05	2,381.00	-64.86	616.71	78.62	1.36	-1.19	-1.49	
2,585.00	24.02	95.43	2,465.44	-68.76	655.46	83.38	1.62	-1.59	-0.67	
2,678.00	24.82	95.41	2,550.12	-72.39	693.74	87.87	0.86	0.86	-0.02	
2,772.00	24.82	96.59	2,635.44	-76.52	732.98	92.87	0.53	0.00	1.26	
2,865.00	22.75	95.74	2,720.54	-80.55	770.27	97.74	2.26	-2.23	-0.91	
2,959.00	24.48	98.50	2,806.67	-85.25	807.62	103.27	2.18	1.84	2.94	
3,054.00	25.13	95.42	2,892.90	-90.07	847.17	108.97	1.52	0.68	-3.24	
3,149.00	22.86	95.13	2,979.69	-93.62	885.63	113.38	2.39	-2.39	-0.31	
3,336.00	25.14	95.29	3,150.51	-100.53	961.37	121.98	1.22	1.22	0.09	
3,429.00	25.83	95.15	3,234.46	-104.17	1,001.22	126.51	0.74	0.74	-0.15	
3,523.00	23.39	95.04	3,319.92	-107.65	1,040.21	130.86	2.60	-2.60	-0.12	
3,617.00	24.72	95.30	3,405.75	-111.11	1,078.37	135.17	1.42	1.41	0.28	
3,711.00	24.54	97.03	3,491.20	-115.31	1,117.31	140.24	0.79	-0.19	1.84	
3,773.28	24.28	96.25	3,547.91	-118.29	1,142.88	143.79	0.66	-0.41	-1.25	
Enter Land Box: 3773.28' MD & 3547.91' TVD										
3,804.00	24.16	95.86	3,575.93	-119.62	1,155.41	145.40	0.66	-0.41	-1.27	
3,897.00	24.08	95.77	3,660.81	-123.47	1,193.22	150.09	0.09	-0.09	-0.10	
3,992.00	24.44	97.14	3,747.42	-127.86	1,232.01	155.35	0.70	0.38	1.44	
4,086.00	24.64	95.53	3,832.93	-132.16	1,270.81	160.52	0.74	0.21	-1.71	
4,178.00	24.66	94.12	3,916.55	-135.39	1,309.04	164.60	0.64	0.02	-1.53	
4,271.00	26.36	92.64	4,000.48	-137.74	1,349.02	167.84	1.95	1.83	-1.59	
4,364.00	26.38	93.15	4,083.80	-139.82	1,390.27	170.84	0.24	0.02	0.55	
4,456.00	27.32	93.72	4,165.88	-142.32	1,431.75	174.26	1.06	1.02	0.62	
4,550.00	24.29	94.80	4,250.50	-145.33	1,472.55	178.19	3.26	-3.22	1.15	

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-3HZ
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 8-3HZ	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)	
4,643.00	22.32	94.17	4,335.91	-148.22	1,509.23	181.90	2.14	-2.12	-0.68	
4,736.00	19.23	93.93	4,422.85	-150.55	1,542.13	184.96	3.32	-3.32	-0.26	
4,830.00	18.94	99.81	4,511.69	-154.21	1,572.61	189.30	2.07	-0.31	6.26	
4,924.00	19.40	97.37	4,600.48	-158.82	1,603.12	194.59	0.98	0.49	-2.60	
5,018.00	17.22	96.43	4,689.71	-162.38	1,632.43	198.80	2.34	-2.32	-1.00	
5,111.00	15.52	95.26	4,778.94	-165.06	1,658.50	202.07	1.86	-1.83	-1.26	
5,229.00	13.57	93.98	4,893.15	-167.47	1,688.04	205.13	1.67	-1.65	-1.08	
5,322.00	11.45	93.55	4,983.94	-168.80	1,708.14	206.91	2.28	-2.28	-0.46	
5,416.00	9.69	92.72	5,076.34	-169.75	1,725.35	208.25	1.88	-1.87	-0.88	
5,508.00	8.26	92.37	5,167.21	-170.39	1,739.69	209.21	1.56	-1.55	-0.38	
5,601.00	7.04	90.62	5,259.38	-170.73	1,752.06	209.82	1.34	-1.31	-1.88	
5,695.00	5.98	94.97	5,352.78	-171.22	1,762.70	210.55	1.24	-1.13	4.63	
5,789.00	3.57	116.09	5,446.45	-172.93	1,770.21	212.43	3.13	-2.56	22.47	
5,881.00	1.74	172.05	5,538.36	-175.57	1,772.98	215.13	3.23	-1.99	60.83	
5,974.00	1.48	159.53	5,631.32	-178.09	1,773.59	217.67	0.47	-0.28	-13.46	
6,066.00	1.01	191.03	5,723.30	-180.00	1,773.85	219.58	0.88	-0.51	34.24	
6,160.00	1.14	196.52	5,817.29	-181.71	1,773.43	221.28	0.18	0.14	5.84	
6,252.00	1.12	191.55	5,909.27	-183.47	1,772.99	223.03	0.11	-0.02	-5.40	
6,346.00	1.08	192.98	6,003.25	-185.23	1,772.61	224.79	0.05	-0.04	1.52	
6,439.00	0.98	194.52	6,096.24	-186.86	1,772.21	226.40	0.11	-0.11	1.66	
6,533.00	1.17	211.38	6,190.22	-188.46	1,771.51	227.98	0.39	0.20	17.94	
6,626.00	0.66	212.70	6,283.21	-189.72	1,770.72	229.22	0.55	-0.55	1.42	
6,718.00	0.78	229.09	6,375.20	-190.57	1,769.96	230.06	0.26	0.13	17.82	
6,811.00	0.81	220.87	6,468.19	-191.48	1,769.06	230.95	0.13	0.03	-8.84	
6,905.00	0.92	222.52	6,562.18	-192.54	1,768.11	231.99	0.12	0.12	1.76	
6,998.00	1.28	214.08	6,655.16	-193.95	1,767.03	233.38	0.42	0.39	-9.08	
7,091.00	1.28	222.20	6,748.14	-195.58	1,765.75	234.98	0.19	0.00	8.73	
7,184.00	1.17	230.68	6,841.12	-196.95	1,764.31	236.32	0.23	-0.12	9.12	
7,208.99	3.02	209.32	6,866.09	-197.69	1,763.79	237.04	7.92	7.41	-85.48	
Curve KOP (Mae J 8-3HZ)										
7,277.00	8.36	201.33	6,933.74	-203.86	1,761.11	243.15	7.92	7.85	-11.75	
7,372.00	21.21	172.60	7,025.51	-227.46	1,760.81	266.74	15.18	13.53	-30.24	
7,467.00	26.99	170.91	7,112.19	-265.82	1,766.44	305.22	6.13	6.08	-1.78	
7,560.00	34.01	178.12	7,192.30	-312.73	1,770.63	352.21	8.50	7.55	7.75	
7,652.00	35.11	180.68	7,268.07	-364.91	1,771.16	404.38	1.98	1.20	2.78	
7,746.00	43.58	177.81	7,340.70	-424.43	1,772.08	463.91	9.21	9.01	-3.05	
7,840.00	51.68	176.59	7,404.00	-493.73	1,775.52	533.27	8.67	8.62	-1.30	
7,933.00	59.09	174.27	7,456.79	-569.96	1,781.68	609.61	8.23	7.97	-2.49	
8,027.00	68.93	184.29	7,498.02	-654.20	1,782.43	693.85	14.18	10.47	10.66	
8,120.00	74.98	182.94	7,526.82	-742.40	1,776.88	781.91	6.65	6.51	-1.45	
8,213.00	78.34	181.62	7,548.27	-832.81	1,773.28	872.21	3.87	3.61	-1.42	
8,287.34	79.08	180.78	7,562.82	-905.69	1,771.76	945.04	1.49	1.00	-1.13	
Heel (MAE J 8-3HZ)										

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-3HZ
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 8-3HZ	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)	
8,307.00	79.28	180.56	7,566.51	-925.00	1,771.53	964.34	1.49	1.00	-1.12	
8,400.00	82.69	178.86	7,581.09	-1,016.83	1,772.00	1,056.16	4.09	3.67	-1.83	
8,493.00	85.79	177.40	7,590.42	-1,109.30	1,775.02	1,148.68	3.68	3.33	-1.57	
8,585.00	88.27	175.72	7,595.19	-1,201.00	1,780.54	1,240.48	3.25	2.70	-1.83	
LP: 356' FNL, 1137' FEL Sec 17 T1N R68W										
8,649.37	88.87	177.40	7,596.79	-1,265.23	1,784.40	1,304.78	2.77	0.94	2.61	
Exit Heel Circle: 8649.37' MD, 420' FNL, 1132' FEL										
8,678.00	89.14	178.15	7,597.29	-1,293.84	1,785.51	1,333.40	2.77	0.94	2.61	
8,771.00	88.95	177.16	7,598.84	-1,386.74	1,789.31	1,426.37	1.08	-0.20	-1.06	
8,866.00	89.69	176.56	7,599.97	-1,481.59	1,794.52	1,521.31	1.00	0.78	-0.63	
8,959.00	91.64	181.26	7,598.89	-1,574.54	1,796.29	1,614.27	5.47	2.10	5.05	
9,051.00	88.79	180.81	7,598.54	-1,666.52	1,794.62	1,706.19	3.14	-3.10	-0.49	
9,146.00	88.82	180.25	7,600.52	-1,761.49	1,793.75	1,801.12	0.59	0.03	-0.59	
9,239.00	90.67	179.44	7,600.94	-1,854.48	1,794.00	1,894.10	2.17	1.99	-0.87	
9,333.00	89.00	178.83	7,601.21	-1,948.47	1,795.42	1,988.09	1.89	-1.78	-0.65	
9,428.00	88.94	178.08	7,602.91	-2,043.42	1,797.98	2,083.07	0.79	-0.06	-0.79	
9,522.00	89.02	177.11	7,604.59	-2,137.32	1,801.92	2,177.04	1.04	0.09	-1.03	
9,615.00	89.29	176.61	7,605.96	-2,230.17	1,807.01	2,269.98	0.61	0.29	-0.54	
9,707.00	87.87	179.46	7,608.24	-2,322.08	1,810.17	2,361.93	3.46	-1.54	3.10	
9,802.00	87.67	178.02	7,611.94	-2,416.98	1,812.26	2,456.86	1.53	-0.21	-1.52	
9,896.00	88.19	178.96	7,615.33	-2,510.88	1,814.73	2,550.79	1.14	0.55	1.00	
9,990.00	90.31	179.65	7,616.56	-2,604.86	1,815.87	2,644.78	2.37	2.26	0.73	
10,084.00	90.74	178.50	7,615.70	-2,698.84	1,817.39	2,738.77	1.31	0.46	-1.22	
10,178.00	91.04	177.81	7,614.24	-2,792.78	1,820.41	2,832.75	0.80	0.32	-0.73	
10,269.00	91.65	176.92	7,612.10	-2,883.66	1,824.60	2,923.70	1.19	0.67	-0.98	
10,362.00	90.61	179.89	7,610.27	-2,976.59	1,827.18	3,016.67	3.38	-1.12	3.19	
10,456.00	90.59	179.70	7,609.29	-3,070.59	1,827.52	3,110.65	0.20	-0.02	-0.20	
10,548.00	90.76	179.72	7,608.20	-3,162.58	1,827.99	3,202.63	0.19	0.18	0.02	
10,642.00	91.13	179.46	7,606.65	-3,256.57	1,828.66	3,296.60	0.48	0.39	-0.28	
10,733.00	89.97	180.08	7,605.78	-3,347.56	1,829.02	3,387.58	1.45	-1.27	0.68	
10,826.00	90.62	179.45	7,605.30	-3,440.56	1,829.40	3,480.56	0.97	0.70	-0.68	
10,919.00	90.85	180.97	7,604.11	-3,533.55	1,829.06	3,573.52	1.65	0.25	1.63	
11,012.00	88.43	178.85	7,604.69	-3,626.53	1,829.21	3,666.49	3.46	-2.60	-2.28	
11,104.00	87.84	178.69	7,607.68	-3,718.46	1,831.18	3,758.44	0.66	-0.64	-0.17	
11,198.00	90.69	176.68	7,608.89	-3,812.36	1,834.98	3,852.40	3.71	3.03	-2.14	
11,291.00	93.35	178.45	7,605.61	-3,905.21	1,838.93	3,945.31	3.43	2.86	1.90	
11,384.00	91.43	179.21	7,601.73	-3,998.10	1,840.83	4,038.23	2.22	-2.06	0.82	
11,479.00	91.79	179.00	7,599.06	-4,093.05	1,842.31	4,133.19	0.44	0.38	-0.22	
11,573.00	89.85	180.27	7,597.72	-4,187.04	1,842.91	4,227.16	2.47	-2.06	1.35	
11,666.00	89.85	179.91	7,597.96	-4,280.03	1,842.76	4,320.13	0.39	0.00	-0.39	
11,760.00	90.10	179.54	7,598.00	-4,374.03	1,843.21	4,414.12	0.48	0.27	-0.39	
11,853.00	90.23	179.17	7,597.74	-4,467.03	1,844.26	4,507.11	0.42	0.14	-0.40	
11,946.00	90.27	178.81	7,597.33	-4,560.01	1,845.90	4,600.11	0.39	0.04	-0.39	
12,041.00	90.91	178.54	7,596.35	-4,654.98	1,848.10	4,695.10	0.73	0.67	-0.28	

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-3HZ
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 8-3HZ	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)	
12,134.00	90.66	179.10	7,595.08	-4,747.95	1,850.01	4,788.09	0.66	-0.27	0.60	
12,229.00	88.40	179.36	7,595.86	-4,842.93	1,851.29	4,883.08	2.39	-2.38	0.27	
12,321.00	88.33	179.13	7,598.48	-4,934.89	1,852.50	4,975.04	0.26	-0.08	-0.25	
12,413.00	89.54	177.85	7,600.19	-5,026.84	1,854.92	5,067.02	1.91	1.32	-1.39	
12,507.00	89.96	177.38	7,600.60	-5,120.75	1,858.83	5,161.00	0.67	0.45	-0.50	
12,601.00	90.57	177.31	7,600.17	-5,214.65	1,863.19	5,254.97	0.65	0.65	-0.07	
12,694.00	89.55	177.09	7,600.07	-5,307.54	1,867.73	5,347.94	1.12	-1.10	-0.24	
12,788.00	89.36	177.15	7,600.96	-5,401.42	1,872.45	5,441.90	0.21	-0.20	0.06	
12,881.00	89.31	177.16	7,602.04	-5,494.30	1,877.07	5,534.85	0.05	-0.05	0.01	
12,974.00	89.67	176.61	7,602.87	-5,587.15	1,882.12	5,627.80	0.71	0.39	-0.59	
13,067.00	91.18	180.09	7,602.18	-5,680.10	1,884.80	5,720.78	4.08	1.62	3.74	
13,150.66	89.69	180.64	7,601.55	-5,763.75	1,884.27	5,804.40	1.89	-1.78	0.65	
Enter Toe Circle: 13150.66' MD 343' FSL, 1024' FEL										
13,162.00	89.49	180.71	7,601.63	-5,775.09	1,884.14	5,815.74	1.89	-1.78	0.65	
13,255.00	88.96	180.35	7,602.88	-5,868.07	1,883.28	5,908.68	0.69	-0.57	-0.39	
13,349.00	88.82	180.11	7,604.70	-5,962.06	1,882.90	6,002.63	0.30	-0.15	-0.26	
13,387.00	88.81	179.88	7,605.49	-6,000.05	1,882.90	6,040.61	0.61	-0.03	-0.61	
13,443.00	88.81	179.88	7,606.65	-6,056.04	1,883.02	6,096.59	0.00	0.00	0.00	
PBHL (MAE J 8-3HZ) - BHL: 53' FSL, 1027' FEL Sec 17 T1N R68W										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
SHL: 866' FSL, 2418' FV - hit/miss target - Shape - Point	0.00	0.00	0.00	0.00	0.00	14,548,812.34	1,632,414.29	40.060629	-105.028600	
Enter Land Box: 3773.28 - actual wellpath hits target center - Point	0.00	0.00	3,547.91	-118.29	1,142.88	14,548,693.68	1,633,557.13	40.060304	-105.024516	
Curve KOP (Mae J 8-3H) - actual wellpath hits target center - Point	0.00	0.00	6,866.10	-197.69	1,763.79	14,548,614.08	1,634,178.01	40.060086	-105.022297	
LP: 356' FNL, 1137' FEL - actual wellpath misses target center by 0.01usft at 8585.00usft MD (7595.19 TVD, -1201.00 N, 1780.54 E) - Point	0.00	0.00	7,595.19	-1,201.00	1,780.54	14,547,610.76	1,634,194.44	40.057331	-105.022237	
Exit Heel Circle: 8649.37 - actual wellpath hits target center - Point	0.00	0.00	7,596.79	-1,265.23	1,784.40	14,547,546.53	1,634,198.28	40.057154	-105.022223	
Enter Toe Circle: 13150. - actual wellpath misses target center by 0.01usft at 13150.66usft MD (7601.54 TVD, -5763.75 N, 1884.27 E) - Point	0.00	0.00	7,601.54	-5,763.75	1,884.27	14,543,047.98	1,634,296.70	40.044801	-105.021868	
BHL: 53' FSL, 1027' FEL - actual wellpath misses target center by 0.01usft at 13443.00usft MD (7606.65 TVD, -6056.04 N, 1883.02 E) - Point	0.00	0.00	7,606.65	-6,056.04	1,883.02	14,542,755.69	1,634,295.36	40.043998	-105.021872	

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-3HZ
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 8-3HZ	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	1,853.71	9 5/8"		9-5/8	13-1/2

Checked By: _____ Approved By: _____ Date: _____