

# ANADARKO PETROLEUM CORP

Project: Weld County, CO (UTM-NAD83)  
 Site: MAE J 14-8HZ  
 Well: MAE J 8-10HZ  
 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)

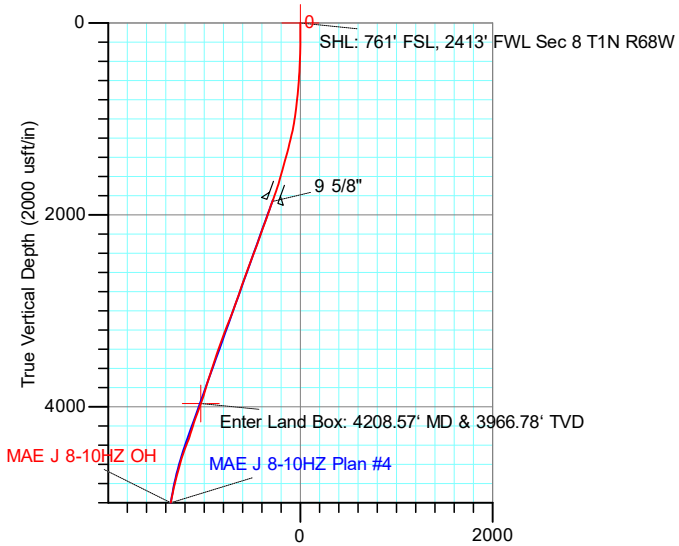
Geodetic System: Universal Transverse Mercator (US Survey Feet)  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: Zone 13N (108 W to 102 W)



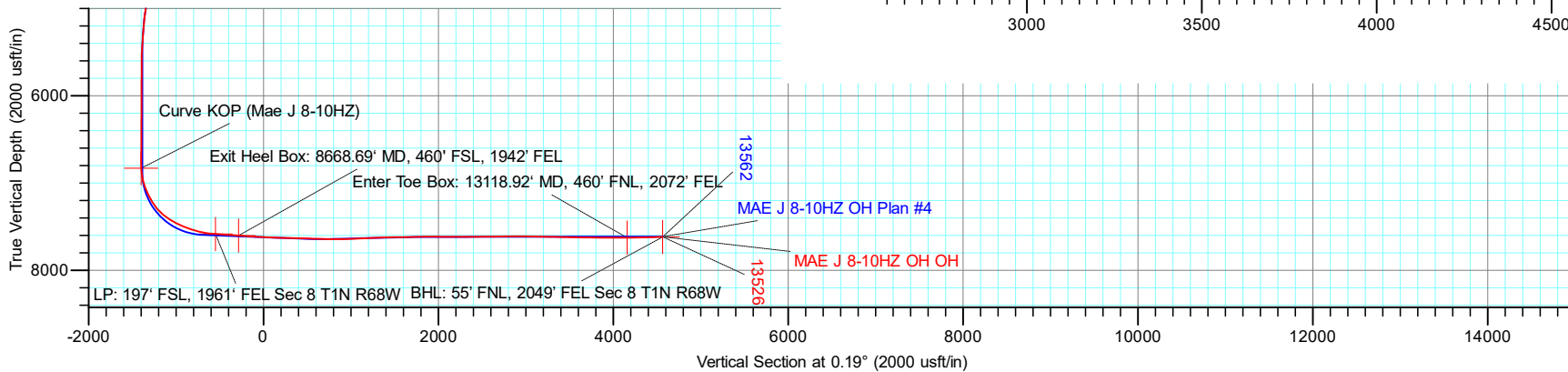
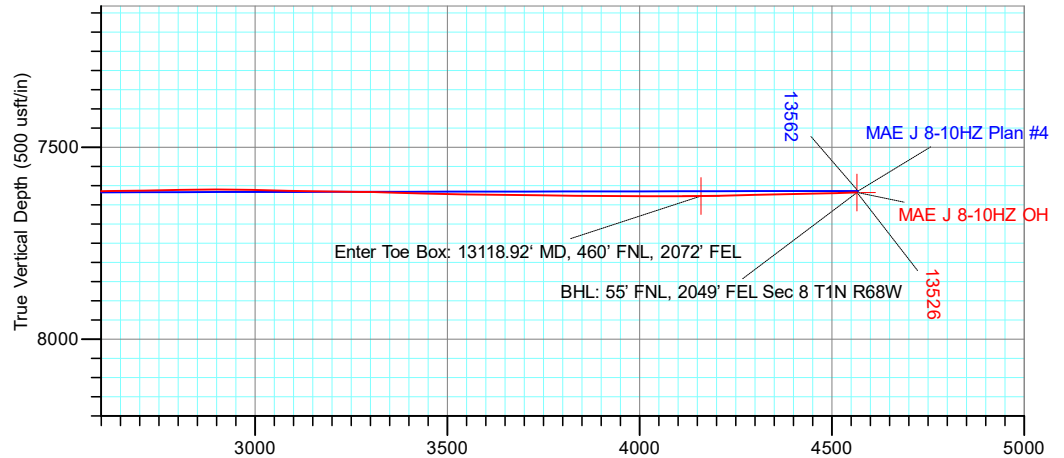
## 1N-68W-8

### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
BHL: 55' FNL, 2049' FEL Sec 8 T1N R68W	7618.00	4562.26	971.69	40.072869	-105.025129
Curve KOP (Mae J 8-10HZ)	6831.33	-1401.22	966.61	40.056492	-105.025148
Enter Land Box: 4208.57' MD & 3966.78' TVD	3966.78	-1036.67	730.27	40.057493	-105.025992
Enter Toe Box: 13118.92' MD, 460' FNL, 2072' FEL	7627.49	4156.49	940.77	40.071754	-105.025239
Exit Heel Box: 8668.69' MD, 460' FSL, 1942' FEL	7602.90	-288.60	984.74	40.059547	-105.025083
LP: 197' FSL, 1961' FEL Sec 8 T1N R68W	7585.72	-552.71	961.98	40.058822	-105.025164
SHL: 761' FSL, 2413' FWL Sec 8 T1N R68W	0.00	0.00	0.00	40.060340	-105.028602



**ACTUAL LINE CALLS**  
**SHL: 761' FSL, 2413' FWL Sec 8 T1N R68W**  
**HEEL: 197' FSL, 1961' FEL Sec 8 T1N R68W**  
**BHL: 55' FNL, 2049' FEL Sec 8 T1N R68W**



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

Design: OH (MAE J 8-10HZ/OH)  
 MAE J 14-8HZ  
 Created By: Dustin Ault  
 Date: 15:11, April 03 2020  
 Approved: \_\_\_\_\_ Date: \_\_\_\_\_

# ANADARKO PETROLEUM CORP

Project: Weld County, CO (UTM-NAD83)  
 Site: MAE J 14-8HZ  
 Well: MAE J 8-10HZ  
 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: 51928.6nT  
 Dip Angle: 66.49°  
 Date: 9/19/2019  
 Model: IGRF2015



### DESIGN TARGET DETAILS

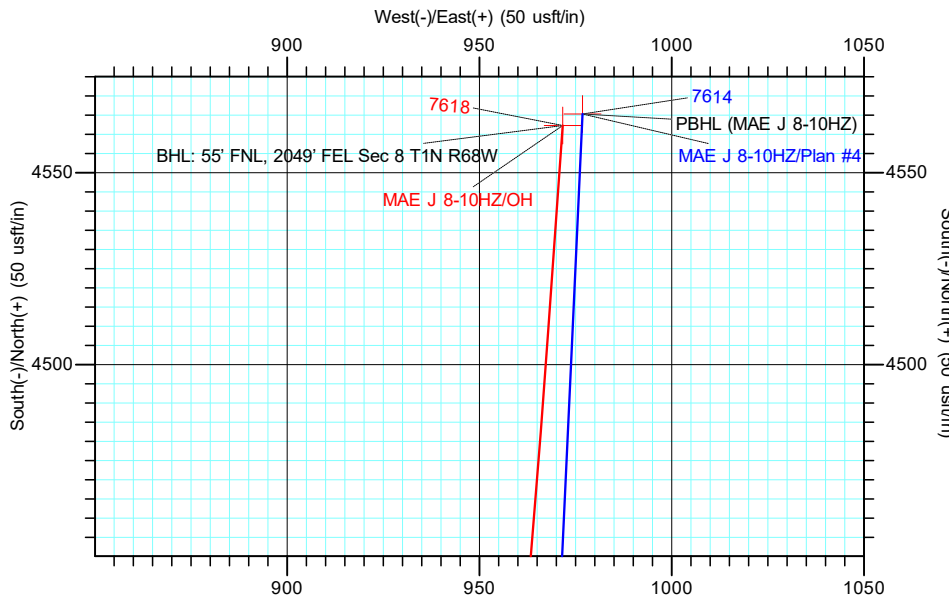
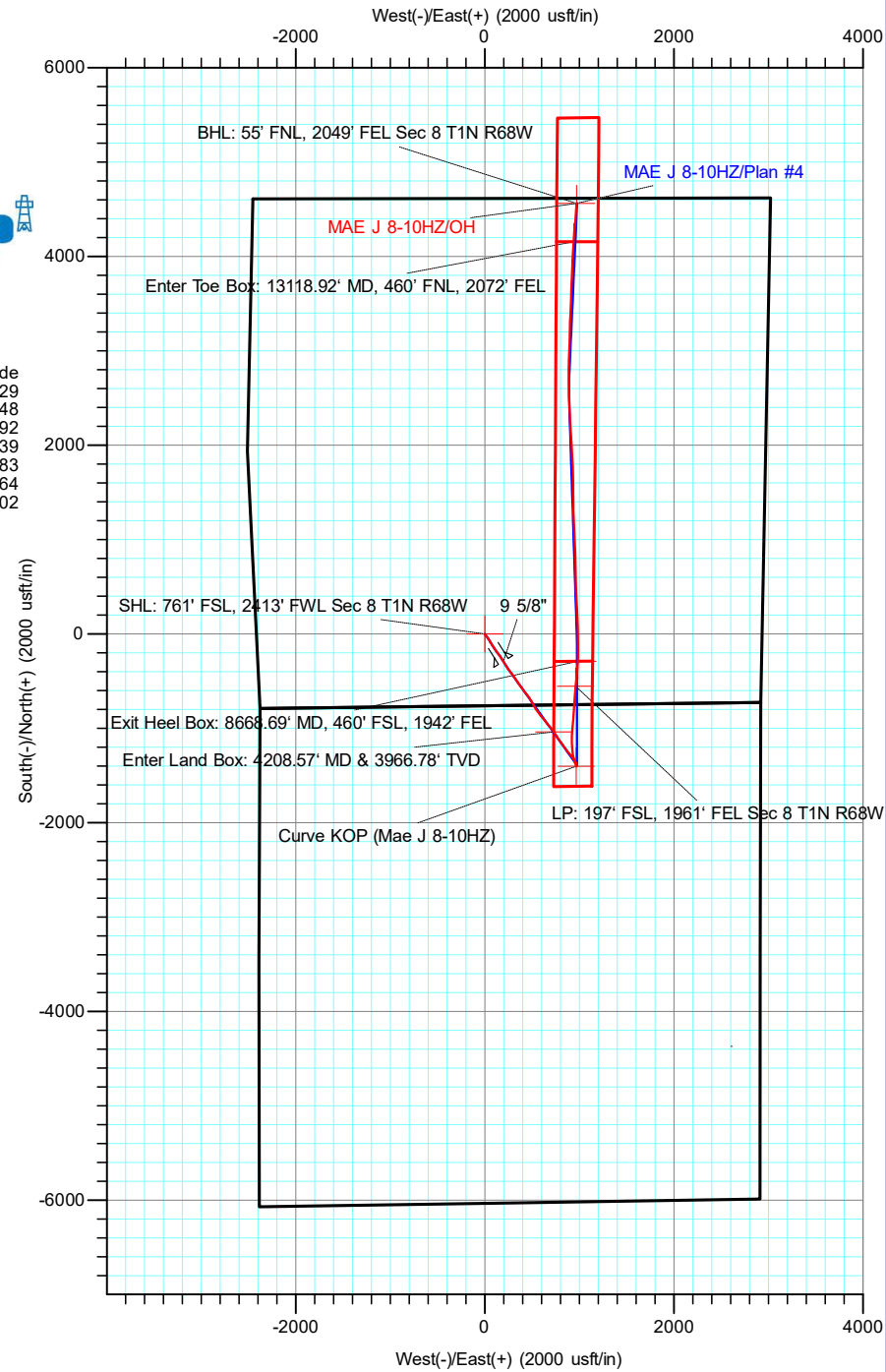
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL: 55' FNL, 2049' FEL Sec 8 T1N R68W	7618.00	4562.26	971.69	14553269.05	1633386.86	40.072869	-105.025129
Curve KOP (Mae J 8-10HZ)	6831.33	-1401.22	966.61	14547305.57	1633379.86	40.056492	-105.025148
Enter Land Box: 4208.57' MD & 3966.78' TVD	3966.78	-1036.67	730.27	14547670.20	1633143.64	40.057493	-105.025992
Enter Toe Box: 13118.92' MD, 460' FNL, 2072' FEL	7627.49	4156.49	940.77	14552863.29	1633355.81	40.071754	-105.025239
Exit Heel Box: 8668.69' MD, 460' FSL, 1942' FEL	7602.90	-288.60	984.74	14548418.18	1633398.35	40.059547	-105.025083
LP: 197' FSL, 1961' FEL Sec 8 T1N R68W	7585.72	-552.71	961.98	14548154.08	1633375.50	40.058822	-105.025164
SHL: 761' FSL, 2413' FWL Sec 8 T1N R68W	0.00	0.00	0.00	14548707.10	1632413.70	40.060340	-105.028602

**ACTUAL LINE CALLS**

**SHL: 761' FSL, 2413' FWL Sec 8 T1N R68W**

**HEEL: 197' FSL, 1961' FEL Sec 8 T1N R68W**

**BHL: 55' FNL, 2049' FEL Sec 8 T1N R68W**



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

Design: OH (MAE J 8-10HZ/OH)  
 MAE J 14-8HZ  
 Created By: Dustin Ault  
 Date: 15:16, April 03 2020  
 Approved: \_\_\_\_\_ Date: \_\_\_\_\_

# **ANADARKO PETROLEUM CORP**

**Weld County, CO (UTM-NAD83)**

**MAE J 14-8HZ**

**MAE J 8-10HZ**

**OH**

**Design: OH**

## **Standard Survey Report**

**03 April, 2020**

<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well MAE J 8-10HZ
<b>Project:</b>	Weld County, CO (UTM-NAD83)	<b>TVD Reference:</b>	20' KB + 5083' GE @ 5103.00usft
<b>Site:</b>	MAE J 14-8HZ	<b>MD Reference:</b>	20' KB + 5083' GE @ 5103.00usft
<b>Well:</b>	MAE J 8-10HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.15 Single User Db

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

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

<b>Well</b>	MAE J 8-10HZ					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	14,548,707.10 usft	<b>Latitude:</b>	40.060340
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,632,413.70 usft	<b>Longitude:</b>	-105.028602
<b>Position Uncertainty</b>		3.28 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	5,083.00 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	9/19/2019	8.08	66.49	51,928.60484961

<b>Design</b>	OH				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	0.19	

<b>Survey Program</b>	<b>Date</b>	4/3/2020			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
131.00	1,893.00	Survey #1 - Surface MWD (OH)	APC_ISCWSA REV 2 MWD	Fixed:v2:standard declination	
2,027.00	13,472.00	Survey #2 - MWD+IFR (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
13,526.00	13,526.00	Survey #3 - Proj to TD (OH)	BLIND	OWSG BLIND	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>SHL: 761' FSL, 2413' FWL Sec 8 T1N R68W - SHL (MAE J 8-10HZ)</b>										
131.00	0.66	32.07	131.00	0.64	0.40	0.64	0.50	0.50	0.00	
226.00	1.01	185.79	225.99	0.27	0.61	0.27	1.71	0.37	161.81	
321.00	1.63	177.62	320.97	-1.91	0.58	-1.91	0.68	0.65	-8.60	
416.00	2.59	154.24	415.90	-5.20	1.57	-5.19	1.34	1.01	-24.61	
511.00	4.31	137.72	510.73	-9.77	4.90	-9.75	2.07	1.81	-17.39	
606.00	5.67	138.16	605.37	-15.91	10.43	-15.87	1.43	1.43	0.46	
701.00	6.46	136.66	699.84	-23.29	17.23	-23.23	0.85	0.83	-1.58	

<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well MAE J 8-10HZ
<b>Project:</b>	Weld County, CO (UTM-NAD83)	<b>TVD Reference:</b>	20' KB + 5083' GE @ 5103.00usft
<b>Site:</b>	MAE J 14-8HZ	<b>MD Reference:</b>	20' KB + 5083' GE @ 5103.00usft
<b>Well:</b>	MAE J 8-10HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	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	8.00	145.37	794.08	-32.62	24.66	-32.54	1.99	1.62	9.17	
892.00	8.66	143.78	889.07	-43.95	32.72	-43.84	0.73	0.69	-1.66	
986.00	9.36	147.83	981.91	-56.13	40.98	-55.99	1.00	0.74	4.31	
1,081.00	11.91	148.79	1,075.27	-71.05	50.17	-70.89	2.69	2.68	1.01	
1,176.00	15.25	150.20	1,167.60	-90.28	61.46	-90.08	3.53	3.52	1.48	
1,271.00	16.61	145.89	1,258.95	-112.37	75.29	-112.12	1.90	1.43	-4.54	
1,367.00	18.15	146.42	1,350.57	-136.19	91.25	-135.89	1.61	1.60	0.55	
1,462.00	18.76	145.98	1,440.68	-161.18	107.98	-160.82	0.66	0.64	-0.46	
1,557.00	18.90	143.78	1,530.60	-186.25	125.62	-185.83	0.76	0.15	-2.32	
1,653.00	18.76	143.96	1,621.46	-211.28	143.89	-210.80	0.16	-0.15	0.19	
1,747.00	21.45	146.07	1,709.72	-237.77	162.38	-237.23	2.96	2.86	2.24	
1,842.00	22.76	147.74	1,797.74	-267.72	181.89	-267.12	1.53	1.38	1.76	
1,893.00	23.38	147.91	1,844.66	-284.64	192.53	-284.00	1.22	1.22	0.33	
1,910.00	23.20	148.03	1,860.28	-290.34	196.09	-289.68	1.07	-1.03	0.72	
<b>9 5/8"</b>										
2,027.00	22.00	148.92	1,968.29	-328.66	219.61	-327.93	1.07	-1.03	0.76	
2,119.00	23.69	145.77	2,053.07	-358.70	238.91	-357.91	2.27	1.84	-3.42	
2,213.00	23.44	142.61	2,139.24	-389.17	260.88	-388.30	1.37	-0.27	-3.36	
2,307.00	24.20	141.56	2,225.23	-419.12	284.21	-418.17	0.93	0.81	-1.12	
2,401.00	24.95	144.71	2,310.72	-450.39	307.65	-449.37	1.61	0.80	3.35	
2,494.00	24.50	145.51	2,395.19	-482.30	329.90	-481.20	0.60	-0.48	0.86	
2,587.00	24.64	146.80	2,479.77	-514.41	351.43	-513.24	0.60	0.15	1.39	
2,680.00	24.41	144.97	2,564.38	-546.37	373.08	-545.13	0.85	-0.25	-1.97	
2,773.00	23.76	144.11	2,649.29	-577.28	395.09	-575.97	0.79	-0.70	-0.92	
2,867.00	23.57	142.41	2,735.38	-607.52	417.66	-606.13	0.75	-0.20	-1.81	
2,960.00	23.88	142.11	2,820.52	-637.11	440.56	-635.64	0.36	0.33	-0.32	
3,056.00	23.70	143.32	2,908.37	-667.92	464.02	-666.37	0.54	-0.19	1.26	
3,150.00	23.80	147.78	2,994.41	-699.12	485.42	-697.50	1.91	0.11	4.74	
3,246.00	24.08	152.75	3,082.16	-732.92	504.72	-731.24	2.12	0.29	5.18	
3,338.00	24.26	150.71	3,166.10	-766.09	522.56	-764.35	0.93	0.20	-2.22	
3,431.00	24.14	143.41	3,250.94	-798.03	543.25	-796.22	3.22	-0.13	-7.85	
3,524.00	24.40	145.74	3,335.73	-829.17	565.40	-827.29	1.07	0.28	2.51	
3,619.00	23.70	143.18	3,422.48	-860.68	587.89	-858.72	1.32	-0.74	-2.69	
3,713.00	22.32	139.69	3,509.01	-889.41	610.76	-887.38	2.06	-1.47	-3.71	
3,806.00	23.58	139.66	3,594.64	-917.06	634.22	-914.95	1.35	1.35	-0.03	
3,899.00	22.21	144.08	3,680.32	-945.48	656.58	-943.29	2.36	-1.47	4.75	
3,993.00	21.81	137.60	3,767.48	-972.76	678.78	-970.51	2.62	-0.43	-6.89	
4,088.00	21.65	140.65	3,855.73	-999.35	701.79	-997.01	1.20	-0.17	3.21	
4,180.00	23.71	143.58	3,940.62	-1,027.36	723.54	-1,024.95	2.55	2.24	3.18	
4,208.57	23.72	144.68	3,966.78	-1,036.67	730.27	-1,034.24	1.56	0.04	3.87	
<b>Enter Land Box: 4208.57' MD &amp; 3966.78' TVD</b>										
4,273.00	23.78	147.17	4,025.75	-1,058.16	744.80	-1,055.69	1.56	0.09	3.86	
4,366.00	22.62	149.07	4,111.23	-1,089.26	764.16	-1,086.72	1.48	-1.25	2.04	
4,458.00	20.84	143.55	4,196.70	-1,117.61	782.98	-1,115.00	2.94	-1.93	-6.00	

<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well MAE J 8-10HZ
<b>Project:</b>	Weld County, CO (UTM-NAD83)	<b>TVD Reference:</b>	20' KB + 5083' GE @ 5103.00usft
<b>Site:</b>	MAE J 14-8HZ	<b>MD Reference:</b>	20' KB + 5083' GE @ 5103.00usft
<b>Well:</b>	MAE J 8-10HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	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)
4,551.00	22.19	142.80	4,283.21	-1,144.90	803.43	-1,142.23	1.48	1.45	-0.81
4,644.00	24.70	146.62	4,368.54	-1,175.12	824.74	-1,172.38	3.15	2.70	4.11
4,738.00	24.73	143.68	4,453.93	-1,207.37	847.20	-1,204.55	1.31	0.03	-3.13
4,832.00	21.85	142.22	4,540.26	-1,237.04	869.56	-1,234.15	3.12	-3.06	-1.55
4,926.00	19.67	139.56	4,628.15	-1,262.91	890.54	-1,259.95	2.53	-2.32	-2.83
5,019.00	18.68	140.81	4,715.99	-1,286.37	910.11	-1,283.34	1.15	-1.06	1.34
5,113.00	16.89	141.62	4,805.50	-1,308.74	928.10	-1,305.65	1.92	-1.90	0.86
5,233.00	13.78	147.40	4,921.22	-1,334.45	946.63	-1,331.31	2.88	-2.59	4.82
5,325.00	10.86	145.32	5,011.09	-1,350.81	957.47	-1,347.63	3.21	-3.17	-2.26
5,419.00	7.83	151.81	5,103.83	-1,363.74	965.53	-1,360.53	3.41	-3.22	6.90
5,512.00	4.69	150.83	5,196.27	-1,372.65	970.38	-1,369.42	3.38	-3.38	-1.05
5,604.00	4.20	174.34	5,288.00	-1,379.29	972.54	-1,376.05	2.03	-0.53	25.55
5,698.00	4.42	185.89	5,381.73	-1,386.31	972.51	-1,383.08	0.95	0.23	12.29
5,792.00	3.92	163.74	5,475.49	-1,393.00	973.04	-1,389.77	1.78	-0.53	-23.56
5,885.00	0.32	127.72	5,568.41	-1,396.21	974.14	-1,392.98	3.94	-3.87	-38.73
5,977.00	0.41	179.17	5,660.41	-1,396.70	974.34	-1,393.46	0.36	0.10	55.92
6,069.00	0.41	236.98	5,752.41	-1,397.21	974.07	-1,393.97	0.43	0.00	62.84
6,163.00	0.73	238.11	5,846.41	-1,397.71	973.28	-1,394.47	0.34	0.34	1.20
6,256.00	0.82	271.93	5,939.40	-1,398.00	972.11	-1,394.77	0.49	0.10	36.37
6,349.00	1.08	273.24	6,032.38	-1,397.93	970.57	-1,394.70	0.28	0.28	1.41
6,442.00	0.85	142.07	6,125.38	-1,398.42	970.12	-1,395.20	1.89	-0.25	-141.04
6,536.00	0.26	159.13	6,219.37	-1,399.17	970.63	-1,395.94	0.64	-0.63	18.15
6,629.00	0.35	278.27	6,312.37	-1,399.33	970.42	-1,396.10	0.57	0.10	128.11
6,722.00	0.53	234.13	6,405.37	-1,399.54	969.79	-1,396.31	0.40	0.19	-47.46
6,815.00	0.68	224.04	6,498.36	-1,400.19	969.06	-1,396.97	0.20	0.16	-10.85
6,908.00	0.50	211.88	6,591.36	-1,400.93	968.46	-1,397.71	0.23	-0.19	-13.08
7,001.00	0.57	214.54	6,684.36	-1,401.65	967.98	-1,398.44	0.08	0.08	2.86
7,094.00	0.64	233.72	6,777.35	-1,402.34	967.30	-1,399.13	0.23	0.08	20.62
7,148.01	2.92	340.77	6,831.33	-1,401.22	966.61	-1,398.01	5.86	4.22	198.22
<b>Curve KOP (Mae J 8-10HZ)</b>									
7,187.00	5.18	345.67	6,870.23	-1,398.58	965.85	-1,395.37	5.86	5.80	12.57
7,281.00	13.96	342.34	6,962.83	-1,383.63	961.35	-1,380.44	9.36	9.34	-3.54
7,375.00	21.37	341.87	7,052.34	-1,356.52	952.56	-1,353.35	7.88	7.88	-0.50
7,470.00	27.74	344.39	7,138.70	-1,318.73	941.22	-1,315.61	6.79	6.71	2.65
7,563.00	32.13	351.24	7,219.30	-1,273.41	931.62	-1,270.31	5.98	4.72	7.37
7,656.00	40.03	353.78	7,294.41	-1,219.15	924.60	-1,216.07	8.64	8.49	2.73
7,749.00	48.15	359.18	7,361.17	-1,154.65	920.86	-1,151.59	9.61	8.73	5.81
7,844.00	58.28	1.88	7,417.99	-1,078.68	921.68	-1,075.62	10.90	10.66	2.84
7,937.00	63.64	5.37	7,463.13	-997.59	926.88	-994.51	6.63	5.76	3.75
8,030.00	67.85	4.65	7,501.32	-913.14	934.28	-910.04	4.58	4.53	-0.77
8,123.00	71.45	3.77	7,533.66	-826.19	940.67	-823.07	3.97	3.87	-0.95
8,216.00	77.03	3.44	7,558.91	-736.90	946.29	-733.76	6.01	6.00	-0.35
8,260.54	79.34	4.35	7,568.03	-693.41	949.25	-690.26	5.55	5.18	2.04

<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well MAE J 8-10HZ
<b>Project:</b>	Weld County, CO (UTM-NAD83)	<b>TVD Reference:</b>	20' KB + 5083' GE @ 5103.00usft
<b>Site:</b>	MAE J 14-8HZ	<b>MD Reference:</b>	20' KB + 5083' GE @ 5103.00usft
<b>Well:</b>	MAE J 8-10HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	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)	
<b>Heel (MAE J 8-10HZ)</b>										
8,310.00	81.90	5.34	7,576.09	-644.79	953.37	-641.63	5.55	5.18	2.01	
8,403.00	86.22	5.34	7,585.72	-552.71	961.98	-549.52	4.64	4.64	0.00	
<b>LP: 197' FSL, 1961' FEL Sec 8 T1N R68W</b>										
8,496.00	86.37	5.61	7,591.73	-460.33	970.83	-457.11	0.33	0.16	0.29	
8,589.00	86.28	5.29	7,597.69	-367.94	979.65	-364.69	0.36	-0.10	-0.34	
8,668.69	86.22	2.06	7,602.90	-288.60	984.75	-285.33	4.05	-0.08	-4.05	
<b>Exit Heel Box: 8668.69' MD, 460' FSL, 1942' FEL</b>										
8,682.00	86.21	1.52	7,603.78	-275.32	985.16	-272.05	4.05	-0.07	-4.05	
8,775.00	85.61	0.73	7,610.41	-182.58	986.98	-179.31	1.06	-0.65	-0.85	
8,963.00	87.65	358.31	7,621.46	5.07	985.41	8.33	1.68	1.09	-1.29	
9,055.00	87.56	357.94	7,625.31	96.94	982.40	100.19	0.41	-0.10	-0.40	
9,149.00	88.28	357.86	7,628.72	190.81	978.96	194.05	0.77	0.77	-0.09	
9,242.00	88.54	357.14	7,631.30	283.68	974.90	286.92	0.82	0.28	-0.77	
9,336.00	89.04	356.82	7,633.29	377.53	969.95	380.75	0.63	0.53	-0.34	
9,432.00	88.39	357.79	7,635.44	473.40	965.44	476.60	1.22	-0.68	1.01	
9,525.00	88.08	358.88	7,638.30	566.32	962.74	569.51	1.22	-0.33	1.17	
9,619.00	87.72	359.24	7,641.75	660.24	961.19	663.42	0.54	-0.38	0.38	
9,711.00	87.95	358.98	7,645.22	752.16	959.77	755.34	0.38	0.25	-0.28	
9,805.00	91.25	357.42	7,645.88	846.10	956.81	849.27	3.88	3.51	-1.66	
9,899.00	92.74	357.05	7,642.61	939.93	952.28	943.08	1.63	1.59	-0.39	
9,993.00	91.69	357.86	7,638.97	1,033.76	948.11	1,036.90	1.41	-1.12	0.86	
10,087.00	92.34	357.84	7,635.67	1,127.64	944.59	1,130.77	0.69	0.69	-0.02	
10,181.00	93.00	357.26	7,631.29	1,221.45	940.57	1,224.56	0.93	0.70	-0.62	
10,273.00	92.86	359.08	7,626.59	1,313.28	937.64	1,316.38	1.98	-0.15	1.98	
10,365.00	92.35	359.86	7,622.41	1,405.18	936.79	1,408.28	1.01	-0.55	0.85	
10,459.00	89.80	358.78	7,620.64	1,499.15	935.67	1,502.24	2.95	-2.71	-1.15	
10,551.00	90.60	359.23	7,620.32	1,591.13	934.08	1,594.22	1.00	0.87	0.49	
10,645.00	91.82	359.21	7,618.34	1,685.10	932.80	1,688.18	1.30	1.30	-0.02	
10,737.00	90.77	357.49	7,616.26	1,777.03	930.15	1,780.11	2.19	-1.14	-1.87	
10,829.00	89.79	356.60	7,615.81	1,868.91	925.41	1,871.97	1.44	-1.07	-0.97	
10,922.00	90.02	357.05	7,615.96	1,961.77	920.26	1,964.81	0.54	0.25	0.48	
11,015.00	89.57	356.78	7,616.29	2,054.63	915.25	2,057.65	0.56	-0.48	-0.29	
11,108.00	90.05	356.65	7,616.60	2,147.48	909.92	2,150.48	0.53	0.52	-0.14	
11,201.00	89.68	355.84	7,616.82	2,240.28	903.83	2,243.26	0.96	-0.40	-0.87	
11,295.00	90.25	358.25	7,616.88	2,334.14	898.99	2,337.11	2.63	0.61	2.56	
11,387.00	89.93	357.90	7,616.74	2,426.09	895.90	2,429.05	0.52	-0.35	-0.38	
11,482.00	91.38	358.15	7,615.65	2,521.03	892.62	2,523.97	1.55	1.53	0.26	
11,576.00	90.05	358.94	7,614.48	2,614.98	890.23	2,617.92	1.65	-1.41	0.84	
11,670.00	91.45	358.68	7,613.25	2,708.95	888.28	2,711.88	1.51	1.49	-0.28	
11,764.00	91.05	0.43	7,611.19	2,802.93	887.55	2,805.85	1.91	-0.43	1.86	
11,857.00	90.01	2.08	7,610.33	2,895.89	889.59	2,898.83	2.10	-1.12	1.77	
11,950.00	88.71	2.32	7,611.37	2,988.82	893.16	2,991.76	1.42	-1.40	0.26	
12,044.00	88.61	1.86	7,613.57	3,082.73	896.59	3,085.69	0.50	-0.11	-0.49	

<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well MAE J 8-10HZ
<b>Project:</b>	Weld County, CO (UTM-NAD83)	<b>TVD Reference:</b>	20' KB + 5083' GE @ 5103.00usft
<b>Site:</b>	MAE J 14-8HZ	<b>MD Reference:</b>	20' KB + 5083' GE @ 5103.00usft
<b>Well:</b>	MAE J 8-10HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	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)	
12,138.00	89.21	1.45	7,615.36	3,176.67	899.30	3,179.64	0.77	0.64	-0.44	
12,232.00	89.39	0.71	7,616.51	3,270.65	901.07	3,273.62	0.81	0.19	-0.79	
12,325.00	88.14	3.28	7,618.51	3,363.56	904.31	3,366.54	3.07	-1.34	2.76	
12,417.00	88.44	2.37	7,621.26	3,455.41	908.84	3,458.40	1.04	0.33	-0.99	
12,510.00	89.01	2.12	7,623.33	3,548.31	912.48	3,551.32	0.67	0.61	-0.27	
12,605.00	89.75	1.51	7,624.36	3,643.26	915.49	3,646.27	1.01	0.78	-0.64	
12,698.00	88.97	2.98	7,625.39	3,736.18	919.13	3,739.20	1.79	-0.84	1.58	
12,792.00	89.52	2.34	7,626.63	3,830.07	923.50	3,833.11	0.90	0.59	-0.68	
12,885.00	89.90	1.74	7,627.10	3,923.01	926.81	3,926.06	0.76	0.41	-0.65	
12,977.00	89.32	3.96	7,627.73	4,014.88	931.38	4,017.95	2.49	-0.63	2.41	
13,071.00	90.38	3.78	7,627.98	4,108.67	937.72	4,111.76	1.14	1.13	-0.19	
13,118.92	90.78	3.50	7,627.49	4,156.49	940.77	4,159.59	1.01	0.83	-0.57	
<b>Enter Toe Box: 13118.92' MD, 460' FNL, 2072' FEL</b>										
13,165.00	91.16	3.24	7,626.71	4,202.48	943.48	4,205.59	1.01	0.83	-0.57	
13,259.00	91.68	5.20	7,624.38	4,296.19	950.39	4,299.32	2.16	0.55	2.09	
13,353.00	90.77	4.86	7,622.37	4,389.81	958.63	4,392.96	1.03	-0.97	-0.36	
13,446.00	91.61	4.22	7,620.44	4,482.50	965.99	4,485.67	1.14	0.90	-0.69	
13,472.00	91.78	4.06	7,619.67	4,508.42	967.87	4,511.60	0.90	0.65	-0.62	
13,526.00	91.78	4.06	7,618.00	4,562.26	971.69	4,565.45	0.00	0.00	0.00	
<b>PBHL (MAE J 8-10HZ) - BHL: 55' FNL, 2049' FEL Sec 8 T1N R68W</b>										

<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well MAE J 8-10HZ
<b>Project:</b>	Weld County, CO (UTM-NAD83)	<b>TVD Reference:</b>	20' KB + 5083' GE @ 5103.00usft
<b>Site:</b>	MAE J 14-8HZ	<b>MD Reference:</b>	20' KB + 5083' GE @ 5103.00usft
<b>Well:</b>	MAE J 8-10HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.15 Single User Db

Design Targets										
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
SHL: 761' FSL, 2413' FV - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	14,548,707.10	1,632,413.70	40.060340	-105.028602	
Enter Land Box: 4208.5' - actual wellpath hits target center - Point	0.00	0.00	3,966.78	-1,036.67	730.27	14,547,670.19	1,633,143.63	40.057493	-105.025992	
Curve KOP (Mae J 8-10) - actual wellpath hits target center - Point	0.00	0.00	6,831.33	-1,401.22	966.61	14,547,305.56	1,633,379.86	40.056492	-105.025148	
LP: 197' FSL, 1961' FEL - actual wellpath hits target center - Point	0.00	0.00	7,585.72	-552.71	961.98	14,548,154.08	1,633,375.50	40.058822	-105.025164	
Exit Heel Box: 8668.69' - actual wellpath hits target center - Point	0.00	0.00	7,602.90	-288.60	984.74	14,548,418.18	1,633,398.34	40.059547	-105.025083	
BHL: 55' FNL, 2049' FEL - actual wellpath misses target center by 0.01usft at 13526.00usft MD (7618.00 TVD, 4562.26 N, 971.69 E) - Point	0.00	0.00	7,618.00	4,562.26	971.69	14,553,269.04	1,633,386.85	40.072869	-105.025129	
Enter Toe Box: 13118.92 - actual wellpath hits target center - Point	0.00	0.00	7,627.49	4,156.49	940.77	14,552,863.28	1,633,355.80	40.071754	-105.025239	

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")		
1,910.00	1,860.28	9 5/8"	9-5/8	13-1/2		

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_