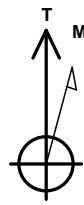


ANADARKO PETROLEUM CORP

Project: Weld County, CO (UTM-NAD83)
 Site: MAE J 14-8HZ
 Well: MAE J 8-5HZ
 Wellbore: OH
 Design: OH

20' KB + 5083' GE @ 5103.00usft



Azimuths to True North
 Magnetic North: 8.08°

Magnetic Field
 Strength: 51928.7nT
 Dip Angle: 66.49°
 Date: 9/19/2019
 Model: IGRF2015

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

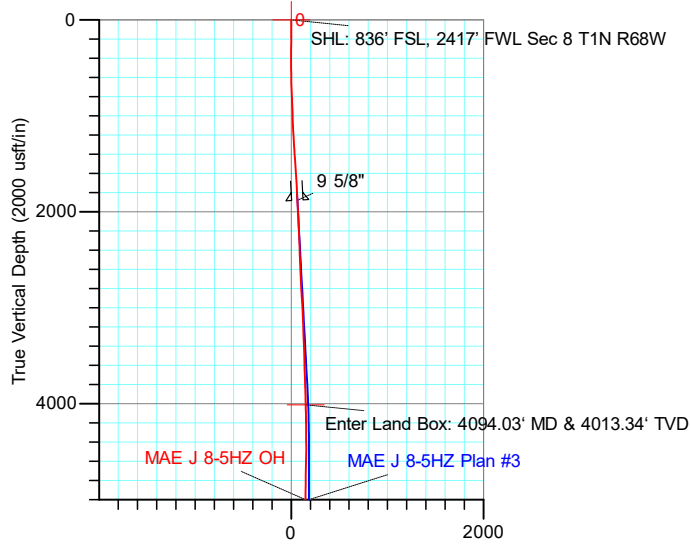
Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Zone 13N (108 W to 102 W)



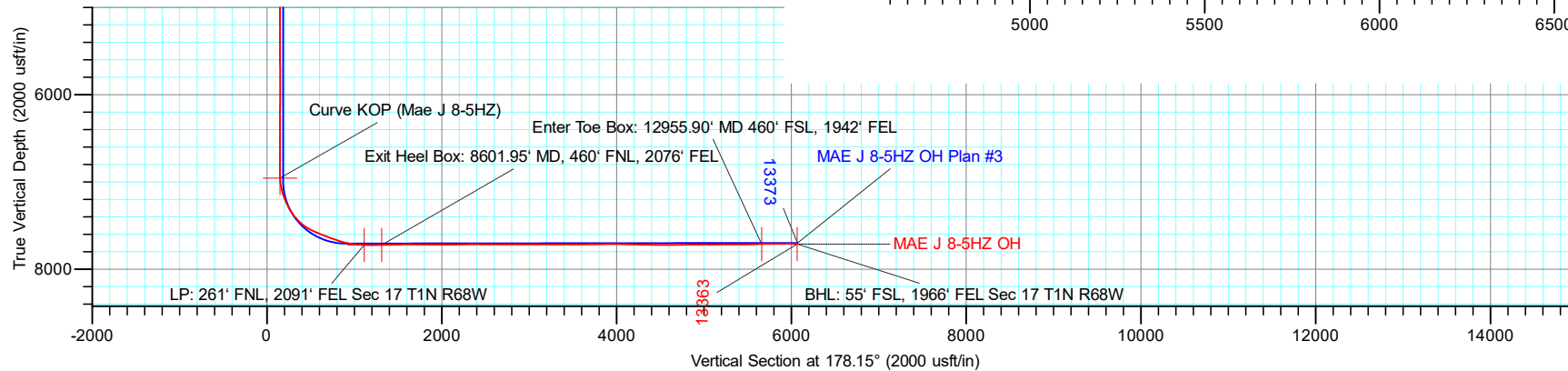
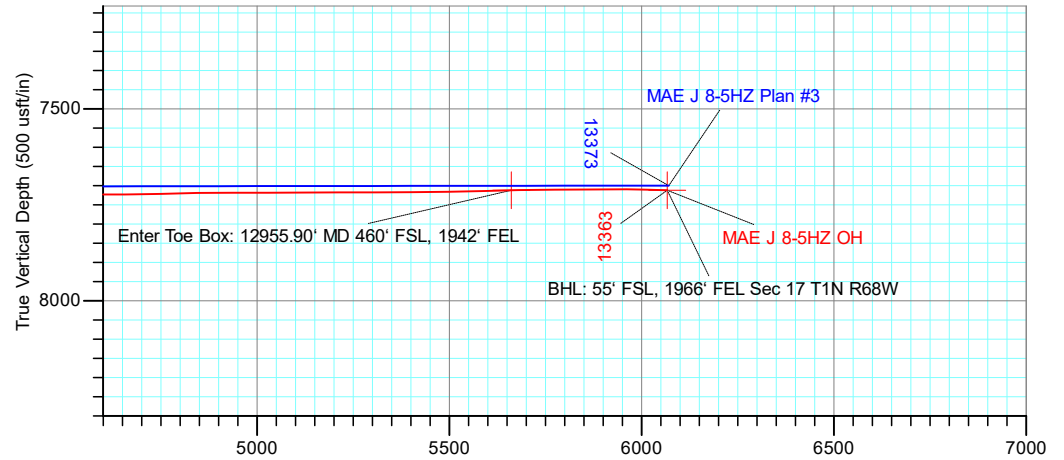
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
BHL: 55' FSL, 1966' FEL Sec 17 T1N R68W	7712.13	-6039.20	943.75	40.043961	-105.025229
Curve KOP (Mae J 8-5HZ)	6957.08	-125.57	756.90	40.060201	-105.025896
Enter Land Box: 4094.03' MD & 4013.34' TVD	4013.34	-127.53	734.69	40.060196	-105.025975
Enter Toe Box: 12955.90' MD 460' FSL, 1942' FEL	7712.12	-5632.90	968.33	40.045077	-105.025141
Exit Heel Box: 8601.95' MD, 460' FNL, 2076' FEL	7723.73	-1285.76	843.48	40.057015	-105.025587
LP: 261' FNL, 2091' FEL Sec 17 T1N R68W	7722.48	-1086.22	831.26	40.057563	-105.025630
SHL: 836' FSL, 2417' FWL Sec 8 T1N R68W	0.00	0.00	0.00	40.060546	-105.028601

1N-68W-17



ACTUAL LINE CALLS
SHL: 836' FSL, 2417' FWL Sec 8 T1N R68W
HEEL: 261' FNL, 2091' FEL Sec 17 T1N R68W
BHL: 55' FSL, 1966' FEL Sec 17 T1N R68W



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

Design: OH (MAE J 8-5HZ/OH)
 MAE J 14-8HZ
 Created By: Dustin Ault Date: 15:57, March 10 2020
 Approved: _____ Date: _____

ANADARKO PETROLEUM CORP

Project: Weld County, CO (UTM-NAD83)
 Site: MAE J 14-8HZ
 Well: MAE J 8-5HZ
 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°

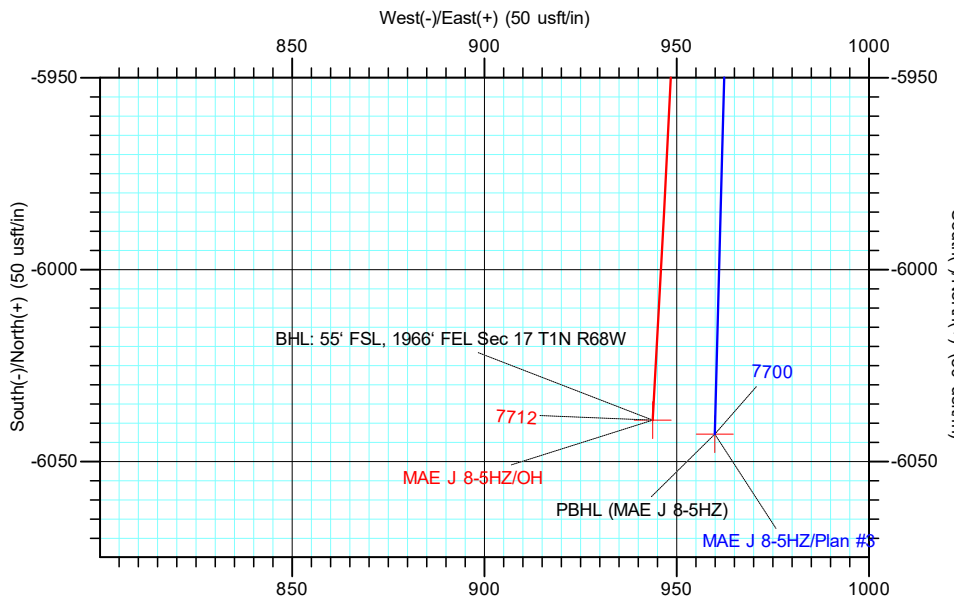
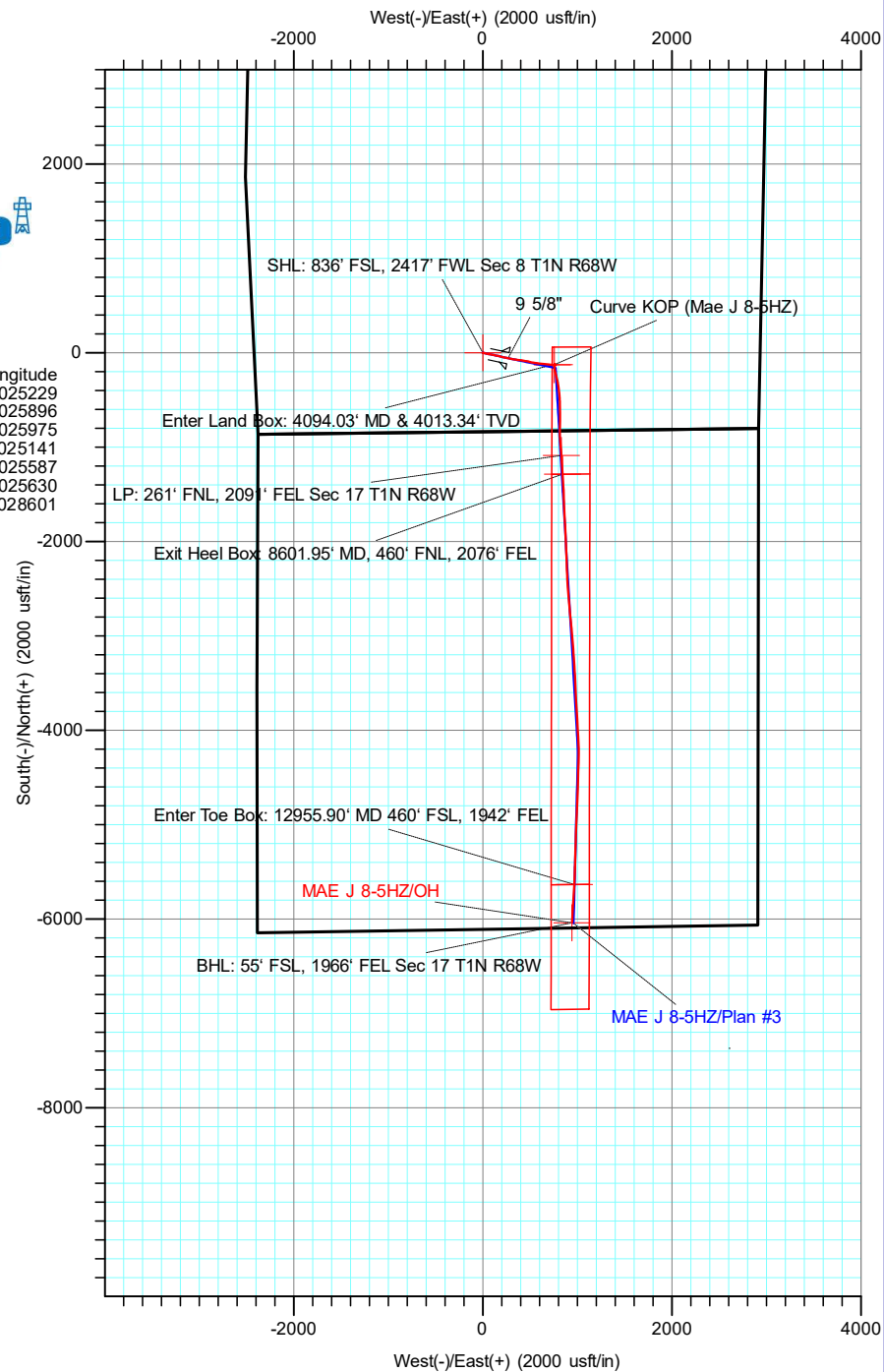
Magnetic Field
 Strength: 51928.7nT
 Dip Angle: 66.49°
 Date: 9/19/2019
 Model: IGRF2015



DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL: 55' FSL, 1966' FEL Sec 17 T1N R68W	7712.13	-6039.20	943.75	14542742.62	1633355.81	40.043961	-105.025229
Curve KOP (Mae J 8-5HZ)	6957.08	-125.57	756.90	14548656.31	1633170.86	40.060201	-105.025896
Enter Land Box: 4094.03' MD & 4013.34' TVD	4013.34	-127.53	734.69	14548654.35	1633148.65	40.060196	-105.025975
Enter Toe Box: 12955.90' MD 460' FSL, 1942' FEL	7712.12	-5632.90	968.33	14543148.91	1633380.52	40.045077	-105.025141
Exit Heel Box: 8601.95' MD, 460' FNL, 2076' FEL	7723.73	-1285.76	843.48	14547496.09	1633257.07	40.057015	-105.025587
LP: 261' FNL, 2091' FEL Sec 17 T1N R68W	7722.48	-1086.22	831.26	14547695.63	1633244.91	40.057563	-105.025630
SHL: 836' FSL, 2417' FWL Sec 8 T1N R68W	0.00	0.00	0.00	14548782.12	1632414.00	40.060546	-105.028601

ACTUAL LINE CALLS
SHL: 836' FSL, 2417' FWL Sec 8 T1N R68W
HEEL: 261' FNL, 2091' FEL Sec 17 T1N R68W
BHL: 55' FSL, 1966' FEL Sec 17 T1N R68W



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

Design: OH (MAE J 8-5HZ/OH)
 MAE J 14-8HZ
 Created By: Dustin Ault
 Date: 15:59, March 10 2020
 Approved: _____ Date: _____



ANADARKO PETROLEUM CORP

Weld County, CO (UTM-NAD83)

MAE J 14-8HZ

MAE J 8-5HZ

OH

Design: OH

Standard Survey Report

10 March, 2020



Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-5HZ
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 8-5HZ	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 8-5HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,548,782.12 usft	Latitude:	40.060546
	+E/-W	0.00 usft	Easting:	1,632,414.00 usft	Longitude:	-105.028601
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	51,928.71239406

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	178.15	

Survey Program	Date	3/10/2020			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
130.00	1,837.00	Survey #1 - Surface MWD (OH)	APC_ISCWSA REV 2 MWD	Fixed:v2:standard declination	
1,933.00	13,309.00	Survey #2 - MWD+IFR (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
13,363.00	13,363.00	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: 836' FSL, 2417' FWL Sec 8 T1N R68W - SHL (MAE J 8-5HZ)										
130.00	0.31	192.31	130.00	-0.34	-0.07	0.34	0.24	0.24	0.00	
225.00	0.97	312.36	225.00	-0.05	-0.72	0.03	1.22	0.69	126.37	
320.00	0.53	8.96	319.99	0.92	-1.25	-0.96	0.85	-0.46	59.58	
415.00	2.29	98.08	414.96	1.09	0.70	-1.07	2.47	1.85	93.81	
510.00	3.56	98.08	509.84	0.41	5.50	-0.23	1.34	1.34	0.00	
606.00	4.88	98.08	605.57	-0.58	12.49	0.99	1.38	1.38	0.00	
701.00	6.20	105.90	700.13	-2.56	21.43	3.25	1.60	1.39	8.23	

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-5HZ
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 8-5HZ	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	7.73	107.84	794.42	-5.92	32.44	6.96	1.63	1.61	2.04	
891.00	9.49	101.24	888.35	-9.40	46.21	10.89	2.12	1.85	-6.95	
986.00	9.76	99.75	982.02	-12.29	61.82	14.28	0.39	0.28	-1.57	
1,081.00	10.99	100.01	1,075.46	-15.23	78.68	17.76	1.30	1.29	0.27	
1,176.00	12.22	101.42	1,168.52	-18.80	97.45	21.93	1.33	1.29	1.48	
1,271.00	13.71	102.39	1,261.09	-23.20	118.30	27.01	1.59	1.57	1.02	
1,366.00	15.64	101.68	1,352.99	-28.21	141.84	32.78	2.04	2.03	-0.75	
1,462.00	14.59	102.39	1,445.67	-33.43	166.33	38.78	1.11	-1.09	0.74	
1,557.00	14.85	103.53	1,537.55	-38.84	189.85	44.95	0.41	0.27	1.20	
1,652.00	12.66	103.44	1,629.82	-44.11	211.81	50.93	2.31	-2.31	-0.09	
1,746.00	12.39	102.30	1,721.58	-48.65	231.68	56.11	0.39	-0.29	-1.21	
1,837.00	12.57	101.77	1,810.43	-52.75	250.92	60.83	0.23	0.20	-0.58	
1,910.00	12.34	102.09	1,881.71	-56.01	266.32	64.58	0.33	-0.31	0.43	
9 5/8"										
1,933.00	12.27	102.19	1,904.18	-57.04	271.11	65.76	0.33	-0.31	0.45	
2,026.00	11.64	101.49	1,995.17	-60.99	289.97	70.32	0.70	-0.68	-0.75	
2,118.00	11.72	103.53	2,085.26	-65.03	308.15	74.94	0.46	0.09	2.22	
2,212.00	12.57	98.58	2,177.16	-68.79	327.54	79.33	1.43	0.90	-5.27	
2,306.00	13.30	97.59	2,268.77	-71.74	348.38	82.95	0.81	0.78	-1.05	
2,400.00	13.07	97.67	2,360.30	-74.59	369.63	86.48	0.25	-0.24	0.09	
2,493.00	12.86	95.21	2,450.93	-76.93	390.36	89.49	0.63	-0.23	-2.65	
2,586.00	12.67	99.27	2,541.63	-79.51	410.73	92.73	0.99	-0.20	4.37	
2,679.00	13.13	100.17	2,632.28	-83.02	431.19	96.90	0.54	0.49	0.97	
2,772.00	12.65	97.16	2,722.94	-86.16	451.69	100.69	0.89	-0.52	-3.24	
2,866.00	13.26	101.52	2,814.55	-89.59	472.47	104.80	1.23	0.65	4.64	
2,959.00	12.81	107.08	2,905.16	-94.75	492.78	110.61	1.43	-0.48	5.98	
3,054.00	12.74	102.22	2,997.81	-100.06	513.08	116.57	1.13	-0.07	-5.12	
3,149.00	12.73	97.89	3,090.47	-103.72	533.69	120.89	1.00	-0.01	-4.56	
3,245.00	12.75	98.14	3,184.11	-106.67	554.65	124.52	0.06	0.02	0.26	
3,337.00	13.22	97.22	3,273.76	-109.43	575.14	127.94	0.56	0.51	-1.00	
3,430.00	13.04	97.67	3,364.32	-112.16	596.09	131.35	0.22	-0.19	0.48	
3,523.00	12.75	96.89	3,454.98	-114.80	616.67	134.64	0.36	-0.31	-0.84	
3,618.00	12.83	93.68	3,547.62	-116.73	637.61	137.25	0.75	0.08	-3.38	
3,712.00	13.06	96.24	3,639.24	-118.55	658.58	139.75	0.66	0.24	2.72	
3,805.00	13.08	96.17	3,729.83	-120.83	679.49	142.70	0.03	0.02	-0.08	
3,898.00	12.66	97.84	3,820.49	-123.35	700.05	145.88	0.60	-0.45	1.80	
3,992.00	10.16	96.53	3,912.62	-125.70	718.49	148.83	2.67	-2.66	-1.39	
4,086.00	8.38	96.41	4,005.39	-127.41	733.53	151.02	1.89	-1.89	-0.13	
4,094.03	8.26	96.39	4,013.34	-127.53	734.69	151.19	1.47	-1.47	-0.26	
Enter Land Box: 4094.03' MD & 4013.34' TVD										
4,179.00	7.01	96.13	4,097.55	-128.77	745.91	152.78	1.47	-1.47	-0.31	
4,272.00	6.01	94.07	4,189.95	-129.72	756.41	154.07	1.10	-1.08	-2.22	
4,364.00	4.36	95.02	4,281.57	-130.37	764.70	154.99	1.80	-1.79	1.03	
4,457.00	1.69	104.08	4,374.44	-131.01	769.55	155.79	2.91	-2.87	9.74	

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-5HZ
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 8-5HZ	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)	
4,550.00	1.08	94.79	4,467.41	-131.42	771.76	156.26	0.70	-0.66	-9.99	
4,643.00	1.23	27.35	4,560.39	-130.60	773.09	155.49	1.39	0.16	-72.52	
4,737.00	1.22	353.76	4,654.37	-128.71	773.44	153.61	0.75	-0.01	-35.73	
4,831.00	0.97	325.66	4,748.36	-127.06	772.89	151.95	0.62	-0.27	-29.89	
4,924.00	0.98	313.91	4,841.34	-125.86	771.87	150.71	0.21	0.01	-12.63	
5,018.00	1.07	299.80	4,935.33	-124.87	770.53	149.68	0.28	0.10	-15.01	
5,112.00	0.86	284.67	5,029.31	-124.25	769.08	149.01	0.35	-0.22	-16.10	
5,232.00	0.82	275.64	5,149.30	-123.94	767.36	148.65	0.12	-0.03	-7.53	
5,324.00	0.93	262.08	5,241.29	-123.98	765.96	148.64	0.25	0.12	-14.74	
5,418.00	1.06	260.36	5,335.28	-124.23	764.35	148.84	0.14	0.14	-1.83	
5,511.00	1.13	252.52	5,428.26	-124.65	762.63	149.20	0.18	0.08	-8.43	
5,603.00	0.91	252.15	5,520.25	-125.14	761.07	149.65	0.24	-0.24	-0.40	
5,697.00	0.77	262.17	5,614.24	-125.46	759.73	149.92	0.22	-0.15	10.66	
5,791.00	0.84	264.69	5,708.23	-125.61	758.42	150.03	0.08	0.07	2.68	
5,884.00	0.97	260.81	5,801.21	-125.80	756.96	150.17	0.15	0.14	-4.17	
5,976.00	1.00	258.79	5,893.20	-126.08	755.41	150.40	0.05	0.03	-2.20	
6,068.00	1.04	258.99	5,985.19	-126.39	753.80	150.66	0.04	0.04	0.22	
6,162.00	1.31	69.90	6,079.18	-126.19	753.97	150.46	2.49	0.29	181.82	
6,254.00	0.83	59.56	6,171.16	-125.49	755.53	149.81	0.56	-0.52	-11.24	
6,348.00	0.59	54.36	6,265.16	-124.86	756.51	149.22	0.26	-0.26	-5.53	
6,441.00	0.14	359.82	6,358.15	-124.47	756.90	148.84	0.56	-0.48	-58.65	
6,535.00	0.47	262.22	6,452.15	-124.41	756.52	148.76	0.54	0.35	-103.83	
6,628.00	1.35	76.93	6,545.15	-124.21	757.21	148.59	1.96	0.95	187.86	
6,720.00	0.77	73.92	6,637.13	-123.79	758.86	148.23	0.63	-0.63	-3.27	
6,813.00	0.03	161.87	6,730.13	-123.64	759.47	148.10	0.83	-0.80	94.57	
6,907.00	0.65	256.32	6,824.13	-123.79	758.96	148.23	0.69	0.66	100.48	
7,000.00	1.24	246.25	6,917.11	-124.32	757.52	148.71	0.66	0.63	-10.83	
7,039.99	3.16	192.01	6,957.08	-125.57	756.90	149.94	6.58	4.80	-135.61	
Curve KOP (Mae J 8-5HZ)										
7,093.00	6.52	180.19	7,009.89	-130.01	756.58	154.37	6.58	6.34	-22.31	
7,186.00	14.84	178.81	7,101.20	-147.23	756.81	171.59	8.95	8.95	-1.48	
7,280.00	21.88	170.65	7,190.37	-176.59	759.91	201.03	7.96	7.49	-8.68	
7,374.00	26.68	165.30	7,276.04	-214.31	768.12	239.00	5.61	5.11	-5.69	
7,469.00	35.24	164.72	7,357.43	-261.47	780.78	286.54	9.02	9.01	-0.61	
7,562.00	43.05	170.00	7,429.52	-318.71	793.39	344.16	9.12	8.40	5.68	
7,654.00	51.68	172.77	7,491.78	-385.58	803.40	411.31	9.64	9.38	3.01	
7,748.00	61.77	175.23	7,543.30	-463.63	811.51	489.59	10.95	10.73	2.62	
7,842.00	67.16	178.85	7,583.81	-548.29	815.82	574.34	6.70	5.73	3.85	
7,936.00	68.93	179.78	7,618.96	-635.46	816.86	661.50	2.09	1.88	0.99	
8,029.00	70.90	181.13	7,650.89	-722.80	816.16	748.77	2.52	2.12	1.45	
8,122.00	72.18	180.92	7,680.34	-811.00	814.58	836.87	1.39	1.38	-0.23	
8,191.82	77.20	177.63	7,698.78	-878.30	815.46	904.17	8.50	7.18	-4.71	
Heel (MAE J 8-5HZ)										

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-5HZ
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 8-5HZ	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)	
8,215.00	78.87	176.57	7,703.58	-900.95	816.61	926.84	8.50	7.22	-4.58	
8,309.00	85.30	174.75	7,716.52	-993.73	823.66	1,019.80	7.10	6.84	-1.94	
8,402.00	87.36	175.85	7,722.48	-1,086.22	831.26	1,112.49	2.51	2.22	1.18	
LP: 261' FNL, 2091' FEL Sec 17 T1N R68W										
8,495.00	90.16	176.95	7,724.49	-1,179.00	837.10	1,205.41	3.23	3.01	1.18	
8,588.00	90.57	176.30	7,723.90	-1,271.84	842.57	1,298.38	0.83	0.44	-0.70	
8,601.95	90.77	176.23	7,723.73	-1,285.76	843.48	1,312.32	1.51	1.42	-0.49	
Exit Heel Box: 8601.95' MD, 460' FNL, 2076' FEL										
8,680.00	91.88	175.85	7,721.93	-1,363.60	848.87	1,390.29	1.51	1.42	-0.49	
8,773.00	91.65	177.55	7,719.06	-1,456.40	854.22	1,483.22	1.84	-0.25	1.83	
8,868.00	90.40	178.51	7,717.36	-1,551.33	857.49	1,578.20	1.66	-1.32	1.01	
8,962.00	88.83	177.10	7,718.00	-1,645.25	861.09	1,672.19	2.24	-1.67	-1.50	
9,054.00	89.69	177.06	7,719.18	-1,737.12	865.77	1,764.17	0.94	0.93	-0.04	
9,148.00	90.86	177.17	7,718.73	-1,831.00	870.50	1,858.15	1.25	1.24	0.12	
9,241.00	89.57	177.26	7,718.38	-1,923.89	875.02	1,951.13	1.39	-1.39	0.10	
9,335.00	90.41	177.12	7,718.40	-2,017.77	879.63	2,045.12	0.91	0.89	-0.15	
9,430.00	89.59	178.52	7,718.40	-2,112.70	883.24	2,140.11	1.71	-0.86	1.47	
9,524.00	91.26	177.88	7,717.70	-2,206.65	886.19	2,234.11	1.90	1.78	-0.68	
9,617.00	91.05	177.91	7,715.83	-2,299.57	889.61	2,327.09	0.23	-0.23	0.03	
9,710.00	88.84	176.71	7,715.92	-2,392.46	893.97	2,420.07	2.70	-2.38	-1.29	
9,804.00	90.04	176.69	7,716.84	-2,486.29	899.39	2,514.03	1.28	1.28	-0.02	
9,898.00	89.42	174.86	7,717.28	-2,580.03	906.31	2,607.95	2.06	-0.66	-1.95	
9,992.00	90.36	175.15	7,717.46	-2,673.68	914.49	2,701.80	1.05	1.00	0.31	
10,086.00	89.77	174.37	7,717.35	-2,767.28	923.08	2,795.64	1.04	-0.63	-0.83	
10,180.00	90.80	174.08	7,716.89	-2,860.80	932.54	2,889.42	1.14	1.10	-0.31	
10,272.00	89.25	175.49	7,716.85	-2,952.42	940.90	2,981.25	2.28	-1.68	1.53	
10,364.00	89.78	175.50	7,717.62	-3,044.13	948.13	3,073.15	0.58	0.58	0.01	
10,458.00	89.89	174.74	7,717.90	-3,137.79	956.12	3,167.02	0.82	0.12	-0.81	
10,550.00	90.10	176.44	7,717.90	-3,229.51	963.20	3,258.92	1.86	0.23	1.85	
10,644.00	90.29	176.25	7,717.58	-3,323.32	969.19	3,352.87	0.29	0.20	-0.20	
10,736.00	91.12	177.49	7,716.45	-3,415.17	974.21	3,444.84	1.62	0.90	1.35	
10,828.00	89.03	177.45	7,716.33	-3,507.08	978.27	3,536.83	2.27	-2.27	-0.04	
10,921.00	89.93	177.26	7,717.17	-3,599.97	982.56	3,629.82	0.99	0.97	-0.20	
11,014.00	91.68	176.97	7,715.87	-3,692.84	987.24	3,722.79	1.91	1.88	-0.31	
11,106.00	90.18	176.35	7,714.38	-3,784.67	992.60	3,814.74	1.76	-1.63	-0.67	
11,200.00	90.99	176.86	7,713.42	-3,878.50	998.17	3,908.70	1.02	0.86	0.54	
11,293.00	88.44	176.63	7,713.88	-3,971.34	1,003.45	4,001.67	2.75	-2.74	-0.25	
11,386.00	89.12	176.49	7,715.86	-4,064.15	1,009.03	4,094.61	0.75	0.73	-0.15	
11,481.00	88.69	178.00	7,717.67	-4,159.02	1,013.59	4,189.58	1.65	-0.45	1.59	
11,575.00	89.11	180.46	7,719.48	-4,252.99	1,014.86	4,283.53	2.65	0.45	2.62	
11,668.00	88.66	182.35	7,721.29	-4,345.94	1,012.58	4,376.36	2.09	-0.48	2.03	
11,762.00	89.64	181.61	7,722.68	-4,439.87	1,009.33	4,470.14	1.31	1.04	-0.79	
11,855.00	89.69	181.56	7,723.23	-4,532.83	1,006.76	4,562.97	0.08	0.05	-0.05	
11,949.00	90.00	181.67	7,723.48	-4,626.80	1,004.11	4,656.80	0.35	0.33	0.12	

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-5HZ
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 8-5HZ	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)	
12,043.00	92.11	181.65	7,721.75	-4,720.73	1,001.38	4,750.60	2.24	2.24	-0.02	
12,137.00	90.88	182.65	7,719.30	-4,814.63	997.86	4,844.34	1.69	-1.31	1.06	
12,231.00	89.82	183.05	7,718.72	-4,908.51	993.19	4,938.02	1.21	-1.13	0.43	
12,323.00	90.09	182.32	7,718.80	-5,000.41	988.88	5,029.73	0.85	0.29	-0.79	
12,415.00	90.88	181.56	7,718.02	-5,092.35	985.76	5,121.52	1.19	0.86	-0.83	
12,509.00	89.51	182.27	7,717.70	-5,186.30	982.62	5,215.32	1.64	-1.46	0.76	
12,603.00	90.39	181.79	7,717.78	-5,280.24	979.29	5,309.10	1.07	0.94	-0.51	
12,697.00	90.37	181.37	7,717.16	-5,374.20	976.70	5,402.93	0.45	-0.02	-0.45	
12,791.00	90.86	181.89	7,716.15	-5,468.16	974.03	5,496.75	0.76	0.52	0.55	
12,884.00	91.75	181.63	7,714.03	-5,561.09	971.17	5,589.54	1.00	0.96	-0.28	
12,955.90	91.29	182.90	7,712.12	-5,632.90	968.33	5,661.23	1.87	-0.64	1.76	
Enter Toe Box: 12955.90' MD 460' FSL, 1942' FEL										
12,976.00	91.16	183.25	7,711.69	-5,652.97	967.25	5,681.25	1.87	-0.64	1.76	
13,070.00	89.79	184.11	7,710.91	-5,746.77	961.22	5,774.81	1.72	-1.46	0.91	
13,164.00	91.17	184.03	7,710.13	-5,840.53	954.55	5,868.30	1.47	1.47	-0.09	
13,258.00	89.15	182.46	7,709.86	-5,934.37	949.23	5,961.92	2.72	-2.15	-1.67	
13,309.00	88.64	183.16	7,710.85	-5,985.30	946.73	6,012.74	1.70	-1.00	1.37	
13,363.00	88.64	183.16	7,712.13	-6,039.20	943.75	6,066.52	0.00	0.00	0.00	
BHL: 55' FSL, 1966' FEL Sec 17 T1N R68W - PBHL (MAE J 8-5HZ)										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
SHL: 836' FSL, 2417' FV - hit/miss target - Shape - Point	0.00	0.00	0.00	0.00	0.00	14,548,782.12	1,632,414.00	40.060546	-105.028601	
Enter Land Box: 4094.00' - actual wellpath hits target center - Point	0.00	0.00	4,013.34	-127.53	734.69	14,548,654.35	1,633,148.65	40.060196	-105.025976	
Curve KOP (Mae J 8-5H) - actual wellpath hits target center - Point	0.00	0.00	6,957.08	-125.57	756.90	14,548,656.30	1,633,170.86	40.060201	-105.025896	
Enter Toe Box: 12955.90' - actual wellpath hits target center - Point	0.00	0.00	7,712.12	-5,632.90	968.33	14,543,148.90	1,633,380.52	40.045077	-105.025141	
BHL: 55' FSL, 1966' FEL - actual wellpath hits target center - Point	0.00	0.00	7,712.13	-6,039.20	943.75	14,542,742.61	1,633,355.81	40.043961	-105.025229	
LP: 261' FNL, 2091' FEL - actual wellpath misses target center by 0.01usft at 8402.00usft MD (7722.48 TVD, -1086.22 N, 831.26 E) - Point	0.00	0.00	7,722.48	-1,086.22	831.26	14,547,695.63	1,633,244.91	40.057563	-105.025631	
Exit Heel Box: 8601.95' - actual wellpath hits target center - Point	0.00	0.00	7,723.73	-1,285.76	843.48	14,547,496.08	1,633,257.06	40.057015	-105.025587	

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well MAE J 8-5HZ
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 8-5HZ	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	1,881.71	9 5/8"		9-5/8	13-1/2

Checked By: _____ Approved By: _____ Date: _____