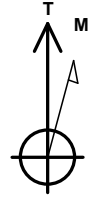


**ANADARKO PETROLEUM CORP**  
Project: Weld County, CO (UTM-NAD83)  
Site: Windsock 15-21HZ  
Well: Windsock 21-6HZ  
Wellbore: OH  
Design: OH



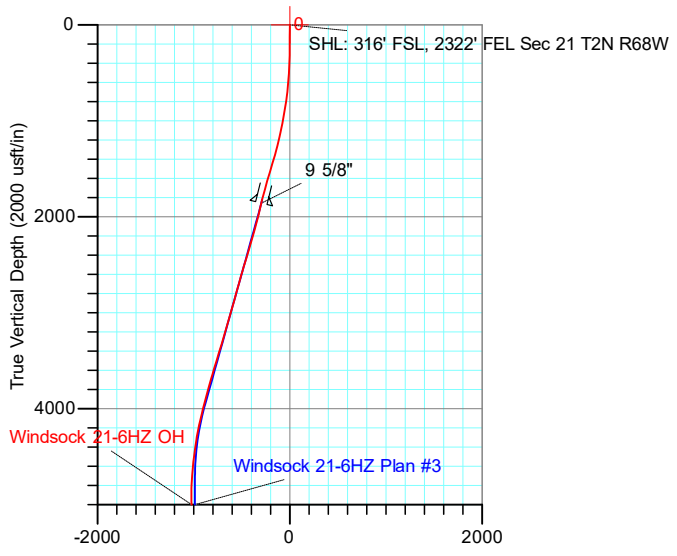
Azimuths to True North  
Magnetic North: 8.05°  
  
Magnetic Field  
Strength: 51893.2nT  
Dip Angle: 66.46°  
Date: 11/25/2019  
Model: IGRF2015

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)

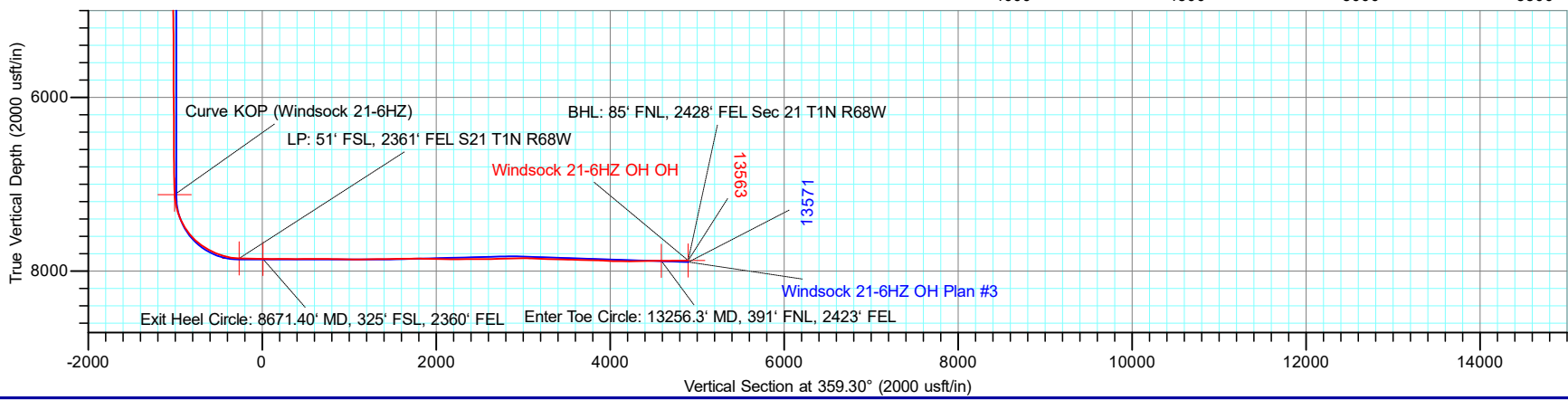
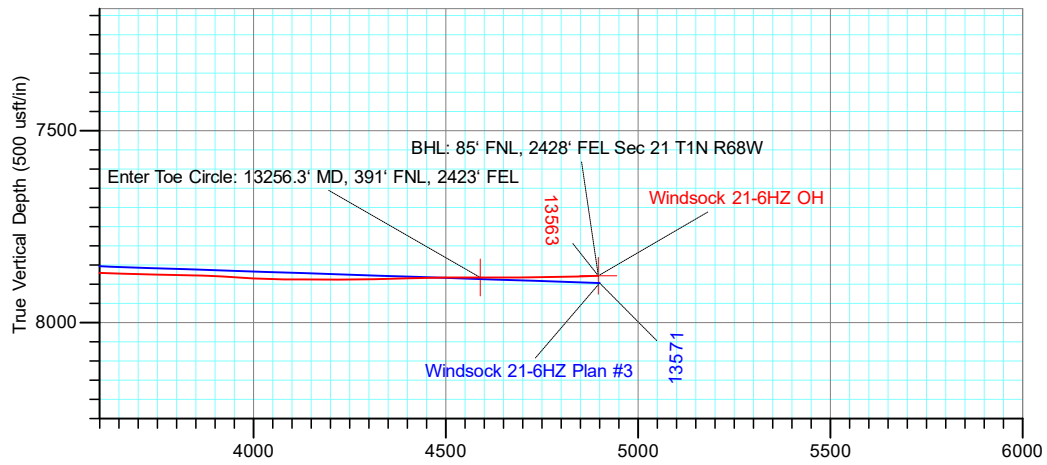


**1N-68W-21**      20' KB + 5222' GE @ 5242.00usft

DESIGN TARGET DETAILS					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
BHL: 85' FNL, 2428' FEL Sec 21 T1N R68W	7878.19	4895.49	-117.89	40.043680	-105.007843
Curve KOP (Windsock 21-6HZ)	7120.69	-1007.75	-38.93	40.027469	-105.007561
Enter Toe Circle: 13256.3' MD, 391' FNL, 2423' FEL	7882.89	4588.92	-116.06	40.042838	-105.007837
Exit Heel Circle: 8671.40' MD, 325' FSL, 2360' FEL	7861.22	7.65	-36.80	40.030257	-105.007553
LP: 51' FSL, 2361' FEL S21 T1N R68W	7855.20	-265.65	-36.16	40.029506	-105.007551
SHL: 316' FSL, 2322' FEL Sec 21 T2N R68W	0.00	0.00	0.00	40.030236	-105.007422



**ACTUAL LINE CALLS**  
**SHL: 316' FSL, 2322' FEL Sec 21 T2N R68W**  
**HEEL: 51' FSL, 2361' FEL S21 T1N R68W**  
**BHL: 85' FNL, 2428' FEL Sec 21 T1N R68W**



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

Design: OH (Windsock 21-6HZ/OH)  
Windsock 15-21HZ  
Created By: Dustin Ault      Date: 14:50, February 20 2020  
Approved: \_\_\_\_\_      Date: \_\_\_\_\_

# ANADARKO PETROLEUM CORP

Project: Weld County, CO (UTM-NAD83)  
 Site: Windsock 15-21HZ  
 Well: Windsock 21-6HZ  
 Wellbore: OH  
 Design: OH



Azimuths to True North  
 Magnetic North: 8.05°

Magnetic Field  
 Strength: 51893.2nT  
 Dip Angle: 66.46°  
 Date: 11/25/2019  
 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)

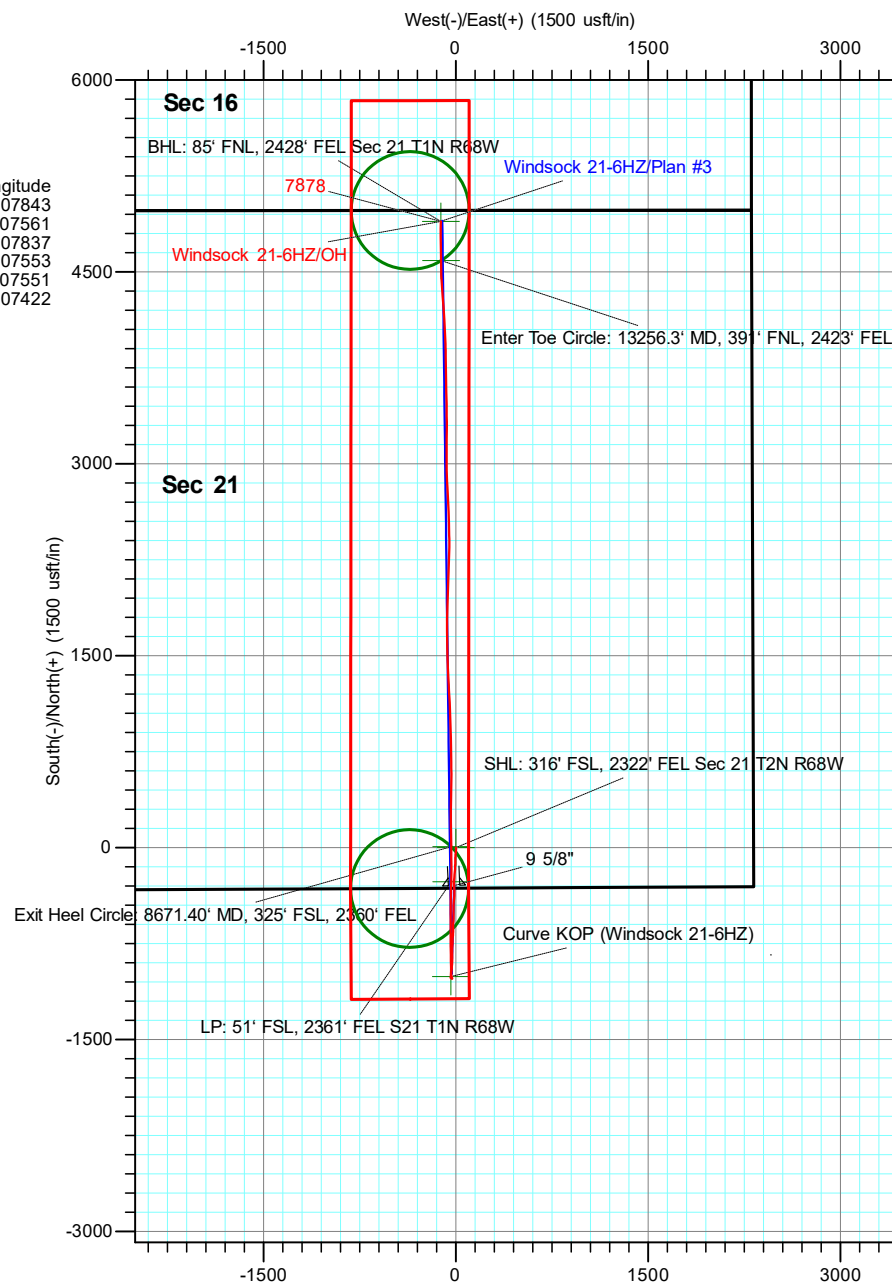
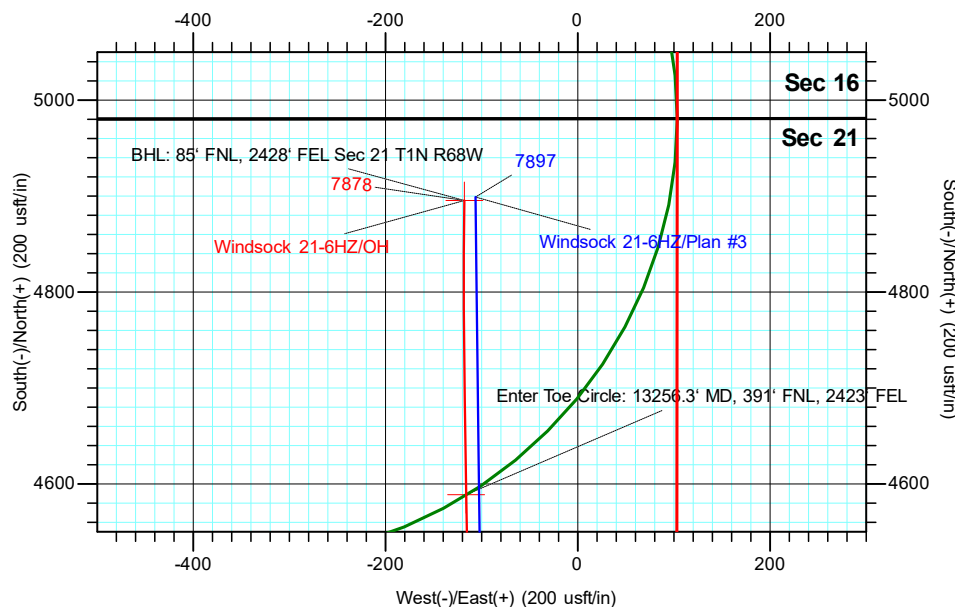


## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL: 85' FNL, 2428' FEL Sec 21 T1N R68W	7878.19	4895.49	-117.89	14542639.24	1638221.56	40.043680	-105.007843
Curve KOP (Windsock 21-6HZ)	7120.69	-1007.75	-38.93	14536735.99	1638300.03	40.027469	-105.007561
Enter Toe Circle: 13256.3' MD, 391' FNL, 2423' FEL	7882.89	4588.92	-116.06	14542332.67	1638223.36	40.042838	-105.007837
Exit Heel Circle: 8671.40' MD, 325' FSL, 2360' FEL	7861.22	7.65	-36.80	14537751.39	1638302.24	40.030257	-105.007553
LP: 51' FSL, 2361' FEL S21 T1N R68W	7855.20	-265.65	-36.16	14537478.09	1638302.86	40.029506	-105.007551
SHL: 316' FSL, 2322' FEL Sec 21 T2N R68W	0.00	0.00	0.00	14537743.74	1638339.04	40.030236	-105.007422

## ACTUAL LINE CALLS

**SHL: 316' FSL, 2322' FEL Sec 21 T2N R68W**  
**HEEL: 51' FSL, 2361' FEL S21 T1N R68W**  
**BHL: 85' FNL, 2428' FEL Sec 21 T1N R68W**



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

Design: OH (Windsock 21-6HZ/OH)  
 Windsock 15-21HZ  
 Created By: Dustin Ault  
 Date: 14:51, February 20 2020  
 Approved: \_\_\_\_\_  
 Date: \_\_\_\_\_



# **ANADARKO PETROLEUM CORP**

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

**Windsock 15-21HZ**

**Windsock 21-6HZ**

**OH**

**Design: OH**

## **Standard Survey Report**

**20 February, 2020**



<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well Windsock 21-6HZ
<b>Project:</b>	Weld County, CO (UTM-NAD83)	<b>TVD Reference:</b>	20' KB + 5222' GE @ 5242.00usft
<b>Site:</b>	Windsock 15-21HZ	<b>MD Reference:</b>	20' KB + 5222' GE @ 5242.00usft
<b>Well:</b>	Windsock 21-6HZ	<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)		

Site		Windsock 15-21HZ			
Site Position:		Northing:	14,537,796.91 usft	Latitude:	40.030382
From:	Map	Easting:	1,638,286.42 usft	Longitude:	-105.007610
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.00 °

Well	Windsock 21-6HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,537,743.74 usft	Latitude:	40.030236
	+E/-W	0.00 usft	Easting:	1,638,339.04 usft	Longitude:	-105.007422
Position Uncertainty		3.28 usft	Wellhead Elevation:	usft	Ground Level:	5,222.00 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	11/25/2019	8.05	66.46	51,893.21648841

<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	359.30	

<b>Survey Program</b>	<b>Date</b>	2/20/2020			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
130.00	1,844.00	Survey #1 - Surface (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
1,929.00	13,508.00	Survey #2 (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
13,563.00	13,563.00	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	
<b>SHL: 316' FSL, 2322' FEL Sec 21 T2N R68W - SHL (Windsock 21-6HZ)</b>										
130.00	0.48	105.17	130.00	-0.14	0.53	-0.15	0.37	0.37	0.00	
225.00	0.26	135.93	225.00	-0.40	1.06	-0.41	0.30	-0.23	32.38	
320.00	1.71	191.83	319.98	-1.94	0.92	-1.95	1.66	1.53	58.84	
415.00	2.24	181.28	414.92	-5.19	0.59	-5.19	0.67	0.56	-11.11	
510.00	3.08	174.34	509.82	-9.58	0.80	-9.59	0.95	0.88	-7.31	
606.00	4.92	181.99	605.58	-16.26	0.91	-16.27	1.99	1.92	7.97	
701.00	6.37	185.85	700.12	-25.58	0.23	-25.58	1.58	1.53	4.06	

<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well Windsock 21-6HZ
<b>Project:</b>	Weld County, CO (UTM-NAD83)	<b>TVD Reference:</b>	20' KB + 5222' GE @ 5242.00usft
<b>Site:</b>	Windsock 15-21HZ	<b>MD Reference:</b>	20' KB + 5222' GE @ 5242.00usft
<b>Well:</b>	Windsock 21-6HZ	<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	8.48	185.59	794.32	-37.79	-0.99	-37.78	2.22	2.22	-0.27
892.00	9.93	186.47	889.08	-53.06	-2.61	-53.03	1.52	1.51	0.92
987.00	9.98	183.04	982.65	-69.42	-3.97	-69.37	0.63	0.05	-3.61
1,082.00	11.47	181.11	1,075.99	-87.09	-4.59	-87.03	1.61	1.57	-2.03
1,177.00	12.70	181.81	1,168.88	-106.97	-5.10	-106.90	1.30	1.29	0.74
1,273.00	13.62	180.23	1,262.36	-128.82	-5.48	-128.75	1.03	0.96	-1.65
1,368.00	16.13	181.37	1,354.17	-153.20	-5.84	-153.12	2.66	2.64	1.20
1,463.00	17.05	186.12	1,445.22	-180.25	-7.64	-180.14	1.72	0.97	5.00
1,558.00	16.92	185.41	1,536.07	-207.86	-10.43	-207.71	0.26	-0.14	-0.75
1,653.00	16.00	185.50	1,627.18	-234.65	-12.99	-234.48	0.97	-0.97	0.09
1,748.00	15.12	181.63	1,718.70	-260.07	-14.60	-259.87	1.43	-0.93	-4.07
1,844.00	14.25	178.00	1,811.57	-284.40	-14.54	-284.20	1.32	-0.91	-3.78
1,892.00	13.87	177.46	1,858.13	-296.05	-14.08	-295.85	0.83	-0.79	-1.12
9 5/8"									
1,929.00	13.58	177.03	1,894.07	-304.82	-13.66	-304.63	0.83	-0.79	-1.17
2,021.00	13.18	175.61	1,983.57	-326.06	-12.30	-325.89	0.56	-0.43	-1.54
2,114.00	14.59	181.26	2,073.86	-348.35	-11.74	-348.18	2.10	1.52	6.08
2,207.00	15.87	182.59	2,163.59	-372.76	-12.57	-372.58	1.43	1.38	1.43
2,300.00	16.45	184.58	2,252.92	-398.59	-14.20	-398.39	0.86	0.62	2.14
2,393.00	16.60	183.69	2,342.07	-424.97	-16.11	-424.74	0.32	0.16	-0.96
2,486.00	16.60	183.02	2,431.20	-451.49	-17.66	-451.24	0.21	0.00	-0.72
2,579.00	17.11	180.79	2,520.20	-478.44	-18.55	-478.18	0.89	0.55	-2.40
2,672.00	15.60	178.73	2,609.44	-504.62	-18.46	-504.36	1.74	-1.62	-2.22
2,765.00	15.76	179.52	2,698.98	-529.75	-18.08	-529.49	0.29	0.17	0.85
2,858.00	15.56	181.98	2,788.53	-554.85	-18.40	-554.58	0.75	-0.22	2.65
2,952.00	15.18	184.51	2,879.17	-579.72	-19.81	-579.43	0.82	-0.40	2.69
3,046.00	16.08	180.51	2,969.69	-605.01	-20.89	-604.71	1.49	0.96	-4.26
3,140.00	16.79	181.46	3,059.85	-631.60	-21.35	-631.29	0.81	0.76	1.01
3,233.00	16.38	180.33	3,148.98	-658.14	-21.77	-657.82	0.56	-0.44	-1.22
3,327.00	15.74	185.81	3,239.32	-684.08	-23.14	-683.74	1.75	-0.68	5.83
3,420.00	16.62	183.57	3,328.63	-709.90	-25.24	-709.54	1.16	0.95	-2.41
3,513.00	16.57	180.39	3,417.76	-736.44	-26.16	-736.06	0.98	-0.05	-3.42
3,607.00	17.43	182.71	3,507.66	-763.91	-26.92	-763.52	1.17	0.91	2.47
3,699.00	16.75	182.55	3,595.59	-790.91	-28.16	-790.51	0.74	-0.74	-0.17
3,793.00	15.72	179.74	3,685.84	-817.18	-28.70	-816.77	1.38	-1.10	-2.99
3,888.00	16.04	179.59	3,777.22	-843.17	-28.55	-842.76	0.34	0.34	-0.16
3,981.00	15.23	178.71	3,866.78	-868.23	-28.19	-867.82	0.91	-0.87	-0.95
4,074.00	14.54	184.18	3,956.66	-892.09	-28.76	-891.67	1.68	-0.74	5.88
4,167.00	13.24	184.94	4,046.94	-914.35	-30.53	-913.90	1.41	-1.40	0.82
4,262.00	13.29	187.88	4,139.41	-936.00	-32.96	-935.53	0.71	0.05	3.09
4,357.00	10.88	185.59	4,232.29	-955.74	-35.33	-955.24	2.59	-2.54	-2.41
4,451.00	8.66	183.44	4,324.92	-971.64	-36.62	-971.12	2.39	-2.36	-2.29
4,544.00	8.07	177.22	4,416.94	-985.15	-36.73	-984.63	1.16	-0.63	-6.69

<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well Windsock 21-6HZ
<b>Project:</b>	Weld County, CO (UTM-NAD83)	<b>TVD Reference:</b>	20' KB + 5222' GE @ 5242.00usft
<b>Site:</b>	Windsock 15-21HZ	<b>MD Reference:</b>	20' KB + 5222' GE @ 5242.00usft
<b>Well:</b>	Windsock 21-6HZ	<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)
4,638.00	6.99	175.65	4,510.12	-997.44	-35.97	-996.93	1.17	-1.15	-1.67
4,730.00	5.93	174.10	4,601.54	-1,007.75	-35.06	-1,007.25	1.17	-1.15	-1.68
4,822.00	4.62	169.16	4,693.15	-1,016.12	-33.87	-1,015.63	1.51	-1.42	-5.37
4,914.00	2.49	150.59	4,784.97	-1,021.50	-32.20	-1,021.03	2.60	-2.32	-20.18
5,008.00	0.63	123.42	4,878.93	-1,023.56	-30.76	-1,023.11	2.08	-1.98	-28.90
5,101.00	1.33	56.52	4,971.92	-1,023.25	-29.43	-1,022.81	1.32	0.75	-71.94
5,220.00	0.66	13.97	5,090.90	-1,021.82	-28.12	-1,021.40	0.80	-0.56	-35.76
5,313.00	0.75	303.37	5,183.90	-1,020.97	-28.50	-1,020.54	0.88	0.10	-75.91
5,407.00	1.12	293.74	5,277.88	-1,020.26	-29.85	-1,019.82	0.43	0.39	-10.24
5,500.00	1.14	286.12	5,370.87	-1,019.64	-31.57	-1,019.17	0.16	0.02	-8.19
5,594.00	0.93	277.36	5,464.85	-1,019.28	-33.23	-1,018.80	0.28	-0.22	-9.32
5,686.00	0.86	267.84	5,556.84	-1,019.21	-34.66	-1,018.71	0.18	-0.08	-10.35
5,780.00	0.69	264.58	5,650.83	-1,019.29	-35.93	-1,018.77	0.19	-0.18	-3.47
5,874.00	0.48	283.54	5,744.83	-1,019.25	-36.87	-1,018.72	0.30	-0.22	20.17
5,967.00	0.57	290.40	5,837.82	-1,019.00	-37.68	-1,018.46	0.12	0.10	7.38
6,061.00	0.48	299.23	5,931.82	-1,018.64	-38.47	-1,018.10	0.13	-0.10	9.39
6,155.00	0.53	349.75	6,025.81	-1,018.02	-38.89	-1,017.47	0.46	0.05	53.74
6,249.00	0.60	13.54	6,119.81	-1,017.12	-38.85	-1,016.56	0.26	0.07	25.31
6,342.00	0.93	5.94	6,212.80	-1,015.89	-38.66	-1,015.34	0.37	0.35	-8.17
6,436.00	0.71	215.32	6,306.80	-1,015.61	-38.91	-1,015.06	1.69	-0.23	-160.23
6,529.00	0.20	264.37	6,399.79	-1,016.09	-39.41	-1,015.54	0.64	-0.55	52.74
6,623.00	0.72	289.81	6,493.79	-1,015.91	-40.13	-1,015.34	0.58	0.55	27.06
6,716.00	0.45	317.69	6,586.79	-1,015.44	-40.92	-1,014.87	0.41	-0.29	29.98
6,809.00	0.95	89.56	6,679.78	-1,015.17	-40.40	-1,014.60	1.39	0.54	141.80
6,903.00	0.96	25.18	6,773.77	-1,014.45	-39.28	-1,013.89	1.08	0.01	-68.49
6,997.00	1.17	14.64	6,867.76	-1,012.81	-38.71	-1,012.26	0.30	0.22	-11.21
7,091.00	0.99	7.12	6,961.74	-1,011.07	-38.36	-1,010.53	0.24	-0.19	-8.00
7,184.00	0.74	354.51	7,054.73	-1,009.68	-38.32	-1,009.13	0.34	-0.27	-13.56
7,250.00	2.78	339.35	7,120.69	-1,007.75	-38.93	-1,007.20	3.15	3.09	-22.98
Curve KOP (Windsock 21-6HZ)									
7,278.00	3.66	338.06	7,148.65	-1,006.29	-39.50	-1,005.73	3.15	3.14	-4.60
7,371.00	14.00	6.29	7,240.45	-992.31	-39.38	-991.76	11.73	11.12	30.35
7,465.00	17.39	2.79	7,330.94	-966.97	-37.45	-966.44	3.74	3.61	-3.72
7,557.00	25.44	357.54	7,416.52	-933.44	-37.63	-932.91	8.99	8.75	-5.71
7,651.00	31.04	359.09	7,499.30	-889.00	-38.88	-888.46	6.01	5.96	1.65
7,744.00	38.69	359.26	7,575.55	-835.88	-39.64	-835.34	8.23	8.23	0.18
7,838.00	46.37	359.62	7,644.77	-772.39	-40.24	-771.84	8.17	8.17	0.38
7,931.00	55.57	0.33	7,703.27	-700.23	-40.24	-699.68	9.91	9.89	0.76
8,025.00	60.68	359.17	7,752.90	-620.43	-40.61	-619.89	5.54	5.44	-1.23
8,119.00	66.33	0.13	7,794.81	-536.34	-41.11	-535.80	6.08	6.01	1.02
8,212.00	74.70	0.63	7,825.81	-448.75	-40.52	-448.22	9.01	9.00	0.54
8,304.00	79.78	1.85	7,846.12	-359.07	-38.57	-358.57	5.67	5.52	1.33
8,394.01	88.72	1.14	7,855.13	-269.64	-36.24	-269.18	9.97	9.94	-0.79
Heel (Windsock 21-6HZ)									

<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well Windsock 21-6HZ
<b>Project:</b>	Weld County, CO (UTM-NAD83)	<b>TVD Reference:</b>	20' KB + 5222' GE @ 5242.00usft
<b>Site:</b>	Windsock 15-21HZ	<b>MD Reference:</b>	20' KB + 5222' GE @ 5242.00usft
<b>Well:</b>	Windsock 21-6HZ	<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)	
8,398.00	89.12	1.11	7,855.20	-265.65	-36.16	-265.19	9.97	9.94	-0.78	
LP: 51' FSL, 2361' FEL S21 T1N R68W										
8,493.00	89.77	0.01	7,856.12	-170.66	-35.23	-170.21	1.35	0.68	-1.16	
8,585.00	87.41	359.32	7,858.39	-78.69	-35.77	-78.25	2.67	-2.57	-0.75	
8,671.40	88.83	359.31	7,861.22	7.65	-36.80	8.10	1.65	1.65	-0.01	
Exit Heel Circle: 8671.40' MD, 325' FSL, 2360' FEL										
8,679.00	88.96	359.31	7,861.36	15.25	-36.89	15.70	1.65	1.65	-0.01	
8,771.00	89.99	359.31	7,862.21	107.24	-38.00	107.69	1.12	1.12	0.00	
8,865.00	91.01	358.97	7,861.39	201.22	-39.41	201.69	1.14	1.09	-0.36	
8,957.00	89.41	0.84	7,861.05	293.21	-39.56	293.68	2.68	-1.74	2.03	
9,051.00	89.34	1.10	7,862.07	387.20	-37.97	387.63	0.29	-0.07	0.28	
9,145.00	91.36	1.09	7,861.50	481.17	-36.18	481.58	2.15	2.15	-0.01	
9,240.00	90.25	359.94	7,860.17	576.16	-35.32	576.54	1.68	-1.17	-1.21	
9,333.00	89.12	358.61	7,860.68	669.14	-36.50	669.54	1.88	-1.22	-1.43	
9,426.00	89.69	359.47	7,861.64	762.12	-38.06	762.53	1.11	0.61	0.92	
9,520.00	88.45	358.80	7,863.17	856.10	-39.48	856.52	1.50	-1.32	-0.71	
9,612.00	89.03	358.28	7,865.19	948.05	-41.82	948.49	0.85	0.63	-0.57	
9,705.00	89.24	357.97	7,866.60	1,040.98	-44.86	1,041.45	0.40	0.23	-0.33	
9,798.00	90.47	357.26	7,866.83	1,133.90	-48.73	1,134.41	1.53	1.32	-0.76	
9,891.00	91.49	356.69	7,865.24	1,226.76	-53.64	1,227.32	1.26	1.10	-0.61	
9,986.00	90.22	357.81	7,863.82	1,321.63	-58.20	1,322.25	1.78	-1.34	1.18	
10,079.00	91.12	356.83	7,862.74	1,414.52	-62.54	1,415.18	1.43	0.97	-1.05	
10,173.00	91.68	358.45	7,860.44	1,508.41	-66.41	1,509.11	1.82	0.60	1.72	
10,267.00	90.39	359.26	7,858.74	1,602.37	-68.29	1,603.09	1.62	-1.37	0.86	
10,359.00	90.32	359.28	7,858.17	1,694.37	-69.46	1,695.09	0.08	-0.08	0.02	
10,451.00	90.32	1.14	7,857.66	1,786.36	-69.13	1,787.07	2.02	0.00	2.02	
10,546.00	88.40	2.33	7,858.72	1,881.30	-66.25	1,881.97	2.38	-2.02	1.25	
10,639.00	88.20	1.69	7,861.48	1,974.21	-62.99	1,974.83	0.72	-0.22	-0.69	
10,734.00	88.90	2.02	7,863.88	2,069.12	-59.92	2,069.70	0.81	0.74	0.35	
10,827.00	89.33	2.06	7,865.32	2,162.05	-56.61	2,162.58	0.46	0.46	0.04	
10,920.00	91.66	1.53	7,864.51	2,255.00	-53.69	2,255.49	2.57	2.51	-0.57	
11,014.00	89.34	0.76	7,863.69	2,348.97	-51.82	2,349.43	2.60	-2.47	-0.82	
11,107.00	90.36	358.74	7,863.94	2,441.96	-52.22	2,442.42	2.43	1.10	-2.17	
11,200.00	90.34	358.34	7,863.37	2,534.93	-54.59	2,535.41	0.43	-0.02	-0.43	
11,294.00	91.31	357.94	7,862.02	2,628.87	-57.64	2,629.38	1.12	1.03	-0.43	
11,389.00	91.40	357.08	7,859.77	2,723.75	-61.77	2,724.30	0.91	0.09	-0.91	
11,481.00	92.08	356.85	7,856.98	2,815.58	-66.64	2,816.18	0.78	0.74	-0.25	
11,574.00	91.07	358.28	7,854.42	2,908.46	-70.59	2,909.10	1.88	-1.09	1.54	
11,667.00	90.45	359.85	7,853.19	3,001.43	-72.10	3,002.09	1.81	-0.67	1.69	
11,761.00	86.89	0.00	7,855.37	3,095.39	-72.23	3,096.04	3.79	-3.79	0.16	
11,855.00	87.62	0.44	7,859.87	3,189.28	-71.87	3,189.92	0.91	0.78	0.47	
11,948.00	88.21	0.21	7,863.25	3,282.22	-71.34	3,282.85	0.68	0.63	-0.25	
12,040.00	88.89	359.44	7,865.58	3,374.19	-71.62	3,374.81	1.12	0.74	-0.84	
12,133.00	89.18	359.08	7,867.15	3,467.17	-72.82	3,467.80	0.50	0.31	-0.39	

<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well Windsock 21-6HZ
<b>Project:</b>	Weld County, CO (UTM-NAD83)	<b>TVD Reference:</b>	20' KB + 5222' GE @ 5242.00usft
<b>Site:</b>	Windsock 15-21HZ	<b>MD Reference:</b>	20' KB + 5222' GE @ 5242.00usft
<b>Well:</b>	Windsock 21-6HZ	<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)	
12,227.00	87.80	358.85	7,869.62	3,561.12	-74.52	3,561.76	1.49	-1.47	-0.24	
12,321.00	88.28	358.79	7,872.84	3,655.04	-76.45	3,655.70	0.51	0.51	-0.06	
12,414.00	88.67	359.10	7,875.31	3,747.99	-78.16	3,748.67	0.54	0.42	0.33	
12,508.00	89.02	359.37	7,877.21	3,841.97	-79.42	3,842.65	0.47	0.37	0.29	
12,603.00	85.91	358.06	7,881.41	3,936.83	-81.55	3,937.54	3.55	-3.27	-1.38	
12,697.00	88.07	357.07	7,886.35	4,030.61	-85.53	4,031.36	2.53	2.30	-1.05	
12,792.00	90.04	356.86	7,887.91	4,125.46	-90.56	4,126.26	2.09	2.07	-0.22	
12,886.00	89.33	355.54	7,888.43	4,219.25	-96.79	4,220.12	1.59	-0.76	-1.40	
12,980.00	91.84	356.30	7,887.47	4,313.00	-103.48	4,313.94	2.79	2.67	0.81	
13,073.00	91.69	355.64	7,884.61	4,405.73	-110.01	4,406.74	0.73	-0.16	-0.71	
13,168.00	90.50	358.99	7,882.79	4,500.59	-114.46	4,501.65	3.74	-1.25	3.53	
13,256.35	89.37	358.93	7,882.89	4,588.92	-116.06	4,590.00	1.29	-1.28	-0.06	
Enter Toe Circle: 13256.3' MD, 391' FNL, 2423' FEL										
13,263.00	89.28	358.93	7,882.97	4,595.57	-116.18	4,596.65	1.29	-1.28	-0.06	
13,357.00	91.05	359.39	7,882.70	4,689.56	-117.56	4,690.64	1.95	1.88	0.49	
13,451.00	90.66	359.35	7,881.30	4,783.54	-118.60	4,784.63	0.42	-0.41	-0.04	
13,508.00	91.91	0.71	7,880.02	4,840.52	-118.57	4,841.61	3.24	2.19	2.39	
13,563.00	91.91	0.71	7,878.19	4,895.49	-117.89	4,896.56	0.00	0.00	0.00	
BHL: 85' FNL, 2428' FEL Sec 21 T1N R68W - PBHL (Windsock 21-6HZ)										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
SHL: 316' FSL, 2322' FE - hit/miss target - Shape - Point	0.00	0.00	0.00	0.00	0.00	14,537,743.74	1,638,339.04	40.030236	-105.007422	
Curve KOP (Windsock 2 - actual wellpath hits target center - Point	0.00	0.00	7,120.69	-1,007.75	-38.93	14,536,736.00	1,638,300.02	40.027469	-105.007561	
LP: 51' FSL, 2361' FEL - actual wellpath hits target center - Point	0.00	0.00	7,855.20	-265.65	-36.16	14,537,478.10	1,638,302.85	40.029507	-105.007551	
Exit Heel Circle: 8671.40 - actual wellpath hits target center - Point	0.00	0.00	7,861.22	7.65	-36.80	14,537,751.40	1,638,302.24	40.030257	-105.007554	
BHL: 85' FNL, 2428' FEL - actual wellpath misses target center by 0.01usft at 13563.00usft MD (7878.19 TVD, 4895.49 N, -117.89 E) - Point	0.00	0.00	7,878.19	4,895.49	-117.89	14,542,639.23	1,638,221.55	40.043680	-105.007844	
Enter Toe Circle: 13256. - actual wellpath hits target center - Point	0.00	0.00	7,882.89	4,588.92	-116.06	14,542,332.66	1,638,223.36	40.042838	-105.007837	

<b>Company:</b>	ANADARKO PETROLEUM CORP	<b>Local Co-ordinate Reference:</b>	Well Windsock 21-6HZ
<b>Project:</b>	Weld County, CO (UTM-NAD83)	<b>TVD Reference:</b>	20' KB + 5222' GE @ 5242.00usft
<b>Site:</b>	Windsock 15-21HZ	<b>MD Reference:</b>	20' KB + 5222' GE @ 5242.00usft
<b>Well:</b>	Windsock 21-6HZ	<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

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (")	Hole Diameter (")
1,892.00	1,858.13	9 5/8"		9-5/8	13-1/2

Checked By: _____	Approved By: _____	Date: _____
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