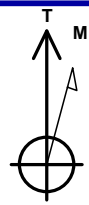


ANADARKO PETROLEUM CORP

Project: WELD COUNTY (NAD 83)
 Site: SW SW SEC 21 T3N R66W 6th P.M.
 Well: SARCHET 21-3HZ
 Wellbore: ORIGINAL WELLBORE
 Design: ORIGINAL WELLBORE

KB 21' @ 5003.00usft (PD 464)

Ground Level: 4982.00



Azimuths to True North
 Magnetic North: 7.98°

Magnetic Field
 Strength: 52046.0nT
 Dip Angle: 66.64°
 Date: 7/29/2019
 Model: IGRF2015

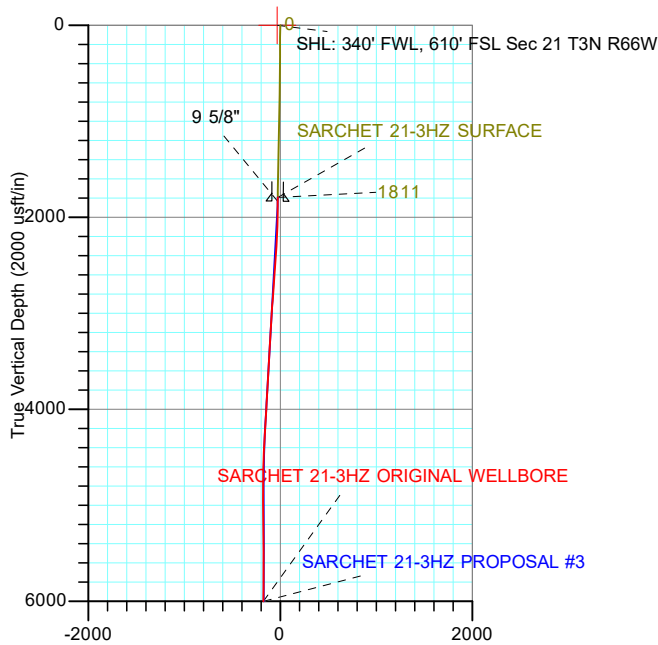
PROJECT DETAILS: WELD COUNTY (NAD 83)

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

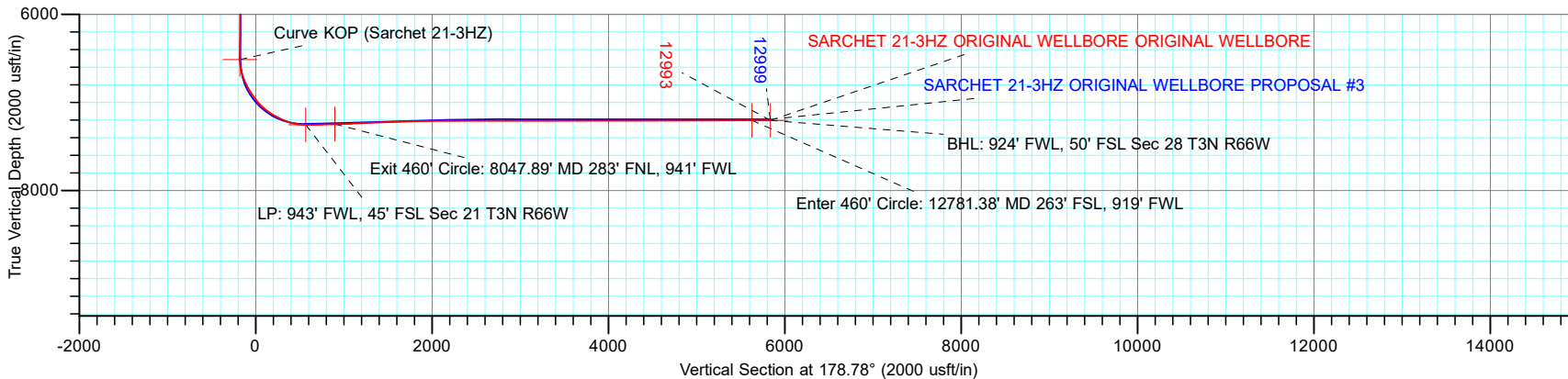
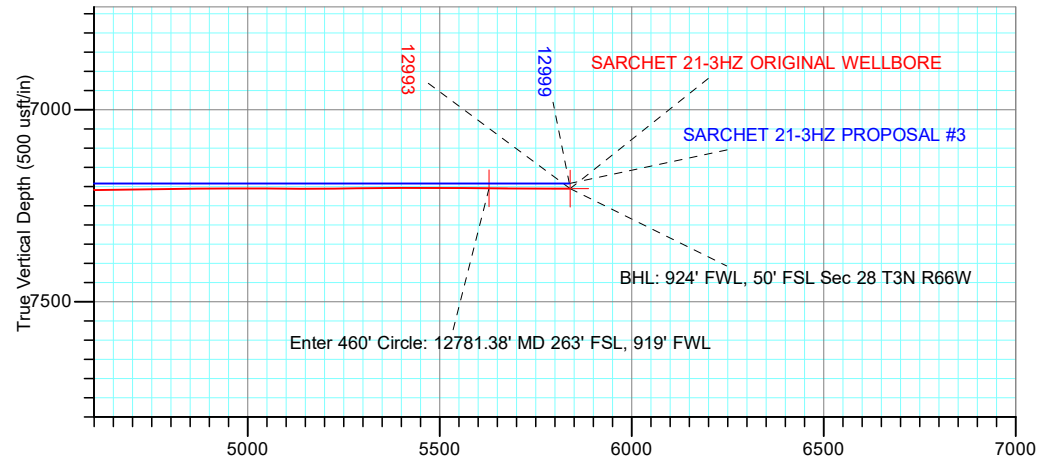


DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
BHL: 924' FWL, 50' FSL Sec 28 T3N R66W	7205.56	-5828.51	586.21	40.188827	-104.788295
Curve KOP (Sarchet 21-3HZ)	6515.33	192.99	608.23	40.205356	-104.788215
Enter 460' Circle: 12781.38' MD 263' FSL, 919' FWL	7204.88	-5616.97	580.77	40.189408	-104.788314
Exit 460' Circle: 8047.89' MD 283' FNL, 941' FWL	7247.45	-885.50	606.54	40.202396	-104.788221
LP: 943' FWL, 45' FSL Sec 21 T3N R66W	7255.86	-556.84	609.02	40.203298	-104.788212
SHL: 340' FWL, 610' FSL Sec 21 T3N R66W	0.00	30.05	0.23	40.204909	-104.790392



Actual Line Calls
SHL: 340' FWL, 610' FSL Sec 21 T3N R66W
Heel: 943' FWL, 45' FSL Sec 21 T3N R66W
BHL: 924' FWL, 50' FSL Sec 28 T3N R66W



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

Design: ORIGINAL WELLBORE (SARCHET 21-3HZ/ORIGINAL WELLBORE)
 SW SW SEC 21 T3N R66W 6th P.M.
 Created By: Micah Ault Date: 11:55, November 06 2019
 Approved: _____ Date: _____

ANADARKO PETROLEUM CORP

Project: WELD COUNTY (NAD 83)
 Site: SW SW SEC 21 T3N R66W 6th P.M.
 Well: SARCHET 21-3HZ
 Wellbore: ORIGINAL WELLBORE
 Design: ORIGINAL WELLBORE



Azimuths to True North
 Magnetic North: 7.98°

Magnetic Field
 Strength: 52046.0nT
 Dip Angle: 66.64°
 Date: 7/29/2019
 Model: IGRF2015

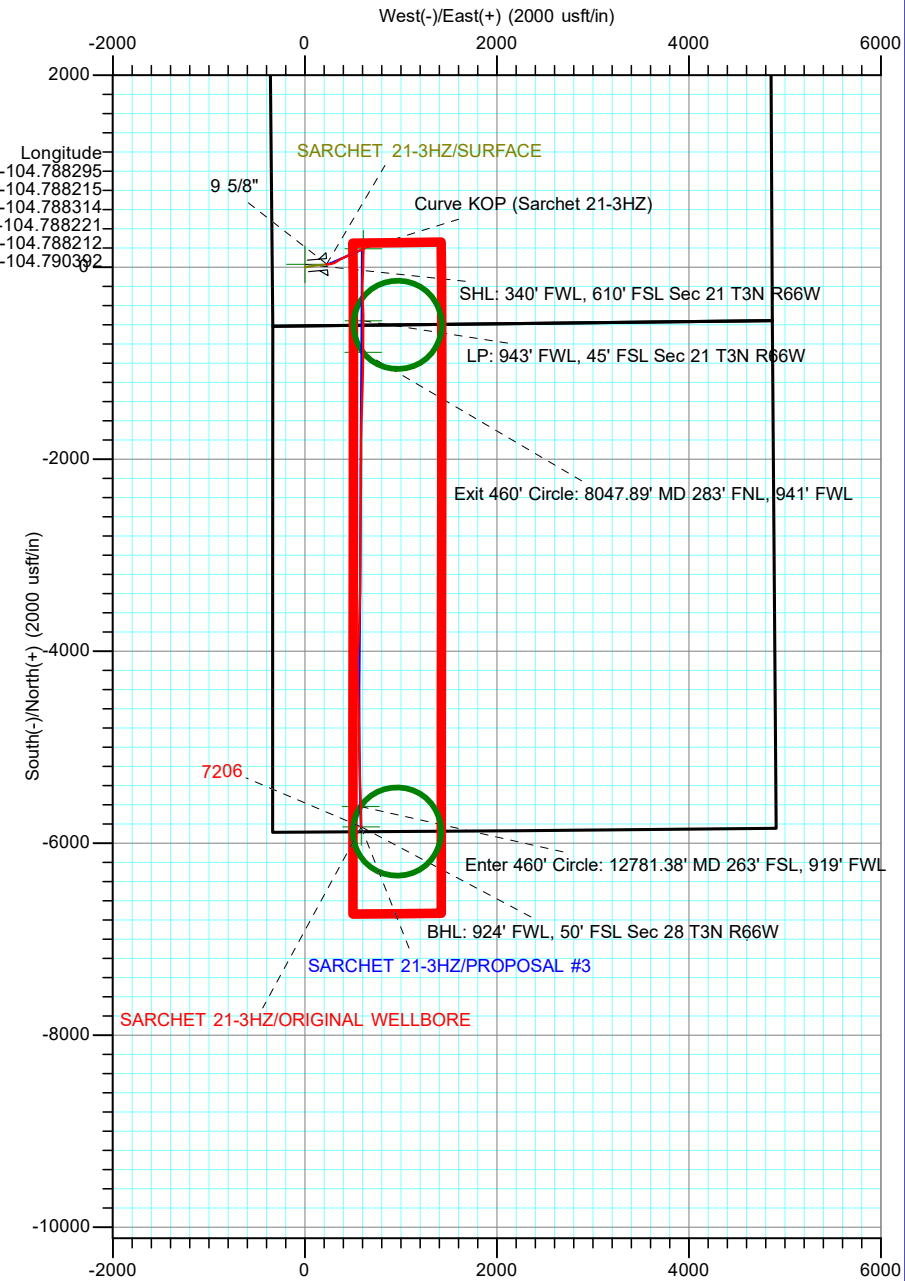
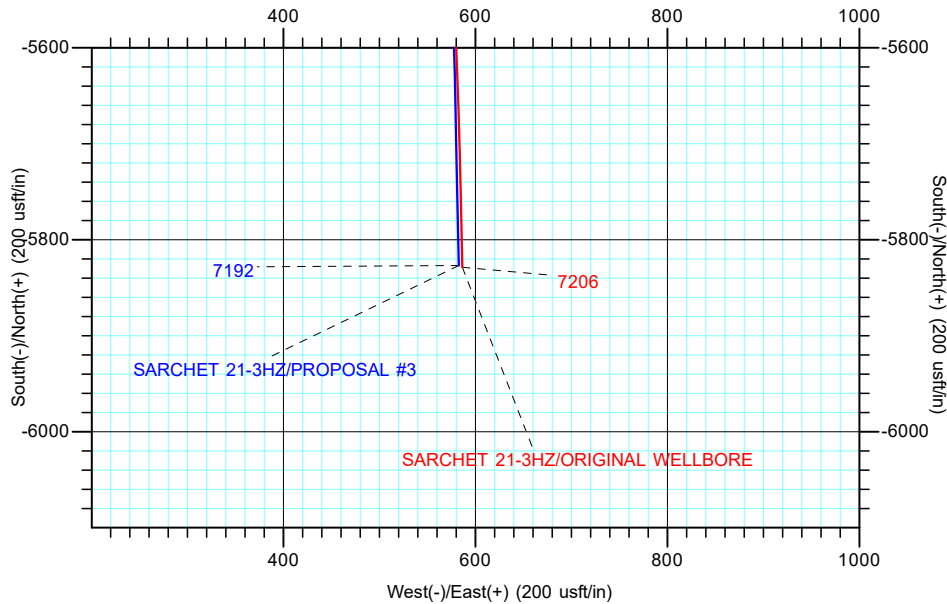
PROJECT DETAILS: WELD COUNTY (NAD 83)
 Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Zone 13N (108 W to 102 W)



DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL: 924' FWL, 50' FSL Sec 28 T3N R66W	7205.56	-5828.51	586.21	14595564.67	1699541.36	40.188827	-104.788295
Curve KOP (Sarchet 21-3HZ)	6515.33	192.99	608.23	14601583.82	1699549.15	40.205356	-104.788215
Enter 460' Circle: 12781.38' MD 263' FSL, 919' FWL	7204.88	-5616.97	580.77	14595776.11	1699535.42	40.189408	-104.788314
Exit 460' Circle: 8047.89' MD 283' FNL, 941' FWL	7247.45	-885.50	606.54	14600505.75	1699550.01	40.202396	-104.788221
LP: 943' FWL, 45' FSL Sec 21 T3N R66W	7255.86	-556.84	609.02	14600834.29	1699551.71	40.203298	-104.788212
SHL: 340' FWL, 610' FSL Sec 21 T3N R66W	0.00	30.05	0.23	14601419.51	1698941.78	40.204909	-104.790392

Actual Line Calls
SHL: 340' FWL, 610' FSL Sec 21 T3N R66W
Heel: 943' FWL, 45' FSL Sec 21 T3N R66W
BHL: 924' FWL, 50' FSL Sec 28 T3N R66W



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

Design: ORIGINAL WELLBORE (SARCHET 21-3HZ/ORIGINAL WELLBORE)
 SW SW SEC 21 T3N R66W 6th P.M.
 Created By: Micah Ault Date: 12:01, November 06 2019
 Date: _____
 Approved: _____ Date: _____

ANADARKO PETROLEUM CORP

**WELD COUNTY (NAD 83)
SW SW SEC 21 T3N R66W 6th P.M.
SARCHET 21-3HZ**

ORIGINAL WELLBORE

Design: ORIGINAL WELLBORE

Standard Survey Report

06 November, 2019

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well SARCHET 21-3HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB 21' @ 5003.00usft (PD 464)
Site:	SW SW SEC 21 T3N R66W 6th P.M.	MD Reference:	KB 21' @ 5003.00usft (PD 464)
Well:	SARCHET 21-3HZ	North Reference:	True
Wellbore:	ORIGINAL WELLBORE	Survey Calculation Method:	Minimum Curvature
Design:	ORIGINAL WELLBORE	Database:	EDM 5000.15 Single User Db

Project	WELD COUNTY (NAD 83)		
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)	Using geodetic scale factor	

Site	SW SW SEC 21 T3N R66W 6th P.M.				
Site Position:		Northing:	14,601,419.51 usft	Latitude:	40.204909
From:	Lat/Long	Easting:	1,698,941.78 usft	Longitude:	-104.790392
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.14 °

Well	SARCHET 21-3HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,601,389.46 usft	Latitude:	40.204826
	+E/-W	0.00 usft	Easting:	1,698,941.62 usft	Longitude:	-104.790393
Position Uncertainty	0.00 usft		Wellhead Elevation:	usft	Ground Level:	4,982.00 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/29/2019	7.98	66.64	52,045.96058821

Design	ORIGINAL WELLBORE				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	1,811.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	178.78	

Survey Program	Date	11/6/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
128.00	1,811.00	FINAL SURVEYS - SURFACE (JOB # 201	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
1,869.00	12,931.00	Survey #1 (ORIGINAL WELLBORE)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
12,993.00	12,993.00	Survey #2 (ORIGINAL WELLBORE)	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
0.03	0.00	71.46	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHL: 340' FWL, 610' FSL Sec 21 T3N R66W										
128.00	0.31	71.46	128.00	0.11	0.33	-0.10	0.24	0.24	0.00	0.00
223.00	0.70	45.97	223.00	0.60	0.99	-0.57	0.46	0.41	-26.83	-26.83
318.00	1.67	73.04	317.97	1.40	2.73	-1.34	1.15	1.02	28.49	28.49
412.00	2.81	76.91	411.90	2.32	6.29	-2.19	1.22	1.21	4.12	4.12
508.00	4.04	80.69	507.73	3.40	11.91	-3.15	1.30	1.28	3.94	3.94
603.00	5.05	78.49	602.43	4.78	19.31	-4.37	1.08	1.06	-2.32	-2.32

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well SARCHET 21-3HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB 21' @ 5003.00usft (PD 464)
Site:	SW SW SEC 21 T3N R66W 6th P.M.	MD Reference:	KB 21' @ 5003.00usft (PD 464)
Well:	SARCHET 21-3HZ	North Reference:	True
Wellbore:	ORIGINAL WELLBORE	Survey Calculation Method:	Minimum Curvature
Design:	ORIGINAL WELLBORE	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)	
699.00	7.43	87.19	697.85	5.93	29.66	-5.29	2.66	2.48	9.06	
793.00	8.92	83.59	790.90	7.04	42.97	-6.12	1.68	1.59	-3.83	
889.00	9.23	82.00	885.70	8.94	57.99	-7.70	0.42	0.32	-1.66	
984.00	10.63	80.60	979.27	11.43	74.18	-9.85	1.50	1.47	-1.47	
1,079.00	11.07	80.69	1,072.57	14.34	91.82	-12.38	0.46	0.46	0.09	
1,174.00	11.12	81.30	1,165.80	17.20	109.88	-14.86	0.13	0.05	0.64	
1,269.00	11.29	81.21	1,258.99	20.01	128.13	-17.27	0.18	0.18	-0.09	
1,364.00	11.25	84.99	1,352.16	22.24	146.55	-19.11	0.78	-0.04	3.98	
1,460.00	10.15	84.11	1,446.48	23.92	164.29	-20.42	1.16	-1.15	-0.92	
1,554.00	10.90	84.55	1,538.90	25.62	181.38	-21.75	0.80	0.80	0.47	
1,649.00	10.41	83.06	1,632.26	27.51	198.84	-23.27	0.59	-0.52	-1.57	
1,744.00	8.53	84.03	1,725.97	29.28	214.37	-24.71	1.99	-1.98	1.02	
1,811.00	8.57	83.06	1,792.22	30.40	224.27	-25.62	0.22	0.06	-1.45	
LAST SURVEY JULY 3, 2019										
1,852.00	8.56	84.99	1,832.76	31.03	230.34	-26.12	0.70	-0.02	4.71	
9 5/8"										
1,869.00	8.56	85.79	1,849.57	31.24	232.86	-26.27	0.70	-0.01	4.71	
1,959.00	7.84	85.42	1,938.65	32.22	245.66	-26.98	0.80	-0.80	-0.41	
2,048.00	8.96	82.12	2,026.70	33.65	258.58	-28.14	1.37	1.26	-3.71	
2,138.00	8.40	79.35	2,115.67	35.83	271.98	-30.03	0.78	-0.62	-3.08	
2,227.00	9.86	75.65	2,203.54	38.92	285.75	-32.83	1.77	1.64	-4.16	
2,317.00	9.49	73.28	2,292.26	42.96	300.32	-36.56	0.60	-0.41	-2.63	
2,407.00	10.12	58.16	2,380.96	49.27	314.15	-42.57	2.94	0.70	-16.80	
2,496.00	9.10	56.81	2,468.71	57.25	326.68	-50.28	1.17	-1.15	-1.52	
2,586.00	8.52	61.65	2,557.65	64.31	338.50	-57.09	1.05	-0.64	5.38	
2,675.00	8.19	59.69	2,645.70	70.64	349.78	-63.18	0.49	-0.37	-2.20	
2,765.00	7.55	55.75	2,734.85	77.20	360.20	-69.52	0.93	-0.71	-4.38	
2,855.00	8.19	59.37	2,824.01	83.80	370.60	-75.89	0.90	0.71	4.02	
2,945.00	9.68	65.66	2,912.91	90.18	383.01	-82.01	1.98	1.66	6.99	
3,034.00	9.21	63.45	3,000.71	96.45	396.20	-87.99	0.67	-0.53	-2.48	
3,124.00	8.47	63.74	3,089.64	102.60	408.59	-93.88	0.82	-0.82	0.32	
3,214.00	7.70	63.06	3,178.74	108.27	419.91	-99.30	0.86	-0.86	-0.76	
3,303.00	8.59	65.95	3,266.85	113.68	431.30	-104.47	1.10	1.00	3.25	
3,393.00	7.64	64.24	3,355.94	119.02	442.82	-109.56	1.09	-1.06	-1.90	
3,483.00	7.85	63.86	3,445.12	124.32	453.73	-114.64	0.24	0.23	-0.42	
3,572.00	8.46	64.14	3,533.22	129.86	465.07	-119.93	0.69	0.69	0.31	
3,662.00	9.45	69.37	3,622.13	135.35	477.95	-125.14	1.42	1.10	5.81	
3,751.00	8.30	69.25	3,710.06	140.20	490.79	-129.72	1.29	-1.29	-0.13	
3,841.00	7.27	68.49	3,799.23	144.59	502.17	-133.86	1.15	-1.14	-0.84	
3,930.00	8.54	64.12	3,887.38	149.54	513.35	-138.57	1.58	1.43	-4.91	
4,020.00	7.36	65.85	3,976.51	154.81	524.62	-143.61	1.34	-1.31	1.92	
4,109.00	9.69	66.98	4,064.52	160.08	536.72	-148.61	2.62	2.62	1.27	
4,199.00	9.09	67.05	4,153.32	165.81	550.24	-154.06	0.67	-0.67	0.08	
4,288.00	8.59	66.49	4,241.26	171.20	562.81	-159.18	0.57	-0.56	-0.63	

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well SARCHET 21-3HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB 21' @ 5003.00usft (PD 464)
Site:	SW SW SEC 21 T3N R66W 6th P.M.	MD Reference:	KB 21' @ 5003.00usft (PD 464)
Well:	SARCHET 21-3HZ	North Reference:	True
Wellbore:	ORIGINAL WELLBORE	Survey Calculation Method:	Minimum Curvature
Design:	ORIGINAL WELLBORE	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)	
4,378.00	7.50	66.08	4,330.37	176.27	574.34	-164.00	1.21	-1.21	-0.46	
4,467.00	6.29	62.97	4,418.73	180.84	583.99	-168.36	1.42	-1.36	-3.49	
4,557.00	5.81	62.42	4,508.23	185.19	592.42	-172.53	0.54	-0.53	-0.61	
4,647.00	4.44	73.37	4,597.87	188.29	599.80	-175.48	1.86	-1.52	12.17	
4,736.00	3.27	69.48	4,686.66	190.17	605.48	-177.23	1.35	-1.31	-4.37	
4,826.00	1.29	66.61	4,776.59	191.47	608.81	-178.46	2.20	-2.20	-3.19	
4,915.00	1.79	60.28	4,865.56	192.56	610.94	-179.51	0.59	0.56	-7.11	
5,005.00	1.53	224.79	4,955.54	192.40	611.31	-179.34	3.66	-0.29	182.79	
5,095.00	1.40	235.72	5,045.51	190.93	609.56	-177.91	0.34	-0.14	12.14	
5,184.00	1.23	236.00	5,134.49	189.78	607.87	-176.80	0.19	-0.19	0.31	
5,274.00	1.08	227.98	5,224.47	188.67	606.44	-175.72	0.24	-0.17	-8.91	
5,364.00	0.99	231.67	5,314.46	187.62	605.20	-174.70	0.12	-0.10	4.10	
5,454.00	0.53	224.93	5,404.45	186.85	604.29	-173.94	0.52	-0.51	-7.49	
5,543.00	0.29	219.11	5,493.45	186.38	603.86	-173.48	0.27	-0.27	-6.54	
5,633.00	0.42	228.94	5,583.45	185.99	603.47	-173.10	0.16	0.14	10.92	
5,722.00	0.19	282.90	5,672.44	185.81	603.08	-172.92	0.39	-0.26	60.63	
5,812.00	0.40	296.60	5,762.44	185.98	602.65	-173.11	0.24	0.23	15.22	
5,901.00	0.82	308.66	5,851.44	186.52	601.88	-173.66	0.49	0.47	13.55	
6,016.00	0.52	331.63	5,966.43	187.49	600.99	-174.65	0.35	-0.26	19.97	
6,106.00	0.58	23.88	6,056.43	188.27	600.98	-175.43	0.54	0.07	58.06	
6,196.00	0.99	66.81	6,146.42	188.99	601.87	-176.13	0.77	0.46	47.70	
6,285.00	1.54	53.87	6,235.40	190.00	603.55	-177.10	0.69	0.62	-14.54	
6,375.00	1.73	57.02	6,325.36	191.45	605.66	-178.51	0.23	0.21	3.50	
6,465.00	0.44	62.38	6,415.34	192.35	607.11	-179.38	1.44	-1.43	5.96	
6,521.11	0.82	55.08	6,471.45	192.68	607.63	-179.70	0.70	0.68	-13.01	
KOP - SARCHET 21-3HZ (P2)										
6,554.00	1.05	53.29	6,504.33	193.00	608.07	-180.01	0.70	0.69	-5.44	
6,565.00	1.06	128.07	6,515.33	192.99	608.23	-180.00	11.65	0.09	679.99	
Curve KOP (Sarchet 21-3HZ)										
6,580.52	2.60	161.49	6,530.85	192.57	608.45	-179.57	11.65	9.90	215.30	
KOP - SARCHET 21-3HZ (P3)										
6,644.00	9.89	175.50	6,593.91	185.76	609.34	-172.75	11.65	11.49	22.06	
6,734.00	16.19	179.37	6,681.54	165.49	610.08	-152.46	7.06	7.00	4.30	
6,823.00	24.30	180.92	6,764.98	134.72	609.92	-121.71	9.13	9.11	1.74	
6,913.00	30.22	182.45	6,844.95	93.54	608.66	-80.56	6.62	6.58	1.70	
7,002.00	33.96	182.88	6,920.34	46.32	606.45	-33.40	4.21	4.20	0.48	
7,092.00	39.48	180.98	6,992.45	-7.44	604.70	20.31	6.26	6.13	-2.11	
7,182.00	48.47	182.55	7,057.15	-69.83	602.70	82.64	10.06	9.99	1.74	
7,271.00	55.78	181.35	7,111.76	-139.99	600.35	152.74	8.28	8.21	-1.35	
7,361.00	61.03	180.54	7,158.90	-216.61	599.10	229.32	5.88	5.83	-0.90	
7,450.00	66.22	178.36	7,198.42	-296.31	599.90	309.02	6.23	5.83	-2.45	
7,540.00	73.34	176.96	7,229.51	-380.64	603.37	393.40	8.04	7.91	-1.56	
7,630.00	80.87	177.44	7,249.58	-468.20	607.65	481.03	8.38	8.37	0.53	

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well SARCHET 21-3HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB 21' @ 5003.00usft (PD 464)
Site:	SW SW SEC 21 T3N R66W 6th P.M.	MD Reference:	KB 21' @ 5003.00usft (PD 464)
Well:	SARCHET 21-3HZ	North Reference:	True
Wellbore:	ORIGINAL WELLBORE	Survey Calculation Method:	Minimum Curvature
Design:	ORIGINAL WELLBORE	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)	
7,708.32	89.81	180.37	7,255.94	-546.15	609.12	559.00	12.01	11.41	3.75	
HEEL - SARCHET 21-3HZ (P2)										
7,712.88	90.33	180.54	7,255.93	-550.72	609.09	563.56	12.01	11.42	3.71	
HEEL - SARCHET 21-3HZ (P3)										
7,719.00	91.03	180.77	7,255.86	-556.84	609.02	569.68	12.01	11.42	3.71	
LP: 943' FWL, 45' FSL Sec 21 T3N R66W										
7,809.00	90.10	180.97	7,254.97	-646.82	607.65	659.61	1.06	-1.03	0.22	
7,899.00	90.24	179.99	7,254.71	-736.82	606.90	749.57	1.10	0.16	-1.09	
7,988.00	94.42	179.98	7,251.09	-825.72	606.92	838.46	4.70	4.70	-0.01	
8,047.89	92.54	180.74	7,247.45	-885.50	606.54	898.22	3.38	-3.13	1.27	
Exit 460' Circle: 8047.89' MD 283' FNL, 941' FWL										
8,078.00	91.60	181.12	7,246.36	-915.58	606.06	928.28	3.38	-3.13	1.26	
8,168.00	92.47	180.92	7,243.17	-1,005.51	604.46	1,018.15	0.99	0.97	-0.22	
8,257.00	91.94	180.68	7,239.74	-1,094.44	603.21	1,107.03	0.65	-0.60	-0.27	
8,347.00	91.53	181.49	7,237.02	-1,184.38	601.51	1,196.92	1.01	-0.46	0.90	
8,437.00	92.29	181.34	7,234.02	-1,274.30	599.29	1,286.77	0.86	0.84	-0.17	
8,526.00	92.66	181.44	7,230.18	-1,363.19	597.13	1,375.60	0.43	0.42	0.11	
8,616.00	92.17	182.42	7,226.38	-1,453.06	594.10	1,465.38	1.22	-0.54	1.09	
8,705.00	92.83	182.12	7,222.50	-1,541.90	590.58	1,554.13	0.81	0.74	-0.34	
8,795.00	91.88	181.49	7,218.80	-1,631.78	587.75	1,643.93	1.27	-1.06	-0.70	
8,885.00	90.96	180.43	7,216.57	-1,721.74	586.24	1,733.83	1.56	-1.02	-1.18	
8,974.00	90.99	180.38	7,215.06	-1,810.72	585.61	1,822.78	0.07	0.03	-0.06	
9,064.00	91.53	180.45	7,213.08	-1,900.70	584.96	1,912.72	0.61	0.60	0.08	
9,154.00	90.18	180.38	7,211.74	-1,990.69	584.31	2,002.67	1.50	-1.50	-0.08	
9,243.00	90.64	180.24	7,211.10	-2,079.68	583.83	2,091.64	0.54	0.52	-0.16	
9,333.00	90.03	180.56	7,210.57	-2,169.68	583.20	2,181.60	0.77	-0.68	0.36	
9,423.00	90.39	180.70	7,210.24	-2,259.67	582.21	2,271.55	0.43	0.40	0.16	
9,512.00	90.44	180.22	7,209.60	-2,348.67	581.50	2,360.51	0.54	0.06	-0.54	
9,602.00	90.62	180.82	7,208.77	-2,438.66	580.68	2,450.47	0.70	0.20	0.67	
9,651.58	89.92	180.61	7,208.53	-2,488.24	580.06	2,500.02	1.47	-1.41	-0.42	
INT PT - SARCHET 21-3HZ										
9,692.00	89.35	180.44	7,208.79	-2,528.65	579.69	2,540.42	1.47	-1.41	-0.42	
9,781.00	89.71	179.99	7,209.52	-2,617.65	579.36	2,629.39	0.65	0.40	-0.51	
9,871.00	89.97	180.33	7,209.77	-2,707.64	579.10	2,719.36	0.48	0.29	0.38	
9,961.00	90.32	180.02	7,209.54	-2,797.64	578.83	2,809.33	0.52	0.39	-0.34	
10,050.00	90.14	179.97	7,209.19	-2,886.64	578.84	2,898.31	0.21	-0.20	-0.06	
10,140.00	89.98	179.84	7,209.09	-2,976.64	578.99	2,988.30	0.23	-0.18	-0.14	
10,230.00	90.22	180.49	7,208.93	-3,066.64	578.73	3,078.27	0.77	0.27	0.72	
10,319.00	90.53	180.45	7,208.35	-3,156.64	578.00	3,167.23	0.35	0.35	-0.04	
10,409.00	90.13	180.98	7,207.83	-3,246.63	576.87	3,257.17	0.74	-0.44	0.59	
10,498.00	89.82	180.57	7,207.87	-3,334.62	575.67	3,346.12	0.58	-0.35	-0.46	
10,588.00	90.70	181.25	7,207.46	-3,424.61	574.24	3,436.06	1.24	0.98	0.76	
10,678.00	90.25	181.58	7,206.72	-3,514.57	572.02	3,525.96	0.62	-0.50	0.37	
10,768.00	90.23	182.38	7,206.34	-3,604.52	568.91	3,615.82	0.89	-0.02	0.89	
10,857.00	88.90	182.71	7,207.02	-3,693.43	564.96	3,704.62	1.54	-1.49	0.37	

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well SARCHET 21-3HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB 21' @ 5003.00usft (PD 464)
Site:	SW SW SEC 21 T3N R66W 6th P.M.	MD Reference:	KB 21' @ 5003.00usft (PD 464)
Well:	SARCHET 21-3HZ	North Reference:	True
Wellbore:	ORIGINAL WELLBORE	Survey Calculation Method:	Minimum Curvature
Design:	ORIGINAL WELLBORE	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)
10,947.00	89.32	182.62	7,208.41	-3,783.32	560.77	3,794.40	0.48	0.47	-0.10
11,036.00	89.57	183.18	7,209.28	-3,872.20	556.27	3,883.17	0.69	0.28	0.63
11,126.00	90.27	181.70	7,209.40	-3,962.12	552.44	3,972.98	1.82	0.78	-1.64
11,216.00	90.65	181.78	7,208.68	-4,052.07	549.71	4,062.86	0.43	0.42	0.09
11,306.00	89.84	179.09	7,208.30	-4,142.06	549.02	4,152.81	3.12	-0.90	-2.99
11,395.00	90.50	179.38	7,208.03	-4,231.05	550.21	4,241.81	0.81	0.74	0.33
11,485.00	89.42	179.40	7,208.09	-4,321.04	551.17	4,331.80	1.20	-1.20	0.02
11,574.00	89.79	179.01	7,208.71	-4,410.03	552.40	4,420.79	0.60	0.42	-0.44
11,664.00	89.85	178.83	7,208.99	-4,500.02	554.10	4,510.79	0.21	0.07	-0.20
11,754.00	89.83	178.07	7,209.24	-4,589.98	556.54	4,600.79	0.84	-0.02	-0.84
11,843.00	91.41	177.89	7,208.28	-4,678.92	559.67	4,689.77	1.79	1.78	-0.20
11,933.00	90.80	178.33	7,206.54	-4,768.85	562.64	4,779.75	0.84	-0.68	0.49
12,022.00	90.35	179.36	7,205.65	-4,857.83	564.43	4,868.74	1.26	-0.51	1.16
12,112.00	90.35	178.18	7,205.10	-4,947.80	566.37	4,958.74	1.31	0.00	-1.31
12,201.00	89.40	180.63	7,205.29	-5,036.79	567.29	5,047.73	2.95	-1.07	2.75
12,291.00	89.67	178.68	7,206.02	-5,126.78	567.83	5,137.71	2.19	0.30	-2.17
12,380.00	90.97	179.05	7,205.53	-5,215.76	569.59	5,226.71	1.52	1.46	0.42
12,470.00	90.26	178.52	7,204.56	-5,305.74	571.50	5,316.70	0.98	-0.79	-0.59
12,559.00	90.60	178.21	7,203.89	-5,394.70	574.04	5,405.70	0.52	0.38	-0.35
12,649.00	89.43	178.40	7,203.87	-5,484.66	576.70	5,495.69	1.32	-1.30	0.21
12,739.00	89.64	178.18	7,204.60	-5,574.61	579.39	5,585.68	0.34	0.23	-0.24
12,781.38	89.61	178.08	7,204.88	-5,616.97	580.77	5,628.06	0.24	-0.08	-0.22
Enter 460' Circle: 12781.38' MD 263' FSL, 919' FWL									
12,828.00	89.57	177.98	7,205.21	-5,663.56	582.37	5,674.68	0.24	-0.08	-0.22
12,931.00	90.02	178.98	7,205.58	-5,766.52	585.10	5,777.67	1.06	0.44	0.97
12,991.12	90.02	178.98	7,205.56	-5,826.63	586.17	5,837.79	0.00	0.00	0.00
BHL - SARCHET 21-3HZ - BHL - SARCHET 21-3HZ (P3)									
12,993.00	90.02	178.98	7,205.56	-5,828.51	586.21	5,839.67	0.00	0.00	0.00
BHL: 924' FWL, 50' FSL Sec 28 T3N R66W									

Company:	ANADARKO PETROLEUM CORP	Local Co-ordinate Reference:	Well SARCHET 21-3HZ
Project:	WELD COUNTY (NAD 83)	TVD Reference:	KB 21' @ 5003.00usft (PD 464)
Site:	SW SW SEC 21 T3N R66W 6th P.M.	MD Reference:	KB 21' @ 5003.00usft (PD 464)
Well:	SARCHET 21-3HZ	North Reference:	True
Wellbore:	ORIGINAL WELLBORE	Survey Calculation Method:	Minimum Curvature
Design:	ORIGINAL WELLBORE	Database:	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: 340' FWL, 610' FS - actual wellpath misses target center by 30.06usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Point	0.00	0.00	0.00	30.05	0.23	14,601,419.51	1,698,941.78	40.204909	-104.790392	
Curve KOP (Sarchet 21- - actual wellpath hits target center - Point	0.00	0.00	6,515.33	192.99	608.23	14,601,583.81	1,699,549.15	40.205356	-104.788216	
Enter 460' Circle: 12781 - actual wellpath hits target center - Point	0.00	0.00	7,204.88	-5,616.97	580.77	14,595,776.10	1,699,535.42	40.189408	-104.788314	
BHL: 924' FWL, 50' FSL - actual wellpath hits target center - Point	0.00	0.00	7,205.56	-5,828.51	586.21	14,595,564.66	1,699,541.36	40.188827	-104.788295	
Exit 460' Circle: 8047.89 - actual wellpath misses target center by 0.01usft at 8047.89usft MD (7247.45 TVD, -885.50 N, 606.54 E) - Point	0.00	0.00	7,247.45	-885.50	606.54	14,600,505.75	1,699,550.01	40.202396	-104.788222	
LP: 943' FWL, 45' FSL S - actual wellpath hits target center - Point	0.00	0.00	7,255.86	-556.84	609.02	14,600,834.28	1,699,551.71	40.203298	-104.788213	

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")		
1,852.00	1,832.76	9 5/8"	9-5/8	12-1/4		

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment	
1,811.00	1,792.22	30.40	224.27	LAST SURVEY JULY 3, 2019	

Checked By: _____ Approved By: _____ Date: _____