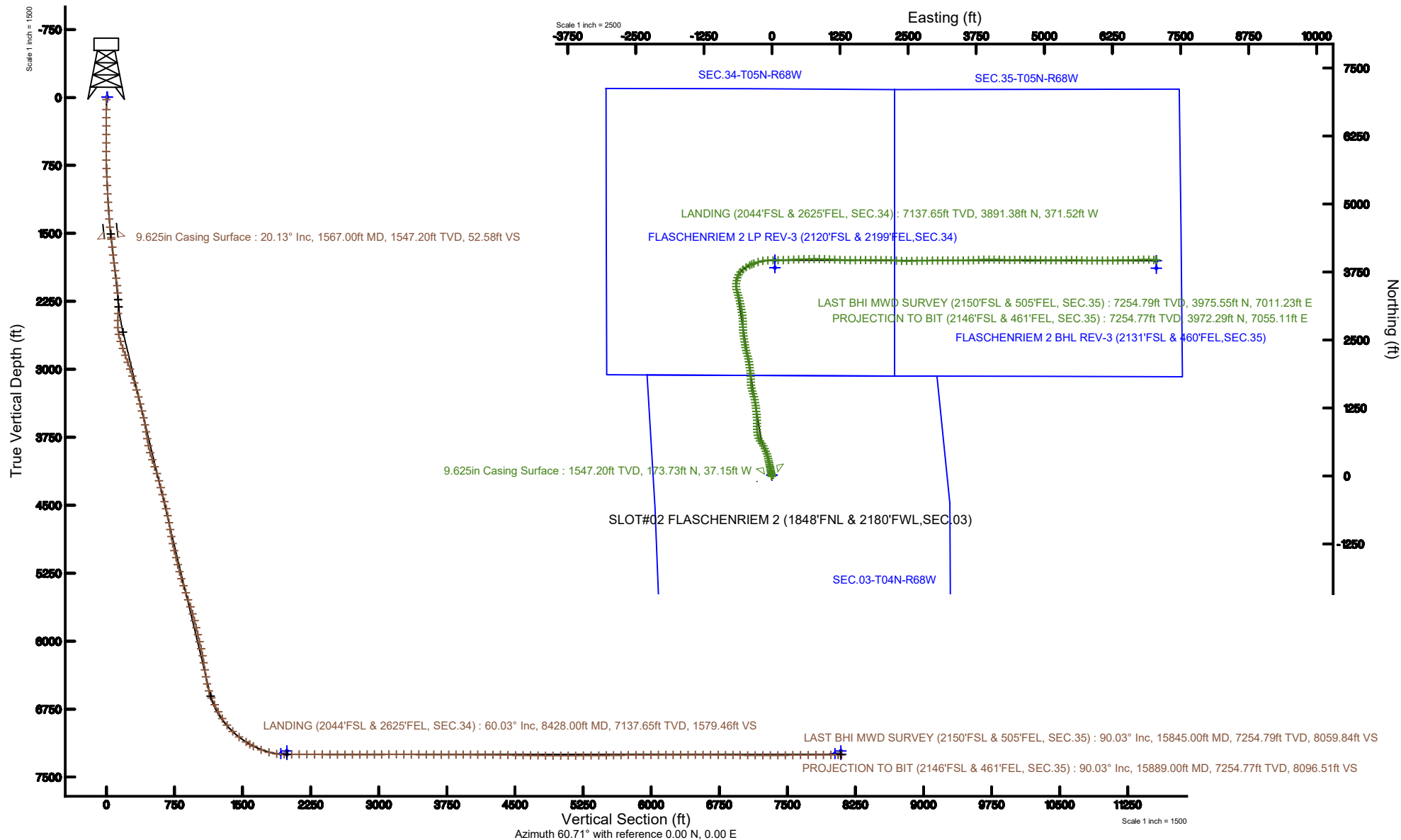
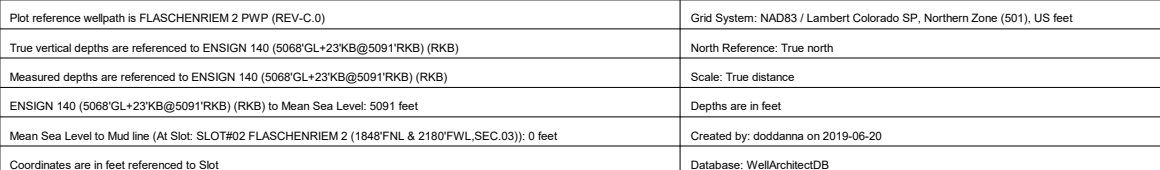


Location:	COLORADO	Slot:	SLOT#02 FLASCHENRIEM 2 (1848'FNL & 2180'FWL, SEC.03)
Field:	WELD COUNTY (NAD83/TRUE NORTH)	Well:	FLASCHENRIEM 2
Facility:	SEC.03-T04N-R68W	Wellbore:	FLASCHENRIEM 2 PWB



# Actual Wellpath Report

FLASCHENRIEM 2 AWP

Page 1 of 9



## REFERENCE WELLPATH IDENTIFICATION

Operator	PETRO OPERATING CO, LLC	Slot	SLOT#02 FLASCHENRIEM 2 (1848'FNL & 2180'FWL,SEC.03)
Area	COLORADO	Well	FLASCHENRIEM 2
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	FLASCHENRIEM 2 AWP
Facility	SEC.03-T04N-R68W		

## REPORT SETUP INFORMATION

Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 5.1
North Reference	True	User	Doddanna
Scale	0.999958	Report Generated	6/20/2019 at 1:23:03 PM
Convergence at slot	0.33° East	Database/Source file	WellArchitectDB/FLASCHENRIEM_2_AWP.xml

## WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-15.01	0.19	3141726.85	1368615.21	40°20'38.884"N	104°59'29.550"W
Facility Reference Pt			3141726.57	1368630.22	40°20'39.033"N	104°59'29.552"W
Field Reference Pt			3141727.20	1368631.79	40°20'39.048"N	104°59'29.544"W

## WELLPATH DATUM

Calculation method	Minimum curvature	ENSIGN 140 (5068'GL+23'KB@5091'RKB) (RKB) to Facility Vertical Datum	5091.00ft
Horizontal Reference Pt	Slot	ENSIGN 140 (5068'GL+23'KB@5091'RKB) (RKB) to Mean Sea Level	5091.00ft
Vertical Reference Pt	ENSIGN 140 (5068'GL+23'KB@5091'RKB) (RKB)	ENSIGN 140 (5068'GL+23'KB@5091'RKB) (RKB) to Mud Line at Slot (SLOT#02 FLASCHENRIEM 2 (1848'FNL & 2180'FWL,SEC.03))	5091.00ft
MD Reference Pt	ENSIGN 140 (5068'GL+23'KB@5091'RKB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	60.71°

# Actual Wellpath Report

FLASCHENRIEM 2 AWP

Page 2 of 9



REFERENCE WELLPATH IDENTIFICATION			
Operator	PETRO OPERATING CO, LLC	Slot	SLOT#02 FLASCHENRIEM 2 (1848'FNL & 2180'FWL,SEC.03)
Area	COLORADO	Well	FLASCHENRIEM 2
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	FLASCHENRIEM 2 AWB
Facility	SEC.03-T04N-R68W		

WELLPATH DATA (172 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00†	0.000	213.700	0.00	0.00	0.00	0.00	40°20'38.884"N	104°59'29.550"W	0.00	
23.00	0.000	213.700	23.00	0.00	0.00	0.00	40°20'38.884"N	104°59'29.550"W	0.00	
134.00	0.390	213.700	134.00	-0.34	-0.31	-0.21	40°20'38.881"N	104°59'29.553"W	0.35	
223.00	0.180	122.580	223.00	-0.54	-0.64	-0.26	40°20'38.878"N	104°59'29.553"W	0.49	
313.00	0.280	170.090	313.00	-0.55	-0.93	-0.10	40°20'38.875"N	104°59'29.551"W	0.23	
408.00	0.600	237.010	408.00	-1.12	-1.43	-0.48	40°20'38.870"N	104°59'29.556"W	0.58	
502.00	0.720	257.300	501.99	-2.18	-1.83	-1.47	40°20'38.866"N	104°59'29.569"W	0.28	
597.00	2.180	335.470	596.96	-2.60	-0.32	-2.80	40°20'38.881"N	104°59'29.586"W	2.26	
691.00	4.450	344.560	690.80	-1.58	4.82	-4.52	40°20'38.932"N	104°59'29.608"W	2.47	
785.00	7.100	349.810	784.31	1.19	14.06	-6.51	40°20'39.023"N	104°59'29.634"W	2.87	
879.00	7.110	348.050	877.59	4.83	25.47	-8.75	40°20'39.136"N	104°59'29.663"W	0.23	
973.00	8.740	349.010	970.69	8.80	38.17	-11.31	40°20'39.261"N	104°59'29.696"W	1.74	
1068.00	9.450	350.620	1064.50	13.73	52.95	-13.96	40°20'39.407"N	104°59'29.730"W	0.79	
1162.00	10.550	348.880	1157.07	19.04	69.01	-16.88	40°20'39.566"N	104°59'29.768"W	1.21	
1256.00	12.580	348.780	1249.15	24.89	87.49	-20.53	40°20'39.749"N	104°59'29.815"W	2.16	
1350.00	14.360	347.640	1340.57	31.46	108.92	-25.02	40°20'39.961"N	104°59'29.873"W	1.91	
1445.00	17.670	349.330	1431.87	39.50	134.61	-30.21	40°20'40.214"N	104°59'29.940"W	3.52	
1525.00	19.500	350.300	1507.69	47.85	159.70	-34.71	40°20'40.462"N	104°59'29.998"W	2.32	
1584.00	20.380	349.790	1563.15	54.51	179.52	-38.19	40°20'40.658"N	104°59'30.043"W	1.52	
1679.00	20.460	345.940	1652.19	64.27	211.91	-45.15	40°20'40.978"N	104°59'30.133"W	1.42	
1772.00	21.290	348.280	1739.08	73.64	244.21	-52.53	40°20'41.297"N	104°59'30.228"W	1.26	
1866.00	23.810	347.880	1825.89	84.39	279.47	-59.98	40°20'41.646"N	104°59'30.324"W	2.69	
1961.00	26.630	346.840	1911.83	95.96	318.96	-68.86	40°20'42.036"N	104°59'30.439"W	3.00	
2055.00	28.970	345.730	1994.97	107.72	361.54	-79.27	40°20'42.457"N	104°59'30.574"W	2.55	
2149.00	31.400	339.980	2076.24	117.56	406.63	-93.27	40°20'42.902"N	104°59'30.754"W	4.02	
2244.00	33.900	337.630	2156.22	124.74	454.39	-111.83	40°20'43.374"N	104°59'30.994"W	2.95	
2338.00	35.900	335.330	2233.32	130.11	503.68	-133.31	40°20'43.861"N	104°59'31.271"W	2.55	
2432.00	36.270	329.980	2309.30	131.97	552.82	-158.73	40°20'44.347"N	104°59'31.600"W	3.37	
2526.00	36.010	325.550	2385.23	129.13	599.68	-188.28	40°20'44.810"N	104°59'31.981"W	2.79	
2621.00	35.970	328.080	2462.10	125.33	646.40	-218.83	40°20'45.272"N	104°59'32.376"W	1.57	

# Actual Wellpath Report

FLASCHENRIEM 2 AWP

Page 3 of 9



REFERENCE WELLPATH IDENTIFICATION			
Operator	PETRO OPERATING CO, LLC	Slot	SLOT#02 FLASCHENRIEM 2 (1848'FNL & 2180'FWL,SEC.03)
Area	COLORADO	Well	FLASCHENRIEM 2
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	FLASCHENRIEM 2 AWP
Facility	SEC.03-T04N-R68W		

WELLPATH DATA (172 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
2715.00	35.750	334.830	2538.31	126.03	694.70	-245.11	40°20'45.749"N	104°59'32.715"W	4.21	
2810.00	35.800	348.240	2615.51	136.41	747.10	-262.61	40°20'46.267"N	104°59'32.941"W	8.24	
2905.00	35.860	355.990	2692.57	156.66	802.09	-270.22	40°20'46.810"N	104°59'33.040"W	4.77	
2999.00	35.810	357.720	2768.78	180.91	857.03	-273.24	40°20'47.353"N	104°59'33.079"W	1.08	
3093.00	35.890	0.140	2844.97	206.93	912.07	-274.27	40°20'47.897"N	104°59'33.092"W	1.51	
3188.00	35.970	0.700	2921.90	234.56	967.81	-273.86	40°20'48.448"N	104°59'33.087"W	0.36	
3282.00	35.860	357.220	2998.03	260.64	1022.92	-274.86	40°20'48.992"N	104°59'33.100"W	2.17	
3376.00	35.950	356.240	3074.17	284.82	1077.96	-278.00	40°20'49.536"N	104°59'33.140"W	0.62	
3470.00	36.000	356.580	3150.25	308.76	1133.07	-281.46	40°20'50.081"N	104°59'33.185"W	0.22	
3565.00	35.870	353.700	3227.17	331.81	1188.60	-286.18	40°20'50.630"N	104°59'33.246"W	1.78	
3660.00	35.330	351.450	3304.42	352.41	1243.44	-293.32	40°20'51.171"N	104°59'33.338"W	1.49	
3754.00	34.160	352.080	3381.66	371.65	1296.45	-300.99	40°20'51.695"N	104°59'33.437"W	1.30	
3848.00	35.780	352.800	3458.68	391.59	1349.86	-308.07	40°20'52.223"N	104°59'33.529"W	1.78	
3942.00	36.150	348.450	3534.78	410.38	1404.30	-317.07	40°20'52.761"N	104°59'33.645"W	2.75	
4037.00	35.680	343.770	3611.73	425.17	1458.36	-330.43	40°20'53.295"N	104°59'33.817"W	2.93	
4132.00	35.440	342.620	3689.01	437.11	1511.25	-346.40	40°20'53.818"N	104°59'34.024"W	0.75	
4226.00	35.580	344.120	3765.53	449.07	1563.56	-362.02	40°20'54.335"N	104°59'34.225"W	0.94	
4320.00	35.370	346.930	3842.09	463.01	1616.37	-375.66	40°20'54.857"N	104°59'34.402"W	1.75	
4415.00	35.210	354.390	3919.67	481.70	1670.43	-384.56	40°20'55.391"N	104°59'34.517"W	4.54	
4509.00	34.360	359.770	3996.89	505.47	1723.94	-387.31	40°20'55.920"N	104°59'34.552"W	3.39	
4603.00	34.890	359.160	4074.24	531.16	1777.35	-387.81	40°20'56.447"N	104°59'34.559"W	0.67	
4697.00	35.010	357.670	4151.29	556.18	1831.17	-389.30	40°20'56.979"N	104°59'34.578"W	0.92	
4792.00	34.750	353.310	4229.23	578.94	1885.30	-393.57	40°20'57.514"N	104°59'34.633"W	2.64	
4886.00	35.070	351.480	4306.32	598.81	1938.62	-400.69	40°20'58.041"N	104°59'34.725"W	1.16	
4980.00	35.180	353.910	4383.21	619.05	1992.25	-407.56	40°20'58.571"N	104°59'34.814"W	1.49	
5075.00	34.940	352.280	4460.97	639.83	2046.43	-414.12	40°20'59.106"N	104°59'34.898"W	1.02	
5169.00	35.000	350.250	4538.00	658.74	2099.67	-422.30	40°20'59.633"N	104°59'35.004"W	1.24	
5264.00	35.070	346.830	4615.80	675.43	2153.10	-433.14	40°21'00.161"N	104°59'35.144"W	2.07	
5358.00	35.010	344.150	4692.76	689.19	2205.34	-446.65	40°21'00.677"N	104°59'35.319"W	1.64	
5451.00	35.060	344.010	4768.91	701.53	2256.68	-461.30	40°21'01.184"N	104°59'35.508"W	0.10	

# Actual Wellpath Report

FLASCHENRIEM 2 AWP

Page 4 of 9



REFERENCE WELLPATH IDENTIFICATION			
Operator	PETRO OPERATING CO, LLC	Slot	SLOT#02 FLASCHENRIEM 2 (1848'FNL & 2180'FWL,SEC.03)
Area	COLORADO	Well	FLASCHENRIEM 2
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	FLASCHENRIEM 2 AWP
Facility	SEC.03-T04N-R68W		

WELLPATH DATA (172 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
5545.00	34.950	345.680	4845.91	714.69	2308.72	-475.40	40°21'01.698"N	104°59'35.690"W	1.03	
5639.00	34.500	349.080	4923.18	730.04	2360.95	-487.10	40°21'02.214"N	104°59'35.841"W	2.12	
5733.00	34.910	351.120	5000.45	747.80	2413.67	-496.30	40°21'02.735"N	104°59'35.960"W	1.31	
5828.00	34.570	351.070	5078.52	766.65	2467.15	-504.68	40°21'03.264"N	104°59'36.068"W	0.36	
5922.00	35.250	351.940	5155.61	785.75	2520.36	-512.62	40°21'03.790"N	104°59'36.171"W	0.90	
6016.00	35.020	351.430	5232.48	805.11	2573.89	-520.44	40°21'04.319"N	104°59'36.272"W	0.40	
6111.00	34.360	354.580	5310.60	825.60	2627.53	-527.04	40°21'04.849"N	104°59'36.357"W	2.01	
6206.00	35.050	358.260	5388.70	849.07	2681.50	-530.40	40°21'05.382"N	104°59'36.400"W	2.32	
6301.00	35.070	359.020	5466.47	874.62	2736.05	-531.69	40°21'05.921"N	104°59'36.417"W	0.46	
6395.00	35.400	358.830	5543.25	900.26	2790.27	-532.71	40°21'06.457"N	104°59'36.430"W	0.37	
6490.00	35.310	358.200	5620.73	925.90	2845.22	-534.13	40°21'07.000"N	104°59'36.449"W	0.40	
6584.00	35.300	353.990	5697.45	949.17	2899.40	-537.83	40°21'07.535"N	104°59'36.497"W	2.59	
6678.00	35.280	353.870	5774.18	970.58	2953.40	-543.57	40°21'08.069"N	104°59'36.571"W	0.08	
6772.00	35.320	349.730	5850.90	990.11	3007.13	-551.32	40°21'08.600"N	104°59'36.671"W	2.55	
6867.00	35.170	348.770	5928.49	1007.54	3060.99	-561.54	40°21'09.132"N	104°59'36.803"W	0.60	
6962.00	35.100	350.770	6006.18	1025.38	3114.79	-571.25	40°21'09.664"N	104°59'36.928"W	1.21	
7057.00	35.000	349.500	6083.96	1043.52	3168.54	-580.60	40°21'10.195"N	104°59'37.049"W	0.77	
7151.00	34.920	346.370	6161.00	1059.46	3221.19	-591.85	40°21'10.715"N	104°59'37.194"W	1.91	
7246.00	34.740	343.470	6238.99	1072.78	3273.57	-605.96	40°21'11.233"N	104°59'37.377"W	1.75	
7340.00	34.980	343.400	6316.12	1084.61	3325.07	-621.28	40°21'11.742"N	104°59'37.575"W	0.26	
7434.00	34.750	342.210	6393.25	1095.87	3376.40	-637.16	40°21'12.249"N	104°59'37.780"W	0.76	
7529.00	34.270	348.520	6471.55	1109.44	3428.41	-650.76	40°21'12.763"N	104°59'37.955"W	3.80	
7623.00	35.750	354.460	6548.57	1128.60	3481.70	-658.68	40°21'13.289"N	104°59'38.058"W	3.95	
7718.00	35.460	8.190	6625.93	1156.59	3536.68	-657.44	40°21'13.833"N	104°59'38.042"W	8.41	
7812.00	36.290	15.630	6702.14	1192.84	3590.49	-646.05	40°21'14.364"N	104°59'37.895"W	4.72	
7907.00	37.670	14.690	6778.02	1232.84	3645.64	-631.11	40°21'14.909"N	104°59'37.702"W	1.57	
8002.00	36.880	25.550	6853.70	1276.35	3699.50	-611.44	40°21'15.442"N	104°59'37.447"W	6.97	
8096.00	40.480	40.070	6927.22	1328.09	3748.42	-579.55	40°21'15.925"N	104°59'37.036"W	10.36	
8190.00	47.010	48.380	6995.15	1390.34	3794.69	-534.12	40°21'16.382"N	104°59'36.449"W	9.24	
8285.00	51.490	58.230	7057.24	1461.56	3837.42	-476.44	40°21'16.804"N	104°59'35.704"W	9.15	

# Actual Wellpath Report

FLASCHENRIEM 2 AWP

Page 5 of 9



REFERENCE WELLPATH IDENTIFICATION			
Operator	PETRO OPERATING CO, LLC	Slot	SLOT#02 FLASCHENRIEM 2 (1848'FNL & 2180'FWL,SEC.03)
Area	COLORADO	Well	FLASCHENRIEM 2
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	FLASCHENRIEM 2 AWP
Facility	SEC.03-T04N-R68W		

WELLPATH DATA (172 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
8379.00	57.110	64.310	7112.10	1537.80	3873.94	-409.51	40°21'17.165"N	104°59'34.839"W	7.95	
8428.00†	60.026	66.340	7137.65	1579.46	3891.38	-371.52	40°21'17.338"N	104°59'34.349"W	6.92	LANDING (2044'FSL & 2625'FEL, SEC.34)
8474.00	62.790	68.140	7159.67	1619.59	3907.00	-334.28	40°21'17.492"N	104°59'33.868"W	6.92	
8568.00	68.700	72.670	7198.28	1703.98	3935.64	-253.58	40°21'17.775"N	104°59'32.825"W	7.67	
8662.00	75.480	80.260	7227.21	1789.92	3956.44	-166.72	40°21'17.981"N	104°59'31.703"W	10.53	
8757.00	84.550	88.920	7243.69	1875.25	3965.14	-73.75	40°21'18.067"N	104°59'30.502"W	13.10	
8851.00	88.980	90.040	7249.00	1957.50	3965.99	20.07	40°21'18.075"N	104°59'29.291"W	4.86	
8945.00	90.120	89.310	7249.74	2039.74	3966.52	114.06	40°21'18.080"N	104°59'28.077"W	1.44	
9040.00	90.030	87.860	7249.61	2123.72	3968.87	209.03	40°21'18.103"N	104°59'26.850"W	1.53	
9134.00	89.780	86.350	7249.77	2207.92	3973.62	302.91	40°21'18.150"N	104°59'25.637"W	1.63	
9229.00	90.030	86.620	7249.93	2293.47	3979.44	397.73	40°21'18.208"N	104°59'24.412"W	0.39	
9324.00	89.780	87.870	7250.08	2378.47	3984.01	492.62	40°21'18.253"N	104°59'23.187"W	1.34	
9418.00	89.750	88.650	7250.47	2461.81	3986.86	586.57	40°21'18.281"N	104°59'21.973"W	0.83	
9512.00	89.820	88.840	7250.82	2544.78	3988.92	680.55	40°21'18.302"N	104°59'20.759"W	0.22	
9606.00	90.030	89.710	7250.94	2627.34	3990.11	774.54	40°21'18.313"N	104°59'19.545"W	0.95	
9701.00	90.120	90.990	7250.82	2709.92	3989.53	869.53	40°21'18.307"N	104°59'18.318"W	1.35	
9795.00	90.060	91.780	7250.67	2790.77	3987.26	963.51	40°21'18.285"N	104°59'17.104"W	0.84	
9890.00	90.150	92.610	7250.50	2871.78	3983.62	1058.44	40°21'18.249"N	104°59'15.878"W	0.88	
9985.00	90.060	92.670	7250.32	2952.41	3979.24	1153.33	40°21'18.206"N	104°59'14.652"W	0.11	
10079.00	90.090	93.080	7250.20	3031.99	3974.53	1247.22	40°21'18.159"N	104°59'13.440"W	0.44	
10173.00	90.180	91.960	7249.98	3111.87	3970.40	1341.12	40°21'18.118"N	104°59'12.227"W	1.20	
10268.00	90.060	90.080	7249.78	3193.89	3968.71	1436.10	40°21'18.101"N	104°59'11.000"W	1.98	
10362.00	89.910	89.470	7249.80	3276.05	3969.07	1530.10	40°21'18.105"N	104°59'09.786"W	0.67	
10457.00	89.820	89.230	7250.03	3359.43	3970.15	1625.10	40°21'18.116"N	104°59'08.559"W	0.27	
10551.00	89.970	89.670	7250.20	3441.86	3971.05	1719.09	40°21'18.124"N	104°59'07.345"W	0.49	
10645.00	89.230	89.460	7250.86	3524.19	3971.77	1813.09	40°21'18.131"N	104°59'06.131"W	0.82	
10739.00	89.570	89.450	7251.84	3606.60	3972.66	1907.08	40°21'18.140"N	104°59'04.917"W	0.36	
10834.00	89.630	91.100	7252.50	3689.23	3972.21	2002.07	40°21'18.136"N	104°59'03.690"W	1.74	
10928.00	90.310	91.660	7252.55	3770.09	3969.94	2096.04	40°21'18.113"N	104°59'02.476"W	0.94	
11022.00	90.580	92.890	7251.82	3850.18	3966.21	2189.96	40°21'18.076"N	104°59'01.263"W	1.34	

# Actual Wellpath Report

FLASCHENRIEM 2 AWP

Page 6 of 9



REFERENCE WELLPATH IDENTIFICATION			
Operator	PETRO OPERATING CO, LLC	Slot	SLOT#02 FLASCHENRIEM 2 (1848'FNL & 2180'FWL,SEC.03)
Area	COLORADO	Well	FLASCHENRIEM 2
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	FLASCHENRIEM 2 AWP
Facility	SEC.03-T04N-R68W		

WELLPATH DATA (172 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
11116.00	89.850	93.800	7251.47	3929.34	3960.73	2283.80	40°21'18.022"N	104°59'00.050"W	1.24	
11211.00	89.450	92.510	7252.05	4009.51	3955.50	2378.65	40°21'17.970"N	104°58'58.825"W	1.42	
11305.00	89.450	90.050	7252.95	4090.44	3953.40	2472.62	40°21'17.949"N	104°58'57.612"W	2.62	
11399.00	89.510	88.660	7253.81	4172.94	3954.46	2566.60	40°21'17.960"N	104°58'56.398"W	1.48	
11494.00	89.690	88.750	7254.47	4256.82	3956.60	2661.58	40°21'17.981"N	104°58'55.171"W	0.21	
11588.00	89.420	89.510	7255.20	4339.49	3958.03	2755.56	40°21'17.995"N	104°58'53.957"W	0.86	
11683.00	88.800	88.880	7256.68	4422.99	3959.37	2850.54	40°21'18.008"N	104°58'52.730"W	0.93	
11777.00	88.980	88.670	7258.50	4505.92	3961.37	2944.50	40°21'18.028"N	104°58'51.516"W	0.29	
11872.00	90.000	89.850	7259.34	4589.37	3962.60	3039.49	40°21'18.040"N	104°58'50.289"W	1.64	
11967.00	88.830	90.640	7260.31	4672.02	3962.20	3134.48	40°21'18.036"N	104°58'49.062"W	1.49	
12061.00	88.980	90.360	7262.11	4753.59	3961.37	3228.46	40°21'18.027"N	104°58'47.849"W	0.34	
12156.00	89.110	89.280	7263.69	4836.58	3961.67	3323.44	40°21'18.030"N	104°58'46.622"W	1.14	
12250.00	89.880	89.230	7264.52	4919.15	3962.90	3417.43	40°21'18.042"N	104°58'45.408"W	0.82	
12345.00	89.940	89.490	7264.67	5002.52	3963.96	3512.43	40°21'18.052"N	104°58'44.181"W	0.28	
12439.00	90.520	88.850	7264.29	5085.17	3965.32	3606.41	40°21'18.066"N	104°58'42.967"W	0.92	
12533.00	90.580	87.160	7263.39	5168.70	3968.59	3700.35	40°21'18.098"N	104°58'41.753"W	1.80	
12628.00	90.430	86.780	7262.55	5253.89	3973.61	3795.21	40°21'18.147"N	104°58'40.528"W	0.43	
12723.00	90.370	88.080	7261.89	5338.75	3977.87	3890.11	40°21'18.189"N	104°58'39.302"W	1.37	
12818.00	90.490	88.770	7261.18	5422.85	3980.48	3985.07	40°21'18.215"N	104°58'38.075"W	0.74	
12912.00	90.490	91.250	7260.37	5504.82	3980.47	4079.06	40°21'18.215"N	104°58'36.861"W	2.64	
13007.00	90.740	92.340	7259.35	5586.17	3977.49	4174.01	40°21'18.185"N	104°58'35.635"W	1.18	
13102.00	90.710	91.880	7258.15	5667.26	3973.99	4268.94	40°21'18.150"N	104°58'34.409"W	0.49	
13196.00	90.580	90.240	7257.09	5748.37	3972.25	4362.91	40°21'18.133"N	104°58'33.195"W	1.75	
13291.00	90.620	88.690	7256.10	5831.65	3973.14	4457.90	40°21'18.142"N	104°58'31.968"W	1.63	
13385.00	90.060	89.370	7255.54	5914.40	3974.73	4551.88	40°21'18.157"N	104°58'30.754"W	0.94	
13479.00	90.090	90.030	7255.42	5996.63	3975.22	4645.88	40°21'18.162"N	104°58'29.540"W	0.70	
13574.00	90.090	90.830	7255.27	6079.14	3974.51	4740.88	40°21'18.155"N	104°58'28.313"W	0.84	
13669.00	90.150	91.070	7255.07	6161.21	3972.94	4835.86	40°21'18.139"N	104°58'27.086"W	0.26	
13763.00	90.060	91.860	7254.90	6242.00	3970.53	4929.83	40°21'18.115"N	104°58'25.872"W	0.85	
13858.00	90.280	91.280	7254.61	6323.55	3967.93	5024.80	40°21'18.089"N	104°58'24.646"W	0.65	

# Actual Wellpath Report

FLASCHENRIEM 2 AWP

Page 7 of 9



REFERENCE WELLPATH IDENTIFICATION			
Operator	PETRO OPERATING CO, LLC	Slot	SLOT#02 FLASCHENRIEM 2 (1848'FNL & 2180'FWL, SEC.03)
Area	COLORADO	Well	FLASCHENRIEM 2
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	FLASCHENRIEM 2 AWP
Facility	SEC.03-T04N-R68W		

WELLPATH DATA (172 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
13953.00	90.250	90.290	7254.18	6405.76	3966.63	5119.79	40°21'18.076"N	104°58'23.419"W	1.04	
14047.00	89.970	89.650	7253.99	6487.77	3966.68	5213.78	40°21'18.076"N	104°58'22.205"W	0.74	
14142.00	89.970	88.710	7254.04	6571.28	3968.04	5308.77	40°21'18.090"N	104°58'20.978"W	0.99	
14237.00	89.480	88.880	7254.50	6655.10	3970.04	5403.75	40°21'18.109"N	104°58'19.751"W	0.55	
14332.00	89.480	90.510	7255.36	6738.20	3970.54	5498.74	40°21'18.114"N	104°58'18.524"W	1.72	
14426.00	89.600	91.910	7256.12	6819.19	3968.56	5592.72	40°21'18.094"N	104°58'17.310"W	1.49	
14521.00	89.570	91.480	7256.81	6900.64	3965.75	5687.67	40°21'18.066"N	104°58'16.083"W	0.45	
14615.00	89.540	91.050	7257.54	6981.59	3963.67	5781.65	40°21'18.045"N	104°58'14.870"W	0.46	
14710.00	89.600	89.810	7258.25	7064.09	3962.96	5876.64	40°21'18.038"N	104°58'13.643"W	1.31	
14804.00	89.600	89.790	7258.90	7146.23	3963.29	5970.64	40°21'18.041"N	104°58'12.428"W	0.02	
14900.00	89.720	89.850	7259.47	7230.11	3963.59	6066.63	40°21'18.044"N	104°58'11.188"W	0.14	
14994.00	90.180	89.980	7259.56	7312.16	3963.73	6160.63	40°21'18.045"N	104°58'09.974"W	0.51	
15089.00	90.520	89.650	7258.98	7395.17	3964.03	6255.63	40°21'18.048"N	104°58'08.747"W	0.50	
15184.00	90.520	89.090	7258.11	7478.53	3965.08	6350.62	40°21'18.058"N	104°58'07.520"W	0.59	
15278.00	90.460	89.300	7257.31	7561.15	3966.40	6444.61	40°21'18.071"N	104°58'06.306"W	0.23	
15373.00	90.550	87.940	7256.47	7645.10	3968.69	6539.57	40°21'18.093"N	104°58'05.080"W	1.43	
15467.00	90.580	87.510	7255.55	7728.84	3972.42	6633.50	40°21'18.130"N	104°58'03.866"W	0.46	
15562.00	89.940	87.710	7255.11	7813.57	3976.38	6728.41	40°21'18.169"N	104°58'02.640"W	0.71	
15656.00	90.030	88.440	7255.14	7897.05	3979.54	6822.36	40°21'18.200"N	104°58'01.427"W	0.78	
15751.00	90.180	91.090	7254.97	7980.09	3979.93	6917.35	40°21'18.203"N	104°58'00.200"W	2.79	
15845.00	90.030	94.250	7254.79	8059.84	3975.55	7011.23	40°21'18.160"N	104°57'58.987"W	3.37	LAST BHI MWD SURVEY (2150'FSL & 505'FEL, SEC.35)
15889.00	90.030	94.250	7254.77	8096.51	3972.29	7055.11	40°21'18.127"N	104°57'58.420"W	0.00	PROJECTION TO BIT (2146'FSL & 461'FEL, SEC.35)

HOLE & CASING SECTIONS - Ref Wellbore: FLASCHENRIEM 2 AWP Ref Wellpath: FLASCHENRIEM 2 AWP									
String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
9.625in Casing Surface	23.00	1567.00	1544.00	23.00	1547.20	0.00	0.00	173.73	-37.15



# Actual Wellpath Report

FLASCHENRIEM 2 AWP

Page 8 of 9



REFERENCE WELLPATH IDENTIFICATION			
Operator	PETRO OPERATING CO, LLC	Slot	SLOT#02 FLASCHENRIEM 2 (1848'FNL & 2180'FWL,SEC.03)
Area	COLORADO	Well	FLASCHENRIEM 2
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	FLASCHENRIEM 2 AWB
Facility	SEC.03-T04N-R68W		

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SEC.03-T04N-R68W	-5.00	16.58	0.45	3141727.20	1368631.79	40°20'39.048"N	104°59'29.544"W	polygon
SEC.34-T05N-R68W	-5.00	16.58	0.45	3141727.20	1368631.79	40°20'39.048"N	104°59'29.544"W	polygon
SEC.35-T05N-R68W	-5.00	16.58	0.45	3141727.20	1368631.79	40°20'39.048"N	104°59'29.544"W	polygon
FLASCHENRIEM 2 BHL REV-2 (2131'FSL & 460'FEL,SEC.35)	7211.00	3957.11	7055.73	3148759.46	1372612.54	40°21'17.977"N	104°57'58.413"W	point
FLASCHENRIEM 2 LP REV-2 (2120'FSL & 2199'FEL,SEC.34)	7211.00	3967.40	53.46	3141757.55	1372582.68	40°21'18.089"N	104°59'28.859"W	point
FLASCHENRIEM 2 BHL ON PLAT (1994'FSL & 460'FEL,SEC.35)	7241.00	3819.99	7056.89	3148761.40	1372475.43	40°21'16.622"N	104°57'58.398"W	point
FLASCHENRIEM 2 LP ON PLAT (1983'FSL & 2199'FEL,SEC.34)	7241.00	3830.42	53.52	3141758.39	1372445.71	40°21'16.735"N	104°59'28.859"W	point
FLASCHENRIEM 2 BHL REV-3 (2131'FSL & 460'FEL,SEC.35)	7250.00	3957.11	7055.73	3148759.46	1372612.54	40°21'17.977"N	104°57'58.413"W	point
FLASCHENRIEM 2 LP REV-3 (2120'FSL & 2199'FEL,SEC.34)	7250.00	3967.40	53.46	3141757.55	1372582.68	40°21'18.089"N	104°59'28.859"W	point

WELLPATH COMPOSITION - Ref Wellbore: FLASCHENRIEM 2 AWB      Ref Wellpath: FLASCHENRIEM 2 AWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
23.00	1525.00	BHI NaviTrak (Rotating+Axial Corr)	BHI NAVITRAK 13.5" (ROTATING & AXIAL)<134-1525>	FLASCHENRIEM 2 AWB
1525.00	15845.00	BHI AutoTrak Curve (Short)	BHI ATC 8.5" (SHORT)<1584-15845>	FLASCHENRIEM 2 AWB
15845.00	15889.00	Blind Drilling (std)	Projection to bit	FLASCHENRIEM 2 AWB

# Actual Wellpath Report

FLASCHENRIEM 2 AWP

Page 9 of 9



REFERENCE WELLPATH IDENTIFICATION			
Operator	PETRO OPERATING CO, LLC	Slot	SLOT#02 FLASCHENRIEM 2 (1848'FNL & 2180'FWL,SEC.03)
Area	COLORADO	Well	FLASCHENRIEM 2
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	FLASCHENRIEM 2 AWB
Facility	SEC.03-T04N-R68W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
8428.00	60.026	66.340	7137.65	LANDING (2044'FSL & 2625'FEL, SEC.34)
15845.00	90.030	94.250	7254.79	LAST BHI MWD SURVEY (2150'FSL & 505'FEL, SEC.35)
15889.00	90.030	94.250	7254.77	PROJECTION TO BIT (2146'FSL & 461'FEL, SEC.35)