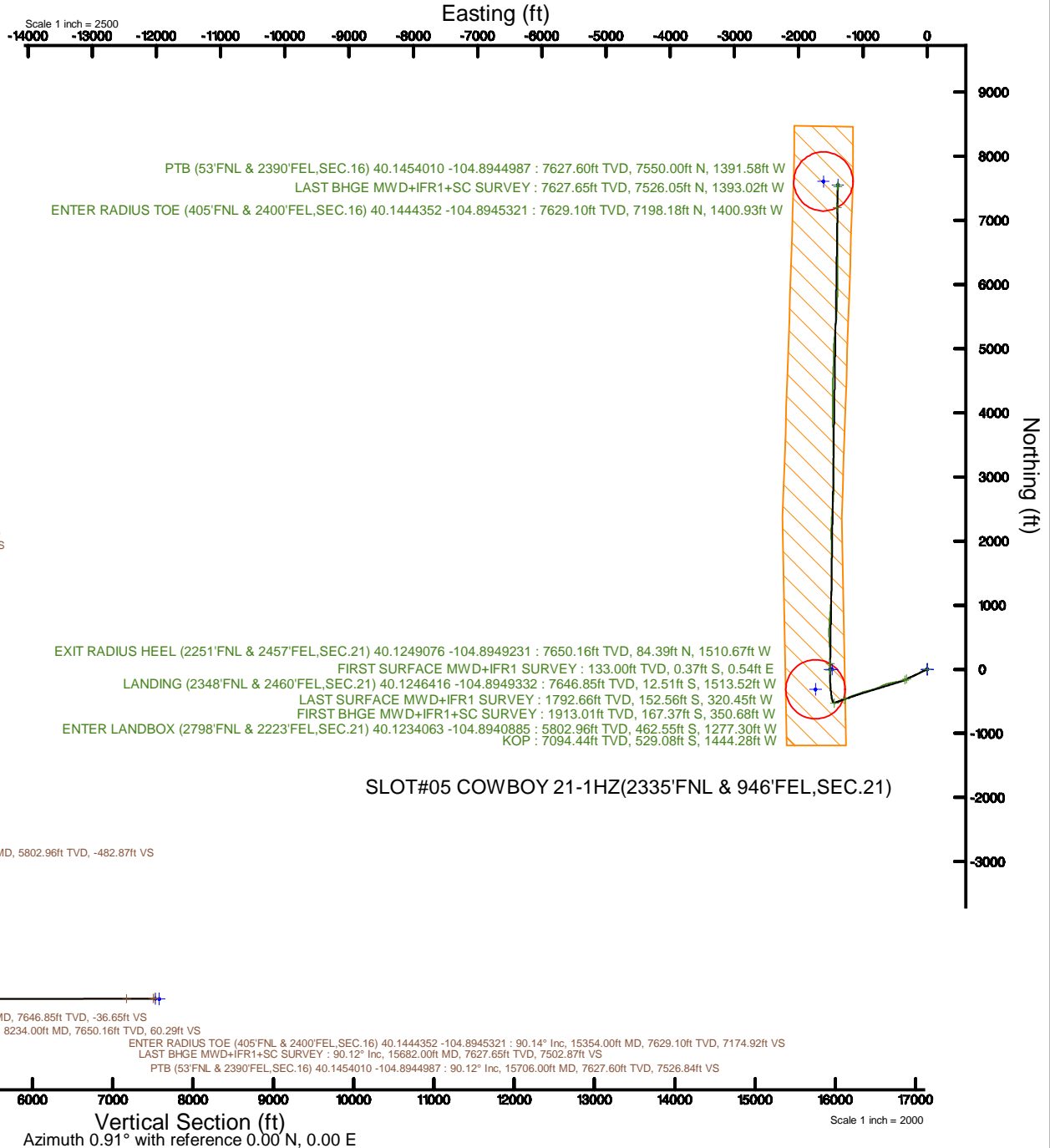


# KERR-MCGEE OIL & GAS ONSHORE LP (WA)

Location: COLORADO Slot: SLOT#05 COWBOY 21-1HZ(2335'FNL & 946'FEL,SEC.21)  
 Field: WELD COUNTY (UTM/TRUE NORTH) Well: COWBOY 21-1HZ  
 Facility: SEC.21-T2N-R67W Wellbore: COWBOY 21-1HZ PWB

Plot reference wellpath is COWBOY 21-1HZ PWP Rev-A.0	Grid System: NAD83 / UTM Zone 13 North, US feet
True vertical depths are referenced to PD 564 (26) (RT)	* = Wellpath was transformed from a different geodetic datum
Measured depths are referenced to PD 564 (26) (RT)	North Reference: True north
PD 564 (26) (RT) to Mean Sea Level: 5067 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: SLOT#05 COWBOY 21-1HZ(2335'FNL & 946'FEL,SEC.21)): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: painsetr on 2018-09-20
	Database: WA_DEN_Anadarko_Defn



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#05 COWBOY 21-1HZ(2335'FNL & 946'FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-1HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-1HZ AWB
Facility	SEC.21-T2N-R67W		

REPORT SETUP INFORMATION			
Projection System	NAD83 / UTM Zone 13 North, US feet	Software System	WellArchitect® 5.0
North Reference	True	User	Painsetr
Scale	0.999601	Report Generated	9/20/2018 at 7:35 AM
Convergence at slot	0.08° East	Database/Source file	WA_DEN_Anadarko_Defn/COWBOY_21-1HZ_AWP.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-1881.18	-285.56	1671300.04	14572152.76	40°07'28.834"N	104°53'22.276"W
Facility Reference Pt			1671583.13	14574033.54	40°07'47.424"N	104°53'18.600"W
Field Reference Pt			1698235.31	14552047.82	40°04'09.600"N	104°47'36.000"W

WELLPATH DATUM			
Calculation method	Minimum curvature	PD 564 (26') (RT) to Facility Vertical Datum	5067.00ft
Horizontal Reference Pt	Slot	PD 564 (26') (RT) to Mean Sea Level	5067.00ft
Vertical Reference Pt	PD 564 (26') (RT)	PD 564 (26') (RT) to Mud Line at Slot (SLOT#05 COWBOY 21-1HZ(2335'FNL & 946'FEL,SEC.21))	5067.00ft
MD Reference Pt	PD 564 (26') (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	0.91°

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#05 COWBOY 21-1HZ(2335°FNL & 946°FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-1HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-1HZ AWB
Facility	SEC.21-T2N-R67W		

WELLPATH DATA (213 stations) † = interpolated/extrapolated station												
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00†	0.000	124.160	0.00	0.00	0.00	0.00	1671300.04	14572152.76	40°07'28.834"N	104°53'22.276"W	0.00	
26.00	0.000	124.160	26.00	0.00	0.00	0.00	1671300.04	14572152.76	40°07'28.834"N	104°53'22.276"W	0.00	
133.00	0.700	124.160	133.00	-0.36	-0.37	0.54	1671300.59	14572152.40	40°07'28.830"N	104°53'22.269"W	0.65	FIRST SURFACE MWD+IFR1 SURVEY
165.00	0.700	126.530	164.99	-0.58	-0.59	0.86	1671300.90	14572152.17	40°07'28.828"N	104°53'22.265"W	0.09	
196.00	0.480	162.210	195.99	-0.81	-0.83	1.05	1671301.10	14572151.94	40°07'28.826"N	104°53'22.262"W	1.35	
228.00	0.260	220.660	227.99	-1.00	-1.01	1.05	1671301.09	14572151.75	40°07'28.824"N	104°53'22.263"W	1.28	
260.00	0.790	238.680	259.99	-1.17	-1.18	0.81	1671300.85	14572151.58	40°07'28.822"N	104°53'22.266"W	1.71	
292.00	1.010	245.010	291.99	-1.41	-1.42	0.37	1671300.41	14572151.35	40°07'28.820"N	104°53'22.271"W	0.75	
323.00	1.270	240.610	322.98	-1.70	-1.70	-0.18	1671299.86	14572151.06	40°07'28.817"N	104°53'22.278"W	0.88	
355.00	1.490	243.950	354.97	-2.07	-2.06	-0.86	1671299.18	14572150.71	40°07'28.814"N	104°53'22.287"W	0.73	
387.00	2.330	247.910	386.95	-2.51	-2.48	-1.84	1671298.21	14572150.28	40°07'28.809"N	104°53'22.300"W	2.66	
419.00	2.770	247.820	418.92	-3.07	-3.02	-3.16	1671296.89	14572149.74	40°07'28.804"N	104°53'22.317"W	1.38	
451.00	3.600	248.170	450.87	-3.76	-3.69	-4.81	1671295.24	14572149.07	40°07'28.798"N	104°53'22.338"W	2.59	
483.00	4.260	246.590	482.80	-4.64	-4.53	-6.83	1671293.22	14572148.23	40°07'28.789"N	104°53'22.364"W	2.09	
514.00	5.010	245.270	513.70	-5.70	-5.56	-9.12	1671290.94	14572147.20	40°07'28.779"N	104°53'22.393"W	2.44	
546.00	5.490	246.680	545.56	-6.93	-6.75	-11.79	1671288.26	14572146.01	40°07'28.767"N	104°53'22.428"W	1.55	
578.00	6.420	246.060	577.39	-8.31	-8.08	-14.83	1671285.23	14572144.67	40°07'28.754"N	104°53'22.467"W	2.91	
609.00	7.650	247.030	608.15	-9.88	-9.59	-18.32	1671281.75	14572143.16	40°07'28.739"N	104°53'22.512"W	3.99	
641.00	8.480	247.110	639.84	-11.69	-11.34	-22.45	1671277.61	14572141.40	40°07'28.722"N	104°53'22.565"W	2.59	
673.00	9.140	247.030	671.46	-13.67	-13.25	-26.97	1671273.11	14572139.49	40°07'28.703"N	104°53'22.623"W	2.06	
704.00	9.670	246.940	702.04	-15.73	-15.23	-31.63	1671268.45	14572137.50	40°07'28.684"N	104°53'22.683"W	1.71	
736.00	10.060	246.500	733.57	-17.98	-17.39	-36.66	1671263.42	14572135.33	40°07'28.662"N	104°53'22.748"W	1.24	
768.00	10.550	246.590	765.05	-20.34	-19.67	-41.92	1671258.17	14572133.05	40°07'28.640"N	104°53'22.816"W	1.53	
800.00	11.030	247.200	796.49	-22.78	-22.02	-47.43	1671252.66	14572130.69	40°07'28.616"N	104°53'22.887"W	1.54	
831.00	11.290	246.240	826.90	-25.23	-24.39	-52.94	1671247.16	14572128.31	40°07'28.593"N	104°53'22.957"W	1.03	
863.00	11.870	247.030	858.25	-27.87	-26.94	-58.83	1671241.27	14572125.76	40°07'28.568"N	104°53'23.033"W	1.88	
895.00	12.570	245.620	889.52	-30.70	-29.66	-65.04	1671235.07	14572123.03	40°07'28.541"N	104°53'23.113"W	2.38	
927.00	13.230	244.300	920.72	-33.82	-32.69	-71.51	1671228.61	14572120.00	40°07'28.511"N	104°53'23.197"W	2.26	
958.00	14.020	242.720	950.84	-37.19	-35.95	-78.04	1671222.08	14572116.73	40°07'28.479"N	104°53'23.281"W	2.82	
990.00	14.500	242.370	981.86	-40.93	-39.58	-85.04	1671215.09	14572113.09	40°07'28.443"N	104°53'23.371"W	1.52	
1022.00	15.160	241.840	1012.79	-44.88	-43.41	-92.27	1671207.86	14572109.25	40°07'28.405"N	104°53'23.464"W	2.11	
1054.00	15.640	241.840	1043.64	-49.01	-47.42	-99.77	1671200.38	14572105.23	40°07'28.365"N	104°53'23.560"W	1.50	
1085.00	16.000	241.140	1073.47	-53.16	-51.46	-107.19	1671192.96	14572101.19	40°07'28.325"N	104°53'23.656"W	1.31	
1117.00	16.920	242.280	1104.16	-57.58	-55.75	-115.18	1671184.98	14572096.89	40°07'28.283"N	104°53'23.759"W	3.05	
1149.00	17.800	242.980	1134.70	-62.11	-60.14	-123.66	1671176.51	14572092.49	40°07'28.240"N	104°53'23.868"W	2.83	
1181.00	18.110	243.690	1165.14	-66.67	-64.57	-132.47	1671167.71	14572088.06	40°07'28.196"N	104°53'23.981"W	1.19	
1212.00	18.330	244.040	1194.59	-71.08	-68.84	-141.17	1671159.01	14572083.78	40°07'28.154"N	104°53'24.093"W	0.79	
1244.00	18.980	243.950	1224.91	-75.71	-73.32	-150.37	1671149.82	14572079.28	40°07'28.109"N	104°53'24.212"W	2.03	
1276.00	19.510	244.040	1255.12	-80.49	-77.95	-159.85	1671140.35	14572074.65	40°07'28.064"N	104°53'24.334"W	1.66	
1307.00	19.030	244.650	1284.38	-85.07	-82.38	-169.07	1671131.14	14572070.21	40°07'28.020"N	104°53'24.452"W	1.68	
1339.00	19.120	244.830	1314.62	-89.68	-86.84	-178.53	1671121.69	14572065.74	40°07'27.976"N	104°53'24.574"W	0.34	
1402.00	18.760	245.000	1374.21	-98.64	-95.51	-197.05	1671103.19	14572057.05	40°07'27.890"N	104°53'24.813"W	0.58	
1434.00	18.590	245.090	1404.53	-103.11	-99.83	-206.34	1671093.91	14572052.71	40°07'27.847"N	104°53'24.932"W	0.54	
1465.00	17.800	245.970	1433.98	-107.26	-103.84	-215.15	1671085.11	14572048.69	40°07'27.808"N	104°53'25.046"W	2.70	
1497.00	17.800	246.500	1464.45	-111.35	-107.79	-224.10	1671076.16	14572044.74	40°07'27.769"N	104°53'25.161"W	0.51	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#05 COWBOY 21-1HZ(2335°FNL & 946°FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-1HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-1HZ AWB
Facility	SEC.21-T2N-R67W		

WELLPATH DATA (213 stations)												
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
1529.00	18.280	246.500	1494.87	-115.44	-111.74	-233.19	1671067.09	14572040.78	40°07'27.730"N	104°53'25.278"W	1.50	
1560.00	18.940	246.760	1524.25	-119.51	-115.66	-242.27	1671058.01	14572036.85	40°07'27.691"N	104°53'25.395"W	2.15	
1591.00	18.330	246.590	1553.63	-123.58	-119.58	-251.37	1671048.92	14572032.92	40°07'27.652"N	104°53'25.512"W	1.98	
1623.00	18.280	246.410	1584.01	-127.73	-123.59	-260.59	1671039.72	14572028.90	40°07'27.613"N	104°53'25.631"W	0.24	
1655.00	17.360	244.830	1614.47	-131.91	-127.63	-269.51	1671030.81	14572024.85	40°07'27.573"N	104°53'25.745"W	3.25	
1687.00	17.400	244.570	1645.01	-136.14	-131.72	-278.15	1671022.17	14572020.76	40°07'27.532"N	104°53'25.857"W	0.27	
1718.00	17.620	244.390	1674.57	-140.29	-135.73	-286.56	1671013.76	14572016.73	40°07'27.493"N	104°53'25.965"W	0.73	
1750.00	18.190	244.130	1705.02	-144.70	-140.01	-295.43	1671004.91	14572012.45	40°07'27.450"N	104°53'26.079"W	1.80	
1782.00	17.490	243.160	1735.48	-149.19	-144.36	-304.21	1670996.13	14572008.09	40°07'27.407"N	104°53'26.192"W	2.38	
1813.00	17.580	243.340	1765.04	-153.53	-148.56	-312.55	1670987.80	14572003.87	40°07'27.366"N	104°53'26.299"W	0.34	
1842.00	17.970	242.900	1792.66	-157.66	-152.56	-320.45	1670979.91	14571999.86	40°07'27.326"N	104°53'26.401"W	1.42	LAST SURFACE MWD+IFR1 SURVEY
1967.00	13.290	245.260	1913.01	-172.94	-167.37	-350.68	1670949.71	14571985.03	40°07'27.180"N	104°53'26.790"W	3.78	FIRST BHGE MWD+IFR1+SC SURVEY
2057.00	17.520	254.420	1999.76	-181.27	-175.34	-373.14	1670927.28	14571977.03	40°07'27.101"N	104°53'27.079"W	5.41	
2146.00	18.320	256.290	2084.45	-188.61	-182.26	-399.63	1670900.80	14571970.09	40°07'27.033"N	104°53'27.420"W	1.11	
2236.00	18.370	257.130	2169.87	-195.56	-188.77	-427.20	1670873.25	14571963.54	40°07'26.969"N	104°53'27.775"W	0.30	
2325.00	18.340	260.230	2254.35	-201.49	-194.27	-454.67	1670845.80	14571958.01	40°07'26.914"N	104°53'28.129"W	1.10	
2414.00	18.200	262.870	2338.86	-206.04	-198.37	-482.26	1670818.22	14571953.88	40°07'26.874"N	104°53'28.484"W	0.94	
2504.00	18.230	258.590	2424.36	-211.01	-202.90	-510.01	1670790.49	14571949.31	40°07'26.829"N	104°53'28.841"W	1.49	
2593.00	18.180	255.730	2508.90	-217.61	-209.07	-537.11	1670763.41	14571943.11	40°07'26.768"N	104°53'29.190"W	1.01	
2683.00	18.250	260.320	2594.40	-223.88	-214.90	-564.61	1670735.93	14571937.24	40°07'26.710"N	104°53'29.544"W	1.60	
2772.00	18.350	256.720	2678.90	-229.88	-220.47	-591.98	1670708.57	14571931.65	40°07'26.655"N	104°53'29.897"W	1.27	
2862.00	18.260	255.230	2764.35	-237.17	-227.31	-619.40	1670681.17	14571924.77	40°07'26.588"N	104°53'30.250"W	0.53	
2951.00	18.380	251.150	2848.84	-245.68	-235.40	-646.17	1670654.43	14571916.65	40°07'26.508"N	104°53'30.594"W	1.45	
3040.00	18.330	244.270	2933.32	-256.70	-246.01	-672.06	1670628.56	14571906.01	40°07'26.403"N	104°53'30.927"W	2.43	
3130.00	18.140	243.230	3018.80	-269.56	-258.47	-697.31	1670603.33	14571893.53	40°07'26.280"N	104°53'31.252"W	0.42	
3219.00	18.170	245.230	3103.37	-282.01	-270.52	-722.28	1670578.39	14571881.45	40°07'26.161"N	104°53'31.574"W	0.70	
3308.00	18.230	247.480	3187.92	-293.56	-281.67	-747.74	1670552.95	14571870.28	40°07'26.050"N	104°53'31.902"W	0.79	
3398.00	18.110	249.540	3273.43	-304.26	-291.95	-773.85	1670526.86	14571859.97	40°07'25.949"N	104°53'32.238"W	0.73	
3487.00	18.230	252.170	3358.00	-313.77	-301.05	-800.07	1670500.67	14571850.84	40°07'25.859"N	104°53'32.575"W	0.93	
3577.00	18.040	252.560	3443.53	-322.68	-309.53	-826.76	1670474.00	14571842.33	40°07'25.775"N	104°53'32.919"W	0.25	
3666.00	18.300	253.100	3528.09	-331.30	-317.73	-853.28	1670447.50	14571834.10	40°07'25.694"N	104°53'33.260"W	0.35	
3755.00	18.320	252.590	3612.58	-339.97	-325.97	-880.00	1670420.81	14571825.83	40°07'25.613"N	104°53'33.604"W	0.18	
3845.00	18.040	255.710	3698.09	-348.07	-333.65	-907.00	1670393.83	14571818.12	40°07'25.537"N	104°53'33.952"W	1.13	
3934.00	18.230	257.770	3782.67	-354.85	-340.00	-933.96	1670366.88	14571811.74	40°07'25.474"N	104°53'34.299"W	0.75	
4023.00	18.370	255.670	3867.17	-361.70	-346.42	-961.15	1670339.71	14571805.29	40°07'25.410"N	104°53'34.649"W	0.76	
4112.00	18.290	254.820	3951.65	-369.26	-353.54	-988.22	1670312.66	14571798.13	40°07'25.340"N	104°53'34.997"W	0.31	
4202.00	15.990	251.080	4037.65	-377.39	-361.26	-1013.58	1670287.32	14571790.39	40°07'25.264"N	104°53'35.324"W	2.83	
4291.00	13.980	246.870	4123.63	-385.93	-369.46	-1035.06	1670265.86	14571782.16	40°07'25.183"N	104°53'35.600"W	2.57	
4380.00	12.900	247.210	4210.19	-394.30	-377.53	-1054.11	1670246.83	14571774.07	40°07'25.103"N	104°53'35.845"W	1.22	
4470.00	11.180	248.300	4298.20	-401.69	-384.65	-1071.48	1670229.47	14571766.94	40°07'25.033"N	104°53'36.069"W	1.93	
4559.00	9.210	250.460	4385.80	-407.50	-390.22	-1086.21	1670214.76	14571761.35	40°07'24.978"N	104°53'36.259"W	2.25	
4649.00	9.340	251.520	4474.62	-412.44	-394.95	-1099.92	1670201.05	14571756.61	40°07'24.931"N	104°53'36.435"W	0.24	
4738.00	9.460	252.890	4562.42	-417.11	-399.39	-1113.76	1670187.23	14571752.15	40°07'24.887"N	104°53'36.613"W	0.29	
4828.00	7.930	254.630	4651.39	-421.13	-403.21	-1126.82	1670174.18	14571748.31	40°07'24.849"N	104°53'36.781"W	1.72	
4917.00	7.850	254.560	4739.54	-424.57	-406.46	-1138.60	1670162.41	14571745.06	40°07'24.817"N	104°53'36.933"W	0.09	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#05 COWBOY 21-1HZ(2335°FNL & 946°FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-1HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-1HZ AWB
Facility	SEC.21-T2N-R67W		

WELLPATH DATA (213 stations) † = interpolated/extrapolated station												
MD (ft)	Inclination [°]	Azimuth [°]	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	DLS (°/100ft)	Comments
5007.00	8.030	254.670	4828.68	-428.06	409.75	-1150.58	1670150.43	14571741.74	40°07'24.784"N	104°53'37.087"W	0.20	
5096.00	7.880	252.220	4916.83	-431.75	413.26	-1162.39	1670138.64	14571738.22	40°07'24.750"N	104°53'37.239"W	0.42	
5186.00	7.970	247.010	5005.97	-436.26	417.58	-1174.01	1670127.03	14571733.89	40°07'24.707"N	104°53'37.389"W	0.80	
5275.00	7.860	242.220	5094.12	-441.68	422.83	-1185.07	1670115.97	14571728.63	40°07'24.655"N	104°53'37.531"W	0.75	
5365.00	8.260	238.940	5183.23	-448.06	429.03	-1196.05	1670105.00	14571722.42	40°07'24.594"N	104°53'37.673"W	0.68	
5454.00	8.080	240.150	5271.33	-454.64	435.44	-1206.95	1670094.11	14571716.00	40°07'24.531"N	104°53'37.813"W	0.28	
5544.00	8.020	242.940	5360.44	-460.82	441.45	-1218.03	1670083.05	14571709.98	40°07'24.471"N	104°53'37.956"W	0.44	
5633.00	8.090	245.230	5448.56	-466.45	446.90	-1229.25	1670071.85	14571704.52	40°07'24.417"N	104°53'38.100"W	0.37	
5722.00	8.130	248.930	5536.67	-471.52	451.78	-1240.81	1670060.30	14571699.62	40°07'24.369"N	104°53'38.249"W	0.59	
5812.00	8.530	252.320	5625.73	-476.03	456.10	-1253.10	1670048.01	14571695.29	40°07'24.326"N	104°53'38.407"W	0.70	
5901.00	7.820	255.970	5713.82	-479.69	459.57	-1265.27	1670035.86	14571691.81	40°07'24.292"N	104°53'38.564"W	0.99	
5991.00	8.010	256.170	5802.96	-482.87	462.55	-1277.30	1670023.84	14571688.81	40°07'24.263"N	104°53'38.718"W	0.21	ENTER LANDBOX (2798°FNL & 2223°FEL,SEC.21) 40.1234063 -104.8940885
6080.00	7.620	251.490	5891.14	-486.41	465.91	-1288.91	1670012.23	14571685.44	40°07'24.230"N	104°53'38.868"W	0.84	
6170.00	8.120	245.870	5980.29	-491.09	470.40	-1300.37	1670000.78	14571680.94	40°07'24.185"N	104°53'39.015"W	1.02	
6259.00	7.920	240.960	6068.42	-496.81	475.95	-1311.47	1669989.69	14571675.38	40°07'24.130"N	104°53'39.158"W	0.80	
6348.00	7.860	238.590	6156.58	-503.12	482.10	-1322.02	1669979.15	14571669.22	40°07'24.070"N	104°53'39.294"W	0.37	
6438.00	7.970	247.470	6245.72	-508.90	487.69	-1333.04	1669968.15	14571663.61	40°07'24.014"N	104°53'39.436"W	1.36	
6527.00	7.820	249.060	6333.88	-513.60	492.22	-1344.39	1669956.80	14571659.07	40°07'23.969"N	104°53'39.582"W	0.30	
6617.00	8.030	247.870	6423.02	-518.34	496.78	-1355.94	1669945.27	14571654.50	40°07'23.924"N	104°53'39.731"W	0.30	
6706.00	7.890	246.210	6511.16	-523.33	501.58	-1367.28	1669933.93	14571649.68	40°07'23.877"N	104°53'39.877"W	0.30	
6796.00	8.020	247.710	6600.30	-528.39	506.46	-1378.74	1669922.48	14571644.80	40°07'23.829"N	104°53'40.024"W	0.27	
6885.00	8.060	248.950	6688.42	-533.17	511.05	-1390.31	1669910.92	14571640.19	40°07'23.783"N	104°53'40.173"W	0.20	
6975.00	7.900	250.030	6777.55	-537.73	515.43	-1402.01	1669899.23	14571635.80	40°07'23.740"N	104°53'40.324"W	0.24	
7064.00	8.080	250.820	6865.69	-542.06	519.58	-1413.67	1669887.59	14571631.64	40°07'23.699"N	104°53'40.474"W	0.24	
7153.00	8.090	250.410	6953.80	-546.40	523.73	-1425.48	1669875.79	14571627.47	40°07'23.658"N	104°53'40.626"W	0.07	
7243.00	7.980	251.200	7042.92	-550.73	527.87	-1437.36	1669863.92	14571623.32	40°07'23.617"N	104°53'40.779"W	0.17	
7295.00†	7.739	269.115	7094.44	-552.06	529.08	-1444.28	1669857.00	14571622.10	40°07'23.605"N	104°53'40.868"W	4.71	KOP
7332.00	8.030	281.680	7131.09	-551.65	528.60	-1449.30	1669851.98	14571622.58	40°07'23.610"N	104°53'40.933"W	4.71	
7421.00	15.270	322.040	7218.33	-541.34	518.07	-1462.63	1669838.64	14571633.08	40°07'23.714"N	104°53'41.104"W	11.79	
7511.00	22.410	339.430	7303.52	-516.09	492.61	-1475.98	1669825.27	14571658.51	40°07'23.966"N	104°53'41.276"W	10.01	
7600.00	30.790	350.140	7383.07	-477.84	454.20	-1485.86	1669815.34	14571696.90	40°07'24.345"N	104°53'41.403"W	10.81	
7690.00	40.000	352.530	7456.36	-426.48	402.71	-1493.58	1669807.56	14571748.36	40°07'24.854"N	104°53'41.503"W	10.35	
7779.00	50.760	353.170	7518.78	-363.85	339.94	-1501.43	1669799.64	14571811.09	40°07'25.474"N	104°53'41.604"W	12.10	
7868.00	59.930	355.800	7569.35	-291.18	267.15	-1508.36	1669792.62	14571883.85	40°07'26.194"N	104°53'41.693"W	10.58	
7958.00	68.020	357.800	7608.80	-210.58	186.47	-1512.82	1669788.06	14571964.49	40°07'26.991"N	104°53'41.751"W	9.21	
8047.00	77.350	359.730	7635.27	-125.77	101.62	-1514.61	1669786.16	14572049.30	40°07'27.829"N	104°53'41.774"W	10.69	
8137.00	87.840	1.650	7646.85	-36.65	-12.51	-1513.52	1669787.14	14572138.38	40°07'28.710"N	104°53'41.760"W	11.85	LANDING (2348°FNL & 2460°FEL,SEC.21) 40.1246416 -104.8949332
8226.00	88.210	1.730	7649.92	52.29	76.40	-1510.90	1669789.66	14572227.26	40°07'29.589"N	104°53'41.726"W	0.43	
8234.00†	88.382	1.518	7650.16	60.29	84.39	-1510.67	1669789.87	14572235.25	40°07'29.668"N	104°53'41.723"W	3.41	EXIT RADIUS HEEL (2251°FNL & 2457°FEL,SEC.21) 40.1249076 -104.8949231
8316.00	90.150	359.350	7651.21	142.27	166.38	-1510.05	1669790.39	14572317.20	40°07'30.478"N	104°53'41.715"W	3.41	
8405.00	90.030	357.540	7651.07	231.18	255.34	-1512.47	1669787.87	14572406.12	40°07'31.357"N	104°53'41.746"W	2.04	
8531.00	89.880	356.470	7651.16	356.89	381.17	-1519.05	1669781.13	14572531.89	40°07'32.600"N	104°53'41.831"W	0.86	
8621.00	90.060	357.280	7651.21	446.66	471.03	-1523.96	1669776.11	14572621.71	40°07'33.488"N	104°53'41.894"W	0.92	
8710.00	90.090	359.520	7651.10	535.57	559.99	-1526.44	1669773.52	14572710.63	40°07'34.367"N	104°53'41.926"W	2.52	
8800.00	89.910	1.790	7651.10	625.56	649.98	-1525.41	1669774.44	14572800.59	40°07'35.257"N	104°53'41.913"W	2.53	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#05 COWBOY 21-1HZ(2335'FNL & 946'FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-1HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-1HZ AWB
Facility	SEC.21-T2N-R67W		

WELLPATH DATA (213 stations)												
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
8889.00	89.380	3.620	7651.65	714.51	738.87	-1521.21	1669778.52	14572889.45	40°07'36.135"N	104°53'41.859"W	2.14	
8979.00	89.630	4.470	7652.42	804.38	828.65	-1514.87	1669784.76	14572979.19	40°07'37.022"N	104°53'41.778"W	0.98	
9068.00	89.410	4.640	7653.17	893.19	917.36	-1507.80	1669791.71	14573067.88	40°07'37.899"N	104°53'41.687"W	0.31	
9157.00	89.540	4.090	7653.99	982.03	1006.10	-1501.02	1669798.37	14573156.59	40°07'38.776"N	104°53'41.600"W	0.63	
9247.00	89.600	3.450	7654.66	1071.91	1095.90	-1495.11	1669804.18	14573246.37	40°07'39.663"N	104°53'41.523"W	0.71	
9336.00	89.510	2.660	7655.35	1160.85	1184.77	-1490.36	1669808.81	14573335.21	40°07'40.542"N	104°53'41.462"W	0.89	
9426.00	89.450	1.750	7656.17	1250.82	1274.70	-1486.90	1669812.16	14573425.10	40°07'41.430"N	104°53'41.418"W	1.01	
9515.00	90.280	359.980	7656.38	1339.81	1363.69	-1485.56	1669813.39	14573514.06	40°07'42.310"N	104°53'41.401"W	2.20	
9605.00	90.030	359.870	7656.14	1429.80	1453.68	-1485.68	1669813.16	14573604.02	40°07'43.199"N	104°53'41.402"W	0.30	
9694.00	90.550	358.610	7655.68	1518.76	1542.67	-1486.86	1669811.87	14573692.97	40°07'44.078"N	104°53'41.418"W	1.53	
9784.00	90.180	0.020	7655.11	1608.72	1632.66	-1487.93	1669810.68	14573782.92	40°07'44.968"N	104°53'41.432"W	1.62	
9873.00	90.280	0.030	7654.75	1697.71	1721.66	-1487.89	1669810.61	14573871.89	40°07'45.847"N	104°53'41.431"W	0.11	
9963.00	90.280	359.680	7654.31	1787.69	1811.66	-1488.12	1669810.27	14573961.85	40°07'46.737"N	104°53'41.434"W	0.39	
10052.00	90.400	358.820	7653.79	1876.65	1900.65	-1489.29	1669809.00	14574050.80	40°07'47.616"N	104°53'41.449"W	0.98	
10142.00	89.940	358.380	7653.52	1966.58	1990.62	-1491.48	1669806.69	14574140.73	40°07'48.505"N	104°53'41.478"W	0.71	
10231.00	90.220	359.080	7653.39	2055.51	2079.60	-1493.46	1669804.60	14574229.67	40°07'49.384"N	104°53'41.503"W	0.85	
10321.00	90.770	1.260	7652.62	2145.50	2169.59	-1493.19	1669804.76	14574319.63	40°07'50.274"N	104°53'41.500"W	2.50	
10410.00	90.120	2.730	7651.93	2234.47	2258.53	-1490.09	1669807.75	14574408.54	40°07'51.153"N	104°53'41.460"W	1.81	
10500.00	90.000	2.760	7651.83	2324.43	2348.43	-1485.78	1669811.94	14574498.40	40°07'52.041"N	104°53'41.404"W	0.14	
10589.00	90.150	3.740	7651.72	2413.35	2437.28	-1480.74	1669816.88	14574587.23	40°07'52.919"N	104°53'41.339"W	1.11	
10678.00	90.060	4.240	7651.55	2502.22	2526.07	-1474.54	1669822.96	14574675.98	40°07'53.796"N	104°53'41.260"W	0.57	
10768.00	90.580	5.540	7651.05	2592.00	2615.74	-1466.87	1669830.51	14574765.63	40°07'54.683"N	104°53'41.161"W	1.56	
10857.00	90.400	3.440	7650.29	2680.82	2704.45	-1459.90	1669837.37	14574854.32	40°07'55.559"N	104°53'41.072"W	2.37	
10947.00	90.370	1.050	7649.68	2770.79	2794.38	-1456.38	1669840.78	14574944.21	40°07'56.448"N	104°53'41.026"W	2.66	
11036.00	90.150	0.390	7649.28	2859.79	2883.37	-1455.26	1669841.79	14575033.17	40°07'57.327"N	104°53'41.012"W	0.78	
11125.00	90.250	0.280	7648.97	2948.78	2972.37	-1454.74	1669842.20	14575122.13	40°07'58.207"N	104°53'41.005"W	0.17	
11215.00	89.940	0.440	7648.82	3038.78	3062.36	-1454.18	1669842.65	14575212.09	40°07'59.096"N	104°53'40.998"W	0.39	
11304.00	90.370	359.120	7648.58	3127.76	3151.36	-1454.52	1669842.20	14575301.05	40°07'59.976"N	104°53'41.002"W	1.56	
11394.00	90.030	358.530	7648.26	3217.70	3241.34	-1456.36	1669840.24	14575390.99	40°08'00.865"N	104°53'41.026"W	0.76	
11483.00	90.060	358.140	7648.19	3306.61	3330.30	-1458.95	1669837.54	14575479.92	40°08'01.744"N	104°53'41.060"W	0.44	
11573.00	90.430	358.630	7647.81	3396.52	3420.27	-1461.49	1669834.90	14575569.84	40°08'02.633"N	104°53'41.092"W	0.68	
11662.00	90.340	358.770	7647.21	3485.45	3509.24	-1463.50	1669832.77	14575658.78	40°08'03.512"N	104°53'41.118"W	0.19	
11752.00	90.580	359.350	7646.49	3575.40	3599.23	-1464.98	1669831.18	14575748.72	40°08'04.401"N	104°53'41.138"W	0.70	
11841.00	90.280	359.470	7645.82	3664.37	3688.22	-1465.90	1669830.15	14575837.68	40°08'05.281"N	104°53'41.149"W	0.36	
11931.00	90.250	358.810	7645.40	3754.32	3778.21	-1467.25	1669828.69	14575927.63	40°08'06.170"N	104°53'41.167"W	0.73	
12020.00	90.400	358.870	7644.90	3843.26	3867.19	-1469.05	1669826.78	14576016.57	40°08'07.050"N	104°53'41.190"W	0.18	
12109.00	90.430	358.920	7644.26	3932.20	3956.17	-1470.77	1669824.95	14576105.52	40°08'07.929"N	104°53'41.212"W	0.07	
12199.00	90.340	359.530	7643.65	4022.16	4046.16	-1471.98	1669823.63	14576195.47	40°08'08.818"N	104°53'41.228"W	0.69	
12288.00	90.180	1.020	7643.25	4111.15	4135.15	-1471.56	1669823.94	14576284.43	40°08'09.698"N	104°53'41.223"W	1.68	
12377.00	89.510	2.030	7643.49	4200.15	4224.12	-1469.19	1669826.20	14576373.36	40°08'10.577"N	104°53'41.192"W	1.36	
12467.00	90.620	358.570	7643.39	4290.13	4314.10	-1468.72	1669826.56	14576463.31	40°08'11.466"N	104°53'41.186"W	4.04	
12556.00	90.680	359.560	7642.38	4379.07	4403.09	-1470.17	1669825.00	14576552.25	40°08'12.345"N	104°53'41.205"W	1.11	
12646.00	90.650	1.590	7641.33	4469.06	4493.07	-1469.27	1669825.79	14576642.20	40°08'13.235"N	104°53'41.193"W	2.26	
12735.00	90.680	2.950	7640.30	4558.03	4581.99	-1465.74	1669829.20	14576731.09	40°08'14.113"N	104°53'41.148"W	1.53	
12825.00	89.880	2.910	7639.86	4647.97	4671.87	-1461.14	1669833.69	14576820.94	40°08'15.001"N	104°53'41.089"W	0.89	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#05 COWBOY 21-1HZ(2335°FNL & 946°FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-1HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-1HZ AWB
Facility	SEC.21-T2N-R67W		

WELLPATH DATA (213 stations) † = interpolated/extrapolated station												
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
12914.00	90.060	0.890	7639.90	4736.95	4760.82	-1458.19	1669836.53	14576909.86	40°08'15.880"N	104°53'41.051"W	2.28	
13004.00	90.150	0.710	7639.74	4826.95	4850.81	-1456.93	1669837.67	14576999.82	40°08'16.770"N	104°53'41.035"W	0.22	
13093.00	90.250	1.230	7639.43	4915.95	4939.80	-1455.43	1669839.07	14577088.77	40°08'17.649"N	104°53'41.016"W	0.59	
13183.00	90.430	2.310	7638.90	5005.94	5029.75	-1452.65	1669841.73	14577178.69	40°08'18.538"N	104°53'40.980"W	1.22	
13272.00	89.970	4.160	7638.58	5094.86	5118.60	-1447.62	1669846.64	14577267.51	40°08'19.416"N	104°53'40.915"W	2.14	
13362.00	90.280	4.640	7638.39	5184.69	5208.34	-1440.72	1669853.43	14577357.22	40°08'20.303"N	104°53'40.826"W	0.63	
13451.00	90.280	6.420	7637.95	5273.40	5296.92	-1432.14	1669861.90	14577445.78	40°08'21.178"N	104°53'40.716"W	2.00	
13541.00	90.180	6.470	7637.59	5362.98	5386.35	-1422.04	1669871.88	14577535.18	40°08'22.062"N	104°53'40.586"W	0.12	
13630.00	90.220	3.910	7637.28	5451.72	5474.98	-1413.99	1669879.82	14577623.78	40°08'22.938"N	104°53'40.482"W	2.88	
13720.00	90.430	1.830	7636.77	5541.67	5564.86	-1409.49	1669884.21	14577713.63	40°08'23.826"N	104°53'40.424"W	2.32	
13898.00	90.280	2.260	7635.67	5719.63	5742.74	-1403.13	1669890.34	14577891.45	40°08'25.584"N	104°53'40.343"W	0.26	
13988.00	90.370	3.600	7635.16	5809.57	5832.82	-1398.53	1669894.83	14577981.30	40°08'26.472"N	104°53'40.284"W	1.49	
14078.00	90.280	1.910	7634.65	5899.52	5922.51	-1394.21	1669899.04	14578071.16	40°08'27.360"N	104°53'40.228"W	1.88	
14167.00	90.430	0.430	7634.10	5988.51	6011.49	-1392.39	1669900.75	14578160.11	40°08'28.240"N	104°53'40.205"W	1.67	
14256.00	90.310	359.060	7633.52	6077.49	6100.48	-1392.79	1669900.24	14578249.07	40°08'29.119"N	104°53'40.210"W	1.55	
14346.00	90.310	358.510	7633.03	6167.43	6190.46	-1394.69	1669898.22	14578339.01	40°08'30.008"N	104°53'40.234"W	0.61	
14435.00	90.250	359.500	7632.60	6256.37	6279.45	-1396.24	1669896.56	14578427.95	40°08'30.888"N	104°53'40.254"W	1.11	
14525.00	90.030	359.890	7632.38	6346.35	6369.44	-1396.72	1669895.97	14578517.91	40°08'31.777"N	104°53'40.261"W	0.50	
14614.00	90.120	358.500	7632.26	6435.31	6458.43	-1397.97	1669894.61	14578606.87	40°08'32.656"N	104°53'40.277"W	1.57	
14703.00	90.340	359.310	7631.90	6524.25	6547.41	-1399.67	1669892.80	14578695.81	40°08'33.536"N	104°53'40.299"W	0.94	
14793.00	90.180	0.870	7631.50	6614.24	6637.41	-1399.53	1669892.83	14578785.77	40°08'34.425"N	104°53'40.297"W	1.74	
14882.00	90.310	2.550	7631.12	6703.23	6726.37	-1396.87	1669895.38	14578874.69	40°08'35.304"N	104°53'40.263"W	1.89	
14971.00	90.090	1.400	7630.81	6792.21	6815.31	-1393.81	1669898.33	14578963.61	40°08'36.183"N	104°53'40.223"W	1.32	
15061.00	90.090	358.430	7630.66	6882.19	6905.30	-1393.94	1669898.09	14579053.56	40°08'37.072"N	104°53'40.225"W	3.30	
15150.00	90.430	357.550	7630.26	6971.07	6994.25	-1397.06	1669894.86	14579142.46	40°08'37.951"N	104°53'40.266"W	1.06	
15239.00	90.430	358.580	7629.59	7059.96	7083.19	-1400.07	1669891.74	14579231.37	40°08'38.830"N	104°53'40.304"W	1.16	
15329.00	90.120	0.200	7629.16	7149.92	7173.18	-1401.02	1669890.67	14579321.32	40°08'39.720"N	104°53'40.317"W	1.83	
15354.00†	90.137	0.228	7629.10	7174.92	7198.18	-1400.93	1669890.73	14579346.31	40°08'39.967"N	104°53'40.315"W	0.13	ENTER RADIUS TOE (405°FNL & 2400°FEL, SEC.16) 40.1444352 -104.8945321
15418.00	90.180	0.300	7628.93	7238.91	7262.18	-1400.64	1669890.95	14579410.29	40°08'40.599"N	104°53'40.312"W	0.13	
15508.00	90.430	1.610	7628.45	7328.91	7352.16	-1399.14	1669892.34	14579500.24	40°08'41.488"N	104°53'40.292"W	1.48	
15597.00	90.250	1.520	7627.92	7417.90	7441.13	-1396.71	1669894.66	14579589.17	40°08'42.368"N	104°53'40.261"W	0.23	
15682.00	90.120	3.450	7627.65	7502.87	7526.05	-1393.02	1669898.23	14579674.06	40°08'43.207"N	104°53'40.214"W	2.28	LAST BHGE MWD+IFR1+SC SURVEY
15706.00	90.120	3.450	7627.60	7526.84	7550.00	-1391.58	1669899.65	14579698.00	40°08'43.443"N	104°53'40.195"W	0.00	PTB (53°FNL & 2390°FEL, SEC.16) 40.1454010 -104.8944987

HOLE & CASING SECTIONS - Ref Wellbore: COWBOY 21-1HZ AWB Ref Wellpath: COWBOY 21-1HZ 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	26.00	1881.00	1855.00	26.00	1829.91	0.00	0.00	-157.78	-330.76



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#05 COWBOY 21-1HZ(2335'FNL & 946'FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-1HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-1HZ AWB
Facility	SEC.21-T2N-R67W		

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SEC.09-T2N-R67W	0.00	0.00	0.00	1671300.04	14572152.76	40°07'28.834"N	104°53'22.276"W	polygon
SEC.16-T2N-R67W	0.00	0.00	0.00	1671300.04	14572152.76	40°07'28.834"N	104°53'22.276"W	polygon
SEC.21-T2N-R67W	0.00	0.00	0.00	1671300.04	14572152.76	40°07'28.834"N	104°53'22.276"W	polygon
COWBOY 21-1HZ BHL REV-1(52'FNL & 2389'FEL,SEC.16)	7632.00	7551.11	-1391.10	1669900.12	14579699.11	40°08'43.454"N	104°53'40.189"W	point
COWBOY 21-1HZ HEEL REV-1(2365'FNL & 2428'FEL,SEC.21)	7636.00	-1.09	-1481.57	1669819.07	14572149.83	40°07'28.823"N	104°53'41.348"W	point
COWBOY 21-1HZ HEEL REV-2(2365'FNL & 2458'FEL,SEC.21)	7636.00	-1.09	-1511.57	1669789.08	14572149.80	40°07'28.823"N	104°53'41.735"W	point
COWBOY 21-1HZ LANDBOX	7636.00	0.00	0.00	1671300.04	14572152.76	40°07'28.834"N	104°53'22.276"W	polygon
COWBOY 21-1HZ RADIUS 1	7636.00	7605.40	-1616.75	1669674.50	14579753.10	40°08'43.991"N	104°53'43.095"W	polygon
COWBOY 21-1HZ RADIUS 2	7636.00	-314.03	-1740.23	1669560.90	14571836.70	40°07'25.730"N	104°53'44.678"W	polygon

WELLPATH COMPOSITION - Ref Wellbore: COWBOY 21-1HZ AWB Ref Wellpath: COWBOY 21-1HZ AWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	1842.00	Custom APC ISCWSA REV 2 MWD+IFR1 (approximation)	Custom APC ISCWSA Rev-2 MWD+IFR1 <133 - 1842>	COWBOY 21-1HZ AWB
1842.00	15682.00	Custom APC ISCWSA REV 2 MWD+IFR1+SC (approximation)	BHGE Custom APC ISCWSA Rev-2 MWD+IFR1+SC <1967 - 15682>	COWBOY 21-1HZ AWB
15682.00	15706.00	Blind Drilling (std)	Projection to bit	COWBOY 21-1HZ AWB



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#05 COWBOY 21-1HZ(2335'FNL & 946'FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-1HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-1HZ AWB
Facility	SEC.21-T2N-R67W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
133.00	0.700	124.160	133.00	FIRST SURFACE MWD+IFR1 SURVEY
1842.00	17.970	242.900	1792.66	LAST SURFACE MWD+IFR1 SURVEY
1967.00	13.290	245.260	1913.01	FIRST BHGE MWD+IFR1+SC SURVEY
5991.00	8.010	256.170	5802.96	ENTER LANDBOX (2798'FNL & 2223'FEL,SEC.21) 40.1234063 -104.8940885
7295.00	7.739	269.115	7094.44	KOP
8137.00	87.840	1.650	7646.85	LANDING (2348'FNL & 2460'FEL,SEC.21) 40.1246416 -104.8949332
8234.00	88.382	1.518	7650.16	EXIT RADIUS HEEL (2251'FNL & 2457'FEL,SEC.21) 40.1249076 -104.8949231
15354.00	90.137	0.228	7629.10	ENTER RADIUS TOE (405'FNL & 2400'FEL,SEC.16) 40.1444352 -104.8945321
15682.00	90.120	3.450	7627.65	LAST BHGE MWD+IFR1+SC SURVEY
15706.00	90.120	3.450	7627.60	PTB (53'FNL & 2390'FEL,SEC.16) 40.1454010 -104.8944987