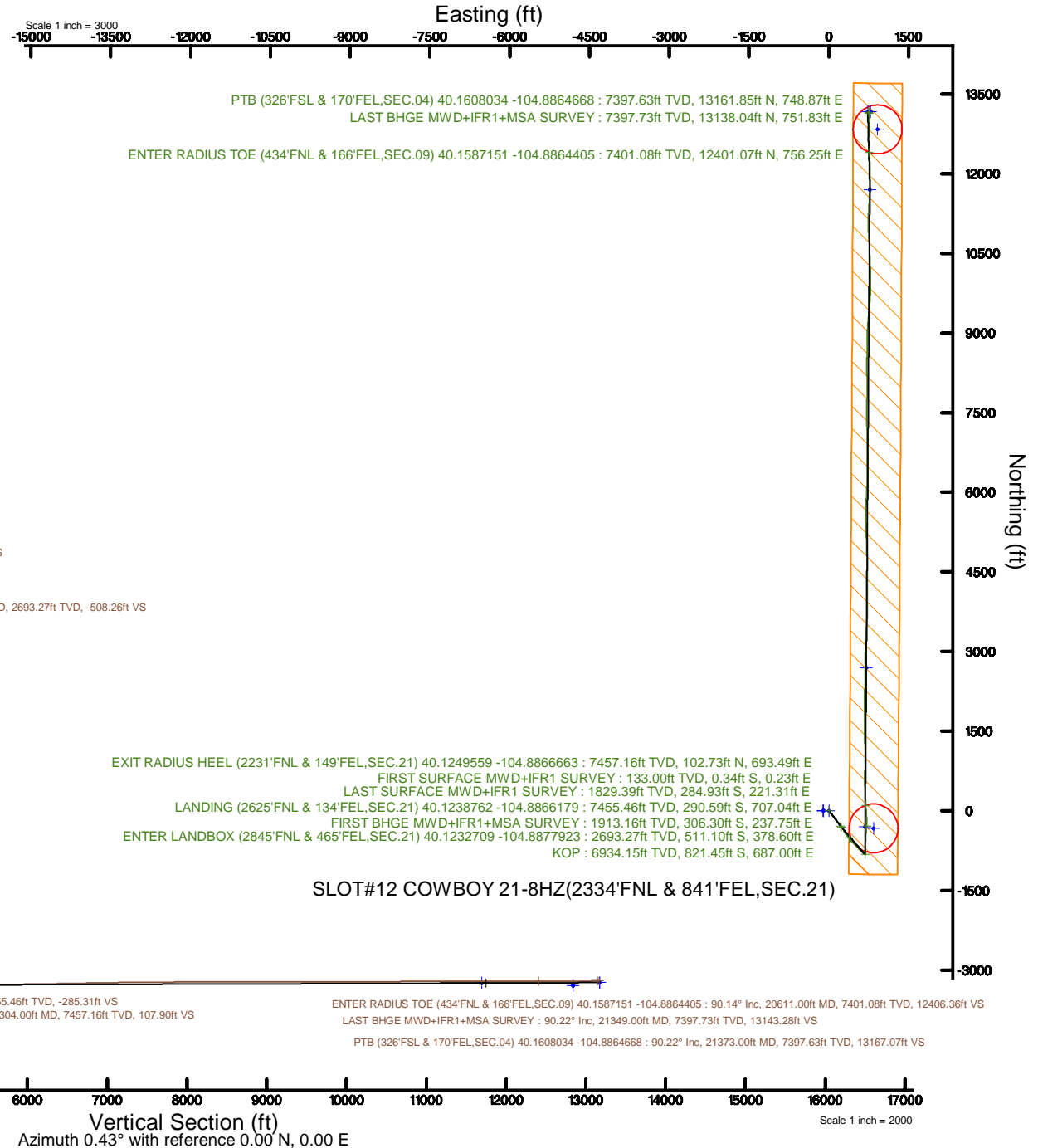


KERR-MCGEE OIL & GAS ONSHORE LP (WA)

Location: COLORADO Slot: SLOT#12 COWBOY 21-8HZ(2334'FNL & 841'FEL,SEC.21)
 Field: WELD COUNTY (UTM/TRUE NORTH) Well: COWBOY 21-8HZ
 Facility: SEC.21-T2N-R67W Wellbore: COWBOY 21-8HZ PWB

Plot reference wellpath is COWBOY 21-8HZ 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#12 COWBOY 21-8HZ(2334'FNL & 841'FEL,SEC.21)): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: painsetr on 2018-10-25
	Database: WA_DEN_Anadarko_Defn



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#12 COWBOY 21-8HZ(2334'FNL & 841'FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-8HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-8HZ 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	10/25/2018 at 9:01 AM
Convergence at slot	0.08° East	Database/Source file	WA_DEN_Anadarko_Defn/COWBOY_21-8HZ_AWP.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-1881.99	-180.69	1671404.87	14572152.09	40°07'28.826"N	104°53'20.926"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#12 COWBOY 21-8HZ(2334'FNL & 841'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	0.43°

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#12 COWBOY 21-8HZ(2334'FNL & 841'FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-8HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-8HZ AWB
Facility	SEC.21-T2N-R67W		

WELLPATH DATA (276 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	146.660	0.00	0.00	0.00	0.00	1671404.87	14572152.08	40°07'28.826"N	104°53'20.926"W	0.00	
26.00	0.000	146.660	26.00	0.00	0.00	0.00	1671404.87	14572152.08	40°07'28.826"N	104°53'20.926"W	0.00	
133.00	0.440	146.660	133.00	-0.34	-0.34	0.23	1671405.10	14572151.74	40°07'28.823"N	104°53'20.923"W	0.41	FIRST SURFACE MWD+IFR1 SURVEY
165.00	0.440	142.880	165.00	-0.54	-0.54	0.37	1671405.24	14572151.54	40°07'28.821"N	104°53'20.921"W	0.09	
196.00	0.570	141.120	196.00	-0.75	-0.76	0.54	1671405.41	14572151.33	40°07'28.819"N	104°53'20.919"W	0.42	
228.00	0.660	142.700	227.99	-1.02	-1.03	0.75	1671405.62	14572151.06	40°07'28.816"N	104°53'20.916"W	0.29	
260.00	0.790	146.830	259.99	-1.35	-1.36	0.98	1671405.85	14572150.73	40°07'28.813"N	104°53'20.913"W	0.44	
292.00	1.010	149.200	291.99	-1.78	-1.79	1.25	1671406.12	14572150.30	40°07'28.808"N	104°53'20.910"W	0.70	
323.00	1.360	142.350	322.98	-2.30	-2.31	1.61	1671406.48	14572149.77	40°07'28.803"N	104°53'20.905"W	1.22	
355.00	2.020	140.240	354.97	-3.03	-3.05	2.20	1671407.08	14572149.04	40°07'28.796"N	104°53'20.898"W	2.07	
387.00	2.500	137.510	386.94	-3.97	-4.00	3.03	1671407.91	14572148.09	40°07'28.787"N	104°53'20.887"W	1.54	
419.00	3.030	137.600	418.91	-5.10	-5.14	4.08	1671408.95	14572146.96	40°07'28.775"N	104°53'20.874"W	1.66	
451.00	3.560	137.690	450.85	-6.45	-6.49	5.32	1671410.19	14572145.60	40°07'28.762"N	104°53'20.858"W	1.66	
483.00	4.040	136.550	482.78	-8.00	-8.05	6.76	1671411.64	14572144.05	40°07'28.746"N	104°53'20.839"W	1.52	
514.00	4.700	136.640	513.69	-9.70	-9.76	8.38	1671413.26	14572142.34	40°07'28.730"N	104°53'20.818"W	2.13	
546.00	5.270	137.080	545.57	-11.72	-11.79	10.28	1671415.17	14572140.31	40°07'28.709"N	104°53'20.794"W	1.79	
578.00	5.930	137.600	577.42	-14.00	-14.09	12.40	1671417.28	14572138.02	40°07'28.687"N	104°53'20.766"W	2.07	
609.00	6.550	138.920	608.23	-16.50	-16.61	14.64	1671419.53	14572135.50	40°07'28.662"N	104°53'20.738"W	2.05	
641.00	7.290	139.620	640.00	-19.40	-19.53	17.15	1671422.05	14572132.59	40°07'28.633"N	104°53'20.705"W	2.33	
673.00	7.780	141.030	671.72	-22.61	-22.76	19.83	1671424.73	14572129.36	40°07'28.601"N	104°53'20.671"W	1.64	
704.00	8.390	140.850	702.42	-25.97	-26.14	22.58	1671427.48	14572125.98	40°07'28.568"N	104°53'20.635"W	1.97	
736.00	8.660	140.240	734.06	-29.61	-29.81	25.59	1671430.49	14572122.32	40°07'28.531"N	104°53'20.597"W	0.89	
768.00	9.230	139.890	765.67	-33.41	-33.62	28.79	1671433.69	14572118.51	40°07'28.494"N	104°53'20.555"W	1.79	
800.00	10.020	140.330	797.22	-37.49	-37.73	32.22	1671437.13	14572114.41	40°07'28.453"N	104°53'20.511"W	2.48	
831.00	11.250	141.650	827.69	-41.91	-42.17	35.82	1671440.73	14572109.97	40°07'28.409"N	104°53'20.465"W	4.04	
863.00	12.080	141.210	859.03	-46.93	-47.23	39.85	1671444.77	14572104.92	40°07'28.359"N	104°53'20.413"W	2.61	
895.00	12.520	141.910	890.29	-52.24	-52.57	44.09	1671449.01	14572099.59	40°07'28.306"N	104°53'20.358"W	1.45	
927.00	12.740	142.170	921.52	-57.73	-58.09	48.39	1671453.32	14572094.08	40°07'28.252"N	104°53'20.303"W	0.71	
958.00	12.790	142.260	951.75	-63.11	-63.50	52.59	1671457.52	14572088.67	40°07'28.198"N	104°53'20.249"W	0.17	
990.00	13.670	142.700	982.90	-68.88	-69.31	57.05	1671461.99	14572082.87	40°07'28.141"N	104°53'20.192"W	2.77	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#12 COWBOY 21-8HZ(2334'FNL & 841'FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-8HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-8HZ AWB
Facility	SEC.21-T2N-R67W		

WELLPATH DATA (276 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
1054.00	16.040	141.910	1044.76	-81.78	-82.29	67.09	1671472.04	14572069.91	40°07'28.013"N	104°53'20.062"W	3.72	
1085.00	16.440	141.910	1074.52	-88.57	-89.11	72.44	1671477.39	14572063.10	40°07'27.945"N	104°53'19.994"W	1.29	
1117.00	16.960	142.520	1105.17	-95.79	-96.38	78.07	1671483.03	14572055.84	40°07'27.874"N	104°53'19.921"W	1.71	
1149.00	17.270	141.380	1135.76	-103.17	-103.79	83.87	1671488.84	14572048.44	40°07'27.800"N	104°53'19.846"W	1.43	
1181.00	17.580	141.650	1166.29	-110.62	-111.29	89.84	1671494.81	14572040.95	40°07'27.726"N	104°53'19.770"W	1.00	
1212.00	17.710	141.560	1195.83	-117.94	-118.66	95.67	1671500.66	14572033.59	40°07'27.653"N	104°53'19.694"W	0.43	
1244.00	18.060	142.350	1226.28	-125.64	-126.40	101.73	1671506.72	14572025.86	40°07'27.577"N	104°53'19.616"W	1.33	
1276.00	18.330	142.090	1256.68	-133.49	-134.30	107.85	1671512.85	14572017.98	40°07'27.499"N	104°53'19.538"W	0.88	
1307.00	19.030	142.880	1286.05	-141.32	-142.17	113.90	1671518.90	14572010.11	40°07'27.421"N	104°53'19.460"W	2.40	
1339.00	19.030	143.580	1316.30	-149.63	-150.53	120.14	1671525.15	14572001.77	40°07'27.338"N	104°53'19.379"W	0.71	
1370.00	18.150	144.020	1345.68	-157.56	-158.50	125.98	1671531.00	14571993.80	40°07'27.260"N	104°53'19.304"W	2.87	
1402.00	17.930	144.550	1376.11	-165.56	-166.55	131.76	1671536.79	14571985.77	40°07'27.180"N	104°53'19.230"W	0.86	
1434.00	18.150	144.630	1406.54	-173.60	-174.63	137.51	1671542.54	14571977.70	40°07'27.100"N	104°53'19.156"W	0.69	
1465.00	18.980	144.900	1435.92	-181.62	-182.69	143.20	1671548.24	14571969.65	40°07'27.021"N	104°53'19.083"W	2.69	
1497.00	19.420	144.550	1466.14	-190.16	-191.28	149.28	1671554.33	14571961.07	40°07'26.936"N	104°53'19.004"W	1.42	
1529.00	18.900	144.110	1496.37	-198.65	-199.81	155.40	1671560.46	14571952.55	40°07'26.851"N	104°53'18.926"W	1.69	
1560.00	18.810	143.140	1525.71	-206.67	-207.88	161.34	1671566.41	14571944.49	40°07'26.772"N	104°53'18.849"W	1.05	
1591.00	18.410	142.610	1555.09	-214.51	-215.77	167.31	1671572.39	14571936.61	40°07'26.694"N	104°53'18.772"W	1.40	
1623.00	18.110	141.910	1585.47	-222.40	-223.70	173.45	1671578.53	14571928.70	40°07'26.615"N	104°53'18.693"W	1.16	
1655.00	17.270	141.470	1615.96	-229.98	-231.33	179.48	1671584.57	14571921.08	40°07'26.540"N	104°53'18.616"W	2.66	
1718.00	17.490	141.650	1676.09	-244.63	-246.07	191.18	1671596.28	14571906.36	40°07'26.394"N	104°53'18.465"W	0.36	
1750.00	17.710	142.790	1706.59	-252.24	-253.71	197.10	1671602.21	14571898.72	40°07'26.319"N	104°53'18.389"W	1.28	
1782.00	18.110	142.960	1737.04	-260.04	-261.56	203.04	1671608.16	14571890.88	40°07'26.241"N	104°53'18.312"W	1.26	
1813.00	17.750	141.910	1766.53	-267.56	-269.12	208.86	1671613.98	14571883.33	40°07'26.166"N	104°53'18.237"W	1.56	
1839.00	17.750	141.730	1791.29	-273.75	-275.35	213.76	1671618.89	14571877.11	40°07'26.105"N	104°53'18.174"W	0.21	
1879.00	17.750	141.730	1829.39	-283.27	-284.93	221.31	1671626.45	14571867.55	40°07'26.010"N	104°53'18.077"W	0.00	LAST SURFACE MWD+IFR1 SURVEY
1967.00	17.930	143.120	1913.16	-304.52	-306.30	237.75	1671642.91	14571846.21	40°07'25.799"N	104°53'17.865"W	0.53	FIRST BHGE MWD+IFR1+MSA SURVEY
2056.00	17.980	145.340	1997.82	-326.65	-328.55	253.78	1671658.96	14571823.98	40°07'25.579"N	104°53'17.659"W	0.77	
2146.00	17.780	148.160	2083.48	-349.64	-351.65	268.93	1671674.14	14571800.91	40°07'25.351"N	104°53'17.464"W	0.99	
2235.00	18.170	150.220	2168.14	-373.12	-375.24	282.99	1671688.22	14571777.35	40°07'25.118"N	104°53'17.283"W	0.84	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#12 COWBOY 21-8HZ(2334'FNL & 841'FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-8HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-8HZ AWP
Facility	SEC.21-T2N-R67W		

WELLPATH DATA (276 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
2325.00	18.170	150.360	2253.65	-397.39	-399.62	296.90	1671702.16	14571753.00	40°07'24.877"N	104°53'17.104"W	0.05	
2414.00	18.260	147.130	2338.19	-421.06	-423.39	311.33	1671716.61	14571729.25	40°07'24.642"N	104°53'16.918"W	1.14	
2504.00	18.150	139.400	2423.70	-443.42	-445.88	328.11	1671733.41	14571706.79	40°07'24.420"N	104°53'16.702"W	2.68	
2593.00	17.600	137.110	2508.40	-463.67	-466.26	346.29	1671751.61	14571686.44	40°07'24.218"N	104°53'16.468"W	1.00	
2682.00	15.990	143.770	2593.61	-483.30	-486.01	362.70	1671768.03	14571666.72	40°07'24.023"N	104°53'16.257"W	2.82	
2772.00	17.080	150.420	2679.90	-504.69	-507.51	376.55	1671781.90	14571645.25	40°07'23.811"N	104°53'16.079"W	2.42	
2786.00†	17.254	150.201	2693.27	-508.26	-511.10	378.60	1671783.95	14571641.66	40°07'23.775"N	104°53'16.052"W	1.33	ENTER LANDBOX (2845'FNL & 465'FEL, SEC.21) 40.1232709 -104.8877923
2861.00	18.190	149.100	2764.71	-527.87	-530.80	390.13	1671795.51	14571621.99	40°07'23.581"N	104°53'15.904"W	1.33	
2951.00	18.270	140.670	2850.21	-550.72	-553.77	406.29	1671811.69	14571599.05	40°07'23.354"N	104°53'15.696"W	2.93	
3040.00	17.960	131.820	2934.82	-570.52	-573.71	425.36	1671830.78	14571579.14	40°07'23.157"N	104°53'15.450"W	3.11	
3130.00	18.130	129.190	3020.39	-588.47	-591.81	446.56	1671851.99	14571561.07	40°07'22.978"N	104°53'15.178"W	0.92	
3219.00	18.100	131.250	3104.98	-606.17	-609.68	467.69	1671873.13	14571543.24	40°07'22.801"N	104°53'14.906"W	0.72	
3309.00	17.820	133.040	3190.59	-624.64	-628.29	488.26	1671893.72	14571524.65	40°07'22.617"N	104°53'14.641"W	0.69	
3398.00	18.130	139.830	3275.26	-644.37	-648.17	507.15	1671912.63	14571504.81	40°07'22.421"N	104°53'14.398"W	2.38	
3488.00	18.080	139.460	3360.80	-665.55	-669.48	525.26	1671930.76	14571483.52	40°07'22.210"N	104°53'14.164"W	0.14	
3577.00	17.980	136.830	3445.44	-685.93	-690.00	543.63	1671949.15	14571463.04	40°07'22.007"N	104°53'13.928"W	0.92	
3666.00	18.110	137.290	3530.06	-705.97	-710.18	562.41	1671967.95	14571442.89	40°07'21.808"N	104°53'13.686"W	0.22	
3756.00	17.320	135.000	3615.79	-725.58	-729.93	581.38	1671986.92	14571423.17	40°07'21.613"N	104°53'13.442"W	1.17	
3845.00	15.480	128.090	3701.17	-742.14	-746.63	600.09	1672005.66	14571406.50	40°07'21.448"N	104°53'13.201"W	3.01	
3935.00	13.420	123.810	3788.32	-755.22	-759.85	618.23	1672023.80	14571393.31	40°07'21.317"N	104°53'12.968"W	2.58	
4024.00	13.240	132.730	3874.94	-767.77	-772.52	634.30	1672039.88	14571380.67	40°07'21.192"N	104°53'12.761"W	2.32	
4113.00	11.270	141.490	3961.91	-781.40	-786.24	647.20	1672052.79	14571366.97	40°07'21.056"N	104°53'12.595"W	3.04	
4203.00	9.720	146.390	4050.40	-794.53	-799.45	656.88	1672062.49	14571353.77	40°07'20.926"N	104°53'12.470"W	1.99	
4292.00	7.900	133.800	4138.36	-804.96	-809.94	665.46	1672071.07	14571343.30	40°07'20.822"N	104°53'12.360"W	2.97	
4382.00	5.830	113.710	4227.72	-811.02	-816.06	674.11	1672079.73	14571337.19	40°07'20.761"N	104°53'12.248"W	3.49	
4471.00	4.490	128.010	4316.36	-814.93	-820.03	680.99	1672086.61	14571333.24	40°07'20.722"N	104°53'12.160"W	2.08	
4560.00	2.350	95.250	4405.21	-817.21	-822.34	685.56	1672091.18	14571330.93	40°07'20.699"N	104°53'12.101"W	3.16	
4650.00	1.200	36.490	4495.17	-816.60	-821.75	687.95	1672093.58	14571331.52	40°07'20.705"N	104°53'12.070"W	2.23	
4739.00	0.220	219.650	4584.16	-815.98	-821.13	688.40	1672094.02	14571332.14	40°07'20.711"N	104°53'12.064"W	1.60	
4829.00	0.070	256.720	4674.16	-816.13	-821.28	688.24	1672093.86	14571331.99	40°07'20.710"N	104°53'12.067"W	0.19	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#12 COWBOY 21-8HZ(2334'FNL & 841'FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-8HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-8HZ AWB
Facility	SEC.21-T2N-R67W		

WELLPATH DATA (276 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
4918.00	0.060	173.560	4763.16	-816.19	-821.34	688.19	1672093.81	14571331.94	40°07'20.709"N	104°53'12.067"W	0.10	
5008.00	0.030	20.340	4853.16	-816.21	-821.36	688.20	1672093.82	14571331.91	40°07'20.709"N	104°53'12.067"W	0.10	
5097.00	0.250	244.360	4942.16	-816.27	-821.42	688.03	1672093.66	14571331.85	40°07'20.709"N	104°53'12.069"W	0.31	
5187.00	0.150	146.270	5032.16	-816.46	-821.61	687.92	1672093.54	14571331.67	40°07'20.707"N	104°53'12.071"W	0.34	
5276.00	0.070	138.310	5121.16	-816.59	-821.74	688.02	1672093.64	14571331.53	40°07'20.705"N	104°53'12.069"W	0.09	
5365.00	0.100	238.750	5210.16	-816.68	-821.83	687.99	1672093.61	14571331.45	40°07'20.705"N	104°53'12.070"W	0.15	
5455.00	0.130	304.080	5300.16	-816.66	-821.81	687.84	1672093.46	14571331.46	40°07'20.705"N	104°53'12.072"W	0.14	
5544.00	0.000	8.300	5389.16	-816.60	-821.75	687.76	1672093.38	14571331.52	40°07'20.705"N	104°53'12.073"W	0.15	
5634.00	0.130	269.090	5479.16	-816.61	-821.75	687.66	1672093.28	14571331.52	40°07'20.705"N	104°53'12.074"W	0.14	
5723.00	0.040	134.480	5568.16	-816.63	-821.78	687.58	1672093.20	14571331.49	40°07'20.705"N	104°53'12.075"W	0.18	
5813.00	0.070	257.220	5658.16	-816.66	-821.81	687.55	1672093.17	14571331.46	40°07'20.705"N	104°53'12.075"W	0.11	
5902.00	0.000	8.300	5747.16	-816.68	-821.82	687.49	1672093.11	14571331.45	40°07'20.705"N	104°53'12.076"W	0.08	
5992.00	0.090	192.570	5837.16	-816.75	-821.89	687.48	1672093.10	14571331.38	40°07'20.704"N	104°53'12.076"W	0.10	
6081.00	0.040	174.280	5926.16	-816.85	-821.99	687.47	1672093.09	14571331.28	40°07'20.703"N	104°53'12.076"W	0.06	
6170.00	0.040	308.090	6015.16	-816.86	-822.00	687.44	1672093.07	14571331.27	40°07'20.703"N	104°53'12.077"W	0.08	
6260.00	0.030	246.610	6105.16	-816.85	-821.99	687.40	1672093.02	14571331.28	40°07'20.703"N	104°53'12.077"W	0.04	
6349.00	0.030	127.900	6194.16	-816.87	-822.02	687.40	1672093.02	14571331.25	40°07'20.703"N	104°53'12.077"W	0.06	
6439.00	0.120	273.960	6284.16	-816.88	-822.02	687.32	1672092.94	14571331.25	40°07'20.703"N	104°53'12.078"W	0.16	
6528.00	0.040	247.370	6373.16	-816.89	-822.03	687.20	1672092.82	14571331.24	40°07'20.703"N	104°53'12.080"W	0.10	
6618.00	0.040	240.130	6463.16	-816.91	-822.06	687.14	1672092.76	14571331.21	40°07'20.702"N	104°53'12.081"W	0.01	
6707.00	0.060	142.920	6552.16	-816.97	-822.11	687.14	1672092.76	14571331.16	40°07'20.702"N	104°53'12.081"W	0.09	
6797.00	0.000	8.310	6642.16	-817.00	-822.15	687.17	1672092.79	14571331.12	40°07'20.701"N	104°53'12.080"W	0.07	
6886.00	0.140	355.540	6731.16	-816.90	-822.04	687.16	1672092.78	14571331.23	40°07'20.702"N	104°53'12.080"W	0.16	
6975.00	0.060	262.850	6820.16	-816.79	-821.94	687.11	1672092.73	14571331.33	40°07'20.703"N	104°53'12.081"W	0.17	
7065.00	0.070	292.320	6910.16	-816.78	-821.92	687.01	1672092.63	14571331.35	40°07'20.704"N	104°53'12.082"W	0.04	
7089.00†	2.249	359.884	6934.15	-816.30	-821.45	687.00	1672092.62	14571331.83	40°07'20.708"N	104°53'12.083"W	9.26	KOP
7154.00	8.270	1.100	6998.85	-810.35	-815.49	687.08	1672092.70	14571337.78	40°07'20.767"N	104°53'12.081"W	9.26	
7244.00	18.730	0.370	7086.24	-789.37	-794.51	687.30	1672092.89	14571358.75	40°07'20.974"N	104°53'12.079"W	11.62	
7333.00	28.460	357.390	7167.71	-753.81	-758.95	686.43	1672091.97	14571394.29	40°07'21.326"N	104°53'12.090"W	11.01	
7423.00	37.910	357.870	7242.94	-704.67	-709.79	684.42	1672089.90	14571443.44	40°07'21.812"N	104°53'12.116"W	10.50	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#12 COWBOY 21-8HZ(2334'FNL & 841'FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-8HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-8HZ AWP
Facility	SEC.21-T2N-R67W		

WELLPATH DATA (276 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
7512.00	46.000	1.860	7309.09	-645.24	-650.36	684.44	1672089.85	14571502.84	40°07'22.399"N	104°53'12.115"W	9.57	
7602.00	55.940	3.580	7365.69	-575.48	-580.62	687.83	1672093.15	14571572.55	40°07'23.088"N	104°53'12.072"W	11.14	
7691.00	66.710	3.090	7408.34	-497.61	-502.78	692.35	1672097.57	14571650.37	40°07'23.857"N	104°53'12.014"W	12.11	
7780.00	76.140	4.070	7436.66	-413.47	-418.68	697.63	1672102.74	14571734.44	40°07'24.688"N	104°53'11.946"W	10.65	
7870.00	83.980	4.460	7452.18	-325.09	-330.35	704.22	1672109.22	14571822.75	40°07'25.561"N	104°53'11.861"W	8.72	
7910.00†	86.618	3.662	7455.46	-285.31	-290.59	707.04	1672111.99	14571862.50	40°07'25.954"N	104°53'11.824"W	6.89	LANDING (2625'FNL & 134'FEL,SEC.21) 40.1238762 -104.8866179
7959.00	89.850	2.690	7456.97	-236.40	-241.69	709.75	1672114.64	14571911.37	40°07'26.437"N	104°53'11.789"W	6.89	
8048.00	89.970	357.690	7457.11	-147.43	-152.72	710.05	1672114.83	14572000.31	40°07'27.317"N	104°53'11.786"W	5.62	
8138.00	89.940	355.770	7457.18	-57.62	-62.87	704.92	1672109.58	14572090.12	40°07'28.205"N	104°53'11.852"W	2.13	
8227.00	90.090	356.110	7457.15	31.11	25.90	698.61	1672103.17	14572178.85	40°07'29.082"N	104°53'11.933"W	0.42	
8304.00†	89.908	356.266	7457.16	107.90	102.73	693.49	1672097.96	14572255.64	40°07'29.841"N	104°53'11.999"W	0.31	EXIT RADIUS HEEL (2231'FNL & 149'FEL,SEC.21) 40.1249559 -104.8866663
8316.00	89.880	356.290	7457.18	119.87	114.71	692.72	1672097.17	14572267.61	40°07'29.959"N	104°53'12.009"W	0.31	
8406.00	89.880	357.550	7457.37	209.70	204.58	687.88	1672092.22	14572357.44	40°07'30.848"N	104°53'12.071"W	1.40	
8495.00	90.060	358.110	7457.41	298.61	293.51	684.51	1672088.74	14572446.33	40°07'31.726"N	104°53'12.114"W	0.66	
8584.00	89.910	357.410	7457.44	387.51	382.44	681.03	1672085.15	14572535.22	40°07'32.605"N	104°53'12.159"W	0.80	
8673.00	90.030	358.360	7457.48	476.42	471.38	677.75	1672081.76	14572624.12	40°07'33.484"N	104°53'12.201"W	1.08	
8763.00	89.910	359.200	7457.53	566.38	561.36	675.83	1672079.73	14572714.06	40°07'34.373"N	104°53'12.226"W	0.94	
8852.00	89.910	0.560	7457.67	655.38	650.36	675.64	1672079.44	14572803.02	40°07'35.253"N	104°53'12.228"W	1.53	
8942.00	89.820	1.450	7457.88	745.37	740.34	677.22	1672080.90	14572892.98	40°07'36.142"N	104°53'12.208"W	0.99	
9031.00	90.370	2.390	7457.73	834.34	829.29	680.20	1672083.77	14572981.89	40°07'37.021"N	104°53'12.169"W	1.22	
9120.00	89.970	0.310	7457.47	923.32	918.26	682.30	1672085.76	14573070.83	40°07'37.900"N	104°53'12.142"W	2.38	
9210.00	90.000	359.680	7457.49	1013.32	1008.26	682.29	1672085.64	14573160.79	40°07'38.790"N	104°53'12.142"W	0.70	
9299.00	90.000	358.870	7457.49	1102.30	1097.25	681.17	1672084.40	14573249.75	40°07'39.669"N	104°53'12.157"W	0.91	
9389.00	89.820	358.710	7457.64	1192.26	1187.23	679.27	1672082.39	14573339.69	40°07'40.558"N	104°53'12.181"W	0.27	
9478.00	90.000	358.770	7457.78	1281.22	1276.21	677.31	1672080.32	14573428.63	40°07'41.438"N	104°53'12.206"W	0.21	
9568.00	90.060	359.640	7457.73	1371.20	1366.20	676.06	1672078.96	14573518.58	40°07'42.327"N	104°53'12.223"W	0.97	
9658.00	90.030	359.960	7457.66	1461.20	1456.20	675.75	1672078.53	14573608.54	40°07'43.216"N	104°53'12.227"W	0.36	
9747.00	89.970	359.590	7457.66	1550.19	1545.20	675.40	1672078.07	14573697.51	40°07'44.096"N	104°53'12.231"W	0.42	
9836.00	90.000	0.720	7457.68	1639.19	1634.20	675.64	1672078.20	14573786.47	40°07'44.975"N	104°53'12.228"W	1.27	
9926.00	89.910	359.530	7457.75	1729.19	1724.20	675.83	1672078.29	14573876.43	40°07'45.865"N	104°53'12.225"W	1.33	

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Area	COLORADO	Well	COWBOY 21-8HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-8HZ AWB
Facility	SEC.21-T2N-R67W		

WELLPATH DATA (276 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
10015.00	89.970	359.600	7457.84	1818.18	1813.19	675.16	1672077.50	14573965.39	40°07'46.744"N	104°53'12.234"W	0.10	
10105.00	89.940	359.640	7457.92	1908.17	1903.19	674.56	1672076.79	14574055.35	40°07'47.633"N	104°53'12.242"W	0.06	
10194.00	89.880	0.520	7458.06	1997.16	1992.19	674.69	1672076.81	14574144.32	40°07'48.513"N	104°53'12.240"W	0.99	
10284.00	89.910	0.380	7458.22	2087.16	2082.19	675.39	1672077.40	14574234.28	40°07'49.402"N	104°53'12.231"W	0.16	
10373.00	90.120	0.580	7458.20	2176.16	2171.19	676.14	1672078.03	14574323.24	40°07'50.282"N	104°53'12.221"W	0.33	
10462.00	90.000	0.760	7458.10	2265.16	2260.18	677.18	1672078.96	14574412.20	40°07'51.161"N	104°53'12.208"W	0.24	
10552.00	90.000	359.980	7458.10	2355.16	2350.18	677.76	1672079.43	14574502.16	40°07'52.051"N	104°53'12.200"W	0.87	
10641.00	90.030	0.180	7458.08	2444.16	2439.18	677.89	1672079.45	14574591.13	40°07'52.930"N	104°53'12.199"W	0.23	
10731.00	90.000	0.720	7458.06	2534.16	2529.17	678.59	1672080.04	14574681.09	40°07'53.819"N	104°53'12.190"W	0.60	
10820.00	90.000	0.810	7458.06	2623.16	2618.17	679.78	1672081.12	14574770.05	40°07'54.699"N	104°53'12.174"W	0.10	
10910.00	90.000	1.070	7458.06	2713.15	2708.15	681.26	1672082.48	14574860.00	40°07'55.588"N	104°53'12.155"W	0.29	
10999.00	90.000	1.290	7458.06	2802.15	2797.13	683.09	1672084.20	14574948.95	40°07'56.467"N	104°53'12.132"W	0.25	
11088.00	89.910	1.270	7458.13	2891.14	2886.11	685.08	1672086.08	14575037.89	40°07'57.347"N	104°53'12.106"W	0.10	
11178.00	90.000	1.340	7458.20	2981.13	2976.09	687.13	1672088.01	14575127.83	40°07'58.236"N	104°53'12.079"W	0.13	
11267.00	90.030	1.890	7458.17	3070.11	3065.05	689.64	1672090.41	14575216.77	40°07'59.115"N	104°53'12.047"W	0.62	
11357.00	90.060	2.250	7458.10	3160.07	3154.99	692.89	1672093.55	14575306.67	40°08'00.004"N	104°53'12.005"W	0.40	
11446.00	90.000	2.610	7458.06	3249.02	3243.91	696.66	1672097.21	14575395.56	40°08'00.883"N	104°53'11.957"W	0.41	
11536.00	89.940	2.870	7458.10	3338.94	3333.81	700.96	1672101.40	14575485.43	40°08'01.771"N	104°53'11.901"W	0.30	
11625.00	90.090	2.710	7458.08	3427.87	3422.71	705.29	1672105.62	14575574.29	40°08'02.649"N	104°53'11.845"W	0.25	
11714.00	89.910	3.190	7458.08	3516.78	3511.59	709.87	1672110.09	14575663.15	40°08'03.528"N	104°53'11.786"W	0.58	
11804.00	90.460	5.020	7457.79	3606.59	3601.35	716.32	1672116.41	14575752.88	40°08'04.415"N	104°53'11.703"W	2.12	
11893.00	90.400	3.060	7457.12	3695.41	3690.12	722.59	1672122.57	14575841.63	40°08'05.292"N	104°53'11.623"W	2.20	
11982.00	90.550	0.720	7456.38	3784.37	3779.07	725.52	1672125.39	14575930.54	40°08'06.171"N	104°53'11.585"W	2.63	
12072.00	90.490	358.130	7455.57	3874.34	3869.05	724.62	1672124.38	14576020.48	40°08'07.060"N	104°53'11.596"W	2.88	
12161.00	90.430	358.780	7454.85	3963.29	3958.01	722.22	1672121.87	14576109.41	40°08'07.939"N	104°53'11.627"W	0.73	
12251.00	90.460	0.340	7454.15	4053.27	4048.01	721.53	1672121.07	14576199.36	40°08'08.829"N	104°53'11.636"W	1.73	
12340.00	90.280	1.100	7453.58	4142.27	4137.00	722.65	1672122.07	14576288.32	40°08'09.708"N	104°53'11.622"W	0.88	
12429.00	90.250	0.930	7453.17	4231.26	4225.98	724.22	1672123.54	14576377.27	40°08'10.587"N	104°53'11.601"W	0.19	
12519.00	90.280	0.110	7452.75	4321.26	4315.98	725.04	1672124.24	14576467.23	40°08'11.477"N	104°53'11.591"W	0.91	
12608.00	90.030	359.700	7452.51	4410.26	4404.98	724.89	1672123.98	14576556.19	40°08'12.356"N	104°53'11.593"W	0.54	

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Area	COLORADO	Well	COWBOY 21-8HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-8HZ AWB
Facility	SEC.21-T2N-R67W		

WELLPATH DATA (276 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
12698.00	90.220	359.720	7452.31	4500.25	4494.97	724.44	1672123.42	14576646.16	40°08'13.246"N	104°53'11.599"W	0.21	
12787.00	90.150	359.170	7452.03	4589.23	4583.97	723.57	1672122.44	14576735.11	40°08'14.125"N	104°53'11.610"W	0.62	
12877.00	90.280	358.190	7451.69	4679.19	4673.94	721.50	1672120.26	14576825.05	40°08'15.014"N	104°53'11.636"W	1.10	
12966.00	90.250	358.350	7451.28	4768.13	4762.90	718.81	1672117.46	14576913.97	40°08'15.893"N	104°53'11.671"W	0.18	
13055.00	90.370	357.840	7450.80	4857.05	4851.85	715.86	1672114.39	14577002.88	40°08'16.772"N	104°53'11.709"W	0.59	
13145.00	90.150	358.080	7450.39	4946.97	4941.79	712.65	1672111.08	14577092.78	40°08'17.661"N	104°53'11.750"W	0.36	
13234.00	90.220	358.550	7450.10	5035.91	5030.75	710.04	1672108.35	14577181.70	40°08'18.540"N	104°53'11.784"W	0.53	
13324.00	90.120	358.320	7449.83	5125.85	5120.72	707.58	1672105.78	14577271.63	40°08'19.429"N	104°53'11.815"W	0.28	
13413.00	90.310	358.180	7449.50	5214.79	5209.68	704.86	1672102.96	14577360.55	40°08'20.308"N	104°53'11.850"W	0.27	
13503.00	90.280	357.820	7449.04	5304.70	5299.62	701.72	1672099.70	14577450.45	40°08'21.197"N	104°53'11.891"W	0.40	
13593.00	90.990	357.850	7448.04	5394.61	5389.55	698.32	1672096.19	14577540.34	40°08'22.086"N	104°53'11.935"W	0.79	
13682.00	90.950	358.380	7446.53	5483.52	5478.49	695.39	1672093.16	14577629.24	40°08'22.965"N	104°53'11.972"W	0.60	
13771.00	91.110	359.000	7444.93	5572.46	5567.45	693.36	1672091.01	14577718.16	40°08'23.844"N	104°53'11.998"W	0.72	
13860.00	90.980	0.200	7443.31	5661.44	5656.43	692.74	1672090.28	14577807.11	40°08'24.723"N	104°53'12.006"W	1.36	
13950.00	90.980	4.570	7441.77	5751.35	5746.32	696.48	1672093.91	14577896.96	40°08'25.612"N	104°53'11.958"W	4.85	
14040.00	90.990	4.360	7440.22	5841.11	5836.03	703.49	1672100.80	14577986.65	40°08'26.498"N	104°53'11.868"W	0.23	
14129.00	91.050	2.970	7438.64	5929.96	5924.84	709.17	1672106.38	14578075.42	40°08'27.376"N	104°53'11.795"W	1.56	
14219.00	91.020	2.350	7437.01	6019.87	6014.72	713.35	1672110.44	14578165.28	40°08'28.264"N	104°53'11.741"W	0.69	
14308.00	90.920	2.860	7435.50	6108.80	6103.62	717.39	1672114.37	14578254.15	40°08'29.142"N	104°53'11.689"W	0.58	
14398.00	90.950	2.020	7434.04	6198.73	6193.52	721.23	1672118.09	14578344.02	40°08'30.031"N	104°53'11.639"W	0.93	
14487.00	90.860	0.990	7432.63	6287.70	6282.48	723.56	1672120.31	14578432.94	40°08'30.910"N	104°53'11.609"W	1.16	
14577.00	90.920	0.780	7431.23	6377.68	6372.46	724.95	1672121.59	14578522.89	40°08'31.799"N	104°53'11.591"W	0.24	
14666.00	91.020	0.660	7429.73	6466.67	6461.44	726.07	1672122.60	14578611.83	40°08'32.678"N	104°53'11.577"W	0.18	
14756.00	91.020	0.070	7428.12	6556.66	6551.42	726.64	1672123.06	14578701.78	40°08'33.568"N	104°53'11.569"W	0.66	
14845.00	90.990	0.070	7426.56	6645.64	6640.41	726.75	1672123.06	14578790.73	40°08'34.447"N	104°53'11.568"W	0.03	
14935.00	91.230	359.790	7424.82	6735.62	6730.39	726.64	1672122.83	14578880.68	40°08'35.336"N	104°53'11.569"W	0.41	
15024.00	91.050	359.890	7423.05	6824.60	6819.37	726.39	1672122.48	14578969.62	40°08'36.216"N	104°53'11.572"W	0.23	
15113.00	90.890	359.520	7421.54	6913.58	6908.36	725.94	1672121.91	14579058.57	40°08'37.095"N	104°53'11.578"W	0.45	
15203.00	90.890	359.290	7420.14	7003.55	6998.34	725.00	1672120.86	14579148.52	40°08'37.984"N	104°53'11.590"W	0.26	
15292.00	91.050	358.480	7418.64	7092.51	7087.31	723.27	1672119.02	14579237.45	40°08'38.863"N	104°53'11.613"W	0.93	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#12 COWBOY 21-8HZ(2334'FNL & 841'FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-8HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-8HZ AWB
Facility	SEC.21-T2N-R67W		

WELLPATH DATA (276 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
15382.00	90.580	357.050	7417.36	7182.40	7177.23	719.76	1672115.40	14579327.33	40°08'39.752"N	104°53'11.658"W	1.67	
15471.00	90.550	358.150	7416.48	7271.28	7266.15	716.03	1672111.56	14579416.21	40°08'40.631"N	104°53'11.706"W	1.24	
15560.00	90.460	359.460	7415.69	7360.24	7355.13	714.18	1672109.60	14579505.15	40°08'41.510"N	104°53'11.730"W	1.48	
15650.00	90.520	359.910	7414.92	7450.23	7445.12	713.68	1672108.99	14579595.10	40°08'42.399"N	104°53'11.736"W	0.50	
15739.00	90.650	0.510	7414.02	7539.23	7534.11	714.01	1672109.20	14579684.06	40°08'43.279"N	104°53'11.732"W	0.69	
15829.00	90.620	359.350	7413.02	7629.22	7624.11	713.90	1672108.98	14579774.02	40°08'44.168"N	104°53'11.733"W	1.29	
15918.00	90.550	2.760	7412.11	7718.19	7713.07	715.54	1672110.51	14579862.95	40°08'45.047"N	104°53'11.712"W	3.83	
16008.00	90.310	2.550	7411.43	7808.12	7802.98	719.71	1672114.56	14579952.82	40°08'45.936"N	104°53'11.658"W	0.35	
16097.00	90.310	1.340	7410.95	7897.09	7891.92	722.73	1672117.47	14580041.74	40°08'46.815"N	104°53'11.619"W	1.36	
16186.00	90.180	359.340	7410.57	7986.08	7980.91	723.25	1672117.89	14580130.69	40°08'47.694"N	104°53'11.612"W	2.25	
16276.00	90.150	358.350	7410.31	8076.05	8070.89	721.44	1672115.96	14580220.64	40°08'48.583"N	104°53'11.636"W	1.10	
16365.00	90.150	357.690	7410.08	8164.97	8159.84	718.37	1672112.78	14580309.54	40°08'49.462"N	104°53'11.675"W	0.74	
16455.00	90.180	358.440	7409.82	8254.89	8249.79	715.33	1672109.63	14580399.45	40°08'50.351"N	104°53'11.714"W	0.83	
16544.00	90.220	359.950	7409.51	8343.87	8338.78	714.08	1672108.27	14580488.40	40°08'51.230"N	104°53'11.731"W	1.70	
16634.00	90.180	1.240	7409.20	8433.86	8428.77	715.01	1672109.09	14580578.36	40°08'52.120"N	104°53'11.718"W	1.43	
16812.00	90.250	1.200	7408.53	8611.85	8606.73	718.80	1672112.66	14580756.25	40°08'53.878"N	104°53'11.670"W	0.05	
16902.00	90.310	0.120	7408.09	8701.84	8696.72	719.84	1672113.58	14580846.21	40°08'54.768"N	104°53'11.656"W	1.20	
16991.00	90.310	359.870	7407.61	8790.84	8785.72	719.83	1672113.46	14580935.17	40°08'55.647"N	104°53'11.656"W	0.28	
17081.00	90.220	1.040	7407.19	8880.84	8875.71	720.54	1672114.07	14581025.13	40°08'56.536"N	104°53'11.647"W	1.30	
17170.00	90.180	2.010	7406.88	8969.82	8964.68	722.91	1672116.32	14581114.06	40°08'57.416"N	104°53'11.616"W	1.09	
17259.00	90.250	3.160	7406.55	9058.75	9053.59	726.93	1672120.22	14581202.94	40°08'58.294"N	104°53'11.565"W	1.29	
17349.00	90.090	4.170	7406.28	9148.61	9143.40	732.68	1672125.86	14581292.73	40°08'59.182"N	104°53'11.491"W	1.14	
17438.00	89.970	5.180	7406.23	9237.36	9232.10	739.93	1672133.00	14581381.40	40°09'00.058"N	104°53'11.397"W	1.14	
17528.00	89.940	4.660	7406.30	9327.08	9321.77	747.65	1672140.61	14581471.04	40°09'00.944"N	104°53'11.298"W	0.58	
17617.00	89.880	3.950	7406.44	9415.88	9410.52	754.33	1672147.17	14581559.76	40°09'01.821"N	104°53'11.212"W	0.80	
17707.00	89.850	4.010	7406.65	9505.71	9500.30	760.58	1672153.31	14581649.52	40°09'02.709"N	104°53'11.131"W	0.07	
17796.00	90.060	4.910	7406.72	9594.49	9589.03	767.50	1672160.11	14581738.22	40°09'03.586"N	104°53'11.042"W	1.04	
17886.00	90.060	5.240	7406.63	9684.19	9678.68	775.46	1672167.96	14581827.84	40°09'04.471"N	104°53'10.939"W	0.37	
17975.00	90.060	2.750	7406.54	9773.01	9767.46	781.66	1672174.05	14581916.59	40°09'05.349"N	104°53'10.860"W	2.80	
18065.00	90.120	0.140	7406.40	9862.99	9857.42	783.93	1672176.20	14582006.52	40°09'06.238"N	104°53'10.830"W	2.90	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#12 COWBOY 21-8HZ(2334'FNL & 841'FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-8HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-8HZ AWB
Facility	SEC.21-T2N-R67W		

WELLPATH DATA (276 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
18154.00	90.280	359.160	7406.08	9951.98	9946.42	783.39	1672175.55	14582095.48	40°09'07.117"N	104°53'10.837"W	1.12	
18244.00	90.180	359.640	7405.72	10041.96	10036.41	782.45	1672174.50	14582185.44	40°09'08.007"N	104°53'10.849"W	0.54	
18333.00	89.880	358.750	7405.68	10130.94	10125.40	781.20	1672173.13	14582274.39	40°09'08.886"N	104°53'10.865"W	1.06	
18423.00	90.060	358.060	7405.72	10220.88	10215.36	778.69	1672170.52	14582364.32	40°09'09.775"N	104°53'10.898"W	0.79	
18512.00	90.180	356.840	7405.54	10309.76	10304.27	774.73	1672166.45	14582453.19	40°09'10.654"N	104°53'10.949"W	1.38	
18602.00	90.060	357.430	7405.35	10399.61	10394.16	770.23	1672161.84	14582543.03	40°09'11.542"N	104°53'11.007"W	0.67	
18691.00	90.000	358.110	7405.30	10488.52	10483.09	766.77	1672158.27	14582631.92	40°09'12.421"N	104°53'11.051"W	0.77	
18781.00	90.340	358.190	7405.04	10578.45	10573.05	763.86	1672155.25	14582721.84	40°09'13.310"N	104°53'11.088"W	0.39	
18870.00	90.150	357.500	7404.65	10667.35	10661.98	760.52	1672151.80	14582810.73	40°09'14.188"N	104°53'11.132"W	0.80	
18960.00	90.120	357.050	7404.44	10757.22	10751.88	756.24	1672147.41	14582900.59	40°09'15.077"N	104°53'11.187"W	0.50	
19049.00	89.910	355.320	7404.42	10845.97	10840.68	750.32	1672141.38	14582989.34	40°09'15.954"N	104°53'11.263"W	1.96	
19138.00	89.970	357.280	7404.51	10934.73	10929.49	744.57	1672135.53	14583078.11	40°09'16.832"N	104°53'11.337"W	2.20	
19228.00	90.060	359.080	7404.49	11024.66	11019.44	741.72	1672132.56	14583168.02	40°09'17.721"N	104°53'11.374"W	2.00	
19317.00	90.180	1.020	7404.30	11113.65	11108.44	741.79	1672132.52	14583256.98	40°09'18.600"N	104°53'11.373"W	2.18	
19406.00	90.150	1.950	7404.05	11202.64	11197.40	744.10	1672134.72	14583345.92	40°09'19.480"N	104°53'11.343"W	1.05	
19496.00	90.280	3.900	7403.71	11292.55	11287.28	748.69	1672139.20	14583435.77	40°09'20.368"N	104°53'11.284"W	2.17	
19675.00	90.150	3.060	7403.04	11471.29	11465.95	759.56	1672149.83	14583614.37	40°09'22.133"N	104°53'11.144"W	0.47	
19764.00	90.180	2.960	7402.78	11560.20	11554.83	764.23	1672154.39	14583703.22	40°09'23.012"N	104°53'11.083"W	0.12	
19853.00	90.150	2.780	7402.52	11649.12	11643.71	768.69	1672158.74	14583792.08	40°09'23.890"N	104°53'11.026"W	0.21	
19942.00	90.120	2.400	7402.31	11738.06	11732.62	772.71	1672162.65	14583880.96	40°09'24.769"N	104°53'10.974"W	0.43	
20032.00	89.880	1.430	7402.31	11828.02	11822.57	775.72	1672165.54	14583970.87	40°09'25.657"N	104°53'10.935"W	1.11	
20121.00	90.220	358.450	7402.24	11917.01	11911.56	775.62	1672165.34	14584059.83	40°09'26.537"N	104°53'10.936"W	3.37	
20211.00	90.120	359.820	7401.97	12006.98	12001.55	774.26	1672163.87	14584149.78	40°09'27.426"N	104°53'10.954"W	1.53	
20390.00	90.090	357.090	7401.64	12185.86	12180.47	769.44	1672158.82	14584328.62	40°09'29.194"N	104°53'11.016"W	1.53	
20480.00	90.150	356.260	7401.45	12275.67	12270.31	764.22	1672153.49	14584418.42	40°09'30.082"N	104°53'11.083"W	0.92	
20569.00	90.180	356.620	7401.20	12364.45	12359.14	758.69	1672147.86	14584507.21	40°09'30.960"N	104°53'11.154"W	0.41	
20611.00†	90.138	356.709	7401.08	12406.36	12401.07	756.25	1672145.36	14584549.12	40°09'31.374"N	104°53'11.186"W	0.23	ENTER RADIUS TOE (434'FNL & 166'FEL,SEC.09) 40.1587151 -104.8864405
20659.00	90.090	356.810	7400.98	12454.26	12448.99	753.53	1672142.59	14584597.02	40°09'31.848"N	104°53'11.221"W	0.23	
20748.00	90.310	357.650	7400.67	12543.12	12537.89	749.23	1672138.18	14584685.87	40°09'32.726"N	104°53'11.276"W	0.98	
20838.00	90.580	359.230	7399.97	12633.06	12627.85	746.78	1672135.62	14584775.79	40°09'33.615"N	104°53'11.308"W	1.78	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#12 COWBOY 21-8HZ(2334'FNL & 841'FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-8HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-8HZ AWB
Facility	SEC.21-T2N-R67W		

WELLPATH DATA (276 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
20927.00	90.370	2.700	7399.24	12722.04	12716.82	748.28	1672137.00	14584864.73	40°09'34.494"N	104°53'11.288"W	3.91	
21017.00	90.220	3.650	7398.77	12811.94	12806.68	753.27	1672141.88	14584954.56	40°09'35.382"N	104°53'11.224"W	1.07	
21106.00	90.250	3.620	7398.41	12900.80	12895.50	758.91	1672147.41	14585043.35	40°09'36.260"N	104°53'11.151"W	0.05	
21196.00	90.090	359.780	7398.14	12990.76	12985.44	761.58	1672149.96	14585133.26	40°09'37.149"N	104°53'11.117"W	4.27	
21349.00	90.220	352.910	7397.73	13143.28	13138.04	751.83	1672140.03	14585285.78	40°09'38.657"N	104°53'11.242"W	4.49	LAST BHGE MWD+IFR1+MSA SURVEY
21373.00	90.220	352.910	7397.63	13167.07	13161.85	748.87	1672137.04	14585309.59	40°09'38.892"N	104°53'11.281"W	0.00	PTB (326'FSL & 170'FEL,SEC.04) 40.1608034 -104.8864668

HOLE & CASING SECTIONS - Ref Wellbore: COWBOY 21-8HZ AWB Ref Wellpath: COWBOY 21-8HZ 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	1879.00	1853.00	26.00	1829.39	0.00	0.00	-284.93	221.31	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#12 COWBOY 21-8HZ(2334'FNL & 841'FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-8HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-8HZ 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	0.81	-104.87	1671300.04	14572152.76	40°07'28.834"N	104°53'22.276"W	polygon
SEC.16-T2N-R67W	0.00	0.81	-104.87	1671300.04	14572152.76	40°07'28.834"N	104°53'22.276"W	polygon
SEC.21-T2N-R67W	0.00	0.81	-104.87	1671300.04	14572152.76	40°07'28.834"N	104°53'22.276"W	polygon
COWBOY 21-8HZ BHL REV-1(330'FSL & 137'FEL,SEC.04)	7417.00	13166.43	781.80	1672169.95	14585314.20	40°09'38.938"N	104°53'10.856"W	point
COWBOY 21-8HZ BHL REV-2(330'FSL & 187'FEL,SEC.04)	7417.00	13166.43	731.80	1672119.97	14585314.14	40°09'38.938"N	104°53'11.500"W	point
COWBOY 21-8HZ LAT. TARGET	7422.63	11692.39	770.83	1672160.82	14583840.74	40°09'24.371"N	104°53'10.998"W	point
COWBOY 21-8HZ HEEL REV-1(2620'FNL & 158'FEL,SEC.21)	7457.00	-299.40	681.55	1672086.53	14571853.65	40°07'25.867"N	104°53'12.152"W	point
COWBOY 21-8HZ INT. TARGET@2700'VS	7457.00	2694.83	703.84	1672105.07	14574846.71	40°07'55.456"N	104°53'11.864"W	point
COWBOY 21-8HZ LANDBOX	7457.00	0.00	0.00	1671404.87	14572152.08	40°07'28.826"N	104°53'20.926"W	polygon
COWBOY 21-8HZ RADIUS 1	7457.00	12833.43	915.99	1672304.50	14584981.50	40°09'35.647"N	104°53'09.128"W	polygon
COWBOY 21-8HZ RADIUS 2	7457.00	-330.76	839.25	1672244.20	14571822.50	40°07'25.557"N	104°53'10.122"W	polygon

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#12 COWBOY 21-8HZ(2334'FNL & 841'FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-8HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-8HZ AWB
Facility	SEC.21-T2N-R67W		

WELLPATH COMPOSITION - Ref Wellbore: COWBOY 21-8HZ AWB Ref Wellpath: COWBOY 21-8HZ AWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	1879.00	Custom APC ISCWSA REV 2 MWD+IFR1 (approximation)	Custom APC ISCWSA Rev-2 MWD+IFR1 <133 - 1879>	COWBOY 21-8HZ AWB
1879.00	21349.00	Custom APC ISCWSA REV 2 MWD+IFR1+MSA (approximation)	BHGE Custom APC ISCWSA Rev-2 MWD+IFR1+MSA <1967 - 21349>	COWBOY 21-8HZ AWB
21349.00	21373.00	Blind Drilling (std)	Projection to bit	COWBOY 21-8HZ AWB

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP (WA)	Slot	SLOT#12 COWBOY 21-8HZ(2334'FNL & 841'FEL,SEC.21)
Area	COLORADO	Well	COWBOY 21-8HZ
Field	WELD COUNTY (UTM/TRUE NORTH)	Wellbore	COWBOY 21-8HZ AWB
Facility	SEC.21-T2N-R67W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
133.00	0.440	146.660	133.00	FIRST SURFACE MWD+IFR1 SURVEY
1879.00	17.750	141.730	1829.39	LAST SURFACE MWD+IFR1 SURVEY
1967.00	17.930	143.120	1913.16	FIRST BHGE MWD+IFR1+MSA SURVEY
2786.00	17.254	150.201	2693.27	ENTER LANDBOX (2845'FNL & 465'FEL,SEC.21) 40.1232709 -104.8877923
7089.00	2.249	359.884	6934.15	KOP
7910.00	86.618	3.662	7455.46	LANDING (2625'FNL & 134'FEL,SEC.21) 40.1238762 -104.8866179
8304.00	89.908	356.266	7457.16	EXIT RADIUS HEEL (2231'FNL & 149'FEL,SEC.21) 40.1249559 -104.8866663
20611.00	90.138	356.709	7401.08	ENTER RADIUS TOE (434'FNL & 166'FEL,SEC.09) 40.1587151 -104.8864405
21349.00	90.220	352.910	7397.73	LAST BHGE MWD+IFR1+MSA SURVEY
21373.00	90.220	352.910	7397.63	PTB (326'FSL & 170'FEL,SEC.04) 40.1608034 -104.8864668