

KERR-MCGEE OIL & GAS ONSHORE LP

Location: COLORADO Slot: SLOT#09 REYNOLDS CATTLE 31N-23HZ (680°FNL & 155°FEL, SEC.23)
Field: WELD COUNTY (KERR MCGEE) Well: REYNOLDS CATTLE 31N-23HZ
Facility: SEC.23-T3N-R68W Wellbore: REYNOLDS CATTLE 31N-23HZ

Plot reference wellpath is REYNOLDS CATTLE 31N-23HZ (PERMIT REV-2) PWB

True vertical depths are referenced to PERMIT (17KB) (RKB)	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
Measured depths are referenced to PERMIT (17KB) (RKB)	North Reference: True north
PERMIT (17KB) (RKB) to Mean Sea Level: 4948 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: SLOT#09 REYNOLDS CATTLE 31N-23HZ (680°FNL & 155°FEL, SEC.23)): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: precan on 07/Jan/2014

Location Information

Facility Name				Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SEC.23-T3N-R68W				3147390.982	1322769.280	40°13'05.700"N	104°56'19.500"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
SLOT#09 REYNOLDS CATTLE 31N-23HZ (680°FNL & 155°FEL, SEC.23)	-436.61	3021.75	3150415.141	1322370.680	40°13'01.384"N	104°57'40.986"W	
PERMIT (17KB) (RKB) to Mud line (At Slot: SLOT#09 REYNOLDS CATTLE 31N-23HZ (680°FNL & 155°FEL, SEC.23))						4948ft	
Mean Sea Level to Mud line (At Slot: SLOT#09 REYNOLDS CATTLE 31N-23HZ (680°FNL & 155°FEL, SEC.23))						0ft	
PERMIT (17KB) (RKB) to Mean Sea Level						4948ft	

Survey Program

Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
17.00	13180.43	NaviTrak	NaviTrak (IFR)		REYNOLDS CATTLE 31N-23HZ

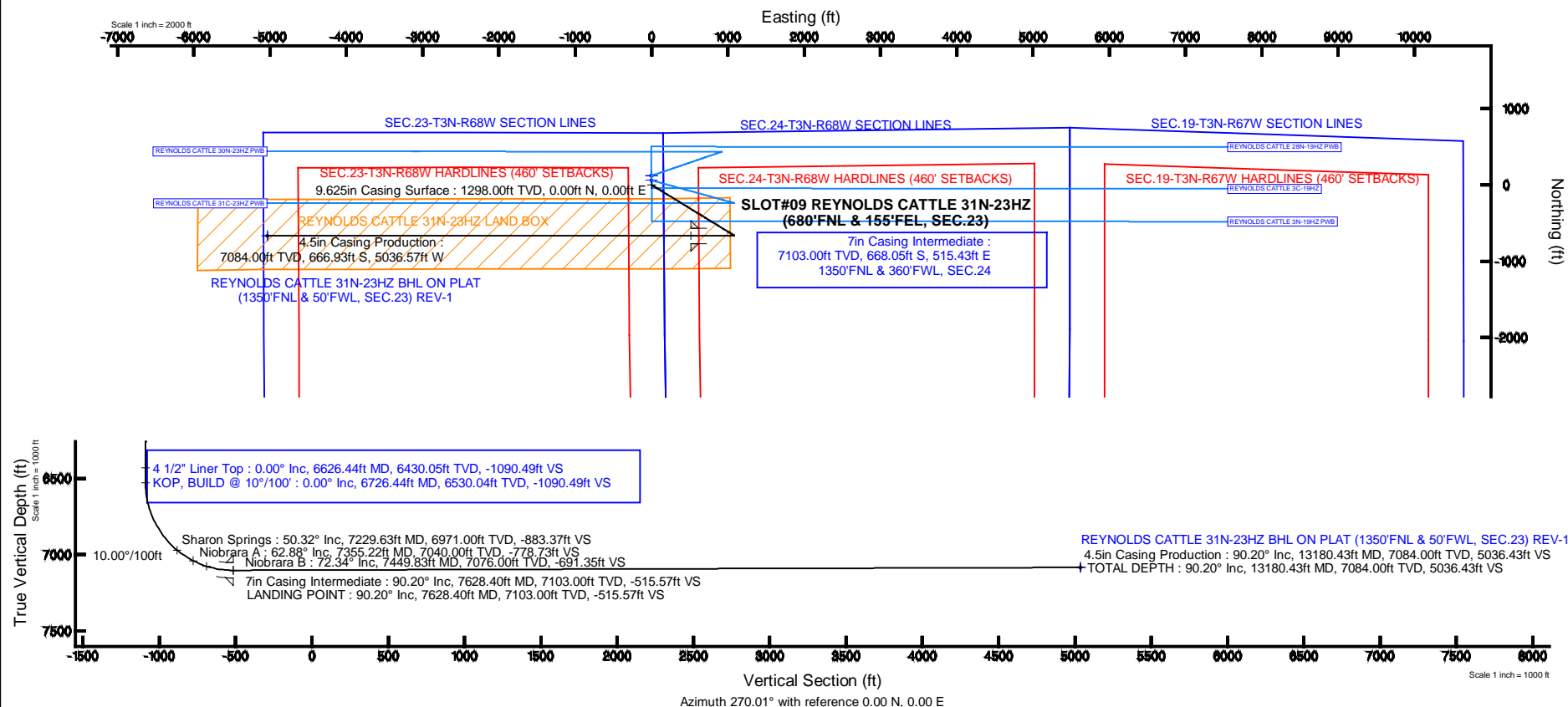


Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
TIE-ON	17.00	0.000	121.500	17.00	0.00	0.00	0.00	0.00
BEGIN NUDGE	1398.00	0.000	121.500	1398.00	0.00	0.00	0.00	0.00
END NUDGE	2348.00	19.000	121.500	2330.68	-81.55	133.08	2.00	-133.10
BEGIN DROP	5317.08	19.000	121.500	5138.00	-586.62	957.27	0.00	-957.39
END DROP	6267.08	0.000	270.012	6070.68	-668.17	1090.35	2.00	-1090.49
KOP, BUILD @ 10°/100'	6726.44	0.000	270.012	6530.04	-668.17	1090.35	0.00	-1090.49
LANDING POINT	7628.40	90.196	270.012	7103.00	-668.05	515.43	10.00	-515.57
TOTAL DEPTH	13180.43	90.196	270.012	7084.00	-666.93	-5036.57	0.00	5036.43

Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SEC.19-T3N-R67W HARDLINES (460' SETBACKS)		0.00	120.22	-1.40	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W
SEC.19-T3N-R67W SECTION LINES		0.00	120.22	-1.40	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W
SEC.23-T3N-R68W HARDLINES (460' SETBACKS)		0.00	120.22	-1.40	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W
SEC.23-T3N-R68W SECTION LINES		0.00	120.22	-1.40	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W
SEC.24-T3N-R68W HARDLINES (460' SETBACKS)		0.00	120.22	-1.40	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W
SEC.24-T3N-R68W SECTION LINES		0.00	120.22	-1.40	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W
REYNOLDS CATTLE 31N-23HZ BHL ON PLAT (1350°FNL & 50°FWL, SEC.23) REV-1	13180.43	7084.00	-666.93	-5036.57	3145382.94	1321673.20	40°12'54.788"N	104°58'45.890"W
REYNOLDS CATTLE 31N-23HZ LAND BOX		7251.00	60.11	-0.84	3150413.94	1322430.78	40°13'01.978"N	104°57'40.979"W



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#09 REYNOLDS CATTLE 31N-23HZ (680'FNL & 155'FEL, SEC.23)
Area	COLORADO	Well	REYNOLDS CATTLE 31N-23HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	REYNOLDS CATTLE 31N-23HZ
Facility	SEC.23-T3N-R68W		

REPORT SETUP INFORMATION			
Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 4.0.0
North Reference	True	User	Precain
Scale	0.999957	Report Generated	07/Jan/2014 at 14:17
Convergence at slot	n/a	Database/Source file	WellArchitectDB/_REYNOLDS_CATTLE_31N-23HZ.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-436.61	3021.75	3150415.14	1322370.68	40°13'01.384"N	104°57'40.968"W
Facility Reference Pt			3147390.98	1322789.28	40°13'05.700"N	104°58'19.920"W
Field Reference Pt			3197771.84	1268891.29	40°04'09.600"N	104°47'36.000"W

WELLPATH DATUM			
Calculation method	Minimum curvature	PERMIT (17'KB) (RKB) to Facility Vertical Datum	4948.00ft
Horizontal Reference Pt	Slot	PERMIT (17'KB) (RKB) to Mean Sea Level	4948.00ft
Vertical Reference Pt	PERMIT (17'KB) (RKB)	PERMIT (17'KB) (RKB) to Mud Line at Slot (SLOT#09 REYNOLDS CATTLE 31N-23HZ (680'FNL & 155'FEL, SEC.23))	4948.00ft
MD Reference Pt	PERMIT (17'KB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	270.01°

REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#09 REYNOLDS CATTLE 31N-23HZ (680'FNL & 155'FEL, SEC.23)
Area	COLORADO	Well	REYNOLDS CATTLE 31N-23HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	REYNOLDS CATTLE 31N-23HZ
Facility	SEC.23-T3N-R68W		

WELLPATH DATA (147 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	121.500	0.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	
17.00	0.000	121.500	17.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	TIE-ON
117.00†	0.000	121.500	117.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	
217.00†	0.000	121.500	217.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	
317.00†	0.000	121.500	317.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	
417.00†	0.000	121.500	417.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	
517.00†	0.000	121.500	517.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	
617.00†	0.000	121.500	617.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	
717.00†	0.000	121.500	717.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	
817.00†	0.000	121.500	817.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	
917.00†	0.000	121.500	917.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	
1017.00†	0.000	121.500	1017.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	
1117.00†	0.000	121.500	1117.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	
1217.00†	0.000	121.500	1217.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	
1248.00†	0.000	121.500	1248.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	Fox Hills Marker
1317.00†	0.000	121.500	1317.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	
1398.00	0.000	121.500	1398.00	0.00	0.00	0.00	40°13'01.384"N	104°57'40.968"W	0.00	BEGIN NUDGE
1417.00†	0.380	121.500	1417.00	-0.05	-0.03	0.05	40°13'01.383"N	104°57'40.967"W	2.00	
1517.00†	2.380	121.500	1516.97	-2.11	-1.29	2.11	40°13'01.371"N	104°57'40.941"W	2.00	
1617.00†	4.380	121.500	1616.79	-7.13	-4.37	7.13	40°13'01.340"N	104°57'40.876"W	2.00	
1717.00†	6.380	121.500	1716.34	-15.13	-9.27	15.13	40°13'01.292"N	104°57'40.773"W	2.00	
1817.00†	8.380	121.500	1815.51	-26.08	-15.98	26.08	40°13'01.226"N	104°57'40.632"W	2.00	
1917.00†	10.380	121.500	1914.17	-39.98	-24.50	39.98	40°13'01.142"N	104°57'40.453"W	2.00	
2017.00†	12.380	121.500	2012.19	-56.81	-34.81	56.80	40°13'01.040"N	104°57'40.236"W	2.00	
2117.00†	14.380	121.500	2109.48	-76.54	-46.90	76.53	40°13'00.920"N	104°57'39.982"W	2.00	
2217.00†	16.380	121.500	2205.89	-99.15	-60.75	99.14	40°13'00.783"N	104°57'39.690"W	2.00	
2317.00†	18.380	121.500	2301.32	-124.62	-76.36	124.61	40°13'00.629"N	104°57'39.362"W	2.00	
2348.00	19.000	121.500	2330.68	-133.10	-81.55	133.08	40°13'00.578"N	104°57'39.253"W	2.00	END NUDGE
2417.00†	19.000	121.500	2395.92	-152.25	-93.29	152.23	40°13'00.462"N	104°57'39.006"W	0.00	
2517.00†	19.000	121.500	2490.48	-180.01	-110.30	179.99	40°13'00.294"N	104°57'38.648"W	0.00	
2617.00†	19.000	121.500	2585.03	-207.78	-127.31	207.75	40°13'00.126"N	104°57'38.290"W	0.00	
2717.00†	19.000	121.500	2679.58	-235.54	-144.32	235.51	40°12'59.957"N	104°57'37.932"W	0.00	
2817.00†	19.000	121.500	2774.13	-263.30	-161.33	263.27	40°12'59.789"N	104°57'37.574"W	0.00	
2917.00†	19.000	121.500	2868.68	-291.07	-178.34	291.03	40°12'59.621"N	104°57'37.217"W	0.00	
3017.00†	19.000	121.500	2963.24	-318.83	-195.35	318.79	40°12'59.453"N	104°57'36.859"W	0.00	
3117.00†	19.000	121.500	3057.79	-346.59	-212.36	346.55	40°12'59.285"N	104°57'36.501"W	0.00	
3217.00†	19.000	121.500	3152.34	-374.35	-229.38	374.31	40°12'59.117"N	104°57'36.143"W	0.00	
3317.00†	19.000	121.500	3246.89	-402.12	-246.39	402.07	40°12'58.949"N	104°57'35.785"W	0.00	
3417.00†	19.000	121.500	3341.44	-429.88	-263.40	429.82	40°12'58.781"N	104°57'35.427"W	0.00	
3517.00†	19.000	121.500	3436.00	-457.64	-280.41	457.58	40°12'58.613"N	104°57'35.070"W	0.00	
3617.00†	19.000	121.500	3530.55	-485.41	-297.42	485.34	40°12'58.444"N	104°57'34.712"W	0.00	
3717.00†	19.000	121.500	3625.10	-513.17	-314.43	513.10	40°12'58.276"N	104°57'34.354"W	0.00	
3817.00†	19.000	121.500	3719.65	-540.93	-331.44	540.86	40°12'58.108"N	104°57'33.996"W	0.00	
3917.00†	19.000	121.500	3814.20	-568.69	-348.45	568.62	40°12'57.940"N	104°57'33.638"W	0.00	
4017.00†	19.000	121.500	3908.75	-596.46	-365.46	596.38	40°12'57.772"N	104°57'33.280"W	0.00	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#09 REYNOLDS CATTLE 31N-23HZ (680'FNL & 155'FEL, SEC.23)
Area	COLORADO	Well	REYNOLDS CATTLE 31N-23HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	REYNOLDS CATTLE 31N-23HZ
Facility	SEC.23-T3N-R68W		

WELLPATH DATA (147 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4117.00†	19.000	121.500	4003.31	-624.22	-382.47	624.14	40°12'57.604"N	104°57'32.923"W	0.00	
4217.00†	19.000	121.500	4097.86	-651.98	-399.48	651.90	40°12'57.436"N	104°57'32.565"W	0.00	
4280.61†	19.000	121.500	4158.00	-669.64	-410.30	669.56	40°12'57.329"N	104°57'32.337"W	0.00	Sussex
4317.00†	19.000	121.500	4192.41	-679.75	-416.49	679.66	40°12'57.268"N	104°57'32.207"W	0.00	
4417.00†	19.000	121.500	4286.96	-707.51	-433.51	707.42	40°12'57.100"N	104°57'31.849"W	0.00	
4517.00†	19.000	121.500	4381.51	-735.27	-450.52	735.18	40°12'56.932"N	104°57'31.491"W	0.00	
4617.00†	19.000	121.500	4476.07	-763.03	-467.53	762.94	40°12'56.763"N	104°57'31.134"W	0.00	
4717.00†	19.000	121.500	4570.62	-790.80	-484.54	790.69	40°12'56.595"N	104°57'30.776"W	0.00	
4817.00†	19.000	121.500	4665.17	-818.56	-501.55	818.45	40°12'56.427"N	104°57'30.418"W	0.00	
4851.72†	19.000	121.500	4698.00	-828.20	-507.46	828.09	40°12'56.369"N	104°57'30.294"W	0.00	Shannon
4917.00†	19.000	121.500	4759.72	-846.32	-518.56	846.21	40°12'56.259"N	104°57'30.060"W	0.00	
5017.00†	19.000	121.500	4854.27	-874.08	-535.57	873.97	40°12'56.091"N	104°57'29.702"W	0.00	
5117.00†	19.000	121.500	4948.82	-901.85	-552.58	901.73	40°12'55.923"N	104°57'29.344"W	0.00	
5217.00†	19.000	121.500	5043.38	-929.61	-569.59	929.49	40°12'55.755"N	104°57'28.987"W	0.00	
5317.00†	19.000	121.500	5137.93	-957.37	-586.60	957.25	40°12'55.587"N	104°57'28.629"W	0.00	
5317.08	19.000	121.500	5138.00	-957.39	-586.62	957.27	40°12'55.587"N	104°57'28.629"W	0.00	BEGIN DROP
5417.00†	17.002	121.500	5233.03	-983.73	-602.75	983.60	40°12'55.427"N	104°57'28.289"W	2.00	
5517.00†	15.002	121.500	5329.15	-1007.23	-617.15	1007.10	40°12'55.285"N	104°57'27.986"W	2.00	
5617.00†	13.002	121.500	5426.17	-1027.86	-629.79	1027.73	40°12'55.160"N	104°57'27.720"W	2.00	
5717.00†	11.002	121.500	5523.98	-1045.59	-640.66	1045.46	40°12'55.052"N	104°57'27.492"W	2.00	
5817.00†	9.002	121.500	5622.46	-1060.40	-649.73	1060.27	40°12'54.963"N	104°57'27.301"W	2.00	
5917.00†	7.002	121.500	5721.48	-1072.27	-657.00	1072.13	40°12'54.891"N	104°57'27.148"W	2.00	
6017.00†	5.002	121.500	5820.93	-1081.19	-662.47	1081.05	40°12'54.837"N	104°57'27.033"W	2.00	
6117.00†	3.002	121.500	5920.68	-1087.14	-666.11	1087.00	40°12'54.801"N	104°57'26.956"W	2.00	
6217.00†	1.002	121.500	6020.61	-1090.12	-667.94	1089.98	40°12'54.783"N	104°57'26.918"W	2.00	
6267.08	0.000	270.012	6070.68	-1090.49	-668.17	1090.35	40°12'54.781"N	104°57'26.913"W	2.00	END DROP
6317.00†	0.000	270.012	6120.61	-1090.49	-668.17	1090.35	40°12'54.781"N	104°57'26.913"W	0.00	
6417.00†	0.000	270.012	6220.61	-1090.49	-668.17	1090.35	40°12'54.781"N	104°57'26.913"W	0.00	
6517.00†	0.000	270.012	6320.61	-1090.49	-668.17	1090.35	40°12'54.781"N	104°57'26.913"W	0.00	
6617.00†	0.000	270.012	6420.61	-1090.49	-668.17	1090.35	40°12'54.781"N	104°57'26.913"W	0.00	
6626.44†	0.000	270.012	6430.05	-1090.49	-668.17	1090.35	40°12'54.781"N	104°57'26.913"W	0.00	4 1/2" Liner Top
6717.00†	0.000	270.012	6520.61	-1090.49	-668.17	1090.35	40°12'54.781"N	104°57'26.913"W	0.00	
6726.44	0.000	270.012	6530.04	-1090.49	-668.17	1090.35	40°12'54.781"N	104°57'26.913"W	0.00	KOP, BUILD @ 10°/100'
6817.00†	9.056	270.012	6620.23	-1083.35	-668.17	1083.21	40°12'54.781"N	104°57'27.005"W	10.00	
6917.00†	19.056	270.012	6717.11	-1059.09	-668.16	1058.95	40°12'54.781"N	104°57'27.318"W	10.00	
7017.00†	29.056	270.012	6808.31	-1018.38	-668.15	1018.24	40°12'54.781"N	104°57'27.843"W	10.00	
7117.00†	39.056	270.012	6891.06	-962.45	-668.14	962.31	40°12'54.781"N	104°57'28.564"W	10.00	
7217.00†	49.056	270.012	6962.83	-893.00	-668.13	892.86	40°12'54.781"N	104°57'29.459"W	10.00	
7229.63†	50.319	270.012	6971.00	-883.37	-668.13	883.23	40°12'54.781"N	104°57'29.583"W	10.00	Sharon Springs
7317.00†	59.056	270.012	7021.46	-812.14	-668.11	812.00	40°12'54.781"N	104°57'30.501"W	10.00	
7355.22†	62.878	270.012	7040.00	-778.73	-668.10	778.59	40°12'54.781"N	104°57'30.932"W	10.00	Niobrara A
7417.00†	69.056	270.012	7065.15	-722.33	-668.09	722.19	40°12'54.781"N	104°57'31.659"W	10.00	
7449.83†	72.340	270.012	7076.00	-691.35	-668.09	691.21	40°12'54.782"N	104°57'32.058"W	10.00	Niobrara B
7517.00†	79.056	270.012	7092.58	-626.30	-668.07	626.16	40°12'54.782"N	104°57'32.897"W	10.00	
7617.00†	89.056	270.012	7102.92	-526.97	-668.05	526.83	40°12'54.782"N	104°57'34.177"W	10.00	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#09 REYNOLDS CATTLE 31N-23HZ (680'FNL & 155'FEL, SEC.23)
Area	COLORADO	Well	REYNOLDS CATTLE 31N-23HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	REYNOLDS CATTLE 31N-23HZ
Facility	SEC.23-T3N-R68W		

WELLPATH DATA (147 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7628.40	90.196	270.012	7103.00	-515.57	-668.05	515.43	40°12'54.782"N	104°57'34.324"W	10.00	LANDING POINT
7717.00†	90.196	270.012	7102.70	-426.97	-668.03	426.83	40°12'54.782"N	104°57'35.466"W	0.00	
7817.00†	90.196	270.012	7102.35	-326.97	-668.01	326.83	40°12'54.782"N	104°57'36.755"W	0.00	
7917.00†	90.196	270.012	7102.01	-226.97	-667.99	226.83	40°12'54.783"N	104°57'38.044"W	0.00	
8017.00†	90.196	270.012	7101.67	-126.97	-667.97	126.83	40°12'54.783"N	104°57'39.333"W	0.00	
8117.00†	90.196	270.012	7101.33	-26.97	-667.95	26.83	40°12'54.783"N	104°57'40.622"W	0.00	
8217.00†	90.196	270.012	7100.98	73.03	-667.93	-73.17	40°12'54.783"N	104°57'41.911"W	0.00	
8317.00†	90.196	270.012	7100.64	173.03	-667.91	-173.17	40°12'54.783"N	104°57'43.200"W	0.00	
8417.00†	90.196	270.012	7100.30	273.03	-667.89	-273.17	40°12'54.784"N	104°57'44.489"W	0.00	
8517.00†	90.196	270.012	7099.96	373.03	-667.87	-373.17	40°12'54.784"N	104°57'45.778"W	0.00	
8617.00†	90.196	270.012	7099.62	473.03	-667.85	-473.17	40°12'54.784"N	104°57'47.067"W	0.00	
8717.00†	90.196	270.012	7099.27	573.03	-667.83	-573.17	40°12'54.784"N	104°57'48.356"W	0.00	
8817.00†	90.196	270.012	7098.93	673.03	-667.81	-673.17	40°12'54.784"N	104°57'49.645"W	0.00	
8917.00†	90.196	270.012	7098.59	773.03	-667.79	-773.17	40°12'54.784"N	104°57'50.934"W	0.00	
9017.00†	90.196	270.012	7098.25	873.02	-667.77	-873.16	40°12'54.785"N	104°57'52.223"W	0.00	
9117.00†	90.196	270.012	7097.90	973.02	-667.75	-973.16	40°12'54.785"N	104°57'53.512"W	0.00	
9217.00†	90.196	270.012	7097.56	1073.02	-667.73	-1073.16	40°12'54.785"N	104°57'54.801"W	0.00	
9317.00†	90.196	270.012	7097.22	1173.02	-667.71	-1173.16	40°12'54.785"N	104°57'56.090"W	0.00	
9417.00†	90.196	270.012	7096.88	1273.02	-667.69	-1273.16	40°12'54.785"N	104°57'57.379"W	0.00	
9517.00†	90.196	270.012	7096.54	1373.02	-667.67	-1373.16	40°12'54.785"N	104°57'58.668"W	0.00	
9617.00†	90.196	270.012	7096.19	1473.02	-667.65	-1473.16	40°12'54.786"N	104°57'59.957"W	0.00	
9717.00†	90.196	270.012	7095.85	1573.02	-667.63	-1573.16	40°12'54.786"N	104°58'01.246"W	0.00	
9817.00†	90.196	270.012	7095.51	1673.02	-667.61	-1673.16	40°12'54.786"N	104°58'02.535"W	0.00	
9917.00†	90.196	270.012	7095.17	1773.02	-667.59	-1773.16	40°12'54.786"N	104°58'03.824"W	0.00	
10017.00†	90.196	270.012	7094.82	1873.02	-667.57	-1873.16	40°12'54.786"N	104°58'05.113"W	0.00	
10117.00†	90.196	270.012	7094.48	1973.02	-667.55	-1973.16	40°12'54.786"N	104°58'06.402"W	0.00	
10217.00†	90.196	270.012	7094.14	2073.02	-667.53	-2073.16	40°12'54.786"N	104°58'07.691"W	0.00	
10317.00†	90.196	270.012	7093.80	2173.02	-667.51	-2173.16	40°12'54.786"N	104°58'08.980"W	0.00	
10417.00†	90.196	270.012	7093.46	2273.02	-667.49	-2273.16	40°12'54.787"N	104°58'10.269"W	0.00	
10517.00†	90.196	270.012	7093.11	2373.02	-667.47	-2373.16	40°12'54.787"N	104°58'11.558"W	0.00	
10617.00†	90.196	270.012	7092.77	2473.02	-667.45	-2473.16	40°12'54.787"N	104°58'12.847"W	0.00	
10717.00†	90.196	270.012	7092.43	2573.02	-667.43	-2573.15	40°12'54.787"N	104°58'14.136"W	0.00	
10817.00†	90.196	270.012	7092.09	2673.01	-667.41	-2673.15	40°12'54.787"N	104°58'15.425"W	0.00	
10917.00†	90.196	270.012	7091.75	2773.01	-667.38	-2773.15	40°12'54.787"N	104°58'16.714"W	0.00	
11017.00†	90.196	270.012	7091.40	2873.01	-667.36	-2873.15	40°12'54.787"N	104°58'18.004"W	0.00	
11117.00†	90.196	270.012	7091.06	2973.01	-667.34	-2973.15	40°12'54.787"N	104°58'19.293"W	0.00	
11217.00†	90.196	270.012	7090.72	3073.01	-667.32	-3073.15	40°12'54.787"N	104°58'20.582"W	0.00	
11317.00†	90.196	270.012	7090.38	3173.01	-667.30	-3173.15	40°12'54.787"N	104°58'21.871"W	0.00	
11417.00†	90.196	270.012	7090.03	3273.01	-667.28	-3273.15	40°12'54.787"N	104°58'23.160"W	0.00	
11517.00†	90.196	270.012	7089.69	3373.01	-667.26	-3373.15	40°12'54.787"N	104°58'24.449"W	0.00	
11617.00†	90.196	270.012	7089.35	3473.01	-667.24	-3473.15	40°12'54.788"N	104°58'25.738"W	0.00	
11717.00†	90.196	270.012	7089.01	3573.01	-667.22	-3573.15	40°12'54.788"N	104°58'27.027"W	0.00	
11817.00†	90.196	270.012	7088.67	3673.01	-667.20	-3673.15	40°12'54.788"N	104°58'28.316"W	0.00	
11917.00†	90.196	270.012	7088.32	3773.01	-667.18	-3773.15	40°12'54.788"N	104°58'29.605"W	0.00	
12017.00†	90.196	270.012	7087.98	3873.01	-667.16	-3873.15	40°12'54.788"N	104°58'30.894"W	0.00	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#09 REYNOLDS CATTLE 31N-23HZ (680'FNL & 155'FEL, SEC.23)
Area	COLORADO	Well	REYNOLDS CATTLE 31N-23HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	REYNOLDS CATTLE 31N-23HZ
Facility	SEC.23-T3N-R68W		

WELLPATH DATA (147 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
12117.00†	90.196	270.012	7087.64	3973.01	-667.14	-3973.15	40°12'54.788"N	104°58'32.183"W	0.00	
12217.00†	90.196	270.012	7087.30	4073.01	-667.12	-4073.15	40°12'54.788"N	104°58'33.472"W	0.00	
12317.00†	90.196	270.012	7086.95	4173.01	-667.10	-4173.15	40°12'54.788"N	104°58'34.761"W	0.00	
12417.00†	90.196	270.012	7086.61	4273.01	-667.08	-4273.14	40°12'54.788"N	104°58'36.050"W	0.00	
12517.00†	90.196	270.012	7086.27	4373.00	-667.06	-4373.14	40°12'54.788"N	104°58'37.339"W	0.00	
12617.00†	90.196	270.012	7085.93	4473.00	-667.04	-4473.14	40°12'54.788"N	104°58'38.628"W	0.00	
12717.00†	90.196	270.012	7085.59	4573.00	-667.02	-4573.14	40°12'54.788"N	104°58'39.917"W	0.00	
12817.00†	90.196	270.012	7085.24	4673.00	-667.00	-4673.14	40°12'54.788"N	104°58'41.206"W	0.00	
12917.00†	90.196	270.012	7084.90	4773.00	-666.98	-4773.14	40°12'54.788"N	104°58'42.495"W	0.00	
13017.00†	90.196	270.012	7084.56	4873.00	-666.96	-4873.14	40°12'54.788"N	104°58'43.784"W	0.00	
13117.00†	90.196	270.012	7084.22	4973.00	-666.94	-4973.14	40°12'54.788"N	104°58'45.073"W	0.00	
13180.43	90.196	270.012	7084.00 ¹	5036.43	-666.93	-5036.57	40°12'54.788"N	104°58'45.890"W	0.00	TOTAL DEPTH

HOLE & CASING SECTIONS -									
Ref Wellbore: REYNOLDS CATTLE 31N-23HZ					Ref Wellpath: REYNOLDS CATTLE 31N-23HZ (PERMIT REV-2) PWP				
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]
13.5in Open Hole	17.00	1298.00	1281.00	17.00	1298.00	0.00	0.00	0.00	0.00
9.625in Casing Surface	17.00	1298.00	1281.00	17.00	1298.00	0.00	0.00	0.00	0.00
8.75in Open Hole	1298.00	7628.40	6330.40	1298.00	7103.00	0.00	0.00	-668.05	515.43
7in Casing Intermediate	17.00	7628.40	7611.40	17.00	7103.00	0.00	0.00	-668.05	515.43
6.125in Open Hole	7628.40	13180.43	5552.03	7103.00	7084.00	-668.05	515.43	-666.93	-5036.57
4.5in Casing Production	17.00	13180.43	13163.43	17.00	7084.00	0.00	0.00	-666.93	-5036.57

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#09 REYNOLDS CATTLE 31N-23HZ (680'FNL & 155'FEL, SEC.23)
Area	COLORADO	Well	REYNOLDS CATTLE 31N-23HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	REYNOLDS CATTLE 31N-23HZ
Facility	SEC.23-T3N-R68W		

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SEC.19-T3N-R67W HARDLINES (460' SETBACKS)		0.00	120.22	-1.40	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W	polygon
SEC.19-T3N-R67W SECTION LINES		0.00	120.22	-1.40	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W	polygon
SEC.23-T3N-R68W HARDLINES (460' SETBACKS)		0.00	120.22	-1.40	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W	polygon
SEC.23-T3N-R68W SECTION LINES		0.00	120.22	-1.40	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W	polygon
SEC.24-T3N-R68W HARDLINES (460' SETBACKS)		0.00	120.22	-1.40	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W	polygon
SEC.24-T3N-R68W SECTION LINES		0.00	120.22	-1.40	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W	polygon
1) REYNOLDS CATTLE 31N-23HZ BHL ON PLAT (1350'FNL & 50'FWL, SEC.23) REV-1	13180.43	7084.00	-666.93	-5036.57	3145382.94	1321673.20	40°12'54.788"N	104°58'45.890"W	point
REYNOLDS CATTLE 31N-23HZ LAND BOX		7251.00	60.11	-0.84	3150413.94	1322430.78	40°13'01.978"N	104°57'40.979"W	polygon
REYNOLDS CATTLE 31N-23HZ LANDBOX		7251.00	60.11	-0.84	3150413.94	1322430.78	40°13'01.978"N	104°57'40.979"W	polygon

SURVEY PROGRAM - Ref Wellbore: REYNOLDS CATTLE 31N-23HZ					Ref Wellpath: REYNOLDS CATTLE 31N-23HZ (PERMIT REV-2) PWP	
Start MD [ft]	End MD [ft]	Positional Uncertainty Model		Log Name/Comment		Wellbore
17.00	13180.43	NaviTrak (IFR)				REYNOLDS CATTLE 31N-23HZ

REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#09 REYNOLDS CATTLE 31N-23HZ (680'FNL & 155'FEL, SEC.23)
Area	COLORADO	Well	REYNOLDS CATTLE 31N-23HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	REYNOLDS CATTLE 31N-23HZ
Facility	SEC.23-T3N-R68W		

WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
1248.00	0.000	121.500	1248.00	Fox Hills Marker
4280.61	19.000	121.500	4158.00	Sussex
4851.72	19.000	121.500	4698.00	Shannon
6626.44	0.000	270.012	6430.05	4 1/2" Liner Top
7229.63	50.319	270.012	6971.00	Sharon Springs
7355.22	62.878	270.012	7040.00	Niobrara A
7449.83	72.340	270.012	7076.00	Niobrara B

DESIGN COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
17.00	0.000	121.500	17.00	TIE-ON
1398.00	0.000	121.500	1398.00	BEGIN NUDGE
2348.00	19.000	121.500	2330.68	END NUDGE
5317.08	19.000	121.500	5138.00	BEGIN DROP
6267.08	0.000	270.012	6070.68	END DROP
6726.44	0.000	270.012	6530.04	KOP, BUILD @ 10°/100'
7628.40	90.196	270.012	7103.00	LANDING POINT
13180.43	90.196	270.012	7084.00	TOTAL DEPTH