

KERR-MCGEE OIL & GAS ONSHORE LP



Location: COLORADO Slot: SLOT#12 REYNOLDS CATTLE 3N-19HZ (710'FNL & 155'FEL, SEC.23)
 Field: WELD COUNTY (KERR MCGEE) Well: REYNOLDS CATTLE 3N-19HZ
 Facility: SEC.23-T3N-R68W Wellbore: REYNOLDS CATTLE 3N-19HZ PWB

Plot reference wellpath is REYNOLDS CATTLE 3N-19HZ (PERMIT REV-1) 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#12 REYNOLDS CATTLE 3N-19HZ (710'FNL & 155'FEL, SEC.23)): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: precain on 09/Dec/2013

Location Information

Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude		
SEC.23-T3N-R68W	3147390.982	1322795.280	40°13'05.700"N	104°58'19.920"W		
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SLOT#12 REYNOLDS CATTLE 3N-19HZ (710'FNL & 155'FEL, SEC.23)	-466.48	3022.03	3150415.601	1322340.811	40°13'01.088"N	104°57'40.964"W
PERMIT (17KB) (RKB) to Mud line (At Slot: SLOT#12 REYNOLDS CATTLE 3N-19HZ (710'FNL & 155'FEL, SEC.23))						4948ft
Mean Sea Level to Mud line (At Slot: SLOT#12 REYNOLDS CATTLE 3N-19HZ (710'FNL & 155'FEL, SEC.23))						0ft
PERMIT (17KB) (RKB) to Mean Sea Level						4948ft

Survey Program

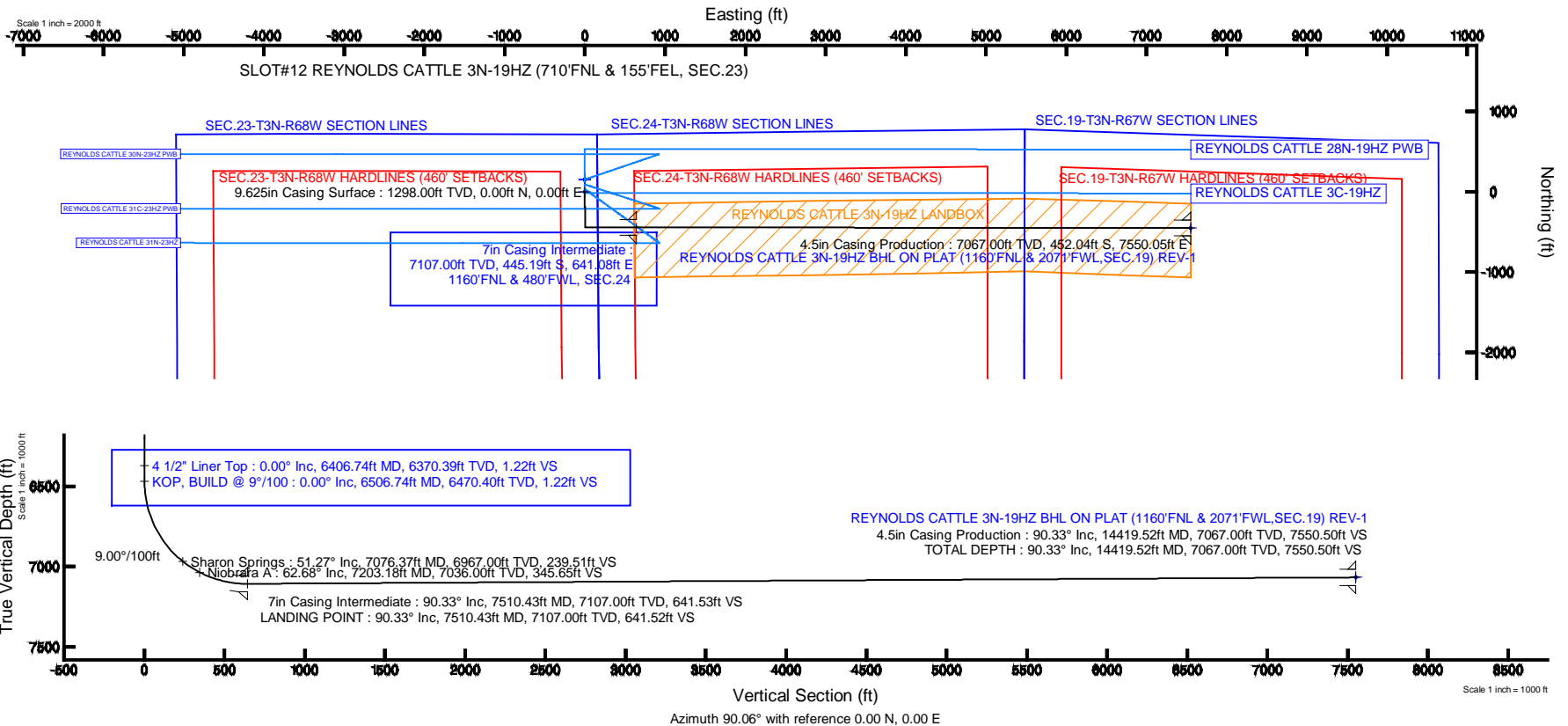
Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
17.00	14419.52	NaviTrak	NaviTrak (IFR)		REYNOLDS CATTLE 3N-19HZ PWB

Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
BEGIN NUDDGE	17.00	0.000	179.900	17.00	0.00	0.00	0.00	0.00
BEGIN NUDDGE	2545.00	0.000	179.900	2545.00	0.00	0.00	0.00	0.00
END NUDDGE	3045.00	10.000	179.900	3042.47	-43.52	0.08	2.00	0.12
BEGIN DROP	5103.81	10.000	179.900	5070.00	-401.03	0.70	0.00	1.10
END DROP	5603.81	0.000	90.057	5567.47	-444.55	0.78	2.00	1.22
KOP, BUILD @ 9°/100	6506.74	0.000	90.057	6470.40	-444.55	0.78	0.00	1.22
LANDING POINT	7510.43	90.332	90.057	7107.00	-445.19	641.08	9.00	641.52
TOTAL DEPTH	14419.52	90.332	90.057	7067.00	-452.04	7550.05	0.00	7550.50

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	150.09	-1.68	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W
SEC.19-T3N-R67W SECTION LINES		0.00	150.09	-1.68	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W
SEC.23-T3N-R68W HARDLINES (460' SETBACKS)		0.00	150.09	-1.68	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W
SEC.23-T3N-R68W SECTION LINES		0.00	150.09	-1.68	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W
SEC.24-T3N-R68W HARDLINES (460' SETBACKS)		0.00	150.09	-1.68	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W
SEC.24-T3N-R68W SECTION LINES		0.00	150.09	-1.68	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W
REYNOLDS CATTLE 3N-19HZ BHL ON PLAT (1160'FNL & 2071'FWL, SEC.19) REV-1	14419.52	7067.00	-452.04	7550.05	3157967.92	1321934.66	40°12'56.610"N	104°56'03.642"W
REYNOLDS CATTLE 3N-19HZ LANDBOX		7067.00	0.00	0.00	3150415.60	1322340.81	40°13'01.088"N	104°57'40.964"W



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#12 REYNOLDS CATTLE 3N-19HZ (710'FNL & 155'FEL, SEC.23)
Area	COLORADO	Well	REYNOLDS CATTLE 3N-19HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	REYNOLDS CATTLE 3N-19HZ PWB
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	09/Dec/2013 at 15:35
Convergence at slot	n/a	Database/Source file	WellArchitectDB/REYNOLDS_CATTLE_3N-19HZ_PWB.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-466.48	3022.03	3150415.60	1322340.81	40°13'01.088"N	104°57'40.964"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#12 REYNOLDS CATTLE 3N-19HZ (710'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	90.06°

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#12 REYNOLDS CATTLE 3N-19HZ (710'FNL & 155'FEL, SEC.23)
Area	COLORADO	Well	REYNOLDS CATTLE 3N-19HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	REYNOLDS CATTLE 3N-19HZ PWB
Facility	SEC.23-T3N-R68W		

WELLPATH DATA (159 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	179.900	0.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
17.00	0.000	179.900	17.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	BEGIN NUDGE
117.00†	0.000	179.900	117.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
217.00†	0.000	179.900	217.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
317.00†	0.000	179.900	317.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
417.00†	0.000	179.900	417.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
517.00†	0.000	179.900	517.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
617.00†	0.000	179.900	617.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
717.00†	0.000	179.900	717.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
817.00†	0.000	179.900	817.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
917.00†	0.000	179.900	917.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
1017.00†	0.000	179.900	1017.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
1117.00†	0.000	179.900	1117.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
1217.00†	0.000	179.900	1217.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
1248.00†	0.000	179.900	1248.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	Fox Hills Marker
1317.00†	0.000	179.900	1317.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
1417.00†	0.000	179.900	1417.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
1517.00†	0.000	179.900	1517.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
1617.00†	0.000	179.900	1617.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
1717.00†	0.000	179.900	1717.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
1817.00†	0.000	179.900	1817.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
1917.00†	0.000	179.900	1917.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
2017.00†	0.000	179.900	2017.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
2117.00†	0.000	179.900	2117.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
2217.00†	0.000	179.900	2217.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
2317.00†	0.000	179.900	2317.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
2417.00†	0.000	179.900	2417.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
2517.00†	0.000	179.900	2517.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	
2545.00	0.000	179.900	2545.00	0.00	0.00	0.00	40°13'01.088"N	104°57'40.964"W	0.00	BEGIN NUDGE
2617.00†	1.440	179.900	2616.99	0.00	-0.90	0.00	40°13'01.079"N	104°57'40.964"W	2.00	
2717.00†	3.440	179.900	2716.90	0.01	-5.16	0.01	40°13'01.037"N	104°57'40.964"W	2.00	
2817.00†	5.440	179.900	2816.59	0.04	-12.90	0.02	40°13'00.961"N	104°57'40.964"W	2.00	
2917.00†	7.440	179.900	2915.96	0.07	-24.12	0.04	40°13'00.850"N	104°57'40.964"W	2.00	
3017.00†	9.440	179.900	3014.87	0.11	-38.80	0.07	40°13'00.705"N	104°57'40.964"W	2.00	
3045.00	10.000	179.900	3042.47	0.12	-43.52	0.08	40°13'00.658"N	104°57'40.963"W	2.00	END NUDGE
3117.00†	10.000	179.900	3113.37	0.15	-56.03	0.10	40°13'00.535"N	104°57'40.963"W	0.00	
3217.00†	10.000	179.900	3211.85	0.20	-73.39	0.13	40°13'00.363"N	104°57'40.963"W	0.00	
3317.00†	10.000	179.900	3310.33	0.25	-90.75	0.16	40°13'00.192"N	104°57'40.962"W	0.00	
3417.00†	10.000	179.900	3408.81	0.30	-108.12	0.19	40°13'00.020"N	104°57'40.962"W	0.00	
3517.00†	10.000	179.900	3507.29	0.34	-125.48	0.22	40°12'59.848"N	104°57'40.962"W	0.00	
3617.00†	10.000	179.900	3605.78	0.39	-142.85	0.25	40°12'59.677"N	104°57'40.961"W	0.00	
3717.00†	10.000	179.900	3704.26	0.44	-160.21	0.28	40°12'59.505"N	104°57'40.961"W	0.00	
3817.00†	10.000	179.900	3802.74	0.49	-177.58	0.31	40°12'59.334"N	104°57'40.960"W	0.00	
3917.00†	10.000	179.900	3901.22	0.53	-194.94	0.34	40°12'59.162"N	104°57'40.960"W	0.00	
4017.00†	10.000	179.900	3999.70	0.58	-212.31	0.37	40°12'58.990"N	104°57'40.960"W	0.00	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#12 REYNOLDS CATTLE 3N-19HZ (710'FNL & 155'FEL, SEC.23)
Area	COLORADO	Well	REYNOLDS CATTLE 3N-19HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	REYNOLDS CATTLE 3N-19HZ PWB
Facility	SEC.23-T3N-R68W		

WELLPATH DATA (159 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4117.00†	10.000	179.900	4098.18	0.63	-229.67	0.40	40°12'58.819"N	104°57'40.959"W	0.00	
4177.74†	10.000	179.900	4158.00	0.66	-240.22	0.42	40°12'58.715"N	104°57'40.959"W	0.00	Sussex
4217.00†	10.000	179.900	4196.66	0.68	-247.04	0.43	40°12'58.647"N	104°57'40.959"W	0.00	
4317.00†	10.000	179.900	4295.14	0.72	-264.40	0.46	40°12'58.476"N	104°57'40.958"W	0.00	
4417.00†	10.000	179.900	4393.62	0.77	-281.77	0.49	40°12'58.304"N	104°57'40.958"W	0.00	
4517.00†	10.000	179.900	4492.10	0.82	-299.13	0.52	40°12'58.132"N	104°57'40.958"W	0.00	
4617.00†	10.000	179.900	4590.58	0.87	-316.50	0.55	40°12'57.961"N	104°57'40.957"W	0.00	
4717.00†	10.000	179.900	4689.06	0.91	-333.86	0.58	40°12'57.789"N	104°57'40.957"W	0.00	
4726.07†	10.000	179.900	4698.00	0.92	-335.44	0.59	40°12'57.774"N	104°57'40.957"W	0.00	Shannon
4817.00†	10.000	179.900	4787.54	0.96	-351.23	0.61	40°12'57.618"N	104°57'40.956"W	0.00	
4917.00†	10.000	179.900	4886.03	1.01	-368.59	0.64	40°12'57.446"N	104°57'40.956"W	0.00	
5017.00†	10.000	179.900	4984.51	1.06	-385.96	0.67	40°12'57.274"N	104°57'40.956"W	0.00	
5103.81	10.000	179.900	5070.00	1.10	-401.03	0.70	40°12'57.125"N	104°57'40.955"W	0.00	BEGIN DROP
5117.00†	9.736	179.900	5082.99	1.11	-403.29	0.70	40°12'57.103"N	104°57'40.955"W	2.00	
5217.00†	7.736	179.900	5181.83	1.15	-418.48	0.73	40°12'56.953"N	104°57'40.955"W	2.00	
5317.00†	5.736	179.900	5281.13	1.18	-430.21	0.75	40°12'56.837"N	104°57'40.955"W	2.00	
5417.00†	3.736	179.900	5380.79	1.20	-438.46	0.77	40°12'56.756"N	104°57'40.955"W	2.00	
5517.00†	1.736	179.900	5480.67	1.21	-443.24	0.77	40°12'56.708"N	104°57'40.954"W	2.00	
5603.81	0.000	90.057	5567.47	1.22	-444.55	0.78	40°12'56.695"N	104°57'40.954"W	2.00	END DROP
5617.00†	0.000	90.057	5580.65	1.22	-444.55	0.78	40°12'56.695"N	104°57'40.954"W	0.00	
5717.00†	0.000	90.057	5680.65	1.22	-444.55	0.78	40°12'56.695"N	104°57'40.954"W	0.00	
5817.00†	0.000	90.057	5780.65	1.22	-444.55	0.78	40°12'56.695"N	104°57'40.954"W	0.00	
5917.00†	0.000	90.057	5880.65	1.22	-444.55	0.78	40°12'56.695"N	104°57'40.954"W	0.00	
6017.00†	0.000	90.057	5980.65	1.22	-444.55	0.78	40°12'56.695"N	104°57'40.954"W	0.00	
6117.00†	0.000	90.057	6080.65	1.22	-444.55	0.78	40°12'56.695"N	104°57'40.954"W	0.00	
6217.00†	0.000	90.057	6180.65	1.22	-444.55	0.78	40°12'56.695"N	104°57'40.954"W	0.00	
6317.00†	0.000	90.057	6280.65	1.22	-444.55	0.78	40°12'56.695"N	104°57'40.954"W	0.00	
6406.74†	0.000	90.057	6370.39	1.22	-444.55	0.78	40°12'56.695"N	104°57'40.954"W	0.00	4 1/2" Liner Top
6417.00†	0.000	90.057	6380.65	1.22	-444.55	0.78	40°12'56.695"N	104°57'40.954"W	0.00	
6506.74	0.000	90.057	6470.40	1.22	-444.55	0.78	40°12'56.695"N	104°57'40.954"W	0.00	KOP, BUILD @ 9°/100
6517.00†	0.923	90.057	6480.65	1.30	-444.55	0.86	40°12'56.695"N	104°57'40.953"W	9.00	
6617.00†	9.923	90.057	6580.10	10.74	-444.56	10.30	40°12'56.695"N	104°57'40.832"W	9.00	
6717.00†	18.923	90.057	6676.85	35.62	-444.59	35.18	40°12'56.695"N	104°57'40.511"W	9.00	
6817.00†	27.923	90.057	6768.52	75.34	-444.63	74.89	40°12'56.695"N	104°57'39.999"W	9.00	
6917.00†	36.923	90.057	6852.84	128.90	-444.68	128.46	40°12'56.694"N	104°57'39.309"W	9.00	
7017.00†	45.923	90.057	6927.75	194.99	-444.75	194.55	40°12'56.693"N	104°57'38.457"W	9.00	
7076.37†	51.267	90.057	6967.00	239.51	-444.79	239.06	40°12'56.693"N	104°57'37.883"W	9.00	Sharon Springs
7117.00†	54.923	90.057	6991.39	271.99	-444.82	271.55	40°12'56.693"N	104°57'37.464"W	9.00	
7203.18†	62.679	90.057	7036.00	345.65	-444.90	345.20	40°12'56.692"N	104°57'36.515"W	9.00	Niobrara A
7217.00†	63.923	90.057	7042.21	358.00	-444.91	357.55	40°12'56.692"N	104°57'36.355"W	9.00	
7317.00†	72.923	90.057	7078.95	450.89	-445.00	450.45	40°12'56.691"N	104°57'35.158"W	9.00	
7417.00†	81.923	90.057	7100.70	548.39	-445.10	547.95	40°12'56.690"N	104°57'33.901"W	9.00	
7510.43	90.332	90.057	7107.00	641.52	-445.19	641.08	40°12'56.689"N	104°57'32.701"W	9.00	LANDING POINT
7517.00†	90.332	90.057	7106.97	648.10	-445.19	647.65	40°12'56.689"N	104°57'32.616"W	0.00	
7617.00†	90.332	90.057	7106.39	748.09	-445.29	747.65	40°12'56.688"N	104°57'31.327"W	0.00	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#12 REYNOLDS CATTLE 3N-19HZ (710'FNL & 155'FEL, SEC.23)
Area	COLORADO	Well	REYNOLDS CATTLE 3N-19HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	REYNOLDS CATTLE 3N-19HZ PWB
Facility	SEC.23-T3N-R68W		

WELLPATH DATA (159 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7717.00†	90.332	90.057	7105.81	848.09	-445.39	847.65	40°12'56.687"N	104°57'30.038"W	0.00	
7817.00†	90.332	90.057	7105.23	948.09	-445.49	947.65	40°12'56.686"N	104°57'28.749"W	0.00	
7917.00†	90.332	90.057	7104.65	1048.09	-445.59	1047.65	40°12'56.685"N	104°57'27.460"W	0.00	
8017.00†	90.332	90.057	7104.07	1148.09	-445.69	1147.64	40°12'56.684"N	104°57'26.171"W	0.00	
8117.00†	90.332	90.057	7103.49	1248.09	-445.79	1247.64	40°12'56.683"N	104°57'24.882"W	0.00	
8217.00†	90.332	90.057	7102.91	1348.08	-445.89	1347.64	40°12'56.682"N	104°57'23.593"W	0.00	
8317.00†	90.332	90.057	7102.33	1448.08	-445.99	1447.64	40°12'56.681"N	104°57'22.304"W	0.00	
8417.00†	90.332	90.057	7101.76	1548.08	-446.09	1547.64	40°12'56.680"N	104°57'21.015"W	0.00	
8517.00†	90.332	90.057	7101.18	1648.08	-446.19	1647.64	40°12'56.679"N	104°57'19.726"W	0.00	
8617.00†	90.332	90.057	7100.60	1748.08	-446.29	1747.63	40°12'56.678"N	104°57'18.437"W	0.00	
8717.00†	90.332	90.057	7100.02	1848.08	-446.38	1847.63	40°12'56.677"N	104°57'17.148"W	0.00	
8817.00†	90.332	90.057	7099.44	1948.07	-446.48	1947.63	40°12'56.676"N	104°57'15.859"W	0.00	
8917.00†	90.332	90.057	7098.86	2048.07	-446.58	2047.63	40°12'56.674"N	104°57'14.570"W	0.00	
9017.00†	90.332	90.057	7098.28	2148.07	-446.68	2147.63	40°12'56.673"N	104°57'13.281"W	0.00	
9117.00†	90.332	90.057	7097.70	2248.07	-446.78	2247.63	40°12'56.672"N	104°57'11.992"W	0.00	
9217.00†	90.332	90.057	7097.12	2348.07	-446.88	2347.62	40°12'56.671"N	104°57'10.703"W	0.00	
9317.00†	90.332	90.057	7096.54	2448.07	-446.98	2447.62	40°12'56.670"N	104°57'09.414"W	0.00	
9417.00†	90.332	90.057	7095.97	2548.06	-447.08	2547.62	40°12'56.669"N	104°57'08.125"W	0.00	
9517.00†	90.332	90.057	7095.39	2648.06	-447.18	2647.62	40°12'56.668"N	104°57'06.836"W	0.00	
9617.00†	90.332	90.057	7094.81	2748.06	-447.28	2747.62	40°12'56.667"N	104°57'05.547"W	0.00	
9717.00†	90.332	90.057	7094.23	2848.06	-447.38	2847.61	40°12'56.666"N	104°57'04.258"W	0.00	
9817.00†	90.332	90.057	7093.65	2948.06	-447.48	2947.61	40°12'56.665"N	104°57'02.969"W	0.00	
9917.00†	90.332	90.057	7093.07	3048.05	-447.57	3047.61	40°12'56.664"N	104°57'01.680"W	0.00	
10017.00†	90.332	90.057	7092.49	3148.05	-447.67	3147.61	40°12'56.663"N	104°57'00.391"W	0.00	
10117.00†	90.332	90.057	7091.91	3248.05	-447.77	3247.61	40°12'56.661"N	104°56'59.102"W	0.00	
10217.00†	90.332	90.057	7091.33	3348.05	-447.87	3347.61	40°12'56.660"N	104°56'57.813"W	0.00	
10317.00†	90.332	90.057	7090.75	3448.05	-447.97	3447.60	40°12'56.659"N	104°56'56.524"W	0.00	
10417.00†	90.332	90.057	7090.18	3548.05	-448.07	3547.60	40°12'56.658"N	104°56'55.235"W	0.00	
10517.00†	90.332	90.057	7089.60	3648.04	-448.17	3647.60	40°12'56.657"N	104°56'53.946"W	0.00	
10617.00†	90.332	90.057	7089.02	3748.04	-448.27	3747.60	40°12'56.656"N	104°56'52.657"W	0.00	
10717.00†	90.332	90.057	7088.44	3848.04	-448.37	3847.60	40°12'56.655"N	104°56'51.368"W	0.00	
10817.00†	90.332	90.057	7087.86	3948.04	-448.47	3947.60	40°12'56.654"N	104°56'50.079"W	0.00	
10917.00†	90.332	90.057	7087.28	4048.04	-448.57	4047.59	40°12'56.652"N	104°56'48.790"W	0.00	
11017.00†	90.332	90.057	7086.70	4148.04	-448.67	4147.59	40°12'56.651"N	104°56'47.501"W	0.00	
11117.00†	90.332	90.057	7086.12	4248.03	-448.76	4247.59	40°12'56.650"N	104°56'46.212"W	0.00	
11217.00†	90.332	90.057	7085.54	4348.03	-448.86	4347.59	40°12'56.649"N	104°56'44.923"W	0.00	
11317.00†	90.332	90.057	7084.96	4448.03	-448.96	4447.59	40°12'56.648"N	104°56'43.634"W	0.00	
11417.00†	90.332	90.057	7084.38	4548.03	-449.06	4547.59	40°12'56.647"N	104°56'42.345"W	0.00	
11517.00†	90.332	90.057	7083.81	4648.03	-449.16	4647.58	40°12'56.646"N	104°56'41.056"W	0.00	
11617.00†	90.332	90.057	7083.23	4748.03	-449.26	4747.58	40°12'56.644"N	104°56'39.767"W	0.00	
11717.00†	90.332	90.057	7082.65	4848.02	-449.36	4847.58	40°12'56.643"N	104°56'38.478"W	0.00	
11817.00†	90.332	90.057	7082.07	4948.02	-449.46	4947.58	40°12'56.642"N	104°56'37.189"W	0.00	
11917.00†	90.332	90.057	7081.49	5048.02	-449.56	5047.58	40°12'56.641"N	104°56'35.900"W	0.00	
12017.00†	90.332	90.057	7080.91	5148.02	-449.66	5147.57	40°12'56.640"N	104°56'34.611"W	0.00	
12117.00†	90.332	90.057	7080.33	5248.02	-449.76	5247.57	40°12'56.638"N	104°56'33.322"W	0.00	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#12 REYNOLDS CATTLE 3N-19HZ (710'FNL & 155'FEL, SEC.23)
Area	COLORADO	Well	REYNOLDS CATTLE 3N-19HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	REYNOLDS CATTLE 3N-19HZ PWB
Facility	SEC.23-T3N-R68W		

WELLPATH DATA (159 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
12217.00†	90.332	90.057	7079.75	5348.02	-449.86	5347.57	40°12'56.637"N	104°56'32.033"W	0.00	
12317.00†	90.332	90.057	7079.17	5448.01	-449.95	5447.57	40°12'56.636"N	104°56'30.744"W	0.00	
12417.00†	90.332	90.057	7078.59	5548.01	-450.05	5547.57	40°12'56.635"N	104°56'29.455"W	0.00	
12517.00†	90.332	90.057	7078.02	5648.01	-450.15	5647.57	40°12'56.634"N	104°56'28.166"W	0.00	
12617.00†	90.332	90.057	7077.44	5748.01	-450.25	5747.56	40°12'56.632"N	104°56'26.877"W	0.00	
12717.00†	90.332	90.057	7076.86	5848.01	-450.35	5847.56	40°12'56.631"N	104°56'25.588"W	0.00	
12817.00†	90.332	90.057	7076.28	5948.01	-450.45	5947.56	40°12'56.630"N	104°56'24.299"W	0.00	
12917.00†	90.332	90.057	7075.70	6048.00	-450.55	6047.56	40°12'56.629"N	104°56'23.010"W	0.00	
13017.00†	90.332	90.057	7075.12	6148.00	-450.65	6147.56	40°12'56.628"N	104°56'21.721"W	0.00	
13117.00†	90.332	90.057	7074.54	6248.00	-450.75	6247.56	40°12'56.626"N	104°56'20.432"W	0.00	
13217.00†	90.332	90.057	7073.96	6348.00	-450.85	6347.55	40°12'56.625"N	104°56'19.143"W	0.00	
13317.00†	90.332	90.057	7073.38	6448.00	-450.95	6447.55	40°12'56.624"N	104°56'17.854"W	0.00	
13417.00†	90.332	90.057	7072.80	6548.00	-451.04	6547.55	40°12'56.623"N	104°56'16.565"W	0.00	
13517.00†	90.332	90.057	7072.23	6647.99	-451.14	6647.55	40°12'56.621"N	104°56'15.276"W	0.00	
13617.00†	90.332	90.057	7071.65	6747.99	-451.24	6747.55	40°12'56.620"N	104°56'13.987"W	0.00	
13717.00†	90.332	90.057	7071.07	6847.99	-451.34	6847.55	40°12'56.619"N	104°56'12.698"W	0.00	
13817.00†	90.332	90.057	7070.49	6947.99	-451.44	6947.54	40°12'56.618"N	104°56'11.409"W	0.00	
13917.00†	90.332	90.057	7069.91	7047.99	-451.54	7047.54	40°12'56.616"N	104°56'10.120"W	0.00	
14017.00†	90.332	90.057	7069.33	7147.99	-451.64	7147.54	40°12'56.615"N	104°56'08.831"W	0.00	
14117.00†	90.332	90.057	7068.75	7247.98	-451.74	7247.54	40°12'56.614"N	104°56'07.542"W	0.00	
14217.00†	90.332	90.057	7068.17	7347.98	-451.84	7347.54	40°12'56.613"N	104°56'06.253"W	0.00	
14317.00†	90.332	90.057	7067.59	7447.98	-451.94	7447.54	40°12'56.611"N	104°56'04.963"W	0.00	
14417.00†	90.332	90.057	7067.01	7547.98	-452.04	7547.53	40°12'56.610"N	104°56'03.674"W	0.00	
14419.52	90.332	90.057	7067.00 [†]	7550.50	-452.04	7550.05	40°12'56.610"N	104°56'03.642"W	0.00	TOTAL DEPTH

HOLE & CASING SECTIONS -									
Ref Wellbore: REYNOLDS CATTLE 3N-19HZ PWB Ref Wellpath: REYNOLDS CATTLE 3N-19HZ (PERMIT REV-1) 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	7510.43	6212.43	1298.00	7107.00	0.00	0.00	-445.19	641.08
7in Casing Intermediate	17.00	7510.43	7493.43	17.00	7107.00	0.00	0.00	-445.19	641.08
6.125in Open Hole	7510.43	14419.52	6909.09	7107.00	7067.00	-445.19	641.08	-452.04	7550.05
4.5in Casing Production	17.00	14419.52	14402.52	17.00	7067.00	0.00	0.00	-452.04	7550.05

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#12 REYNOLDS CATTLE 3N-19HZ (710'FNL & 155'FEL, SEC.23)
Area	COLORADO	Well	REYNOLDS CATTLE 3N-19HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	REYNOLDS CATTLE 3N-19HZ PWB
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	150.09	-1.68	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W	polygon
SEC.19-T3N-R67W SECTION LINES		0.00	150.09	-1.68	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W	polygon
SEC.23-T3N-R68W HARDLINES (460' SETBACKS)		0.00	150.09	-1.68	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W	polygon
SEC.23-T3N-R68W SECTION LINES		0.00	150.09	-1.68	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W	polygon
SEC.24-T3N-R68W HARDLINES (460' SETBACKS)		0.00	150.09	-1.68	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W	polygon
SEC.24-T3N-R68W SECTION LINES		0.00	150.09	-1.68	3150413.01	1322490.88	40°13'02.572"N	104°57'40.986"W	polygon
1) REYNOLDS CATTLE 3N-19HZ BHL ON PLAT (1160'FNL & 2071'FWL,SEC.19) REV-1	14419.52	7067.00	-452.04	7550.05	3157967.92	1321934.66	40°12'56.610"N	104°56'03.642"W	point
REYNOLDS CATTLE 3N-19HZ LANDBOX		7067.00	0.00	0.00	3150415.60	1322340.81	40°13'01.088"N	104°57'40.964"W	polygon

SURVEY PROGRAM -				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
17.00	14419.52	NaviTrak (IFR)		REYNOLDS CATTLE 3N-19HZ PWB

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#12 REYNOLDS CATTLE 3N-19HZ (710'FNL & 155'FEL, SEC.23)
Area	COLORADO	Well	REYNOLDS CATTLE 3N-19HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	REYNOLDS CATTLE 3N-19HZ PWB
Facility	SEC.23-T3N-R68W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
1248.00	0.000	179.900	1248.00	Fox Hills Marker
4177.74	10.000	179.900	4158.00	Sussex
4726.07	10.000	179.900	4698.00	Shannon
6406.74	0.000	90.057	6370.39	4 1/2" Liner Top
7076.37	51.267	90.057	6967.00	Sharon Springs
7203.18	62.679	90.057	7036.00	Niobrara A

DESIGN COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
17.00	0.000	179.900	17.00	BEGIN NUDGE
2545.00	0.000	179.900	2545.00	BEGIN NUDGE
3045.00	10.000	179.900	3042.47	END NUDGE
5103.81	10.000	179.900	5070.00	BEGIN DROP
5603.81	0.000	90.057	5567.47	END DROP
6506.74	0.000	90.057	6470.40	KOP, BUILD @ 9°/100
7510.43	90.332	90.057	7107.00	LANDING POINT
14419.52	90.332	90.057	7067.00	TOTAL DEPTH