

# KERR-MCGEE OIL & GAS ONSHORE LP

Location: COLORADO Slot: SLOT#17 THOMSEN 4N-31HZ (2371'FNL & 1491'FWL, SEC.07)  
 Field: WELD COUNTY (KERR MCGEE) Well: THOMSEN 4N-31HZ  
 Facility: SEC.07-T2N-R65W Wellbore: THOMSEN 4N-31HZ PWB

Plot reference wellpath is THOMSEN 4N-31HZ (PERMIT REV-1) PWP

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: 4965ft Scale: True distance  
 Mean Sea Level to Mud line (At Slot: SLOT#17 THOMSEN 4N-31HZ (2371'FNL & 1491'FWL, SEC.07)): 0 feet Depths are in feet  
 Coordinates are in feet referenced to Slot Created by: robialo01 on 9/9/2014

## Location Information

Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude		
SEC.07-T2N-R65W	3219721.272	1297490.241	40°08'50.395"N	104°42'50.411"W		
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SLOT#17 THOMSEN 4N-31HZ (2371'FNL & 1491'FWL, SEC.07)	2340.62	968.04	3220668.488	1298939.250	40°09'13.525"N	104°42'37.944"W
PERMIT (17KB) (RKB) to Mud line (At Slot: SLOT#17 THOMSEN 4N-31HZ (2371'FNL & 1491'FWL, SEC.07))						4965ft
Mean Sea Level to Mud line (At Slot: SLOT#17 THOMSEN 4N-31HZ (2371'FNL & 1491'FWL, SEC.07))						0ft
PERMIT (17KB) (RKB) to Mean Sea Level						4965ft

## Survey Program

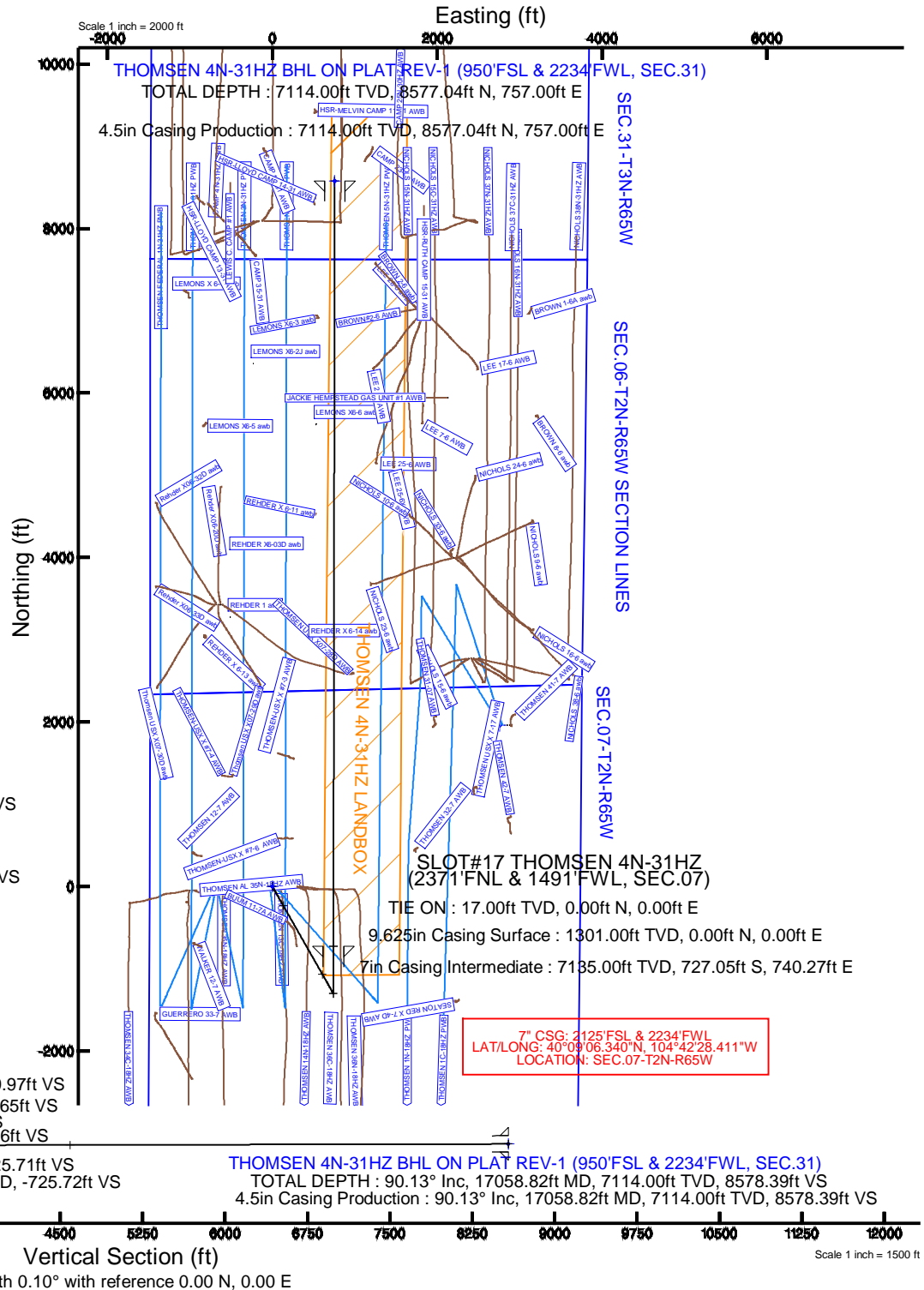
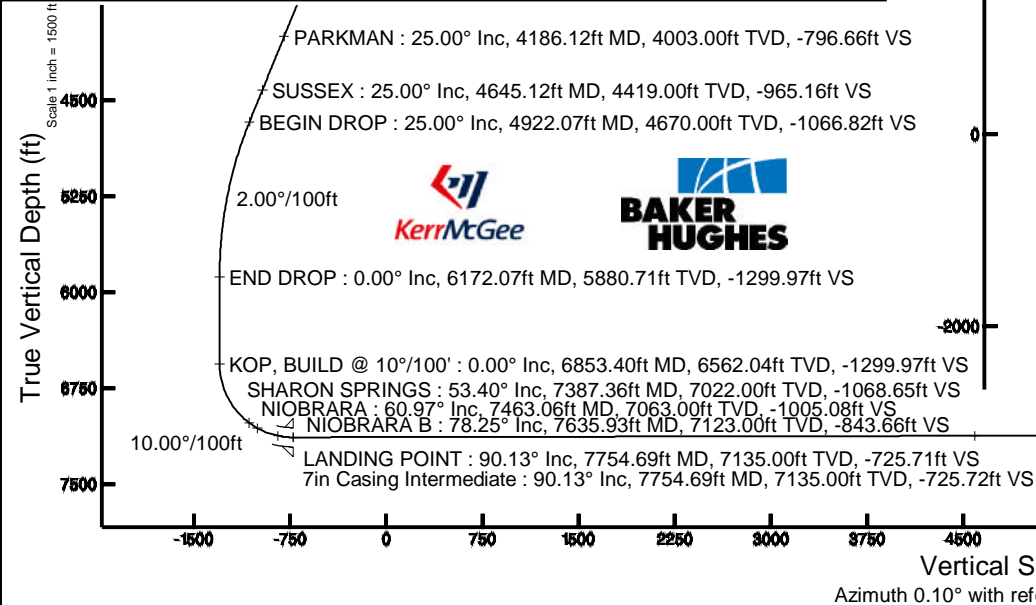
Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
17.00	17058.82	NaviTrak	NaviTrak	(MAGCORR, IFR)	THOMSEN 4N-31HZ PWB

## Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SEC.06-T2N-R65W SECTION LINES		1.00	-49.47	-721.20	3219947.79	1297983.36	40°09'13.036"N	104°42'47.232"W
SEC.31-T3N-R65W SECTION LINES		1.00	-49.47	-721.20	3219947.79	1297983.36	40°09'13.036"N	104°42'47.232"W
SEC.07-T2N-R65W SECTION LINES		36.00	1960.78	2758.78	3223409.59	1301624.42	40°09'32.900"N	104°42'02.412"W
THOMSEN 4N-31HZ BHL ON PLAT REV-1 (950'FSL & 2234'FWL, SEC.31)	17058.82	7114.00	8577.04	757.00	3221349.06	1308422.32	40°10'38.284"N	104°42'28.192"W
THOMSEN 4N-31HZ LANDBOX		7114.00	0.00	0.00	3220668.49	1298939.25	40°09'13.525"N	104°42'37.944"W

## 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	150.400	17.00	0.00	0.00	0.00	0.00
BEGIN NUDDGE	1401.00	0.000	150.400	1401.00	0.00	0.00	0.00	0.00
END NUDDGE	2651.00	25.000	150.400	2611.71	-233.38	132.58	2.00	-233.14
BEGIN DROP	4922.07	25.000	150.400	4670.00	-1067.92	606.66	0.00	-1066.82
END DROP	6172.07	0.000	0.103	5880.71	-1301.30	739.24	2.00	-1299.97
KOP, BUILD @ 10°/100'	6853.40	0.000	0.103	6562.04	-1301.30	739.24	0.00	-1299.97
LANDING POINT	7754.69	90.129	0.103	7135.00	-727.05	740.27	10.00	-725.71
TOTAL DEPTH	17058.82	90.129	0.103	7114.00	8577.04	757.00	0.00	8578.39



THOMSEN 4N-31HZ BHL ON PLAT REV-1 (950'FSL & 2234'FWL, SEC.31)  
 TOTAL DEPTH : 90.13° Inc, 17058.82ft MD, 7114.00ft TVD, 8578.39ft VS  
 4.5in Casing Production : 90.13° Inc, 17058.82ft MD, 7114.00ft TVD, 8578.39ft VS

Azimuth 0.10° with reference 0.00 N, 0.00 E

Scale 1 inch = 1500 ft



# Planned Wellpath Report

## THOMSEN 4N-31HZ (PERMIT REV-1) PWP



### REFERENCE WELLPATH IDENTIFICATION

Operator	<b>KERR-MCGEE OIL &amp; GAS ONSHORE LP</b>	Slot	<b>SLOT#17 THOMSEN 4N-31HZ (2371'FNL &amp; 1491'FWL, SEC.07)</b>
Area	<b>COLORADO</b>	Well	<b>THOMSEN 4N-31HZ</b>
Field	<b>WELD COUNTY (KERR MCGEE)</b>	Wellbore	<b>THOMSEN 4N-31HZ PWB</b>
Facility	<b>SEC.07-T2N-R65W</b>		

### REPORT SETUP INFORMATION

Projection System	<b>NAD83 / Lambert Colorado SP, Northern Zone (501), US feet</b>	Software System	<b>WellArchitect® 4.0.0</b>
North Reference	<b>True</b>	User	<b>Robiale01</b>
Scale	<b>0.999958</b>	Report Generated	<b>9/9/2014 at 9:54:37 AM</b>
Convergence at slot	<b>n/a</b>	Database/Source file	<b>WellArchitectDB/THOMSEN_4N-31HZ_PWB.xml</b>

### WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	2340.62	968.04	3220668.49	1299839.25	<b>40°09'13.525"N</b>	<b>104°42'37.944"W</b>
Facility Reference Pt			3219721.27	1297490.24	<b>40°08'50.395"N</b>	<b>104°42'50.411"W</b>
Field Reference Pt			<b>3197771.84</b>	<b>1268891.29</b>	40°04'09.600"N	104°47'36.000"W

### WELLPATH DATUM

Calculation method	<b>Minimum curvature</b>	PERMIT (17'KB) (RKB) to Facility Vertical Datum	<b>4965.00ft</b>
Horizontal Reference Pt	<b>Slot</b>	PERMIT (17'KB) (RKB) to Mean Sea Level	<b>4965.00ft</b>
Vertical Reference Pt	<b>PERMIT (17'KB) (RKB)</b>	PERMIT (17'KB) (RKB) to Mud Line at Slot (SLOT#17 THOMSEN 4N-31HZ (2371'FNL & 1491'FWL, SEC.07))	<b>4965.00ft</b>
MD Reference Pt	<b>PERMIT (17'KB) (RKB)</b>	Section Origin	<b>N 0.00, E 0.00 ft</b>
Field Vertical Reference	<b>Mean Sea Level</b>	Section Azimuth	<b>0.10°</b>



# Planned Wellpath Report

## THOMSEN 4N-31HZ (PERMIT REV-1) PWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#17 THOMSEN 4N-31HZ (2371'FNL & 1491'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 4N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 4N-31HZ PWB
Facility	SEC.07-T2N-R65W		

WELLPATH DATA (187 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	150.400	0.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	
17.00	0.000	150.400	17.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	TIE ON
117.00†	0.000	150.400	117.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	
217.00†	0.000	150.400	217.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	
317.00†	0.000	150.400	317.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	
417.00†	0.000	150.400	417.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	
517.00†	0.000	150.400	517.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	
617.00†	0.000	150.400	617.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	
717.00†	0.000	150.400	717.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	
817.00†	0.000	150.400	817.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	
917.00†	0.000	150.400	917.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	
950.00†	0.000	150.400	950.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	BASE FOX HILLS
1017.00†	0.000	150.400	1017.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	
1117.00†	0.000	150.400	1117.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	
1217.00†	0.000	150.400	1217.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	
1301.00†	0.000	150.400	1301.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	SURFACE CSG SETTING DEPTH
1317.00†	0.000	150.400	1317.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	
1401.00	0.000	150.400	1401.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.944"W	0.00	BEGIN NUDGE
1417.00†	0.320	150.400	1417.00	-0.04	-0.04	0.02	40°09'13.525"N	104°42'37.944"W	2.00	
1517.00†	2.320	150.400	1516.97	-2.04	-2.04	1.16	40°09'13.505"N	104°42'37.929"W	2.00	
1617.00†	4.320	150.400	1616.80	-7.07	-7.08	4.02	40°09'13.455"N	104°42'37.892"W	2.00	
1717.00†	6.320	150.400	1716.36	-15.12	-15.14	8.60	40°09'13.375"N	104°42'37.833"W	2.00	
1817.00†	8.320	150.400	1815.54	-26.19	-26.22	14.89	40°09'13.266"N	104°42'37.752"W	2.00	
1917.00†	10.320	150.400	1914.21	-40.26	-40.30	22.89	40°09'13.127"N	104°42'37.649"W	2.00	
2017.00†	12.320	150.400	2012.26	-57.30	-57.36	32.59	40°09'12.958"N	104°42'37.524"W	2.00	
2117.00†	14.320	150.400	2109.57	-77.32	-77.39	43.97	40°09'12.760"N	104°42'37.378"W	2.00	
2217.00†	16.320	150.400	2206.01	-100.26	-100.37	57.02	40°09'12.533"N	104°42'37.210"W	2.00	
2317.00†	18.320	150.400	2301.47	-126.12	-126.25	71.72	40°09'12.277"N	104°42'37.020"W	2.00	
2417.00†	20.320	150.400	2395.84	-154.86	-155.02	88.06	40°09'11.993"N	104°42'36.810"W	2.00	
2517.00†	22.320	150.400	2488.99	-186.44	-186.63	106.02	40°09'11.681"N	104°42'36.579"W	2.00	
2617.00†	24.320	150.400	2580.81	-220.82	-221.05	125.57	40°09'11.341"N	104°42'36.327"W	2.00	
2651.00	25.000	150.400	2611.71	-233.14	-233.38	132.58	40°09'11.219"N	104°42'36.237"W	2.00	END NUDGE
2717.00†	25.000	150.400	2671.53	-257.37	-257.63	146.36	40°09'10.979"N	104°42'36.059"W	0.00	
2817.00†	25.000	150.400	2762.16	-294.08	-294.38	167.23	40°09'10.616"N	104°42'35.790"W	0.00	
2917.00†	25.000	150.400	2852.79	-330.79	-331.13	188.11	40°09'10.253"N	104°42'35.522"W	0.00	
3017.00†	25.000	150.400	2943.42	-367.50	-367.87	208.98	40°09'09.890"N	104°42'35.253"W	0.00	
3117.00†	25.000	150.400	3034.05	-404.20	-404.62	229.86	40°09'09.527"N	104°42'34.984"W	0.00	
3217.00†	25.000	150.400	3124.68	-440.91	-441.36	250.73	40°09'09.163"N	104°42'34.715"W	0.00	
3317.00†	25.000	150.400	3215.31	-477.62	-478.11	271.60	40°09'08.800"N	104°42'34.446"W	0.00	
3417.00†	25.000	150.400	3305.94	-514.33	-514.86	292.48	40°09'08.437"N	104°42'34.177"W	0.00	
3517.00†	25.000	150.400	3396.57	-551.04	-551.60	313.35	40°09'08.074"N	104°42'33.909"W	0.00	
3617.00†	25.000	150.400	3487.21	-587.75	-588.35	334.23	40°09'07.711"N	104°42'33.640"W	0.00	
3717.00†	25.000	150.400	3577.84	-624.46	-625.10	355.10	40°09'07.348"N	104°42'33.371"W	0.00	
3817.00†	25.000	150.400	3668.47	-661.17	-661.84	375.98	40°09'06.985"N	104°42'33.102"W	0.00	
3917.00†	25.000	150.400	3759.10	-697.88	-698.59	396.85	40°09'06.621"N	104°42'32.833"W	0.00	

REFERENCE WELLPATH IDENTIFICATION			
Operator	<b>KERR-MCGEE OIL &amp; GAS ONSHORE LP</b>	Slot	<b>SLOT#17 THOMSEN 4N-31HZ (2371'FNL &amp; 1491'FWL, SEC.07)</b>
Area	<b>COLORADO</b>	Well	<b>THOMSEN 4N-31HZ</b>
Field	<b>WELD COUNTY (KERR MCGEE)</b>	Wellbore	<b>THOMSEN 4N-31HZ PWB</b>
Facility	<b>SEC.07-T2N-R65W</b>		

**WELLPATH DATA (187 stations) † = interpolated/extrapolated station**

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4017.00†	25.000	150.400	3849.73	-734.58	-735.34	417.73	40°09'06.258"N	104°42'32.564"W	0.00	
4117.00†	25.000	150.400	3940.36	-771.29	-772.08	438.60	40°09'05.895"N	104°42'32.296"W	0.00	
4186.12†	25.000	150.400	4003.00	-796.66	-797.48	453.03	40°09'05.644"N	104°42'32.110"W	0.00	PARKMAN
4217.00†	25.000	150.400	4030.99	-808.00	-808.83	459.48	40°09'05.532"N	104°42'32.027"W	0.00	
4317.00†	25.000	150.400	4121.62	-844.71	-845.58	480.35	40°09'05.169"N	104°42'31.758"W	0.00	
4417.00†	25.000	150.400	4212.25	-881.42	-882.32	501.23	40°09'04.806"N	104°42'31.489"W	0.00	
4517.00†	25.000	150.400	4302.88	-918.13	-919.07	522.10	40°09'04.443"N	104°42'31.220"W	0.00	
4617.00†	25.000	150.400	4393.51	-954.84	-955.81	542.98	40°09'04.080"N	104°42'30.951"W	0.00	
4645.12†	25.000	150.400	4419.00	-965.16	-966.15	548.85	40°09'03.977"N	104°42'30.876"W	0.00	SUSSEX
4717.00†	25.000	150.400	4484.14	-991.55	-992.56	563.85	40°09'03.716"N	104°42'30.683"W	0.00	
4817.00†	25.000	150.400	4574.77	-1028.25	-1029.31	584.73	40°09'03.353"N	104°42'30.414"W	0.00	
4917.00†	25.000	150.400	4665.41	-1064.96	-1066.05	605.60	40°09'02.990"N	104°42'30.145"W	0.00	
4922.07	25.000	150.400	4670.00	-1066.82	-1067.92	606.66	40°09'02.972"N	104°42'30.131"W	0.00	BEGIN DROP
5017.00†	23.101	150.400	4756.69	-1100.43	-1101.55	625.77	40°09'02.639"N	104°42'29.885"W	2.00	
5117.00†	21.101	150.400	4849.33	-1133.11	-1134.27	644.35	40°09'02.316"N	104°42'29.646"W	2.00	
5217.00†	19.101	150.400	4943.24	-1162.96	-1164.15	661.33	40°09'02.021"N	104°42'29.427"W	2.00	
5317.00†	17.101	150.400	5038.28	-1189.94	-1191.16	676.67	40°09'01.754"N	104°42'29.230"W	2.00	
5417.00†	15.101	150.400	5134.35	-1214.03	-1215.28	690.37	40°09'01.515"N	104°42'29.053"W	2.00	
5517.00†	13.101	150.400	5231.34	-1235.19	-1236.46	702.41	40°09'01.306"N	104°42'28.898"W	2.00	
5617.00†	11.101	150.400	5329.11	-1253.40	-1254.69	712.76	40°09'01.126"N	104°42'28.765"W	2.00	
5717.00†	9.101	150.400	5427.55	-1268.64	-1269.94	721.42	40°09'00.975"N	104°42'28.654"W	2.00	
5817.00†	7.101	150.400	5526.55	-1280.88	-1282.19	728.38	40°09'00.854"N	104°42'28.564"W	2.00	
5917.00†	5.101	150.400	5625.98	-1290.11	-1291.43	733.63	40°09'00.763"N	104°42'28.496"W	2.00	
6017.00†	3.101	150.400	5725.72	-1296.32	-1297.65	737.17	40°09'00.701"N	104°42'28.451"W	2.00	
6117.00†	1.101	150.400	5825.65	-1299.51	-1300.84	738.98	40°09'00.670"N	104°42'28.428"W	2.00	
6172.07	0.000	0.103	5880.71	-1299.97	-1301.30	739.24	40°09'00.665"N	104°42'28.424"W	2.00	END DROP
6217.00†	0.000	0.103	5925.64	-1299.97	-1301.30	739.24	40°09'00.665"N	104°42'28.424"W	0.00	
6317.00†	0.000	0.103	6025.64	-1299.97	-1301.30	739.24	40°09'00.665"N	104°42'28.424"W	0.00	
6417.00†	0.000	0.103	6125.64	-1299.97	-1301.30	739.24	40°09'00.665"N	104°42'28.424"W	0.00	
6517.00†	0.000	0.103	6225.64	-1299.97	-1301.30	739.24	40°09'00.665"N	104°42'28.424"W	0.00	
6617.00†	0.000	0.103	6325.64	-1299.97	-1301.30	739.24	40°09'00.665"N	104°42'28.424"W	0.00	
6717.00†	0.000	0.103	6425.64	-1299.97	-1301.30	739.24	40°09'00.665"N	104°42'28.424"W	0.00	
6817.00†	0.000	0.103	6525.64	-1299.97	-1301.30	739.24	40°09'00.665"N	104°42'28.424"W	0.00	
6853.40	0.000	0.103	6562.04	-1299.97	-1301.30	739.24	40°09'00.665"N	104°42'28.424"W	0.00	KOP, BUILD @ 10°/100'
6917.00†	6.360	0.103	6625.51	-1296.44	-1297.77	739.25	40°09'00.700"N	104°42'28.424"W	10.00	
7017.00†	16.360	0.103	6723.43	-1276.77	-1278.10	739.28	40°09'00.895"N	104°42'28.424"W	10.00	
7117.00†	26.360	0.103	6816.44	-1240.39	-1241.72	739.35	40°09'01.254"N	104°42'28.423"W	10.00	
7217.00†	36.360	0.103	6901.72	-1188.41	-1189.75	739.44	40°09'01.768"N	104°42'28.422"W	10.00	
7317.00†	46.360	0.103	6976.69	-1122.42	-1123.75	739.56	40°09'02.420"N	104°42'28.420"W	10.00	
7387.36†	53.396	0.103	7022.00	-1068.65	-1069.98	739.66	40°09'02.951"N	104°42'28.419"W	10.00	SHARON SPRINGS
7417.00†	56.360	0.103	7039.05	-1044.41	-1045.74	739.70	40°09'03.191"N	104°42'28.418"W	10.00	
7463.06†	60.967	0.103	7063.00	-1005.08	-1006.41	739.77	40°09'03.580"N	104°42'28.417"W	10.00	NIOBRARA
7517.00†	66.360	0.103	7086.92	-956.76	-958.09	739.86	40°09'04.057"N	104°42'28.416"W	10.00	
7617.00†	76.360	0.103	7118.84	-862.12	-863.45	740.03	40°09'04.992"N	104°42'28.414"W	10.00	
7635.93†	78.253	0.103	7123.00	-843.66	-844.99	740.06	40°09'05.175"N	104°42'28.413"W	10.00	NIOBRARA B

### REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#17 THOMSEN 4N-31HZ (2371'FNL & 1491'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 4N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 4N-31HZ PWB
Facility	SEC.07-T2N-R65W		

### WELLPATH DATA (187 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7717.00†	86.360	0.103	7133.84	-763.38	-764.71	740.20	40°09'05.968"N	104°42'28.412"W	10.00	
7754.69	90.129	0.103	7135.00	-725.71	-727.05	740.27	40°09'06.340"N	104°42'28.411"W	10.00	LANDING POINT
7817.00†	90.129	0.103	7134.86	-663.41	-664.74	740.38	40°09'06.956"N	104°42'28.409"W	0.00	
7917.00†	90.129	0.103	7134.63	-563.41	-564.74	740.56	40°09'07.944"N	104°42'28.407"W	0.00	
8017.00†	90.129	0.103	7134.41	-463.41	-464.74	740.74	40°09'08.932"N	104°42'28.404"W	0.00	
8117.00†	90.129	0.103	7134.18	-363.41	-364.74	740.92	40°09'09.921"N	104°42'28.402"W	0.00	
8217.00†	90.129	0.103	7133.96	-263.41	-264.74	741.10	40°09'10.909"N	104°42'28.400"W	0.00	
8317.00†	90.129	0.103	7133.73	-163.41	-164.74	741.28	40°09'11.897"N	104°42'28.397"W	0.00	
8417.00†	90.129	0.103	7133.50	-63.41	-64.74	741.46	40°09'12.885"N	104°42'28.395"W	0.00	
8517.00†	90.129	0.103	7133.28	36.59	35.26	741.64	40°09'13.873"N	104°42'28.393"W	0.00	
8617.00†	90.129	0.103	7133.05	136.59	135.26	741.82	40°09'14.862"N	104°42'28.390"W	0.00	
8717.00†	90.129	0.103	7132.83	236.59	235.26	742.00	40°09'15.850"N	104°42'28.388"W	0.00	
8817.00†	90.129	0.103	7132.60	336.59	335.26	742.18	40°09'16.838"N	104°42'28.386"W	0.00	
8917.00†	90.129	0.103	7132.38	436.59	435.26	742.36	40°09'17.826"N	104°42'28.383"W	0.00	
9017.00†	90.129	0.103	7132.15	536.59	535.26	742.54	40°09'18.814"N	104°42'28.381"W	0.00	
9117.00†	90.129	0.103	7131.92	636.59	635.26	742.72	40°09'19.803"N	104°42'28.379"W	0.00	
9217.00†	90.129	0.103	7131.70	736.59	735.25	742.90	40°09'20.791"N	104°42'28.376"W	0.00	
9317.00†	90.129	0.103	7131.47	836.59	835.25	743.08	40°09'21.779"N	104°42'28.374"W	0.00	
9417.00†	90.129	0.103	7131.25	936.59	935.25	743.26	40°09'22.767"N	104°42'28.372"W	0.00	
9517.00†	90.129	0.103	7131.02	1036.59	1035.25	743.44	40°09'23.755"N	104°42'28.369"W	0.00	
9617.00†	90.129	0.103	7130.80	1136.59	1135.25	743.62	40°09'24.744"N	104°42'28.367"W	0.00	
9717.00†	90.129	0.103	7130.57	1236.59	1235.25	743.80	40°09'25.732"N	104°42'28.364"W	0.00	
9817.00†	90.129	0.103	7130.34	1336.59	1335.25	743.98	40°09'26.720"N	104°42'28.362"W	0.00	
9917.00†	90.129	0.103	7130.12	1436.59	1435.25	744.16	40°09'27.708"N	104°42'28.360"W	0.00	
10017.00†	90.129	0.103	7129.89	1536.59	1535.25	744.34	40°09'28.696"N	104°42'28.357"W	0.00	
10117.00†	90.129	0.103	7129.67	1636.59	1635.25	744.52	40°09'29.685"N	104°42'28.355"W	0.00	
10217.00†	90.129	0.103	7129.44	1736.59	1735.25	744.70	40°09'30.673"N	104°42'28.353"W	0.00	
10317.00†	90.129	0.103	7129.22	1836.59	1835.25	744.88	40°09'31.661"N	104°42'28.350"W	0.00	
10417.00†	90.129	0.103	7128.99	1936.59	1935.25	745.06	40°09'32.649"N	104°42'28.348"W	0.00	
10517.00†	90.129	0.103	7128.76	2036.59	2035.25	745.24	40°09'33.637"N	104°42'28.346"W	0.00	
10617.00†	90.129	0.103	7128.54	2136.59	2135.25	745.42	40°09'34.626"N	104°42'28.343"W	0.00	
10717.00†	90.129	0.103	7128.31	2236.59	2235.25	745.60	40°09'35.614"N	104°42'28.341"W	0.00	
10817.00†	90.129	0.103	7128.09	2336.58	2335.25	745.78	40°09'36.602"N	104°42'28.339"W	0.00	
10917.00†	90.129	0.103	7127.86	2436.58	2435.25	745.96	40°09'37.590"N	104°42'28.336"W	0.00	
11017.00†	90.129	0.103	7127.64	2536.58	2535.25	746.14	40°09'38.578"N	104°42'28.334"W	0.00	
11117.00†	90.129	0.103	7127.41	2636.58	2635.25	746.32	40°09'39.567"N	104°42'28.332"W	0.00	
11217.00†	90.129	0.103	7127.18	2736.58	2735.25	746.50	40°09'40.555"N	104°42'28.329"W	0.00	
11317.00†	90.129	0.103	7126.96	2836.58	2835.25	746.68	40°09'41.543"N	104°42'28.327"W	0.00	
11417.00†	90.129	0.103	7126.73	2936.58	2935.25	746.85	40°09'42.531"N	104°42'28.324"W	0.00	
11517.00†	90.129	0.103	7126.51	3036.58	3035.25	747.03	40°09'43.519"N	104°42'28.322"W	0.00	
11617.00†	90.129	0.103	7126.28	3136.58	3135.24	747.21	40°09'44.508"N	104°42'28.320"W	0.00	
11717.00†	90.129	0.103	7126.06	3236.58	3235.24	747.39	40°09'45.496"N	104°42'28.317"W	0.00	
11817.00†	90.129	0.103	7125.83	3336.58	3335.24	747.57	40°09'46.484"N	104°42'28.315"W	0.00	
11917.00†	90.129	0.103	7125.60	3436.58	3435.24	747.75	40°09'47.472"N	104°42'28.313"W	0.00	
12017.00†	90.129	0.103	7125.38	3536.58	3535.24	747.93	40°09'48.460"N	104°42'28.310"W	0.00	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#17 THOMSEN 4N-31HZ (2371'FNL & 1491'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 4N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 4N-31HZ PWB
Facility	SEC.07-T2N-R65W		

**WELLPATH DATA (187 stations) † = interpolated/extrapolated station**

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
12117.00†	90.129	0.103	7125.15	3636.58	3635.24	748.11	40°09'49.449"N	104°42'28.308"W	0.00	
12217.00†	90.129	0.103	7124.93	3736.58	3735.24	748.29	40°09'50.437"N	104°42'28.306"W	0.00	
12317.00†	90.129	0.103	7124.70	3836.58	3835.24	748.47	40°09'51.425"N	104°42'28.303"W	0.00	
12417.00†	90.129	0.103	7124.48	3936.58	3935.24	748.65	40°09'52.413"N	104°42'28.301"W	0.00	
12517.00†	90.129	0.103	7124.25	4036.58	4035.24	748.83	40°09'53.401"N	104°42'28.299"W	0.00	
12617.00†	90.129	0.103	7124.02	4136.58	4135.24	749.01	40°09'54.390"N	104°42'28.296"W	0.00	
12717.00†	90.129	0.103	7123.80	4236.58	4235.24	749.19	40°09'55.378"N	104°42'28.294"W	0.00	
12817.00†	90.129	0.103	7123.57	4336.58	4335.24	749.37	40°09'56.366"N	104°42'28.291"W	0.00	
12917.00†	90.129	0.103	7123.35	4436.58	4435.24	749.55	40°09'57.354"N	104°42'28.289"W	0.00	
13017.00†	90.129	0.103	7123.12	4536.58	4535.24	749.73	40°09'58.342"N	104°42'28.287"W	0.00	
13071.05†	90.129	0.103	7123.00	4590.63	4589.29	749.83	40°09'58.876"N	104°42'28.286"W	0.00	NIOBRARA B
13117.00†	90.129	0.103	7122.90	4636.58	4635.24	749.91	40°09'59.331"N	104°42'28.284"W	0.00	
13217.00†	90.129	0.103	7122.67	4736.58	4735.24	750.09	40°10'00.319"N	104°42'28.282"W	0.00	
13317.00†	90.129	0.103	7122.44	4836.58	4835.24	750.27	40°10'01.307"N	104°42'28.280"W	0.00	
13417.00†	90.129	0.103	7122.22	4936.58	4935.24	750.45	40°10'02.295"N	104°42'28.277"W	0.00	
13517.00†	90.129	0.103	7121.99	5036.58	5035.24	750.63	40°10'03.283"N	104°42'28.275"W	0.00	
13617.00†	90.129	0.103	7121.77	5136.58	5135.24	750.81	40°10'04.272"N	104°42'28.273"W	0.00	
13717.00†	90.129	0.103	7121.54	5236.58	5235.24	750.99	40°10'05.260"N	104°42'28.270"W	0.00	
13817.00†	90.129	0.103	7121.32	5336.58	5335.24	751.17	40°10'06.248"N	104°42'28.268"W	0.00	
13917.00†	90.129	0.103	7121.09	5436.58	5435.24	751.35	40°10'07.236"N	104°42'28.266"W	0.00	
14017.00†	90.129	0.103	7120.87	5536.58	5535.23	751.53	40°10'08.224"N	104°42'28.263"W	0.00	
14117.00†	90.129	0.103	7120.64	5636.58	5635.23	751.71	40°10'09.213"N	104°42'28.261"W	0.00	
14217.00†	90.129	0.103	7120.41	5736.58	5735.23	751.89	40°10'10.201"N	104°42'28.259"W	0.00	
14317.00†	90.129	0.103	7120.19	5836.58	5835.23	752.07	40°10'11.189"N	104°42'28.256"W	0.00	
14417.00†	90.129	0.103	7119.96	5936.58	5935.23	752.25	40°10'12.177"N	104°42'28.254"W	0.00	
14517.00†	90.129	0.103	7119.74	6036.58	6035.23	752.43	40°10'13.165"N	104°42'28.251"W	0.00	
14617.00†	90.129	0.103	7119.51	6136.58	6135.23	752.61	40°10'14.154"N	104°42'28.249"W	0.00	
14717.00†	90.129	0.103	7119.29	6236.57	6235.23	752.79	40°10'15.142"N	104°42'28.247"W	0.00	
14817.00†	90.129	0.103	7119.06	6336.57	6335.23	752.97	40°10'16.130"N	104°42'28.244"W	0.00	
14917.00†	90.129	0.103	7118.83	6436.57	6435.23	753.15	40°10'17.118"N	104°42'28.242"W	0.00	
15017.00†	90.129	0.103	7118.61	6536.57	6535.23	753.33	40°10'18.106"N	104°42'28.240"W	0.00	
15117.00†	90.129	0.103	7118.38	6636.57	6635.23	753.51	40°10'19.095"N	104°42'28.237"W	0.00	
15217.00†	90.129	0.103	7118.16	6736.57	6735.23	753.69	40°10'20.083"N	104°42'28.235"W	0.00	
15317.00†	90.129	0.103	7117.93	6836.57	6835.23	753.87	40°10'21.071"N	104°42'28.233"W	0.00	
15417.00†	90.129	0.103	7117.71	6936.57	6935.23	754.04	40°10'22.059"N	104°42'28.230"W	0.00	
15517.00†	90.129	0.103	7117.48	7036.57	7035.23	754.22	40°10'23.047"N	104°42'28.228"W	0.00	
15617.00†	90.129	0.103	7117.25	7136.57	7135.23	754.40	40°10'24.036"N	104°42'28.226"W	0.00	
15717.00†	90.129	0.103	7117.03	7236.57	7235.23	754.58	40°10'25.024"N	104°42'28.223"W	0.00	
15817.00†	90.129	0.103	7116.80	7336.57	7335.23	754.76	40°10'26.012"N	104°42'28.221"W	0.00	
15917.00†	90.129	0.103	7116.58	7436.57	7435.23	754.94	40°10'27.000"N	104°42'28.218"W	0.00	
16017.00†	90.129	0.103	7116.35	7536.57	7535.23	755.12	40°10'27.988"N	104°42'28.216"W	0.00	
16117.00†	90.129	0.103	7116.13	7636.57	7635.23	755.30	40°10'28.977"N	104°42'28.214"W	0.00	
16217.00†	90.129	0.103	7115.90	7736.57	7735.23	755.48	40°10'29.965"N	104°42'28.211"W	0.00	
16317.00†	90.129	0.103	7115.67	7836.57	7835.23	755.66	40°10'30.953"N	104°42'28.209"W	0.00	
16417.00†	90.129	0.103	7115.45	7936.57	7935.22	755.84	40°10'31.941"N	104°42'28.207"W	0.00	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#17 THOMSEN 4N-31HZ (2371'FNL & 1491'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 4N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 4N-31HZ PWB
Facility	SEC.07-T2N-R65W		

WELLPATH DATA (187 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
16517.00†	90.129	0.103	7115.22	8036.57	8035.22	756.02	40°10'32.929"N	104°42'28.204"W	0.00	
16617.00†	90.129	0.103	7115.00	8136.57	8135.22	756.20	40°10'33.918"N	104°42'28.202"W	0.00	
16717.00†	90.129	0.103	7114.77	8236.57	8235.22	756.38	40°10'34.906"N	104°42'28.200"W	0.00	
16817.00†	90.129	0.103	7114.55	8336.57	8335.22	756.56	40°10'35.894"N	104°42'28.197"W	0.00	
16917.00†	90.129	0.103	7114.32	8436.57	8435.22	756.74	40°10'36.882"N	104°42'28.195"W	0.00	
17017.00†	90.129	0.103	7114.09	8536.57	8535.22	756.92	40°10'37.870"N	104°42'28.193"W	0.00	
17058.82	90.129	0.103	7114.00 <sup>1</sup>	8578.39	8577.04	757.00	40°10'38.284"N	104°42'28.192"W	0.00	TOTAL DEPTH

HOLE & CASING SECTIONS -									
Ref Wellbore: THOMSEN 4N-31HZ PWB      Ref Wellpath: THOMSEN 4N-31HZ (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	1301.00	1284.00	17.00	1301.00	0.00	0.00	0.00	0.00
9.625in Casing Surface	17.00	1301.00	1284.00	17.00	1301.00	0.00	0.00	0.00	0.00
8.75in Open Hole	1301.00	7754.69	6453.69	1301.00	7135.00	0.00	0.00	-727.05	740.27
7in Casing Intermediate	17.00	7754.69	7737.69	17.00	7135.00	0.00	0.00	-727.05	740.27
6.125in Open Hole	7754.69	17058.82	9304.13	7135.00	7114.00	-727.05	740.27	8577.04	757.00
4.5in Casing Production	17.00	17058.82	17041.82	17.00	7114.00	0.00	0.00	8577.04	757.00



# Planned Wellpath Report

## THOMSEN 4N-31HZ (PERMIT REV-1) PWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#17 THOMSEN 4N-31HZ (2371'FNL & 1491'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 4N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 4N-31HZ PWB
Facility	SEC.07-T2N-R65W		

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SEC.06-T2N-R65W SECTION LINES		1.00	-49.47	-721.20	3219947.79	1299783.36	40°09'13.036"N	104°42'47.232"W	polygon
SEC.31-T3N-R65W SECTION LINES		1.00	-49.47	-721.20	3219947.79	1299783.36	40°09'13.036"N	104°42'47.232"W	polygon
SEC.07-T2N-R65W SECTION LINES		36.00	1960.78	2758.78	3223409.59	1301824.42	40°09'32.900"N	104°42'02.412"W	polygon
1) THOMSEN 4N-31HZ BHL ON PLAT REV-1 (950'FSL & 2234'FWL, SEC.31)	17058.82	7114.00	8577.04	757.00	3221349.06	1308422.32	40°10'38.284"N	104°42'28.192"W	point
THOMSEN 4N-31HZ LANDBOX		7114.00	0.00	0.00	3220668.49	1299839.25	40°09'13.525"N	104°42'37.944"W	polygon

SURVEY PROGRAM - Ref Wellbore: THOMSEN 4N-31HZ PWB					Ref Wellpath: THOMSEN 4N-31HZ (PERMIT REV-1) PWP	
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore		
17.00	17058.82	NaviTrak (MAGCORR,IFR)		THOMSEN 4N-31HZ PWB		



# Planned Wellpath Report

## THOMSEN 4N-31HZ (PERMIT REV-1) PWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#17 THOMSEN 4N-31HZ (2371'FNL & 1491'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 4N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 4N-31HZ PWB
Facility	SEC.07-T2N-R65W		

WELLPATH COMMENTS					
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment	
950.00	0.000	150.400	950.00	BASE FOX HILLS	
1301.00	0.000	150.400	1301.00	SURFACE CSG SETTING DEPTH	
4186.12	25.000	150.400	4003.00	PARKMAN	
4645.12	25.000	150.400	4419.00	SUSSEX	
7387.36	53.396	0.103	7022.00	SHARON SPRINGS	
7463.06	60.967	0.103	7063.00	NIOBRARA	
7635.93	78.253	0.103	7123.00	NIOBRARA B	
13071.05	90.129	0.103	7123.00	NIOBRARA B	

DESIGN COMMENTS					
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment	
17.00	0.000	150.400	17.00	TIE ON	
1401.00	0.000	150.400	1401.00	BEGIN NUDGE	
2651.00	25.000	150.400	2611.71	END NUDGE	
4922.07	25.000	150.400	4670.00	BEGIN DROP	
6172.07	0.000	0.103	5880.71	END DROP	
6853.40	0.000	0.103	6562.04	KOP, BUILD @ 10°/100'	
7754.69	90.129	0.103	7135.00	LANDING POINT	
17058.82	90.129	0.103	7114.00	TOTAL DEPTH	