

# KERR-MCGEE OIL & GAS ONSHORE LP

Location: COLORADO Slot: SLOT#18 THOMSEN 5N-31HZ (2371'FNL & 1521'FWL, SEC.07)  
 Field: WELD COUNTY (KERR MCGEE) Well: THOMSEN 5N-31HZ  
 Facility: SEC.07-T2N-R65W Wellbore: THOMSEN 5N-31HZ PWB

Plot reference wellpath is THOMSEN 5N-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: 4965 feet Scale: True distance  
 Mean Sea Level to Mud line (At Slot: SLOT#18 THOMSEN 5N-31HZ (2371'FNL & 1521'FWL, SEC.07)): 0 feet Depths are in feet  
 Coordinates are in feet referenced to Slot Created by: robiale01 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#18 THOMSEN 5N-31HZ (2371'FNL & 1521'FWL, SEC.07)	2340.62	998.25	3220698.691	1299839.519	40°09'13.525"N	104°42'37.555"W
PERMIT (17KB) (RKB) to Mud line (At Slot: SLOT#18 THOMSEN 5N-31HZ (2371'FNL & 1521'FWL, SEC.07))						4965ft
Mean Sea Level to Mud line (At Slot: SLOT#18 THOMSEN 5N-31HZ (2371'FNL & 1521'FWL, SEC.07))						0ft
PERMIT (17KB) (RKB) to Mean Sea Level						4965ft

## Survey Program

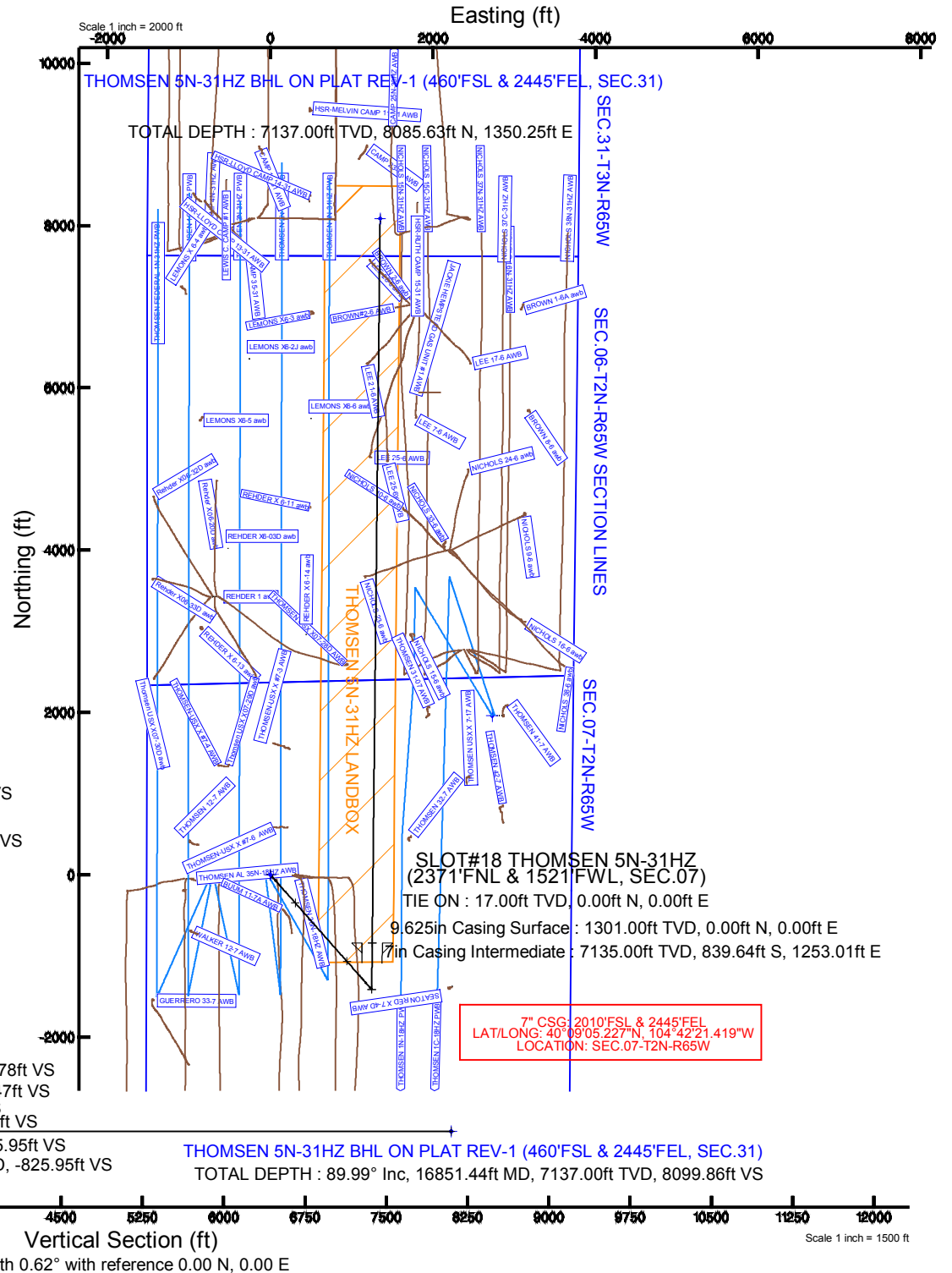
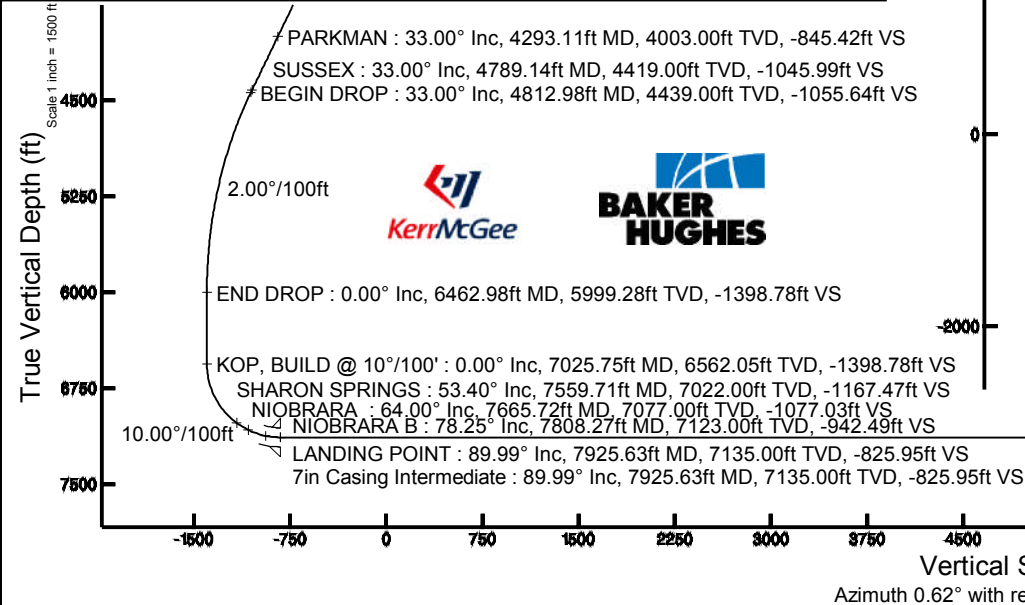
Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
17.00	16851.44	NaviTrak	NaviTrak	(MAGCORR, IFR)	THOMSEN 5N-31HZ PWB

## 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	-751.40	3219947.79	1299793.36	40°09'13.036"N	104°42'47.232"W
SEC.31-T3N-R65W SECTION LINES		1.00	-49.47	-751.40	3219947.79	1299793.36	40°09'13.036"N	104°42'47.232"W
SEC.07-T2N-R65W SECTION LINES		36.00	1960.77	2728.58	3223409.59	1301624.42	40°09'32.900"N	104°42'02.412"W
THOMSEN 5N-31HZ BHL ON PLAT REV-1 (460'FSL & 2445'FEL, SEC.31)	16851.44	7137.00	8085.63	1350.25	3221976.84	1307936.50	40°10'33.427"N	104°42'20.160"W
THOMSEN 5N-31HZ LANDBOX		7137.00	0.00	0.00	3220698.69	1299839.52	40°09'13.525"N	104°42'37.555"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	138.565	17.00	0.00	0.00	0.00	0.00
BEGIN NUDDGE	1401.00	0.000	138.565	1401.00	0.00	0.00	0.00	0.00
END NUDDGE	3051.00	33.000	138.565	2961.28	-346.50	305.85	2.00	-343.14
BEGIN DROP	4812.98	33.000	138.565	4439.00	-1065.95	940.92	0.00	-1055.64
END DROP	6462.98	0.000	0.624	5999.28	-1412.44	1246.77	2.00	-1398.78
KOP, BUILD @ 10°/100'	7025.75	0.000	0.624	6562.05	-1412.44	1246.77	0.00	-1398.78
LANDING POINT	7925.63	89.987	0.624	7135.00	-839.65	1253.01	10.00	-825.95
TOTAL DEPTH	16851.44	89.987	0.624	7137.00	8085.63	1350.25	0.00	8099.86





# Planned Wellpath Report

## THOMSEN 5N-31HZ (PERMIT REV-1) PWP

Page 1 of 7



### REFERENCE WELLPATH IDENTIFICATION

Operator	<b>KERR-MCGEE OIL &amp; GAS ONSHORE LP</b>	Slot	<b>SLOT#18 THOMSEN 5N-31HZ (2371'FNL &amp; 1521'FWL, SEC.07)</b>
Area	<b>COLORADO</b>	Well	<b>THOMSEN 5N-31HZ</b>
Field	<b>WELD COUNTY (KERR MCGEE)</b>	Wellbore	<b>THOMSEN 5N-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 10:13:47 AM</b>
Convergence at slot	<b>n/a</b>	Database/Source file	<b>WellArchitectDB/THOMSEN_5N-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	998.25	3220698.69	1299839.52	<b>40°09'13.525"N</b>	<b>104°42'37.555"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#18 THOMSEN 5N-31HZ (2371'FNL & 1521'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>0.62°</b>



# Planned Wellpath Report

## THOMSEN 5N-31HZ (PERMIT REV-1) PWP



### REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#18 THOMSEN 5N-31HZ (2371'FNL & 1521'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 5N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 5N-31HZ PWB
Facility	SEC.07-T2N-R65W		

### WELLPATH DATA (184 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	138.565	0.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	
17.00	0.000	138.565	17.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	TIE ON
117.00†	0.000	138.565	117.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	
217.00†	0.000	138.565	217.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	
317.00†	0.000	138.565	317.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	
417.00†	0.000	138.565	417.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	
517.00†	0.000	138.565	517.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	
617.00†	0.000	138.565	617.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	
717.00†	0.000	138.565	717.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	
817.00†	0.000	138.565	817.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	
917.00†	0.000	138.565	917.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	
950.00†	0.000	138.565	950.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	BASE FOX HILLS
1017.00†	0.000	138.565	1017.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	
1117.00†	0.000	138.565	1117.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	
1217.00†	0.000	138.565	1217.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	
1301.00†	0.000	138.565	1301.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	SURFACE CSG SETTING DEPTH
1317.00†	0.000	138.565	1317.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	
1401.00	0.000	138.565	1401.00	0.00	0.00	0.00	40°09'13.525"N	104°42'37.555"W	0.00	BEGIN NUDGE
1417.00†	0.320	138.565	1417.00	-0.03	-0.03	0.03	40°09'13.525"N	104°42'37.555"W	2.00	
1517.00†	2.320	138.565	1516.97	-1.74	-1.76	1.55	40°09'13.508"N	104°42'37.535"W	2.00	
1617.00†	4.320	138.565	1616.80	-6.04	-6.10	5.39	40°09'13.465"N	104°42'37.486"W	2.00	
1717.00†	6.320	138.565	1716.36	-12.93	-13.05	11.52	40°09'13.396"N	104°42'37.407"W	2.00	
1817.00†	8.320	138.565	1815.54	-22.39	-22.60	19.95	40°09'13.302"N	104°42'37.298"W	2.00	
1917.00†	10.320	138.565	1914.21	-34.41	-34.75	30.67	40°09'13.182"N	104°42'37.160"W	2.00	
2017.00†	12.320	138.565	2012.26	-48.98	-49.46	43.66	40°09'13.036"N	104°42'36.993"W	2.00	
2117.00†	14.320	138.565	2109.57	-66.09	-66.73	58.90	40°09'12.866"N	104°42'36.796"W	2.00	
2217.00†	16.320	138.565	2206.01	-85.70	-86.54	76.39	40°09'12.670"N	104°42'36.571"W	2.00	
2317.00†	18.320	138.565	2301.47	-107.80	-108.86	96.09	40°09'12.449"N	104°42'36.318"W	2.00	
2417.00†	20.320	138.565	2395.84	-132.37	-133.66	117.98	40°09'12.204"N	104°42'36.036"W	2.00	
2517.00†	22.320	138.565	2488.99	-159.36	-160.92	142.04	40°09'11.935"N	104°42'35.726"W	2.00	
2617.00†	24.320	138.565	2580.81	-188.75	-190.59	168.24	40°09'11.642"N	104°42'35.388"W	2.00	
2717.00†	26.320	138.565	2671.20	-220.50	-222.65	196.54	40°09'11.325"N	104°42'35.024"W	2.00	
2817.00†	28.320	138.565	2760.04	-254.57	-257.06	226.91	40°09'10.985"N	104°42'34.633"W	2.00	
2917.00†	30.320	138.565	2847.23	-290.93	-293.77	259.31	40°09'10.622"N	104°42'34.215"W	2.00	
3017.00†	32.320	138.565	2932.65	-329.52	-332.74	293.71	40°09'10.237"N	104°42'33.772"W	2.00	
3051.00	33.000	138.565	2961.28	-343.14	-346.50	305.85	40°09'10.101"N	104°42'33.616"W	2.00	END NUDGE
3117.00†	33.000	138.565	3016.63	-369.83	-373.44	329.64	40°09'09.835"N	104°42'33.310"W	0.00	
3217.00†	33.000	138.565	3100.50	-410.27	-414.28	365.68	40°09'09.431"N	104°42'32.846"W	0.00	
3317.00†	33.000	138.565	3184.36	-450.71	-455.11	401.73	40°09'09.028"N	104°42'32.381"W	0.00	
3417.00†	33.000	138.565	3268.23	-491.14	-495.94	437.77	40°09'08.624"N	104°42'31.917"W	0.00	
3517.00†	33.000	138.565	3352.10	-531.58	-536.77	473.81	40°09'08.221"N	104°42'31.453"W	0.00	
3617.00†	33.000	138.565	3435.96	-572.02	-577.60	509.85	40°09'07.817"N	104°42'30.989"W	0.00	
3717.00†	33.000	138.565	3519.83	-612.45	-618.44	545.90	40°09'07.414"N	104°42'30.525"W	0.00	
3817.00†	33.000	138.565	3603.70	-652.89	-659.27	581.94	40°09'07.010"N	104°42'30.061"W	0.00	
3917.00†	33.000	138.565	3687.56	-693.33	-700.10	617.98	40°09'06.606"N	104°42'29.597"W	0.00	



# Planned Wellpath Report

## THOMSEN 5N-31HZ (PERMIT REV-1) PWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#18 THOMSEN 5N-31HZ (2371'FNL & 1521'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 5N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 5N-31HZ PWB
Facility	SEC.07-T2N-R65W		

### WELLPATH DATA (184 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4017.00†	33.000	138.565	3771.43	-733.77	-740.93	654.02	40°09'06.203"N	104°42'29.132"W	0.00	
4117.00†	33.000	138.565	3855.30	-774.20	-781.76	690.07	40°09'05.799"N	104°42'28.668"W	0.00	
4217.00†	33.000	138.565	3939.17	-814.64	-822.60	726.11	40°09'05.396"N	104°42'28.204"W	0.00	
4293.11†	33.000	138.565	4003.00	-845.42	-853.68	753.54	40°09'05.089"N	104°42'27.851"W	0.00	PARKMAN
4317.00†	33.000	138.565	4023.03	-855.08	-863.43	762.15	40°09'04.992"N	104°42'27.740"W	0.00	
4417.00†	33.000	138.565	4106.90	-895.51	-904.26	798.19	40°09'04.589"N	104°42'27.276"W	0.00	
4517.00†	33.000	138.565	4190.77	-935.95	-945.09	834.24	40°09'04.185"N	104°42'26.812"W	0.00	
4617.00†	33.000	138.565	4274.63	-976.39	-985.92	870.28	40°09'03.782"N	104°42'26.347"W	0.00	
4717.00†	33.000	138.565	4358.50	-1016.82	-1026.76	906.32	40°09'03.378"N	104°42'25.883"W	0.00	
4789.14†	33.000	138.565	4419.00	-1045.99	-1056.21	932.32	40°09'03.087"N	104°42'25.549"W	0.00	SUSSEX
4812.98	33.000	138.565	4439.00	-1055.64	-1065.95	940.92	40°09'02.991"N	104°42'25.438"W	0.00	BEGIN DROP
4817.00†	32.920	138.565	4442.37	-1057.26	-1067.59	942.36	40°09'02.975"N	104°42'25.419"W	2.00	
4917.00†	30.920	138.565	4527.24	-1096.51	-1107.22	977.35	40°09'02.583"N	104°42'24.969"W	2.00	
5017.00†	28.920	138.565	4613.91	-1133.54	-1144.62	1010.36	40°09'02.214"N	104°42'24.544"W	2.00	
5117.00†	26.920	138.565	4702.27	-1168.31	-1179.72	1041.34	40°09'01.867"N	104°42'24.145"W	2.00	
5217.00†	24.920	138.565	4792.20	-1200.76	-1212.49	1070.27	40°09'01.543"N	104°42'23.772"W	2.00	
5317.00†	22.920	138.565	4883.61	-1230.86	-1242.88	1097.10	40°09'01.243"N	104°42'23.427"W	2.00	
5417.00†	20.920	138.565	4976.38	-1258.58	-1270.87	1121.80	40°09'00.966"N	104°42'23.109"W	2.00	
5517.00†	18.920	138.565	5070.39	-1283.87	-1296.41	1144.35	40°09'00.714"N	104°42'22.818"W	2.00	
5617.00†	16.920	138.565	5165.53	-1306.71	-1319.48	1164.71	40°09'00.486"N	104°42'22.556"W	2.00	
5717.00†	14.920	138.565	5261.69	-1327.08	-1340.04	1182.86	40°09'00.282"N	104°42'22.322"W	2.00	
5817.00†	12.920	138.565	5358.75	-1344.94	-1358.07	1198.78	40°09'00.104"N	104°42'22.117"W	2.00	
5917.00†	10.920	138.565	5456.59	-1360.27	-1373.56	1212.44	40°08'59.951"N	104°42'21.941"W	2.00	
6017.00†	8.920	138.565	5555.09	-1373.06	-1386.47	1223.84	40°08'59.824"N	104°42'21.795"W	2.00	
6117.00†	6.920	138.565	5654.13	-1383.29	-1396.80	1232.96	40°08'59.721"N	104°42'21.677"W	2.00	
6217.00†	4.920	138.565	5753.59	-1390.95	-1404.53	1239.79	40°08'59.645"N	104°42'21.589"W	2.00	
6317.00†	2.920	138.565	5853.36	-1396.02	-1409.66	1244.31	40°08'59.594"N	104°42'21.531"W	2.00	
6417.00†	0.920	138.565	5953.29	-1398.51	-1412.17	1246.53	40°08'59.570"N	104°42'21.502"W	2.00	
6462.98	0.000	0.624	5999.28	-1398.78	-1412.44	1246.77	40°08'59.567"N	104°42'21.499"W	2.00	END DROP
6517.00†	0.000	0.624	6053.29	-1398.78	-1412.44	1246.77	40°08'59.567"N	104°42'21.499"W	0.00	
6617.00†	0.000	0.624	6153.29	-1398.78	-1412.44	1246.77	40°08'59.567"N	104°42'21.499"W	0.00	
6717.00†	0.000	0.624	6253.29	-1398.78	-1412.44	1246.77	40°08'59.567"N	104°42'21.499"W	0.00	
6817.00†	0.000	0.624	6353.29	-1398.78	-1412.44	1246.77	40°08'59.567"N	104°42'21.499"W	0.00	
6917.00†	0.000	0.624	6453.29	-1398.78	-1412.44	1246.77	40°08'59.567"N	104°42'21.499"W	0.00	
7017.00†	0.000	0.624	6553.29	-1398.78	-1412.44	1246.77	40°08'59.567"N	104°42'21.499"W	0.00	
7025.75	0.000	0.624	6562.05	-1398.78	-1412.44	1246.77	40°08'59.567"N	104°42'21.499"W	0.00	KOP, BUILD @ 10°/100'
7117.00†	9.125	0.624	6652.91	-1391.53	-1405.19	1246.85	40°08'59.638"N	104°42'21.498"W	10.00	
7217.00†	19.125	0.624	6749.76	-1367.16	-1380.82	1247.12	40°08'59.879"N	104°42'21.495"W	10.00	
7317.00†	29.125	0.624	6840.91	-1326.34	-1340.01	1247.56	40°09'00.283"N	104°42'21.489"W	10.00	
7417.00†	39.125	0.624	6923.59	-1270.31	-1283.98	1248.17	40°09'00.836"N	104°42'21.481"W	10.00	
7517.00†	49.125	0.624	6995.28	-1200.78	-1214.45	1248.93	40°09'01.523"N	104°42'21.471"W	10.00	
7559.71†	53.396	0.624	7022.00	-1167.47	-1181.15	1249.29	40°09'01.853"N	104°42'21.467"W	10.00	SHARON SPRINGS
7617.00†	59.125	0.624	7053.81	-1119.85	-1133.53	1249.81	40°09'02.323"N	104°42'21.460"W	10.00	
7665.72†	63.996	0.624	7077.00	-1077.03	-1090.71	1250.28	40°09'02.746"N	104°42'21.454"W	10.00	NIOBRARA
7717.00†	69.125	0.624	7097.39	-1029.99	-1043.67	1250.79	40°09'03.211"N	104°42'21.447"W	10.00	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#18 THOMSEN 5N-31HZ (2371'FNL & 1521'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 5N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 5N-31HZ PWB
Facility	SEC.07-T2N-R65W		

**WELLPATH DATA (184 stations) † = interpolated/extrapolated station**

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7808.27†	78.251	0.624	7123.00	-942.49	-956.18	1251.74	40°09'04.076"N	104°42'21.435"W	10.00	NIOBRARA B
7817.00†	79.125	0.624	7124.71	-933.93	-947.62	1251.84	40°09'04.160"N	104°42'21.434"W	10.00	
7917.00†	89.125	0.624	7134.94	-834.58	-848.27	1252.92	40°09'05.142"N	104°42'21.420"W	10.00	
7925.63	89.987	0.624	7135.00	-825.95	-839.65	1253.01	40°09'05.227"N	104°42'21.419"W	10.00	LANDING POINT
8017.00†	89.987	0.624	7135.02	-734.58	-748.28	1254.01	40°09'06.130"N	104°42'21.406"W	0.00	
8117.00†	89.987	0.624	7135.05	-634.58	-648.29	1255.10	40°09'07.118"N	104°42'21.392"W	0.00	
8217.00†	89.987	0.624	7135.07	-534.58	-548.29	1256.19	40°09'08.106"N	104°42'21.377"W	0.00	
8317.00†	89.987	0.624	7135.09	-434.58	-448.30	1257.28	40°09'09.095"N	104°42'21.363"W	0.00	
8417.00†	89.987	0.624	7135.11	-334.58	-348.30	1258.37	40°09'10.083"N	104°42'21.349"W	0.00	
8517.00†	89.987	0.624	7135.14	-234.58	-248.31	1259.45	40°09'11.071"N	104°42'21.335"W	0.00	
8617.00†	89.987	0.624	7135.16	-134.58	-148.32	1260.54	40°09'12.059"N	104°42'21.321"W	0.00	
8717.00†	89.987	0.624	7135.18	-34.58	-48.32	1261.63	40°09'13.047"N	104°42'21.307"W	0.00	
8817.00†	89.987	0.624	7135.20	65.42	51.67	1262.72	40°09'14.035"N	104°42'21.293"W	0.00	
8917.00†	89.987	0.624	7135.23	165.42	151.67	1263.81	40°09'15.023"N	104°42'21.279"W	0.00	
9017.00†	89.987	0.624	7135.25	265.42	251.66	1264.90	40°09'16.012"N	104°42'21.265"W	0.00	
9117.00†	89.987	0.624	7135.27	365.42	351.66	1265.99	40°09'17.000"N	104°42'21.251"W	0.00	
9217.00†	89.987	0.624	7135.29	465.42	451.65	1267.08	40°09'17.988"N	104°42'21.237"W	0.00	
9317.00†	89.987	0.624	7135.31	565.42	551.64	1268.17	40°09'18.976"N	104°42'21.222"W	0.00	
9417.00†	89.987	0.624	7135.34	665.42	651.64	1269.26	40°09'19.964"N	104°42'21.208"W	0.00	
9517.00†	89.987	0.624	7135.36	765.42	751.63	1270.35	40°09'20.952"N	104°42'21.194"W	0.00	
9617.00†	89.987	0.624	7135.38	865.42	851.63	1271.44	40°09'21.940"N	104°42'21.180"W	0.00	
9717.00†	89.987	0.624	7135.40	965.42	951.62	1272.53	40°09'22.929"N	104°42'21.166"W	0.00	
9817.00†	89.987	0.624	7135.43	1065.42	1051.61	1273.62	40°09'23.917"N	104°42'21.152"W	0.00	
9917.00†	89.987	0.624	7135.45	1165.42	1151.61	1274.71	40°09'24.905"N	104°42'21.138"W	0.00	
10017.00†	89.987	0.624	7135.47	1265.42	1251.60	1275.80	40°09'25.893"N	104°42'21.124"W	0.00	
10117.00†	89.987	0.624	7135.49	1365.42	1351.60	1276.89	40°09'26.881"N	104°42'21.110"W	0.00	
10217.00†	89.987	0.624	7135.52	1465.42	1451.59	1277.97	40°09'27.869"N	104°42'21.096"W	0.00	
10317.00†	89.987	0.624	7135.54	1565.42	1551.58	1279.06	40°09'28.858"N	104°42'21.081"W	0.00	
10417.00†	89.987	0.624	7135.56	1665.42	1651.58	1280.15	40°09'29.846"N	104°42'21.067"W	0.00	
10517.00†	89.987	0.624	7135.58	1765.42	1751.57	1281.24	40°09'30.834"N	104°42'21.053"W	0.00	
10617.00†	89.987	0.624	7135.61	1865.42	1851.57	1282.33	40°09'31.822"N	104°42'21.039"W	0.00	
10717.00†	89.987	0.624	7135.63	1965.42	1951.56	1283.42	40°09'32.810"N	104°42'21.025"W	0.00	
10817.00†	89.987	0.624	7135.65	2065.42	2051.55	1284.51	40°09'33.798"N	104°42'21.011"W	0.00	
10917.00†	89.987	0.624	7135.67	2165.42	2151.55	1285.60	40°09'34.786"N	104°42'20.997"W	0.00	
11017.00†	89.987	0.624	7135.70	2265.42	2251.54	1286.69	40°09'35.775"N	104°42'20.983"W	0.00	
11117.00†	89.987	0.624	7135.72	2365.42	2351.54	1287.78	40°09'36.763"N	104°42'20.969"W	0.00	
11217.00†	89.987	0.624	7135.74	2465.42	2451.53	1288.87	40°09'37.751"N	104°42'20.955"W	0.00	
11317.00†	89.987	0.624	7135.76	2565.42	2551.52	1289.96	40°09'38.739"N	104°42'20.940"W	0.00	
11417.00†	89.987	0.624	7135.78	2665.42	2651.52	1291.05	40°09'39.727"N	104°42'20.926"W	0.00	
11517.00†	89.987	0.624	7135.81	2765.42	2751.51	1292.14	40°09'40.715"N	104°42'20.912"W	0.00	
11617.00†	89.987	0.624	7135.83	2865.42	2851.51	1293.23	40°09'41.703"N	104°42'20.898"W	0.00	
11717.00†	89.987	0.624	7135.85	2965.42	2951.50	1294.32	40°09'42.692"N	104°42'20.884"W	0.00	
11817.00†	89.987	0.624	7135.87	3065.42	3051.49	1295.41	40°09'43.680"N	104°42'20.870"W	0.00	
11917.00†	89.987	0.624	7135.90	3165.42	3151.49	1296.50	40°09'44.668"N	104°42'20.856"W	0.00	
12017.00†	89.987	0.624	7135.92	3265.42	3251.48	1297.58	40°09'45.656"N	104°42'20.842"W	0.00	

### REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#18 THOMSEN 5N-31HZ (2371'FNL & 1521'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 5N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 5N-31HZ PWB
Facility	SEC.07-T2N-R65W		

### WELLPATH DATA (184 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
12117.00†	89.987	0.624	7135.94	3365.42	3351.48	1298.67	40°09'46.644"N	104°42'20.828"W	0.00	
12217.00†	89.987	0.624	7135.96	3465.42	3451.47	1299.76	40°09'47.632"N	104°42'20.814"W	0.00	
12317.00†	89.987	0.624	7135.99	3565.42	3551.47	1300.85	40°09'48.620"N	104°42'20.799"W	0.00	
12417.00†	89.987	0.624	7136.01	3665.42	3651.46	1301.94	40°09'49.609"N	104°42'20.785"W	0.00	
12517.00†	89.987	0.624	7136.03	3765.42	3751.45	1303.03	40°09'50.597"N	104°42'20.771"W	0.00	
12617.00†	89.987	0.624	7136.05	3865.42	3851.45	1304.12	40°09'51.585"N	104°42'20.757"W	0.00	
12717.00†	89.987	0.624	7136.08	3965.42	3951.44	1305.21	40°09'52.573"N	104°42'20.743"W	0.00	
12817.00†	89.987	0.624	7136.10	4065.42	4051.44	1306.30	40°09'53.561"N	104°42'20.729"W	0.00	
12917.00†	89.987	0.624	7136.12	4165.42	4151.43	1307.39	40°09'54.549"N	104°42'20.715"W	0.00	
13017.00†	89.987	0.624	7136.14	4265.42	4251.42	1308.48	40°09'55.537"N	104°42'20.701"W	0.00	
13117.00†	89.987	0.624	7136.16	4365.42	4351.42	1309.57	40°09'56.526"N	104°42'20.687"W	0.00	
13217.00†	89.987	0.624	7136.19	4465.42	4451.41	1310.66	40°09'57.514"N	104°42'20.673"W	0.00	
13317.00†	89.987	0.624	7136.21	4565.42	4551.41	1311.75	40°09'58.502"N	104°42'20.658"W	0.00	
13417.00†	89.987	0.624	7136.23	4665.42	4651.40	1312.84	40°09'59.490"N	104°42'20.644"W	0.00	
13517.00†	89.987	0.624	7136.25	4765.42	4751.39	1313.93	40°10'00.478"N	104°42'20.630"W	0.00	
13617.00†	89.987	0.624	7136.28	4865.42	4851.39	1315.02	40°10'01.466"N	104°42'20.616"W	0.00	
13717.00†	89.987	0.624	7136.30	4965.42	4951.38	1316.11	40°10'02.454"N	104°42'20.602"W	0.00	
13817.00†	89.987	0.624	7136.32	5065.42	5051.38	1317.19	40°10'03.443"N	104°42'20.588"W	0.00	
13917.00†	89.987	0.624	7136.34	5165.42	5151.37	1318.28	40°10'04.431"N	104°42'20.574"W	0.00	
14017.00†	89.987	0.624	7136.37	5265.42	5251.36	1319.37	40°10'05.419"N	104°42'20.560"W	0.00	
14117.00†	89.987	0.624	7136.39	5365.42	5351.36	1320.46	40°10'06.407"N	104°42'20.546"W	0.00	
14217.00†	89.987	0.624	7136.41	5465.42	5451.35	1321.55	40°10'07.395"N	104°42'20.532"W	0.00	
14317.00†	89.987	0.624	7136.43	5565.42	5551.35	1322.64	40°10'08.383"N	104°42'20.517"W	0.00	
14417.00†	89.987	0.624	7136.46	5665.42	5651.34	1323.73	40°10'09.371"N	104°42'20.503"W	0.00	
14517.00†	89.987	0.624	7136.48	5765.42	5751.33	1324.82	40°10'10.360"N	104°42'20.489"W	0.00	
14617.00†	89.987	0.624	7136.50	5865.42	5851.33	1325.91	40°10'11.348"N	104°42'20.475"W	0.00	
14717.00†	89.987	0.624	7136.52	5965.42	5951.32	1327.00	40°10'12.336"N	104°42'20.461"W	0.00	
14817.00†	89.987	0.624	7136.54	6065.42	6051.32	1328.09	40°10'13.324"N	104°42'20.447"W	0.00	
14917.00†	89.987	0.624	7136.57	6165.42	6151.31	1329.18	40°10'14.312"N	104°42'20.433"W	0.00	
15017.00†	89.987	0.624	7136.59	6265.42	6251.30	1330.27	40°10'15.300"N	104°42'20.419"W	0.00	
15117.00†	89.987	0.624	7136.61	6365.42	6351.30	1331.36	40°10'16.288"N	104°42'20.405"W	0.00	
15217.00†	89.987	0.624	7136.63	6465.42	6451.29	1332.45	40°10'17.277"N	104°42'20.391"W	0.00	
15317.00†	89.987	0.624	7136.66	6565.42	6551.29	1333.54	40°10'18.265"N	104°42'20.376"W	0.00	
15417.00†	89.987	0.624	7136.68	6665.42	6651.28	1334.63	40°10'19.253"N	104°42'20.362"W	0.00	
15517.00†	89.987	0.624	7136.70	6765.42	6751.28	1335.72	40°10'20.241"N	104°42'20.348"W	0.00	
15617.00†	89.987	0.624	7136.72	6865.42	6851.27	1336.80	40°10'21.229"N	104°42'20.334"W	0.00	
15717.00†	89.987	0.624	7136.75	6965.42	6951.26	1337.89	40°10'22.217"N	104°42'20.320"W	0.00	
15817.00†	89.987	0.624	7136.77	7065.42	7051.26	1338.98	40°10'23.205"N	104°42'20.306"W	0.00	
15917.00†	89.987	0.624	7136.79	7165.42	7151.25	1340.07	40°10'24.194"N	104°42'20.292"W	0.00	
16017.00†	89.987	0.624	7136.81	7265.42	7251.25	1341.16	40°10'25.182"N	104°42'20.278"W	0.00	
16117.00†	89.987	0.624	7136.84	7365.42	7351.24	1342.25	40°10'26.170"N	104°42'20.264"W	0.00	
16217.00†	89.987	0.624	7136.86	7465.42	7451.23	1343.34	40°10'27.158"N	104°42'20.249"W	0.00	
16317.00†	89.987	0.624	7136.88	7565.42	7551.23	1344.43	40°10'28.146"N	104°42'20.235"W	0.00	
16417.00†	89.987	0.624	7136.90	7665.42	7651.22	1345.52	40°10'29.134"N	104°42'20.221"W	0.00	
16517.00†	89.987	0.624	7136.93	7765.42	7751.22	1346.61	40°10'30.122"N	104°42'20.207"W	0.00	



# Planned Wellpath Report

## THOMSEN 5N-31HZ (PERMIT REV-1) PWP



### REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#18 THOMSEN 5N-31HZ (2371'FNL & 1521'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 5N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 5N-31HZ PWB
Facility	SEC.07-T2N-R65W		

### WELLPATH DATA (184 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
16617.00†	89.987	0.624	7136.95	7865.42	7851.21	1347.70	40°10'31.111"N	104°42'20.193"W	0.00	
16717.00†	89.987	0.624	7136.97	7965.42	7951.20	1348.79	40°10'32.099"N	104°42'20.179"W	0.00	
16817.00†	89.987	0.624	7136.99	8065.42	8051.20	1349.88	40°10'33.087"N	104°42'20.165"W	0.00	
16851.44	89.987	0.624	7137.00 <sup>1</sup>	8099.86	8085.63	1350.25	40°10'33.427"N	104°42'20.160"W	0.00	TOTAL DEPTH

### HOLE & CASING SECTIONS -

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	7925.63	6624.63	1301.00	7135.00	0.00	0.00	-839.64	1253.01
7in Casing Intermediate	17.00	7925.63	7908.63	17.00	7135.00	0.00	0.00	-839.64	1253.01
6.125in Open Hole	7925.63	16851.44	8925.81	7135.00	NA	-839.64	1253.01	NA	NA
4.5in Casing Production	17.00	16851.44	16834.44	17.00	NA	0.00	0.00	NA	NA

### 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	-751.40	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	-751.40	3219947.79	1299783.36	40°09'13.036"N	104°42'47.232"W	polygon
SEC.07-T2N-R65W SECTION LINES		36.00	1960.77	2728.58	3223409.59	1301824.42	40°09'32.900"N	104°42'02.412"W	polygon
1) THOMSEN 5N-31HZ BHL ON PLAT REV-1 (460'FSL & 2445'FEL, SEC.31)	16851.44	7137.00	8085.63	1350.25	3221976.84	1307936.50	40°10'33.427"N	104°42'20.160"W	point
THOMSEN 5N-31HZ LANDBOX		7137.00	0.00	0.00	3220698.69	1299839.52	40°09'13.525"N	104°42'37.555"W	polygon

### SURVEY PROGRAM - Ref Wellbore: THOMSEN 5N-31HZ PWB Ref Wellpath: THOMSEN 5N-31HZ (PERMIT REV-1) PWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
17.00	16851.44	NaviTrak (MAGCORR,IFR)		THOMSEN 5N-31HZ PWB



# Planned Wellpath Report

## THOMSEN 5N-31HZ (PERMIT REV-1) PWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#18 THOMSEN 5N-31HZ (2371'FNL & 1521'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 5N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 5N-31HZ PWB
Facility	SEC.07-T2N-R65W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
950.00	0.000	138.565	950.00	BASE FOX HILLS
1301.00	0.000	138.565	1301.00	SURFACE CSG SETTING DEPTH
4293.11	33.000	138.565	4003.00	PARKMAN
4789.14	33.000	138.565	4419.00	SUSSEX
7559.71	53.396	0.624	7022.00	SHARON SPRINGS
7665.72	63.996	0.624	7077.00	NIOBRARA
7808.27	78.251	0.624	7123.00	NIOBRARA B

DESIGN COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
17.00	0.000	138.565	17.00	TIE ON
1401.00	0.000	138.565	1401.00	BEGIN NUDGE
3051.00	33.000	138.565	2961.28	END NUDGE
4812.98	33.000	138.565	4439.00	BEGIN DROP
6462.98	0.000	0.624	5999.28	END DROP
7025.75	0.000	0.624	6562.05	KOP, BUILD @ 10°/100'
7925.63	89.987	0.624	7135.00	LANDING POINT
16851.44	89.987	0.624	7137.00	TOTAL DEPTH