

KERR-MCGEE OIL & GAS ONSHORE LP

Location: COLORADO Slot: SLOT#15 THOMSEN 3N-31HZ (2405'FNL & 830'FWL, SEC.07)
 Field: WELD COUNTY (KERR MCGEE) Well: THOMSEN 3N-31HZ
 Facility: SEC.07-T2N-R65W Wellbore: THOMSEN 3N-31HZ PWB

Plot reference wellpath is THOMSEN 3N-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: 4964 feet Scale: True distance
 Mean Sea Level to Mud line (At Slot: SLOT#15 THOMSEN 3N-31HZ (2405'FNL & 830'FWL, SEC.07)): 0 feet Depths are in feet
 Coordinates are in feet referenced to Slot Created by: robiale01 on 9/5/2014

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#15 THOMSEN 3N-31HZ (2405'FNL & 830'FWL, SEC.07)	2290.72	306.94	3220007.887	1299783.489	40°09'13.032"N	104°42'46.458"W
PERMIT (17KB) (RKB) to Mud line (At Slot: SLOT#15 THOMSEN 3N-31HZ (2405'FNL & 830'FWL, SEC.07))				4964ft		
Mean Sea Level to Mud line (At Slot: SLOT#15 THOMSEN 3N-31HZ (2405'FNL & 830'FWL, SEC.07))				0ft		
PERMIT (17KB) (RKB) to Mean Sea Level				4964ft		

Survey Program

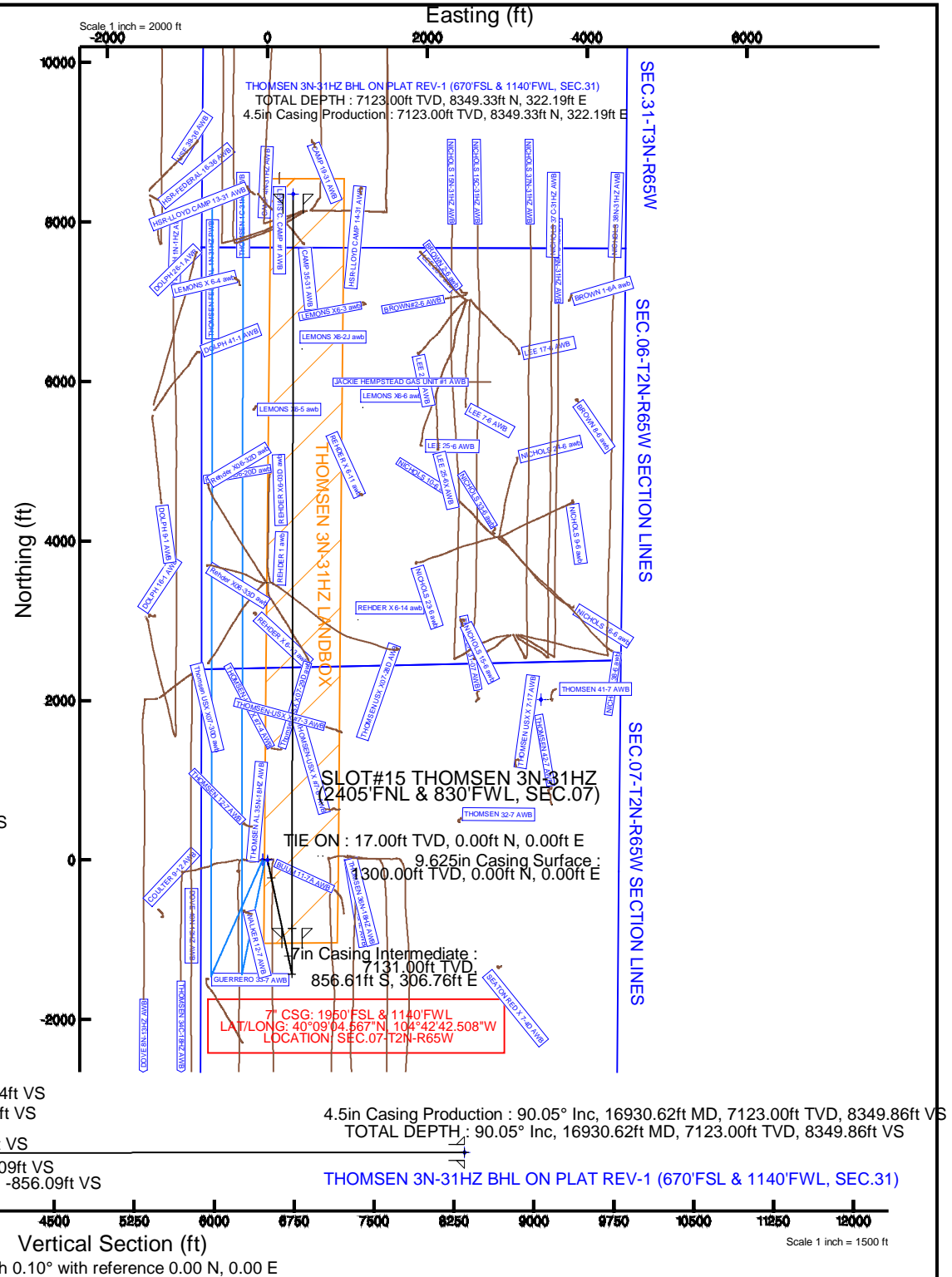
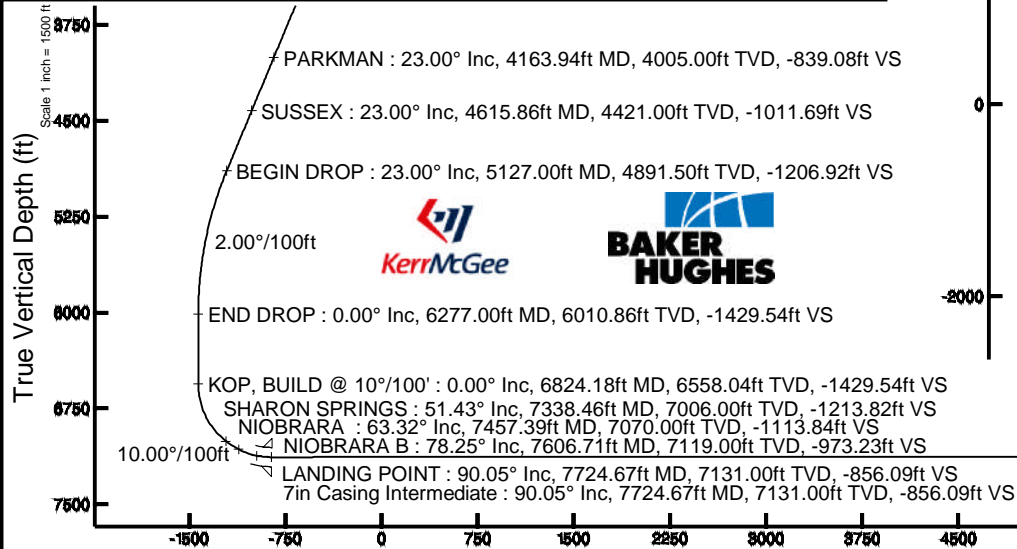
Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
17.00	16930.62	NaviTrak	NaviTrak (MAGCORR,IFR)		THOMSEN 3N-31HZ PWB

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		0.00	0.40	-60.10	3219947.79	1299783.36	40°09'13.036"N	104°42'47.232"W
SEC.31-T3N-R65W SECTION LINES		0.00	0.40	-60.10	3219947.79	1299783.36	40°09'13.036"N	104°42'47.232"W
SEC.07-T2N-R65W SECTION LINES		35.00	2010.75	3419.83	3223409.59	1301824.42	40°09'32.900"N	104°42'02.412"W
THOMSEN 3N-31HZ BHL ON PLAT REV-1 (670'FSL & 1140'FWL, SEC.31)	16930.62	7123.00	8349.33	322.19	3220255.95	1308134.98	40°10'35.540"N	104°42'42.307"W
THOMSEN 3N-31HZ LANDBOX		7123.00	0.00	0.00	3220007.89	1299783.49	40°09'13.032"N	104°42'46.458"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	167.930	17.00	0.00	0.00	0.00	0.00
BEGIN NUJGE	1400.00	0.000	167.930	1400.00	0.00	0.00	0.00	0.00
END NUJGE	2550.00	23.000	167.930	2519.36	-222.70	47.62	2.00	-222.62
BEGIN DROP	5127.00	23.000	167.930	4891.50	-1207.35	258.17	0.00	-1206.92
END DROP	6277.00	0.000	0.096	6010.86	-1430.06	305.79	2.00	-1429.54
KOP, BUILD @ 10°/100'	6824.18	0.000	0.096	6558.04	-1430.06	305.79	0.00	-1429.54
LANDING POINT	7724.67	90.050	0.096	7131.00	-856.60	306.76	10.00	-856.09
TOTAL DEPTH	16930.62	90.050	0.096	7123.00	8349.33	322.19	0.00	8349.86





Planned Wellpath Report

THOMSEN 3N-31HZ (PERMIT REV-1) PWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#15 THOMSEN 3N-31HZ (2405'FNL & 830'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 3N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 3N-31HZ PWB
Facility	SEC.07-T2N-R65W		

REPORT SETUP INFORMATION			
Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 4.0.0
North Reference	True	User	Robiale01
Scale	0.999958	Report Generated	9/5/2014 at 12:57:50 PM
Convergence at slot	n/a	Database/Source file	WellArchitectDB/THOMSEN_3N-31HZ_PWB.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	2290.72	306.94	3220007.89	1299783.49	40°09'13.032"N	104°42'46.458"W
Facility Reference Pt			3219721.27	1297490.24	40°08'50.395"N	104°42'50.411"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	4964.00ft
Horizontal Reference Pt	Slot	PERMIT (17'KB) (RKB) to Mean Sea Level	4964.00ft
Vertical Reference Pt	PERMIT (17'KB) (RKB)	PERMIT (17'KB) (RKB) to Mud Line at Slot (SLOT#15 THOMSEN 3N-31HZ (2405'FNL & 830'FWL, SEC.07))	4964.00ft
MD Reference Pt	PERMIT (17'KB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	0.10°

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#15 THOMSEN 3N-31HZ (2405'FNL & 830'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 3N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 3N-31HZ PWB
Facility	SEC.07-T2N-R65W		

WELLPATH DATA (185 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	167.930	0.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	
17.00	0.000	167.930	17.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	TIE ON
117.00†	0.000	167.930	117.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	
217.00†	0.000	167.930	217.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	
317.00†	0.000	167.930	317.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	
417.00†	0.000	167.930	417.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	
517.00†	0.000	167.930	517.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	
617.00†	0.000	167.930	617.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	
717.00†	0.000	167.930	717.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	
817.00†	0.000	167.930	817.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	
917.00†	0.000	167.930	917.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	
949.00†	0.000	167.930	949.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	BASE FOX HILLS
1017.00†	0.000	167.930	1017.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	
1117.00†	0.000	167.930	1117.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	
1217.00†	0.000	167.930	1217.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	
1300.00†	0.000	167.930	1300.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	SURFACE CSG SETTING DEPTH
1317.00†	0.000	167.930	1317.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	
1400.00	0.000	167.930	1400.00	0.00	0.00	0.00	40°09'13.032"N	104°42'46.458"W	0.00	BEGIN NUDGE
1417.00†	0.340	167.930	1417.00	-0.05	-0.05	0.01	40°09'13.032"N	104°42'46.458"W	2.00	
1517.00†	2.340	167.930	1516.97	-2.34	-2.34	0.50	40°09'13.009"N	104°42'46.452"W	2.00	
1617.00†	4.340	167.930	1616.79	-8.03	-8.03	1.72	40°09'12.953"N	104°42'46.436"W	2.00	
1717.00†	6.340	167.930	1716.35	-17.13	-17.13	3.66	40°09'12.863"N	104°42'46.411"W	2.00	
1817.00†	8.340	167.930	1815.53	-29.62	-29.63	6.34	40°09'12.739"N	104°42'46.376"W	2.00	
1917.00†	10.340	167.930	1914.20	-45.48	-45.50	9.73	40°09'12.582"N	104°42'46.333"W	2.00	
2017.00†	12.340	167.930	2012.24	-64.70	-64.72	13.84	40°09'12.392"N	104°42'46.280"W	2.00	
2117.00†	14.340	167.930	2109.54	-87.25	-87.28	18.66	40°09'12.169"N	104°42'46.218"W	2.00	
2217.00†	16.340	167.930	2205.97	-113.11	-113.15	24.20	40°09'11.914"N	104°42'46.146"W	2.00	
2317.00†	18.340	167.930	2301.42	-142.25	-142.30	30.43	40°09'11.626"N	104°42'46.066"W	2.00	
2417.00†	20.340	167.930	2395.77	-174.62	-174.68	37.35	40°09'11.306"N	104°42'45.977"W	2.00	
2517.00†	22.340	167.930	2488.91	-210.19	-210.26	44.96	40°09'10.954"N	104°42'45.879"W	2.00	
2550.00	23.000	167.930	2519.36	-222.62	-222.70	47.62	40°09'10.831"N	104°42'45.845"W	2.00	END NUDGE
2617.00†	23.000	167.930	2581.04	-248.21	-248.30	53.10	40°09'10.578"N	104°42'45.774"W	0.00	
2717.00†	23.000	167.930	2673.09	-286.41	-286.51	61.27	40°09'10.201"N	104°42'45.669"W	0.00	
2817.00†	23.000	167.930	2765.14	-324.60	-324.72	69.44	40°09'09.823"N	104°42'45.564"W	0.00	
2917.00†	23.000	167.930	2857.19	-362.80	-362.93	77.61	40°09'09.445"N	104°42'45.459"W	0.00	
3017.00†	23.000	167.930	2949.24	-401.00	-401.14	85.78	40°09'09.068"N	104°42'45.353"W	0.00	
3117.00†	23.000	167.930	3041.29	-439.19	-439.35	93.95	40°09'08.690"N	104°42'45.248"W	0.00	
3217.00†	23.000	167.930	3133.34	-477.39	-477.56	102.12	40°09'08.313"N	104°42'45.143"W	0.00	
3317.00†	23.000	167.930	3225.39	-515.58	-515.77	110.29	40°09'07.935"N	104°42'45.038"W	0.00	
3417.00†	23.000	167.930	3317.44	-553.78	-553.98	118.46	40°09'07.558"N	104°42'44.932"W	0.00	
3517.00†	23.000	167.930	3409.49	-591.97	-592.19	126.63	40°09'07.180"N	104°42'44.827"W	0.00	
3617.00†	23.000	167.930	3501.54	-630.17	-630.40	134.80	40°09'06.802"N	104°42'44.722"W	0.00	
3717.00†	23.000	167.930	3593.59	-668.36	-668.60	142.97	40°09'06.425"N	104°42'44.617"W	0.00	
3817.00†	23.000	167.930	3685.64	-706.56	-706.81	151.14	40°09'06.047"N	104°42'44.512"W	0.00	
3917.00†	23.000	167.930	3777.69	-744.76	-745.02	159.31	40°09'05.670"N	104°42'44.406"W	0.00	

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Area	COLORADO	Well	THOMSEN 3N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 3N-31HZ PWB
Facility	SEC.07-T2N-R65W		

WELLPATH DATA (185 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4017.00†	23.000	167.930	3869.74	-782.95	-783.23	167.48	40°09'05.292"N	104°42'44.301"W	0.00	
4117.00†	23.000	167.930	3961.79	-821.15	-821.44	175.65	40°09'04.914"N	104°42'44.196"W	0.00	
4163.94†	23.000	167.930	4005.00	-839.08	-839.38	179.49	40°09'04.737"N	104°42'44.147"W	0.00	PARKMAN
4217.00†	23.000	167.930	4053.84	-859.34	-859.65	183.82	40°09'04.537"N	104°42'44.091"W	0.00	
4317.00†	23.000	167.930	4145.89	-897.54	-897.86	191.99	40°09'04.159"N	104°42'43.985"W	0.00	
4417.00†	23.000	167.930	4237.94	-935.73	-936.07	200.16	40°09'03.782"N	104°42'43.880"W	0.00	
4517.00†	23.000	167.930	4330.00	-973.93	-974.28	208.33	40°09'03.404"N	104°42'43.775"W	0.00	
4615.86†	23.000	167.930	4421.00	-1011.69	-1012.05	216.41	40°09'03.031"N	104°42'43.671"W	0.00	SUSSEX
4617.00†	23.000	167.930	4422.05	-1012.12	-1012.49	216.50	40°09'03.027"N	104°42'43.670"W	0.00	
4717.00†	23.000	167.930	4514.10	-1050.32	-1050.70	224.67	40°09'02.649"N	104°42'43.565"W	0.00	
4817.00†	23.000	167.930	4606.15	-1088.52	-1088.91	232.85	40°09'02.271"N	104°42'43.459"W	0.00	
4917.00†	23.000	167.930	4698.20	-1126.71	-1127.12	241.02	40°09'01.894"N	104°42'43.354"W	0.00	
5017.00†	23.000	167.930	4790.25	-1164.91	-1165.33	249.19	40°09'01.516"N	104°42'43.249"W	0.00	
5117.00†	23.000	167.930	4882.30	-1203.10	-1203.54	257.36	40°09'01.139"N	104°42'43.144"W	0.00	
5127.00	23.000	167.930	4891.50	-1206.92	-1207.35	258.17	40°09'01.101"N	104°42'43.133"W	0.00	BEGIN DROP
5217.00†	21.200	167.930	4974.89	-1240.02	-1240.47	265.25	40°09'00.774"N	104°42'43.042"W	2.00	
5317.00†	19.200	167.930	5068.73	-1273.77	-1274.23	272.47	40°09'00.440"N	104°42'42.949"W	2.00	
5417.00†	17.200	167.930	5163.72	-1304.30	-1304.77	279.00	40°09'00.138"N	104°42'42.865"W	2.00	
5517.00†	15.200	167.930	5259.75	-1331.57	-1332.05	284.84	40°08'59.869"N	104°42'42.790"W	2.00	
5617.00†	13.200	167.930	5356.69	-1355.55	-1356.04	289.97	40°08'59.632"N	104°42'42.724"W	2.00	
5717.00†	11.200	167.930	5454.43	-1376.21	-1376.70	294.39	40°08'59.427"N	104°42'42.667"W	2.00	
5817.00†	9.200	167.930	5552.84	-1393.52	-1394.02	298.09	40°08'59.256"N	104°42'42.619"W	2.00	
5917.00†	7.200	167.930	5651.81	-1407.46	-1407.97	301.07	40°08'59.118"N	104°42'42.581"W	2.00	
6017.00†	5.200	167.930	5751.22	-1418.02	-1418.53	303.33	40°08'59.014"N	104°42'42.552"W	2.00	
6117.00†	3.200	167.930	5850.95	-1425.18	-1425.69	304.86	40°08'58.943"N	104°42'42.532"W	2.00	
6217.00†	1.200	167.930	5950.87	-1428.93	-1429.44	305.66	40°08'58.906"N	104°42'42.522"W	2.00	
6277.00	0.000	0.096	6010.86	-1429.54	-1430.06	305.79	40°08'58.900"N	104°42'42.520"W	2.00	END DROP
6317.00†	0.000	0.096	6050.87	-1429.54	-1430.06	305.79	40°08'58.900"N	104°42'42.520"W	0.00	
6417.00†	0.000	0.096	6150.87	-1429.54	-1430.06	305.79	40°08'58.900"N	104°42'42.520"W	0.00	
6517.00†	0.000	0.096	6250.87	-1429.54	-1430.06	305.79	40°08'58.900"N	104°42'42.520"W	0.00	
6617.00†	0.000	0.096	6350.87	-1429.54	-1430.06	305.79	40°08'58.900"N	104°42'42.520"W	0.00	
6717.00†	0.000	0.096	6450.87	-1429.54	-1430.06	305.79	40°08'58.900"N	104°42'42.520"W	0.00	
6817.00†	0.000	0.096	6550.87	-1429.54	-1430.06	305.79	40°08'58.900"N	104°42'42.520"W	0.00	
6824.18	0.000	0.096	6558.04	-1429.54	-1430.06	305.79	40°08'58.900"N	104°42'42.520"W	0.00	KOP, BUILD @ 10°/100'
6917.00†	9.282	0.096	6650.46	-1422.04	-1422.55	305.81	40°08'58.974"N	104°42'42.520"W	10.00	
7017.00†	19.282	0.096	6747.25	-1397.40	-1397.92	305.85	40°08'59.218"N	104°42'42.519"W	10.00	
7117.00†	29.282	0.096	6838.28	-1356.33	-1356.84	305.92	40°08'59.624"N	104°42'42.518"W	10.00	
7217.00†	39.282	0.096	6920.81	-1300.07	-1300.59	306.01	40°09'00.179"N	104°42'42.517"W	10.00	
7317.00†	49.282	0.096	6992.31	-1230.34	-1230.86	306.13	40°09'00.869"N	104°42'42.516"W	10.00	
7338.46†	51.429	0.096	7006.00	-1213.82	-1214.33	306.16	40°09'01.032"N	104°42'42.515"W	10.00	SHARON SPRINGS
7417.00†	59.282	0.096	7050.61	-1149.26	-1149.77	306.26	40°09'01.670"N	104°42'42.514"W	10.00	
7457.39†	63.321	0.096	7070.00	-1113.84	-1114.35	306.32	40°09'02.020"N	104°42'42.513"W	10.00	NIOBRARA
7517.00†	69.282	0.096	7093.95	-1059.28	-1059.79	306.42	40°09'02.559"N	104°42'42.512"W	10.00	
7606.71†	78.253	0.096	7119.00	-973.23	-973.75	306.56	40°09'03.409"N	104°42'42.510"W	10.00	NIOBRARA B
7617.00†	79.282	0.096	7121.01	-963.14	-963.65	306.58	40°09'03.509"N	104°42'42.510"W	10.00	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#15 THOMSEN 3N-31HZ (2405'FNL & 830'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 3N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 3N-31HZ PWB
Facility	SEC.07-T2N-R65W		

WELLPATH DATA (185 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7717.00†	89.282	0.096	7130.96	-863.76	-864.28	306.74	40°09'04.491"N	104°42'42.508"W	10.00	
7724.67	90.050	0.096	7131.00	-856.09	-856.60	306.76	40°09'04.567"N	104°42'42.508"W	10.00	LANDING POINT
7817.00†	90.050	0.096	7130.92	-763.76	-764.28	306.91	40°09'05.479"N	104°42'42.506"W	0.00	
7917.00†	90.050	0.096	7130.83	-663.76	-664.28	307.08	40°09'06.468"N	104°42'42.503"W	0.00	
8017.00†	90.050	0.096	7130.75	-563.76	-564.28	307.25	40°09'07.456"N	104°42'42.501"W	0.00	
8117.00†	90.050	0.096	7130.66	-463.76	-464.28	307.41	40°09'08.444"N	104°42'42.499"W	0.00	
8217.00†	90.050	0.096	7130.57	-363.76	-364.28	307.58	40°09'09.432"N	104°42'42.497"W	0.00	
8317.00†	90.050	0.096	7130.49	-263.76	-264.28	307.75	40°09'10.420"N	104°42'42.495"W	0.00	
8417.00†	90.050	0.096	7130.40	-163.76	-164.28	307.92	40°09'11.409"N	104°42'42.492"W	0.00	
8517.00†	90.050	0.096	7130.31	-63.76	-64.28	308.09	40°09'12.397"N	104°42'42.490"W	0.00	
8617.00†	90.050	0.096	7130.22	36.24	35.72	308.25	40°09'13.385"N	104°42'42.488"W	0.00	
8717.00†	90.050	0.096	7130.14	136.24	135.72	308.42	40°09'14.373"N	104°42'42.486"W	0.00	
8817.00†	90.050	0.096	7130.05	236.24	235.72	308.59	40°09'15.361"N	104°42'42.484"W	0.00	
8917.00†	90.050	0.096	7129.96	336.24	335.72	308.76	40°09'16.350"N	104°42'42.482"W	0.00	
9017.00†	90.050	0.096	7129.88	436.24	435.72	308.92	40°09'17.338"N	104°42'42.479"W	0.00	
9117.00†	90.050	0.096	7129.79	536.24	535.72	309.09	40°09'18.326"N	104°42'42.477"W	0.00	
9217.00†	90.050	0.096	7129.70	636.24	635.72	309.26	40°09'19.314"N	104°42'42.475"W	0.00	
9317.00†	90.050	0.096	7129.62	736.24	735.72	309.43	40°09'20.302"N	104°42'42.473"W	0.00	
9417.00†	90.050	0.096	7129.53	836.24	835.72	309.59	40°09'21.291"N	104°42'42.471"W	0.00	
9517.00†	90.050	0.096	7129.44	936.24	935.72	309.76	40°09'22.279"N	104°42'42.469"W	0.00	
9617.00†	90.050	0.096	7129.36	1036.24	1035.72	309.93	40°09'23.267"N	104°42'42.466"W	0.00	
9717.00†	90.050	0.096	7129.27	1136.24	1135.72	310.10	40°09'24.255"N	104°42'42.464"W	0.00	
9817.00†	90.050	0.096	7129.18	1236.24	1235.72	310.27	40°09'25.243"N	104°42'42.462"W	0.00	
9917.00†	90.050	0.096	7129.09	1336.24	1335.72	310.43	40°09'26.232"N	104°42'42.460"W	0.00	
10017.00†	90.050	0.096	7129.01	1436.24	1435.72	310.60	40°09'27.220"N	104°42'42.458"W	0.00	
10117.00†	90.050	0.096	7128.92	1536.24	1535.72	310.77	40°09'28.208"N	104°42'42.456"W	0.00	
10217.00†	90.050	0.096	7128.83	1636.24	1635.72	310.94	40°09'29.196"N	104°42'42.453"W	0.00	
10317.00†	90.050	0.096	7128.75	1736.24	1735.72	311.10	40°09'30.184"N	104°42'42.451"W	0.00	
10417.00†	90.050	0.096	7128.66	1836.24	1835.72	311.27	40°09'31.173"N	104°42'42.449"W	0.00	
10517.00†	90.050	0.096	7128.57	1936.24	1935.72	311.44	40°09'32.161"N	104°42'42.447"W	0.00	
10617.00†	90.050	0.096	7128.49	2036.24	2035.72	311.61	40°09'33.149"N	104°42'42.445"W	0.00	
10717.00†	90.050	0.096	7128.40	2136.24	2135.72	311.77	40°09'34.137"N	104°42'42.442"W	0.00	
10817.00†	90.050	0.096	7128.31	2236.24	2235.72	311.94	40°09'35.125"N	104°42'42.440"W	0.00	
10917.00†	90.050	0.096	7128.23	2336.24	2335.72	312.11	40°09'36.114"N	104°42'42.438"W	0.00	
11017.00†	90.050	0.096	7128.14	2436.24	2435.72	312.28	40°09'37.102"N	104°42'42.436"W	0.00	
11117.00†	90.050	0.096	7128.05	2536.24	2535.72	312.45	40°09'38.090"N	104°42'42.434"W	0.00	
11217.00†	90.050	0.096	7127.97	2636.24	2635.72	312.61	40°09'39.078"N	104°42'42.432"W	0.00	
11317.00†	90.050	0.096	7127.88	2736.24	2735.72	312.78	40°09'40.066"N	104°42'42.429"W	0.00	
11417.00†	90.050	0.096	7127.79	2836.24	2835.72	312.95	40°09'41.055"N	104°42'42.427"W	0.00	
11517.00†	90.050	0.096	7127.70	2936.24	2935.72	313.12	40°09'42.043"N	104°42'42.425"W	0.00	
11617.00†	90.050	0.096	7127.62	3036.24	3035.72	313.28	40°09'43.031"N	104°42'42.423"W	0.00	
11717.00†	90.050	0.096	7127.53	3136.24	3135.72	313.45	40°09'44.019"N	104°42'42.421"W	0.00	
11817.00†	90.050	0.096	7127.44	3236.24	3235.72	313.62	40°09'45.007"N	104°42'42.419"W	0.00	
11917.00†	90.050	0.096	7127.36	3336.24	3335.72	313.79	40°09'45.996"N	104°42'42.416"W	0.00	
12017.00†	90.050	0.096	7127.27	3436.24	3435.72	313.95	40°09'46.984"N	104°42'42.414"W	0.00	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#15 THOMSEN 3N-31HZ (2405'FNL & 830'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 3N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 3N-31HZ PWB
Facility	SEC.07-T2N-R65W		

WELLPATH DATA (185 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
12117.00†	90.050	0.096	7127.18	3536.24	3535.72	314.12	40°09'47.972"N	104°42'42.412"W	0.00	
12217.00†	90.050	0.096	7127.10	3636.24	3635.72	314.29	40°09'48.960"N	104°42'42.410"W	0.00	
12317.00†	90.050	0.096	7127.01	3736.24	3735.72	314.46	40°09'49.949"N	104°42'42.408"W	0.00	
12417.00†	90.050	0.096	7126.92	3836.24	3835.71	314.63	40°09'50.937"N	104°42'42.405"W	0.00	
12517.00†	90.050	0.096	7126.84	3936.24	3935.71	314.79	40°09'51.925"N	104°42'42.403"W	0.00	
12617.00†	90.050	0.096	7126.75	4036.24	4035.71	314.96	40°09'52.913"N	104°42'42.401"W	0.00	
12717.00†	90.050	0.096	7126.66	4136.24	4135.71	315.13	40°09'53.901"N	104°42'42.399"W	0.00	
12817.00†	90.050	0.096	7126.57	4236.24	4235.71	315.30	40°09'54.890"N	104°42'42.397"W	0.00	
12917.00†	90.050	0.096	7126.49	4336.24	4335.71	315.46	40°09'55.878"N	104°42'42.395"W	0.00	
13017.00†	90.050	0.096	7126.40	4436.24	4435.71	315.63	40°09'56.866"N	104°42'42.392"W	0.00	
13117.00†	90.050	0.096	7126.31	4536.24	4535.71	315.80	40°09'57.854"N	104°42'42.390"W	0.00	
13217.00†	90.050	0.096	7126.23	4636.24	4635.71	315.97	40°09'58.842"N	104°42'42.388"W	0.00	
13317.00†	90.050	0.096	7126.14	4736.24	4735.71	316.13	40°09'59.831"N	104°42'42.386"W	0.00	
13417.00†	90.050	0.096	7126.05	4836.24	4835.71	316.30	40°10'00.819"N	104°42'42.384"W	0.00	
13517.00†	90.050	0.096	7125.97	4936.24	4935.71	316.47	40°10'01.807"N	104°42'42.382"W	0.00	
13617.00†	90.050	0.096	7125.88	5036.24	5035.71	316.64	40°10'02.795"N	104°42'42.379"W	0.00	
13717.00†	90.050	0.096	7125.79	5136.24	5135.71	316.81	40°10'03.783"N	104°42'42.377"W	0.00	
13817.00†	90.050	0.096	7125.71	5236.24	5235.71	316.97	40°10'04.772"N	104°42'42.375"W	0.00	
13917.00†	90.050	0.096	7125.62	5336.24	5335.71	317.14	40°10'05.760"N	104°42'42.373"W	0.00	
14017.00†	90.050	0.096	7125.53	5436.24	5435.71	317.31	40°10'06.748"N	104°42'42.371"W	0.00	
14117.00†	90.050	0.096	7125.44	5536.24	5535.71	317.48	40°10'07.736"N	104°42'42.368"W	0.00	
14217.00†	90.050	0.096	7125.36	5636.24	5635.71	317.64	40°10'08.724"N	104°42'42.366"W	0.00	
14317.00†	90.050	0.096	7125.27	5736.24	5735.71	317.81	40°10'09.713"N	104°42'42.364"W	0.00	
14417.00†	90.050	0.096	7125.18	5836.24	5835.71	317.98	40°10'10.701"N	104°42'42.362"W	0.00	
14517.00†	90.050	0.096	7125.10	5936.24	5935.71	318.15	40°10'11.689"N	104°42'42.360"W	0.00	
14617.00†	90.050	0.096	7125.01	6036.24	6035.71	318.31	40°10'12.677"N	104°42'42.358"W	0.00	
14717.00†	90.050	0.096	7124.92	6136.24	6135.71	318.48	40°10'13.665"N	104°42'42.355"W	0.00	
14817.00†	90.050	0.096	7124.84	6236.24	6235.71	318.65	40°10'14.654"N	104°42'42.353"W	0.00	
14917.00†	90.050	0.096	7124.75	6336.24	6335.71	318.82	40°10'15.642"N	104°42'42.351"W	0.00	
15017.00†	90.050	0.096	7124.66	6436.24	6435.71	318.99	40°10'16.630"N	104°42'42.349"W	0.00	
15117.00†	90.050	0.096	7124.58	6536.24	6535.71	319.15	40°10'17.618"N	104°42'42.347"W	0.00	
15217.00†	90.050	0.096	7124.49	6636.24	6635.71	319.32	40°10'18.606"N	104°42'42.345"W	0.00	
15317.00†	90.050	0.096	7124.40	6736.24	6735.71	319.49	40°10'19.595"N	104°42'42.342"W	0.00	
15417.00†	90.050	0.096	7124.32	6836.24	6835.71	319.66	40°10'20.583"N	104°42'42.340"W	0.00	
15517.00†	90.050	0.096	7124.23	6936.24	6935.71	319.82	40°10'21.571"N	104°42'42.338"W	0.00	
15617.00†	90.050	0.096	7124.14	7036.24	7035.71	319.99	40°10'22.559"N	104°42'42.336"W	0.00	
15717.00†	90.050	0.096	7124.05	7136.24	7135.71	320.16	40°10'23.547"N	104°42'42.334"W	0.00	
15817.00†	90.050	0.096	7123.97	7236.24	7235.71	320.33	40°10'24.536"N	104°42'42.331"W	0.00	
15917.00†	90.050	0.096	7123.88	7336.24	7335.71	320.50	40°10'25.524"N	104°42'42.329"W	0.00	
16017.00†	90.050	0.096	7123.79	7436.24	7435.71	320.66	40°10'26.512"N	104°42'42.327"W	0.00	
16117.00†	90.050	0.096	7123.71	7536.24	7535.71	320.83	40°10'27.500"N	104°42'42.325"W	0.00	
16217.00†	90.050	0.096	7123.62	7636.24	7635.71	321.00	40°10'28.488"N	104°42'42.323"W	0.00	
16317.00†	90.050	0.096	7123.53	7736.24	7735.71	321.17	40°10'29.477"N	104°42'42.321"W	0.00	
16417.00†	90.050	0.096	7123.45	7836.24	7835.71	321.33	40°10'30.465"N	104°42'42.318"W	0.00	
16517.00†	90.050	0.096	7123.36	7936.24	7935.71	321.50	40°10'31.453"N	104°42'42.316"W	0.00	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#15 THOMSEN 3N-31HZ (2405'FNL & 830'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 3N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 3N-31HZ PWB
Facility	SEC.07-T2N-R65W		

WELLPATH DATA (185 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
16617.00†	90.050	0.096	7123.27	8036.24	8035.71	321.67	40°10'32.441"N	104°42'42.314"W	0.00	
16717.00†	90.050	0.096	7123.19	8136.24	8135.71	321.84	40°10'33.429"N	104°42'42.312"W	0.00	
16817.00†	90.050	0.096	7123.10	8236.24	8235.71	322.00	40°10'34.418"N	104°42'42.310"W	0.00	
16917.00†	90.050	0.096	7123.01	8336.24	8335.71	322.17	40°10'35.406"N	104°42'42.307"W	0.00	
16930.62	90.050	0.096	7123.00 ¹	8349.86	8349.33	322.19	40°10'35.540"N	104°42'42.307"W	0.00	TOTAL DEPTH

HOLE & CASING SECTIONS -										
Ref Wellbore: THOMSEN 3N-31HZ PWB		Ref Wellpath: THOMSEN 3N-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	1300.00	1283.00	17.00	1300.00	0.00	0.00	0.00	0.00	
9.625in Casing Surface	17.00	1300.00	1283.00	17.00	1300.00	0.00	0.00	0.00	0.00	
8.75in Open Hole	1300.00	7724.67	6424.67	1300.00	7131.00	0.00	0.00	-856.61	306.76	
7in Casing Intermediate	17.00	7724.67	7707.67	17.00	7131.00	0.00	0.00	-856.61	306.76	
6.125in Open Hole	7724.67	16930.62	9205.95	7131.00	7123.00	-856.61	306.76	8349.33	322.19	
4.5in Casing Production	17.00	16930.62	16913.62	17.00	7123.00	0.00	0.00	8349.33	322.19	

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		0.00	0.40	-60.10	3219947.79	1299783.36	40°09'13.036"N	104°42'47.232"W	polygon
SEC.31-T3N-R65W SECTION LINES		0.00	0.40	-60.10	3219947.79	1299783.36	40°09'13.036"N	104°42'47.232"W	polygon
SEC.07-T2N-R65W SECTION LINES		35.00	2010.75	3419.83	3223409.59	1301824.42	40°09'32.900"N	104°42'02.412"W	polygon
1) THOMSEN 3N-31HZ BHL ON PLAT REV-1 (670'FSL & 1140'FWL, SEC.31)	16930.62	7123.00	8349.33	322.19	3220255.95	1308134.98	40°10'35.540"N	104°42'42.307"W	point
THOMSEN 3N-31HZ LANDBOX		7123.00	0.00	0.00	3220007.89	1299783.49	40°09'13.032"N	104°42'46.458"W	polygon

SURVEY PROGRAM - Ref Wellbore: THOMSEN 3N-31HZ PWB					Ref Wellpath: THOMSEN 3N-31HZ (PERMIT REV-1) PWP	
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore		
17.00	16930.62	NaviTrak (MAGCORR,IFR)		THOMSEN 3N-31HZ PWB		

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#15 THOMSEN 3N-31HZ (2405'FNL & 830'FWL, SEC.07)
Area	COLORADO	Well	THOMSEN 3N-31HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 3N-31HZ PWB
Facility	SEC.07-T2N-R65W		

WELLPATH COMMENTS					
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment	
949.00	0.000	167.930	949.00	BASE FOX HILLS	
1300.00	0.000	167.930	1300.00	SURFACE CSG SETTING DEPTH	
4163.94	23.000	167.930	4005.00	PARKMAN	
4615.86	23.000	167.930	4421.00	SUSSEX	
7338.46	51.429	0.096	7006.00	SHARON SPRINGS	
7457.39	63.321	0.096	7070.00	NIOBRARA	
7606.71	78.253	0.096	7119.00	NIOBRARA B	

DESIGN COMMENTS					
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment	
17.00	0.000	167.930	17.00	TIE ON	
1400.00	0.000	167.930	1400.00	BEGIN NUDGE	
2550.00	23.000	167.930	2519.36	END NUDGE	
5127.00	23.000	167.930	4891.50	BEGIN DROP	
6277.00	0.000	0.096	6010.86	END DROP	
6824.18	0.000	0.096	6558.04	KOP, BUILD @ 10°/100'	
7724.67	90.050	0.096	7131.00	LANDING POINT	
16930.62	90.050	0.096	7123.00	TOTAL DEPTH	