

KERR-MCGEE OIL & GAS ONSHORE LP

Location: COLORADO Slot: SLOT#06 THOMSEN 4N-18HZ (472'FNL & 875'FEL, SEC.07)
 Field: WELD COUNTY (KERR MCGEE) Well: THOMSEN 4N-18HZ
 Facility: SEC.07-T2N-R65W Wellbore: THOMSEN 4N-18HZ PWB

Plot reference wellpath is THOMSEN 4N-18HZ (PERMIT REV-1) PWP

True vertical depths are referenced to PERMIT (17KB) (RKB)	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (601), US feet
Measured depths are referenced to PERMIT (17KB) (RKB)	North Reference: True north
PERMIT (17KB) (RKB) to Mean Sea Level: 4929 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: SLOT#06 THOMSEN 4N-18HZ (472'FNL & 875'FEL, SEC.07)): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: robale01 on 06/Aug/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#06 THOMSEN 4N-18HZ (472'FNL & 875'FEL, SEC.07)	4304.46	3846.63	3223529.430	1301828.439	40°09'32.929"N	104°42'00.868"W
PERMIT (17KB) (RKB) to Mud line (At Slot: SLOT#06 THOMSEN 4N-18HZ (472'FNL & 875'FEL, SEC.07))	4929ft					
Mean Sea Level to Mud line (At Slot: SLOT#06 THOMSEN 4N-18HZ (472'FNL & 875'FEL, SEC.07))	0ft					
PERMIT (17KB) (RKB) to Mean Sea Level	4929ft					

Survey Program

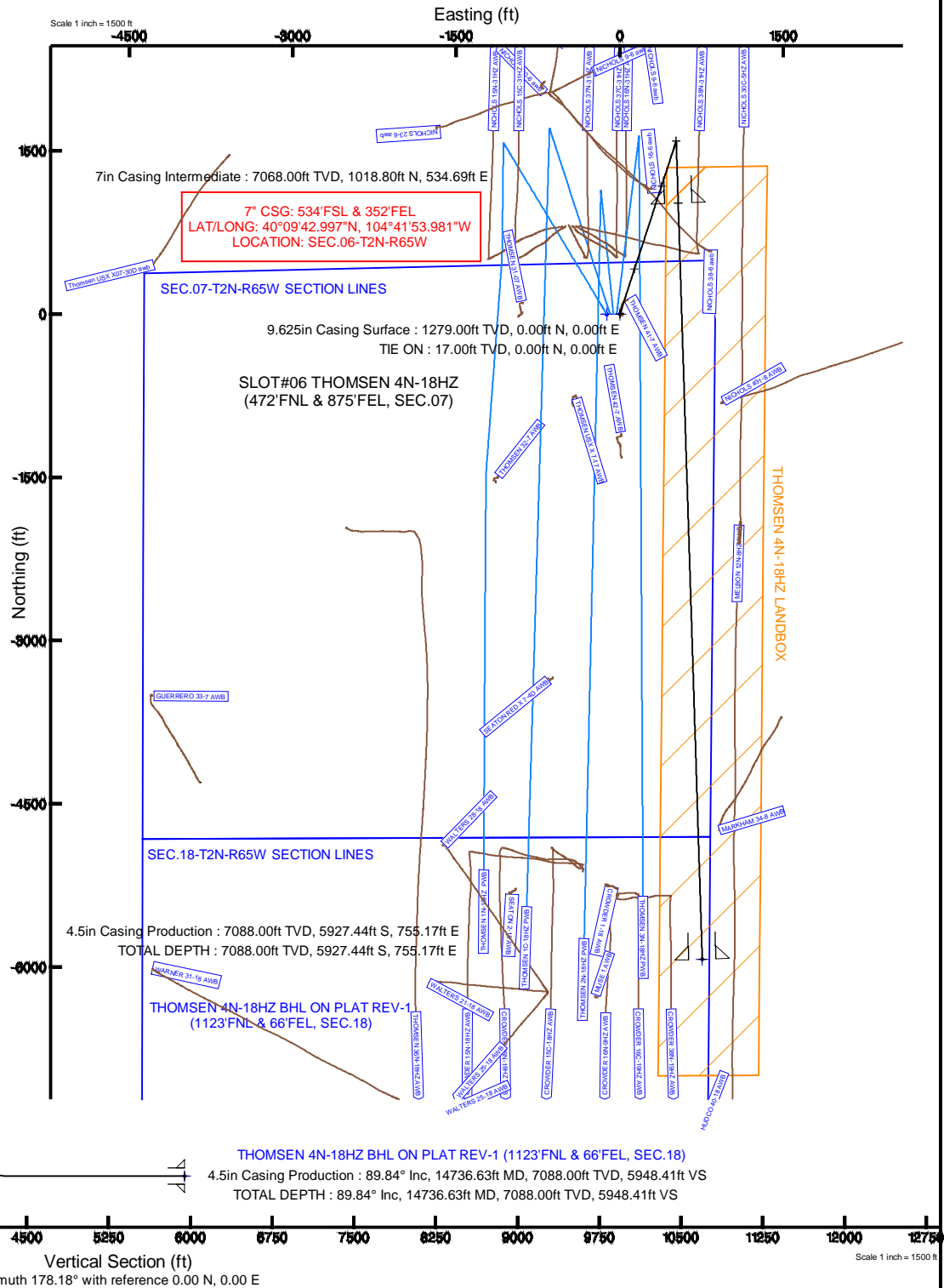
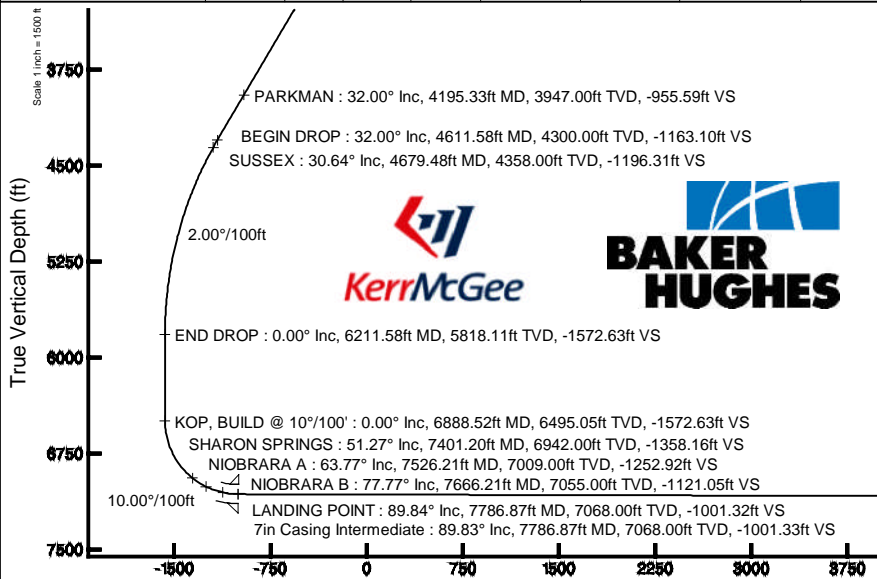
Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
17.00	14736.63	NaviTrak	NaviTrak (MAGCORR,IFR)		THOMSEN 4N-18HZ PWB

Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SEC.07-T2N-R65W SECTION LINES		0.00	-2.93	-119.88	3223409.59	1301824.42	40°09'32.900"N	104°42'02.412"W
SEC.18-T2N-R65W SECTION LINES		0.00	-2.93	-119.88	3223409.59	1301824.42	40°09'32.900"N	104°42'02.412"W
THOMSEN 4N-18HZ BHL ON PLAT REV-1 (1123'FNL & 66'FEL, SEC.18)	14736.63	7088.00	-5927.44	755.17	3224338.00	1299908.31	40°08'34.354"N	104°41'51.144"W
THOMSEN 4N-18HZ LANDBOX		7088.00	0.00	0.00	3223529.43	1301828.44	40°09'32.929"N	104°42'00.868"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	18.000	17.00	0.00	0.00	0.00	0.00
BEGIN NUDDGE	1500.00	0.000	18.000	1500.00	0.00	0.00	0.00	0.00
END NUDDGE	3100.00	32.000	18.000	3018.11	414.00	134.52	2.00	-409.53
BEGIN DROP	4611.58	32.000	18.000	4300.00	1175.82	382.05	0.00	-1163.10
END DROP	6211.58	0.000	178.182	5818.11	1589.82	516.56	2.00	-1572.63
KOP, BUILD @ 10°/100'	6888.52	0.000	178.182	6495.05	1589.82	516.56	0.00	-1572.63
LANDING POINT	7786.87	89.835	178.182	7068.00	1018.80	534.69	10.00	-1001.32
TOTAL DEPTH	14736.63	89.835	178.182	7088.00	-5927.44	755.17	0.00	5948.41



Vertical Section (ft)
 Azimuth 178.18° with reference 0.00 N, 0.00 E

Scale 1 inch = 1500 ft

REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#06 THOMSEN 4N-18HZ (472'FNL & 875'FEL, SEC.07)
Area	COLORADO	Well	THOMSEN 4N-18HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 4N-18HZ 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	06/Aug/2014 at 07:53
Convergence at slot	n/a	Database/Source file	WellArchitectDB/THOMSEN_4N-18HZ_PWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	4304.46	3846.63	3223529.43	1301828.44	40°09'32.929"N	104°42'00.868"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	4929.00ft
Horizontal Reference Pt	Slot	PERMIT (17'KB) (RKB) to Mean Sea Level	4929.00ft
Vertical Reference Pt	PERMIT (17'KB) (RKB)	PERMIT (17'KB) (RKB) to Mud Line at Slot (SLOT#06 THOMSEN 4N-18HZ (472'FNL & 875'FEL, SEC.07))	4929.00ft
MD Reference Pt	PERMIT (17'KB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	178.18°

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#06 THOMSEN 4N-18HZ (472'FNL & 875'FEL, SEC.07)
Area	COLORADO	Well	THOMSEN 4N-18HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 4N-18HZ PWB
Facility	SEC.07-T2N-R65W		

WELLPATH DATA (163 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	18.000	0.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	
17.00	0.000	18.000	17.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	TIE ON
117.00†	0.000	18.000	117.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	
217.00†	0.000	18.000	217.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	
317.00†	0.000	18.000	317.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	
417.00†	0.000	18.000	417.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	
517.00†	0.000	18.000	517.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	
617.00†	0.000	18.000	617.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	
717.00†	0.000	18.000	717.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	
793.00†	0.000	18.000	793.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	BASE FOX HILLS
817.00†	0.000	18.000	817.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	
917.00†	0.000	18.000	917.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	
1017.00†	0.000	18.000	1017.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	
1117.00†	0.000	18.000	1117.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	
1217.00†	0.000	18.000	1217.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	
1279.00†	0.000	18.000	1279.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	SURFACE CASING SETTING DEPTH
1317.00†	0.000	18.000	1317.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	
1417.00†	0.000	18.000	1417.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	
1500.00	0.000	18.000	1500.00	0.00	0.00	0.00	40°09'32.929"N	104°42'00.868"W	0.00	BEGIN NUDGE
1517.00†	0.340	18.000	1517.00	-0.05	0.05	0.02	40°09'32.929"N	104°42'00.868"W	2.00	
1617.00†	2.340	18.000	1616.97	-2.25	2.27	0.74	40°09'32.951"N	104°42'00.858"W	2.00	
1717.00†	4.340	18.000	1716.79	-7.73	7.81	2.54	40°09'33.006"N	104°42'00.835"W	2.00	
1817.00†	6.340	18.000	1816.35	-16.48	16.66	5.41	40°09'33.094"N	104°42'00.798"W	2.00	
1917.00†	8.340	18.000	1915.53	-28.50	28.81	9.36	40°09'33.214"N	104°42'00.747"W	2.00	
2017.00†	10.340	18.000	2014.20	-43.77	44.25	14.38	40°09'33.366"N	104°42'00.683"W	2.00	
2117.00†	12.340	18.000	2112.24	-62.27	62.95	20.45	40°09'33.551"N	104°42'00.605"W	2.00	
2217.00†	14.340	18.000	2209.54	-83.97	84.89	27.58	40°09'33.768"N	104°42'00.513"W	2.00	
2317.00†	16.340	18.000	2305.97	-108.86	110.05	35.76	40°09'34.016"N	104°42'00.407"W	2.00	
2417.00†	18.340	18.000	2401.42	-136.90	138.39	44.97	40°09'34.297"N	104°42'00.289"W	2.00	
2517.00†	20.340	18.000	2495.77	-168.05	169.89	55.20	40°09'34.608"N	104°42'00.157"W	2.00	
2617.00†	22.340	18.000	2588.91	-202.28	204.49	66.44	40°09'34.950"N	104°42'00.012"W	2.00	
2717.00†	24.340	18.000	2680.72	-239.55	242.17	78.69	40°09'35.322"N	104°41'59.855"W	2.00	
2817.00†	26.340	18.000	2771.10	-279.82	282.87	91.91	40°09'35.724"N	104°41'59.684"W	2.00	
2917.00†	28.340	18.000	2859.92	-323.02	326.55	106.10	40°09'36.156"N	104°41'59.501"W	2.00	
3017.00†	30.340	18.000	2947.09	-369.12	373.15	121.24	40°09'36.616"N	104°41'59.306"W	2.00	
3100.00	32.000	18.000	3018.11	-409.53	414.00	134.52	40°09'37.020"N	104°41'59.135"W	2.00	END NUDGE
3117.00†	32.000	18.000	3032.52	-418.00	422.57	137.30	40°09'37.105"N	104°41'59.100"W	0.00	
3217.00†	32.000	18.000	3117.33	-467.86	472.97	153.68	40°09'37.603"N	104°41'58.889"W	0.00	
3317.00†	32.000	18.000	3202.13	-517.71	523.37	170.05	40°09'38.101"N	104°41'58.678"W	0.00	
3417.00†	32.000	18.000	3286.94	-567.56	573.77	186.43	40°09'38.599"N	104°41'58.467"W	0.00	
3517.00†	32.000	18.000	3371.74	-617.42	624.17	202.80	40°09'39.097"N	104°41'58.256"W	0.00	
3617.00†	32.000	18.000	3456.55	-667.27	674.56	219.18	40°09'39.595"N	104°41'58.045"W	0.00	
3717.00†	32.000	18.000	3541.35	-717.12	724.96	235.55	40°09'40.093"N	104°41'57.834"W	0.00	
3817.00†	32.000	18.000	3626.16	-766.98	775.36	251.93	40°09'40.591"N	104°41'57.623"W	0.00	
3917.00†	32.000	18.000	3710.96	-816.83	825.76	268.31	40°09'41.089"N	104°41'57.412"W	0.00	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#06 THOMSEN 4N-18HZ (472'FNL & 875'FEL, SEC.07)
Area	COLORADO	Well	THOMSEN 4N-18HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 4N-18HZ PWB
Facility	SEC.07-T2N-R65W		

WELLPATH DATA (163 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4017.00†	32.000	18.000	3795.77	-866.68	876.16	284.68	40°09'41.587"N	104°41'57.201"W	0.00	
4117.00†	32.000	18.000	3880.57	-916.54	926.56	301.06	40°09'42.085"N	104°41'56.990"W	0.00	
4195.33†	32.000	18.000	3947.00	-955.59	966.03	313.88	40°09'42.475"N	104°41'56.825"W	0.00	PARKMAN
4217.00†	32.000	18.000	3965.38	-966.39	976.95	317.43	40°09'42.583"N	104°41'56.779"W	0.00	
4317.00†	32.000	18.000	4050.18	-1016.24	1027.35	333.81	40°09'43.081"N	104°41'56.569"W	0.00	
4417.00†	32.000	18.000	4134.99	-1066.10	1077.75	350.18	40°09'43.579"N	104°41'56.358"W	0.00	
4517.00†	32.000	18.000	4219.79	-1115.95	1128.15	366.56	40°09'44.077"N	104°41'56.147"W	0.00	
4611.58	32.000	18.000	4300.00	-1163.10	1175.82	382.05	40°09'44.548"N	104°41'55.947"W	0.00	BEGIN DROP
4617.00†	31.892	18.000	4304.60	-1165.80	1178.54	382.93	40°09'44.575"N	104°41'55.936"W	2.00	
4679.48†	30.642	18.000	4358.00	-1196.31	1209.38	392.95	40°09'44.880"N	104°41'55.807"W	2.00	SUSSEX
4717.00†	29.892	18.000	4390.41	-1214.10	1227.37	398.80	40°09'45.058"N	104°41'55.731"W	2.00	
4817.00†	27.892	18.000	4477.96	-1259.55	1273.32	413.73	40°09'45.512"N	104°41'55.539"W	2.00	
4917.00†	25.892	18.000	4567.14	-1302.10	1316.33	427.70	40°09'45.937"N	104°41'55.359"W	2.00	
5017.00†	23.892	18.000	4657.85	-1341.70	1356.36	440.71	40°09'46.333"N	104°41'55.192"W	2.00	
5117.00†	21.892	18.000	4749.96	-1378.29	1393.35	452.73	40°09'46.698"N	104°41'55.037"W	2.00	
5217.00†	19.892	18.000	4843.39	-1411.84	1427.27	463.75	40°09'47.033"N	104°41'54.895"W	2.00	
5317.00†	17.892	18.000	4937.99	-1442.29	1458.06	473.75	40°09'47.338"N	104°41'54.766"W	2.00	
5417.00†	15.892	18.000	5033.67	-1469.63	1485.69	482.73	40°09'47.611"N	104°41'54.650"W	2.00	
5517.00†	13.892	18.000	5130.31	-1493.80	1510.13	490.67	40°09'47.852"N	104°41'54.548"W	2.00	
5617.00†	11.892	18.000	5227.79	-1514.79	1531.35	497.57	40°09'48.062"N	104°41'54.459"W	2.00	
5717.00†	9.892	18.000	5325.98	-1532.57	1549.32	503.40	40°09'48.239"N	104°41'54.384"W	2.00	
5817.00†	7.892	18.000	5424.77	-1547.11	1564.02	508.18	40°09'48.385"N	104°41'54.322"W	2.00	
5917.00†	5.892	18.000	5524.05	-1558.40	1575.43	511.89	40°09'48.497"N	104°41'54.275"W	2.00	
6017.00†	3.892	18.000	5623.68	-1566.42	1583.54	514.52	40°09'48.578"N	104°41'54.241"W	2.00	
6117.00†	1.892	18.000	5723.54	-1571.16	1588.34	516.08	40°09'48.625"N	104°41'54.221"W	2.00	
6211.58	0.000	178.182	5818.11	-1572.63	1589.82	516.56	40°09'48.640"N	104°41'54.214"W	2.00	END DROP
6217.00†	0.000	178.182	5823.53	-1572.63	1589.82	516.56	40°09'48.640"N	104°41'54.214"W	0.00	
6317.00†	0.000	178.182	5923.53	-1572.63	1589.82	516.56	40°09'48.640"N	104°41'54.214"W	0.00	
6417.00†	0.000	178.182	6023.53	-1572.63	1589.82	516.56	40°09'48.640"N	104°41'54.214"W	0.00	
6517.00†	0.000	178.182	6123.53	-1572.63	1589.82	516.56	40°09'48.640"N	104°41'54.214"W	0.00	
6617.00†	0.000	178.182	6223.53	-1572.63	1589.82	516.56	40°09'48.640"N	104°41'54.214"W	0.00	
6717.00†	0.000	178.182	6323.53	-1572.63	1589.82	516.56	40°09'48.640"N	104°41'54.214"W	0.00	
6817.00†	0.000	178.182	6423.53	-1572.63	1589.82	516.56	40°09'48.640"N	104°41'54.214"W	0.00	
6888.52	0.000	178.182	6495.05	-1572.63	1589.82	516.56	40°09'48.640"N	104°41'54.214"W	0.00	KOP, BUILD @ 10°/100'
6917.00†	2.848	178.182	6523.51	-1571.92	1589.11	516.59	40°09'48.633"N	104°41'54.214"W	10.00	
7017.00†	12.848	178.182	6622.45	-1558.29	1575.48	517.02	40°09'48.498"N	104°41'54.209"W	10.00	
7117.00†	22.848	178.182	6717.52	-1527.68	1544.89	517.99	40°09'48.196"N	104°41'54.196"W	10.00	
7217.00†	32.848	178.182	6805.83	-1481.02	1498.26	519.47	40°09'47.735"N	104°41'54.177"W	10.00	
7317.00†	42.848	178.182	6884.69	-1419.74	1437.01	521.41	40°09'47.130"N	104°41'54.152"W	10.00	
7401.20†	51.268	178.182	6942.00	-1358.16	1375.46	523.37	40°09'46.521"N	104°41'54.127"W	10.00	SHARON SPRINGS
7417.00†	52.848	178.182	6951.71	-1345.70	1363.00	523.76	40°09'46.398"N	104°41'54.122"W	10.00	
7517.00†	62.848	178.182	7004.86	-1261.15	1278.49	526.45	40°09'45.563"N	104°41'54.087"W	10.00	
7526.21†	63.769	178.182	7009.00	-1252.92	1270.27	526.71	40°09'45.482"N	104°41'54.084"W	10.00	NIOBRARA A
7617.00†	72.848	178.182	7042.52	-1168.64	1186.04	529.38	40°09'44.649"N	104°41'54.049"W	10.00	
7666.21†	77.769	178.182	7055.00	-1121.05	1138.47	530.89	40°09'44.179"N	104°41'54.030"W	10.00	NIOBRARA B

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#06 THOMSEN 4N-18HZ (472'FNL & 875'FEL, SEC.07)
Area	COLORADO	Well	THOMSEN 4N-18HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 4N-18HZ PWB
Facility	SEC.07-T2N-R65W		

WELLPATH DATA (163 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7717.00†	82.848	178.182	7063.55	-1071.01	1088.45	532.48	40°09'43.685"N	104°41'54.010"W	10.00	
7786.87	89.835	178.182	7068.00	-1001.32	1018.80	534.69	40°09'42.997"N	104°41'53.981"W	10.00	LANDING POINT
7817.00†	89.835	178.182	7068.09	-971.20	988.69	535.64	40°09'42.699"N	104°41'53.969"W	0.00	
7917.00†	89.835	178.182	7068.38	-871.20	888.74	538.82	40°09'41.711"N	104°41'53.928"W	0.00	
8017.00†	89.835	178.182	7068.66	-771.20	788.79	541.99	40°09'40.724"N	104°41'53.887"W	0.00	
8117.00†	89.835	178.182	7068.95	-671.20	688.84	545.16	40°09'39.736"N	104°41'53.846"W	0.00	
8217.00†	89.835	178.182	7069.24	-571.20	588.89	548.34	40°09'38.748"N	104°41'53.806"W	0.00	
8317.00†	89.835	178.182	7069.53	-471.20	488.94	551.51	40°09'37.761"N	104°41'53.765"W	0.00	
8417.00†	89.835	178.182	7069.82	-371.20	388.99	554.68	40°09'36.773"N	104°41'53.724"W	0.00	
8517.00†	89.835	178.182	7070.10	-271.20	289.04	557.85	40°09'35.785"N	104°41'53.683"W	0.00	
8617.00†	89.835	178.182	7070.39	-171.20	189.09	561.03	40°09'34.798"N	104°41'53.642"W	0.00	
8717.00†	89.835	178.182	7070.68	-71.20	89.14	564.20	40°09'33.810"N	104°41'53.601"W	0.00	
8817.00†	89.835	178.182	7070.97	28.80	-10.81	567.37	40°09'32.822"N	104°41'53.561"W	0.00	
8917.00†	89.835	178.182	7071.25	128.80	-110.76	570.54	40°09'31.834"N	104°41'53.520"W	0.00	
9017.00†	89.835	178.182	7071.54	228.80	-210.70	573.72	40°09'30.847"N	104°41'53.479"W	0.00	
9117.00†	89.835	178.182	7071.83	328.80	-310.65	576.89	40°09'29.859"N	104°41'53.438"W	0.00	
9217.00†	89.835	178.182	7072.12	428.80	-410.60	580.06	40°09'28.871"N	104°41'53.397"W	0.00	
9317.00†	89.835	178.182	7072.41	528.80	-510.55	583.23	40°09'27.884"N	104°41'53.356"W	0.00	
9417.00†	89.835	178.182	7072.69	628.80	-610.50	586.41	40°09'26.896"N	104°41'53.316"W	0.00	
9517.00†	89.835	178.182	7072.98	728.80	-710.45	589.58	40°09'25.908"N	104°41'53.275"W	0.00	
9617.00†	89.835	178.182	7073.27	828.80	-810.40	592.75	40°09'24.921"N	104°41'53.234"W	0.00	
9717.00†	89.835	178.182	7073.56	928.80	-910.35	595.92	40°09'23.933"N	104°41'53.193"W	0.00	
9817.00†	89.835	178.182	7073.84	1028.80	-1010.30	599.10	40°09'22.945"N	104°41'53.152"W	0.00	
9917.00†	89.835	178.182	7074.13	1128.80	-1110.25	602.27	40°09'21.957"N	104°41'53.111"W	0.00	
10017.00†	89.835	178.182	7074.42	1228.80	-1210.20	605.44	40°09'20.970"N	104°41'53.071"W	0.00	
10117.00†	89.835	178.182	7074.71	1328.80	-1310.15	608.61	40°09'19.982"N	104°41'53.030"W	0.00	
10217.00†	89.835	178.182	7074.99	1428.79	-1410.10	611.79	40°09'18.994"N	104°41'52.989"W	0.00	
10317.00†	89.835	178.182	7075.28	1528.79	-1510.05	614.96	40°09'18.007"N	104°41'52.948"W	0.00	
10417.00†	89.835	178.182	7075.57	1628.79	-1609.99	618.13	40°09'17.019"N	104°41'52.907"W	0.00	
10517.00†	89.835	178.182	7075.86	1728.79	-1709.94	621.30	40°09'16.031"N	104°41'52.866"W	0.00	
10617.00†	89.835	178.182	7076.15	1828.79	-1809.89	624.48	40°09'15.043"N	104°41'52.826"W	0.00	
10717.00†	89.835	178.182	7076.43	1928.79	-1909.84	627.65	40°09'14.056"N	104°41'52.785"W	0.00	
10817.00†	89.835	178.182	7076.72	2028.79	-2009.79	630.82	40°09'13.068"N	104°41'52.744"W	0.00	
10917.00†	89.835	178.182	7077.01	2128.79	-2109.74	633.99	40°09'12.080"N	104°41'52.703"W	0.00	
11017.00†	89.835	178.182	7077.30	2228.79	-2209.69	637.17	40°09'11.093"N	104°41'52.662"W	0.00	
11117.00†	89.835	178.182	7077.58	2328.79	-2309.64	640.34	40°09'10.105"N	104°41'52.621"W	0.00	
11217.00†	89.835	178.182	7077.87	2428.79	-2409.59	643.51	40°09'09.117"N	104°41'52.581"W	0.00	
11317.00†	89.835	178.182	7078.16	2528.79	-2509.54	646.68	40°09'08.130"N	104°41'52.540"W	0.00	
11417.00†	89.835	178.182	7078.45	2628.79	-2609.49	649.86	40°09'07.142"N	104°41'52.499"W	0.00	
11517.00†	89.835	178.182	7078.74	2728.79	-2709.44	653.03	40°09'06.154"N	104°41'52.458"W	0.00	
11617.00†	89.835	178.182	7079.02	2828.79	-2809.39	656.20	40°09'05.166"N	104°41'52.417"W	0.00	
11717.00†	89.835	178.182	7079.31	2928.79	-2909.33	659.37	40°09'04.179"N	104°41'52.377"W	0.00	
11817.00†	89.835	178.182	7079.60	3028.79	-3009.28	662.55	40°09'03.191"N	104°41'52.336"W	0.00	
11917.00†	89.835	178.182	7079.89	3128.79	-3109.23	665.72	40°09'02.203"N	104°41'52.295"W	0.00	
12017.00†	89.835	178.182	7080.17	3228.79	-3209.18	668.89	40°09'01.216"N	104°41'52.254"W	0.00	

REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#06 THOMSEN 4N-18HZ (472'FNL & 875'FEL, SEC.07)
Area	COLORADO	Well	THOMSEN 4N-18HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 4N-18HZ PWB
Facility	SEC.07-T2N-R65W		

WELLPATH DATA (163 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
12117.00†	89.835	178.182	7080.46	3328.79	-3309.13	672.06	40°09'00.228"N	104°41'52.213"W	0.00	
12217.00†	89.835	178.182	7080.75	3428.79	-3409.08	675.24	40°08'59.240"N	104°41'52.172"W	0.00	
12317.00†	89.835	178.182	7081.04	3528.79	-3509.03	678.41	40°08'58.252"N	104°41'52.132"W	0.00	
12417.00†	89.835	178.182	7081.33	3628.79	-3608.98	681.58	40°08'57.265"N	104°41'52.091"W	0.00	
12517.00†	89.835	178.182	7081.61	3728.79	-3708.93	684.75	40°08'56.277"N	104°41'52.050"W	0.00	
12617.00†	89.835	178.182	7081.90	3828.78	-3808.88	687.93	40°08'55.289"N	104°41'52.009"W	0.00	
12717.00†	89.835	178.182	7082.19	3928.78	-3908.83	691.10	40°08'54.302"N	104°41'51.968"W	0.00	
12817.00†	89.835	178.182	7082.48	4028.78	-4008.78	694.27	40°08'53.314"N	104°41'51.928"W	0.00	
12917.00†	89.835	178.182	7082.76	4128.78	-4108.73	697.44	40°08'52.326"N	104°41'51.887"W	0.00	
13017.00†	89.835	178.182	7083.05	4228.78	-4208.67	700.62	40°08'51.339"N	104°41'51.846"W	0.00	
13117.00†	89.835	178.182	7083.34	4328.78	-4308.62	703.79	40°08'50.351"N	104°41'51.805"W	0.00	
13217.00†	89.835	178.182	7083.63	4428.78	-4408.57	706.96	40°08'49.363"N	104°41'51.764"W	0.00	
13317.00†	89.835	178.182	7083.92	4528.78	-4508.52	710.14	40°08'48.375"N	104°41'51.723"W	0.00	
13417.00†	89.835	178.182	7084.20	4628.78	-4608.47	713.31	40°08'47.388"N	104°41'51.683"W	0.00	
13517.00†	89.835	178.182	7084.49	4728.78	-4708.42	716.48	40°08'46.400"N	104°41'51.642"W	0.00	
13617.00†	89.835	178.182	7084.78	4828.78	-4808.37	719.65	40°08'45.412"N	104°41'51.601"W	0.00	
13717.00†	89.835	178.182	7085.07	4928.78	-4908.32	722.83	40°08'44.425"N	104°41'51.560"W	0.00	
13817.00†	89.835	178.182	7085.35	5028.78	-5008.27	726.00	40°08'43.437"N	104°41'51.519"W	0.00	
13917.00†	89.835	178.182	7085.64	5128.78	-5108.22	729.17	40°08'42.449"N	104°41'51.479"W	0.00	
14017.00†	89.835	178.182	7085.93	5228.78	-5208.17	732.34	40°08'41.461"N	104°41'51.438"W	0.00	
14117.00†	89.835	178.182	7086.22	5328.78	-5308.12	735.52	40°08'40.474"N	104°41'51.397"W	0.00	
14217.00†	89.835	178.182	7086.50	5428.78	-5408.07	738.69	40°08'39.486"N	104°41'51.356"W	0.00	
14317.00†	89.835	178.182	7086.79	5528.78	-5508.02	741.86	40°08'38.498"N	104°41'51.315"W	0.00	
14417.00†	89.835	178.182	7087.08	5628.78	-5607.96	745.03	40°08'37.511"N	104°41'51.274"W	0.00	
14517.00†	89.835	178.182	7087.37	5728.78	-5707.91	748.21	40°08'36.523"N	104°41'51.234"W	0.00	
14617.00†	89.835	178.182	7087.66	5828.78	-5807.86	751.38	40°08'35.535"N	104°41'51.193"W	0.00	
14717.00†	89.835	178.182	7087.94	5928.78	-5907.81	754.55	40°08'34.548"N	104°41'51.152"W	0.00	
14736.63	89.835	178.182	7088.00 ¹	5948.41	-5927.44	755.17	40°08'34.354"N	104°41'51.144"W	0.00	TOTAL DEPTH

HOLE & CASING SECTIONS - Ref Wellbore: THOMSEN 4N-18HZ PWB Ref Wellpath: THOMSEN 4N-18HZ (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	1289.00	1272.00	17.00	1289.00	0.00	0.00	0.00	0.00
9.625in Casing Surface	17.00	1279.00	1262.00	17.00	1279.00	0.00	0.00	0.00	0.00
8.75in Open Hole	1289.00	7786.87	6497.87	1289.00	7068.00	0.00	0.00	1018.80	534.69
7in Casing Intermediate	17.00	7786.87	7769.87	17.00	7068.00	0.00	0.00	1018.80	534.69
6.125in Open Hole	7786.87	14736.63	6949.76	7068.00	7088.00	1018.80	534.69	-5927.44	755.17
4.5in Casing Production	17.00	14736.63	14719.63	17.00	7088.00	0.00	0.00	-5927.44	755.17

REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#06 THOMSEN 4N-18HZ (472'FNL & 875'FEL, SEC.07)
Area	COLORADO	Well	THOMSEN 4N-18HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 4N-18HZ 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.07-T2N-R65W SECTION LINES		0.00	-2.93	-119.88	3223409.59	1301824.42	40°09'32.900"N	104°42'02.412"W	polygon
SEC.18-T2N-R65W SECTION LINES		0.00	-2.93	-119.88	3223409.59	1301824.42	40°09'32.900"N	104°42'02.412"W	polygon
1) THOMSEN 4N-18HZ BHL ON PLAT REV-1 (1123'FNL & 66'FEL, SEC.18)	14736.63	7088.00	-5927.44	755.17	3224338.00	1295908.31	40°08'34.354"N	104°41'51.144"W	point
THOMSEN 4N-18HZ LANDBOX		7088.00	0.00	0.00	3223529.43	1301828.44	40°09'32.929"N	104°42'00.868"W	polygon

SURVEY PROGRAM - Ref Wellbore: THOMSEN 4N-18HZ PWB Ref Wellpath: THOMSEN 4N-18HZ (PERMIT REV-1) PWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
17.00	14736.63	NaviTrak (MAGCORR,IFR)		THOMSEN 4N-18HZ PWB

REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#06 THOMSEN 4N-18HZ (472'FNL & 875'FEL, SEC.07)
Area	COLORADO	Well	THOMSEN 4N-18HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	THOMSEN 4N-18HZ PWB
Facility	SEC.07-T2N-R65W		

WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
793.00	0.000	18.000	793.00	BASE FOX HILLS
1279.00	0.000	18.000	1279.00	SURFACE CASING SETTING DEPTH
4195.33	32.000	18.000	3947.00	PARKMAN
4679.48	30.642	18.000	4358.00	SUSSEX
7401.20	51.268	178.182	6942.00	SHARON SPRINGS
7526.21	63.769	178.182	7009.00	NIOBRARA A
7666.21	77.769	178.182	7055.00	NIOBRARA B

DESIGN COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
17.00	0.000	18.000	17.00	TIE ON
1500.00	0.000	18.000	1500.00	BEGIN NUDGE
3100.00	32.000	18.000	3018.11	END NUDGE
4611.58	32.000	18.000	4300.00	BEGIN DROP
6211.58	0.000	178.182	5818.11	END DROP
6888.52	0.000	178.182	6495.05	KOP, BUILD @ 10°/100'
7786.87	89.835	178.182	7068.00	LANDING POINT
14736.63	89.835	178.182	7088.00	TOTAL DEPTH