

KERR-MCGEE OIL & GAS ONSHORE LP



Location: COLORADO Slot: SLOTH43 GREENLEAF 16N-15HZ (261°FNL & 2240°FEL, SEC.15) Scale 1 inch = 1500 ft
 Field: WELD COUNTY (KERR MCGEE) Well: GREENLEAF 16N-15HZ
 Facility: SEC.15-T2N-R65W Wellbore: GREENLEAF 16N-15HZ PWB

Plot reference wellpath is GREENLEAF 16N-15HZX (REV-H.0.1) PWP
 True vertical depths are referenced to XTREME 23 (16KB) (RKB) Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
 Measured depths are referenced to XTREME 23 (16KB) (RKB) North Reference: True north
 XTREME 23 (16KB) (RKB) to Mean Sea Level: 4884 feet Scale: True distance
 Mean Sea Level to Mud line (At Slot: SLOTH43 GREENLEAF 16N-15HZ (261°FNL & 2240°FEL, SEC.15)): 0 feet Depths are in feet
 Coordinates are in feet referenced to Slot Created by: precain on 12/31/2014

Location Information

Facility Name		Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
SEC.15-T2N-R65W		323884.464	1295914.535	40°08'33.072"N	104°38'43.836"W	
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SLOTH43 GREENLEAF 16N-15HZ (261°FNL & 2240°FEL, SEC.15)	991.30	-850.74	3238024.244	1296897.553	40°08'42.868"N	104°38'54.791"W
XTREME 23 (16KB) (RKB) to Mud line (At Slot: SLOTH43 GREENLEAF 16N-15HZ (261°FNL & 2240°FEL, SEC.15))						4884ft
Mean Sea Level to Mud line (At Slot: SLOTH43 GREENLEAF 16N-15HZ (261°FNL & 2240°FEL, SEC.15))						0ft
XTREME 23 (16KB) (RKB) to Mean Sea Level						4884ft

Survey Program

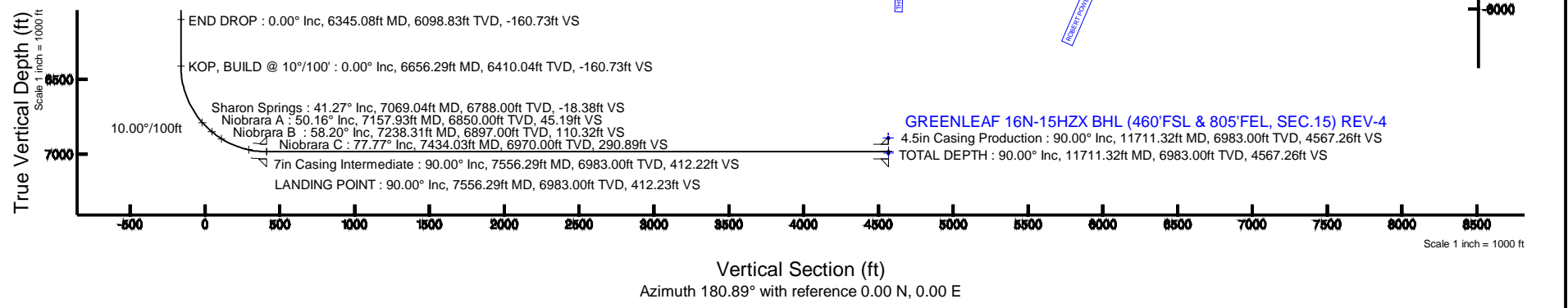
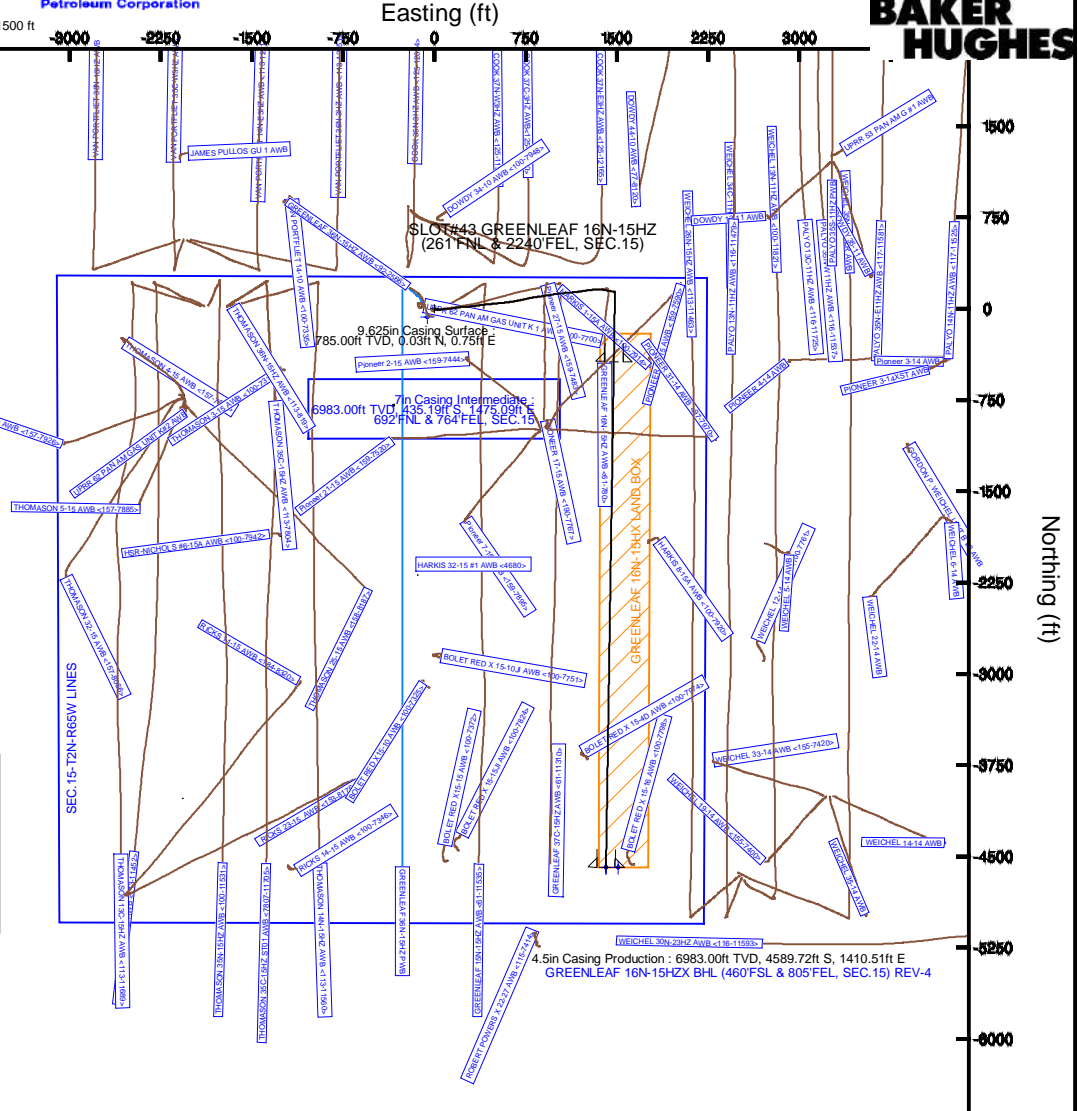
Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
16.00	780.00	ISWCWSA MWD, Rev. 2	ISWCWSA MWD, Rev. 2 (Standard)		GREENLEAF 16N-15HZ AWB <61-780>
780.00	5635.00	NavitTrak	NavitTrak (MAGCORR, IFR)		GREENLEAF 16N-15HZ AWB <61-780>
5635.00	5935.00	Drift Indicator	Drift Indicator (Standard)		GREENLEAF 16N-15HZR PWB
5935.00	11711.32	NavitTrak	NavitTrak (MAGCORR, IFR)		GREENLEAF 16N-15HZR PWB

Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
TIE-INTO BHI MWD+IFR SURVEYS	5635.00	10.700	87.800	5402.04	158.72	1359.88	0.00	-179.83
BUILD & TURN @ 12°/100'	5643.00	11.399	91.237	5409.89	158.73	1361.41	12.00	-179.86
HOLD @ 45° TFACE	5663.00	11.399	91.237	5429.50	158.65	1365.36	0.00	-179.84
BUILD @ TURN @ 10°/100'	5693.00	13.683	100.237	5458.79	157.95	1371.82	10.00	-179.24
BEGIN DROP	6003.00	13.683	100.237	5759.99	144.92	1443.98	0.00	-167.33
END DROP	6345.08	0.000	180.890	6098.83	137.70	1483.99	4.00	-160.73
KOP_BUILD @ 10°/100'	6656.29	0.000	180.890	6410.04	137.70	1483.99	0.00	-160.73
LANDING POINT	7556.29	90.000	180.890	6983.00	-435.19	1475.09	10.00	412.23
TOTAL DEPTH	11711.32	90.000	180.891	6983.00	-4589.72	1410.51	0.00	4567.26

Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
GREENLEAF 16N-15HZ LAND BOX	16.00		-0.04	0.02	3238024.26	1296897.51	40°08'42.868"N	104°38'54.791"W
SEC.15-T2N-R65W LINES	16.00		-68.53	-58.69	3237966.21	1296828.47	40°08'42.191"N	104°38'55.547"W
GREENLEAF 16N-15HZ BHL (460°FSL & 805°FEL, SEC.15) REV-2	6893.00	-4589.72	1410.51	3239478.70	1292321.79	40°07'57.512"N	104°38'36.631"W	
GREENLEAF 16N-15HZ BHL ON PLAT (460°FSL & 705°FEL, SEC.15) REV-1	6893.00	-4589.72	1510.51	3239578.69	1292322.75	40°07'57.512"N	104°38'36.344"W	
GREENLEAF 16N-15HZ BHL (460°FSL & 805°FEL, SEC.15) REV-4	11711.32	6983.00	-4589.72	1410.51	3239478.70	1292321.79	40°07'57.512"N	104°38'36.631"W
GREENLEAF 16N-15HZ BHL (460°FSL & 805°FEL, SEC.15) REV-3	6994.00	-4589.72	1410.51	3239478.70	1292321.79	40°07'57.512"N	104°38'36.631"W	



REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#43 GREENLEAF 16N-15HZ (261'FNL & 2240'FEL, SEC.15)
Area	COLORADO	Well	GREENLEAF 16N-15HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	GREENLEAF 16N-15HZX PWB
Facility	SEC.15-T2N-R65W	Sidetrack from	GREENLEAF 16N-15HZ AWB <61-780> at 6155.00 MD

REPORT SETUP INFORMATION

Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 4.0.0
North Reference	True	User	Precain
Scale	0.999959	Report Generated	12/31/2014 at 10:28:27 AM
Convergence at slot	n/a	Database/Source file	WellArchitectDB/GREENLEAF_16N-15HZX_PWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	991.30	-850.74	3238024.24	1296897.55	40°08'42.868"N	104°38'54.791"W
Facility Reference Pt			3238884.46	1295914.54	40°08'33.072"N	104°38'43.836"W
Field Reference Pt			3197771.84	1268891.29	40°04'09.600"N	104°47'36.000"W

WELLPATH DATUM

Calculation method	Minimum curvature	XTREME 23 (16'KB) (RKB) to Facility Vertical Datum	4884.00ft
Horizontal Reference Pt	Slot	XTREME 23 (16'KB) (RKB) to Mean Sea Level	4884.00ft
Vertical Reference Pt	XTREME 23 (16'KB) (RKB)	XTREME 23 (16'KB) (RKB) to Mud Line at Slot (SLOT#43 GREENLEAF 16N-15HZ (261'FNL & 2240'FEL, SEC.15))	4884.00ft
MD Reference Pt	XTREME 23 (16'KB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	180.89°

REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#43 GREENLEAF 16N-15HZ (261'FNL & 2240'FEL, SEC.15)
Area	COLORADO	Well	GREENLEAF 16N-15HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	GREENLEAF 16N-15HZX PWB
Facility	SEC.15-T2N-R65W	Sidetrack from	GREENLEAF 16N-15HZ AWB <61-780> at 6155.00 MD

WELLPATH DATA (126 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	81.400	0.00	0.00	0.00	0.00	40°08'42.868"N	104°38'54.791"W	0.00	
16.00	0.000	81.400	16.00	0.00	0.00	0.00	40°08'42.868"N	104°38'54.791"W	0.00	
61.00	0.300	81.400	61.00	-0.02	0.02	0.12	40°08'42.868"N	104°38'54.790"W	0.67	
151.00	0.200	54.000	151.00	-0.15	0.15	0.48	40°08'42.869"N	104°38'54.785"W	0.17	
230.00	0.200	56.100	230.00	-0.31	0.30	0.70	40°08'42.871"N	104°38'54.782"W	0.01	
330.00	0.100	172.000	330.00	-0.33	0.31	0.86	40°08'42.871"N	104°38'54.780"W	0.26	
410.00	0.100	110.300	410.00	-0.24	0.22	0.93	40°08'42.870"N	104°38'54.779"W	0.13	
490.00	0.200	155.800	490.00	-0.09	0.07	1.06	40°08'42.869"N	104°38'54.777"W	0.19	
570.00	0.100	285.600	570.00	0.02	-0.04	1.05	40°08'42.868"N	104°38'54.778"W	0.34	
650.00	0.300	321.800	650.00	-0.16	0.14	0.85	40°08'42.869"N	104°38'54.780"W	0.28	
699.00†	0.068	243.168	699.00	-0.24	0.23	0.75	40°08'42.870"N	104°38'54.781"W	0.60	Fox Hills Base
730.00	0.200	174.700	730.00	-0.18	0.17	0.73	40°08'42.870"N	104°38'54.782"W	0.60	
780.00	0.100	166.000	780.00	-0.05	0.04	0.75	40°08'42.868"N	104°38'54.781"W	0.20	
898.00	0.000	284.300	898.00	0.05	-0.06	0.78	40°08'42.867"N	104°38'54.781"W	0.08	
991.00	0.200	175.400	991.00	0.21	-0.22	0.79	40°08'42.866"N	104°38'54.781"W	0.22	
1085.00	1.300	115.300	1084.99	0.81	-0.84	1.77	40°08'42.860"N	104°38'54.768"W	1.29	
1179.00	2.300	114.000	1178.94	1.99	-2.06	4.46	40°08'42.848"N	104°38'54.734"W	1.06	
1273.00	5.000	106.800	1272.74	3.86	-4.02	10.10	40°08'42.828"N	104°38'54.661"W	2.91	
1367.00	6.800	104.900	1366.24	6.33	-6.63	19.40	40°08'42.802"N	104°38'54.541"W	1.93	
1460.00	7.200	97.800	1458.55	8.36	-8.84	30.50	40°08'42.781"N	104°38'54.398"W	1.02	
1555.00	8.200	82.300	1552.70	8.07	-8.74	43.11	40°08'42.782"N	104°38'54.236"W	2.42	
1648.00	9.600	80.600	1644.58	5.69	-6.58	57.33	40°08'42.803"N	104°38'54.053"W	1.53	
1740.00	10.800	78.900	1735.12	2.53	-3.67	73.36	40°08'42.832"N	104°38'53.846"W	1.34	
1832.00	12.200	85.300	1825.28	-0.21	-1.21	91.51	40°08'42.856"N	104°38'53.613"W	2.06	
1924.00	15.000	88.000	1914.69	-1.76	0.00	113.10	40°08'42.868"N	104°38'53.335"W	3.12	
2016.00	17.200	84.400	2003.08	-3.89	1.74	138.54	40°08'42.885"N	104°38'53.007"W	2.62	
2107.00	19.200	80.900	2089.52	-8.01	5.42	166.71	40°08'42.922"N	104°38'52.644"W	2.50	
2200.00	20.400	81.100	2177.02	-13.42	10.35	197.82	40°08'42.970"N	104°38'52.244"W	1.29	
2293.00	19.700	83.900	2264.39	-18.08	14.52	229.42	40°08'43.011"N	104°38'51.837"W	1.28	
2385.00	20.900	88.600	2350.68	-20.63	16.57	261.25	40°08'43.032"N	104°38'51.427"W	2.20	
2569.00	20.500	81.800	2522.83	-27.03	21.97	325.96	40°08'43.085"N	104°38'50.594"W	1.32	
2755.00	18.100	82.700	2698.36	-36.29	30.29	386.86	40°08'43.167"N	104°38'49.809"W	1.30	
2939.00	20.700	84.500	2871.90	-43.98	37.04	447.60	40°08'43.234"N	104°38'49.027"W	1.45	
3125.00	21.400	84.600	3045.49	-51.36	43.38	514.10	40°08'43.297"N	104°38'48.171"W	0.38	
3311.00	20.100	83.800	3219.42	-59.02	50.03	579.66	40°08'43.362"N	104°38'47.327"W	0.72	
3525.00	17.300	80.200	3422.11	-69.47	59.42	647.59	40°08'43.455"N	104°38'46.452"W	1.41	
3738.00	18.100	78.500	3625.02	-82.44	71.40	711.22	40°08'43.574"N	104°38'45.633"W	0.45	
3909.00	19.900	77.300	3786.70	-94.98	83.10	765.65	40°08'43.689"N	104°38'44.932"W	1.08	
3975.49†	21.009	79.054	3849.00	-100.08	87.85	788.39	40°08'43.736"N	104°38'44.639"W	1.91	Parkman
4081.00	22.800	81.500	3946.89	-107.30	94.46	827.18	40°08'43.801"N	104°38'44.139"W	1.91	
4252.00	24.300	82.200	4103.64	-118.02	104.14	894.81	40°08'43.897"N	104°38'43.269"W	0.89	
4424.00	20.800	79.500	4262.47	-129.40	114.51	959.92	40°08'43.999"N	104°38'42.430"W	2.12	
4599.00	22.500	83.700	4425.13	-139.73	123.85	1023.77	40°08'44.092"N	104°38'41.608"W	1.31	
4607.52†	22.514	83.796	4433.00	-140.14	124.20	1027.01	40°08'44.095"N	104°38'41.566"W	0.46	Sussex
4770.00	22.800	85.600	4582.95	-146.88	129.98	1089.32	40°08'44.152"N	104°38'40.764"W	0.46	

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#43 GREENLEAF 16N-15HZ (261'FNL & 2240'FEL, SEC.15)
Area	COLORADO	Well	GREENLEAF 16N-15HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	GREENLEAF 16N-15HZX PWB
Facility	SEC.15-T2N-R65W	Sidetrack from	GREENLEAF 16N-15HZ AWB <61-780> at 6155.00 MD

WELLPATH DATA (126 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4942.00	22.900	83.900	4741.45	-154.03	136.09	1155.83	40°08'44.213"N	104°38'39.907"W	0.39	
5029.00	20.900	82.400	4822.17	-158.38	139.94	1188.04	40°08'44.251"N	104°38'39.493"W	2.39	
5116.00	20.700	81.300	4903.50	-163.23	144.32	1218.63	40°08'44.294"N	104°38'39.099"W	0.50	
5203.00	18.700	79.900	4985.40	-168.45	149.09	1247.56	40°08'44.341"N	104°38'38.726"W	2.36	
5290.00	17.100	85.200	5068.19	-172.38	152.61	1274.04	40°08'44.376"N	104°38'38.385"W	2.62	
5379.00	16.600	84.400	5153.37	-175.11	154.94	1299.73	40°08'44.399"N	104°38'38.054"W	0.62	
5465.00	14.900	86.700	5236.14	-177.31	156.78	1323.00	40°08'44.417"N	104°38'37.755"W	2.11	
5550.00	12.300	86.800	5318.75	-178.76	157.91	1342.95	40°08'44.428"N	104°38'37.498"W	3.06	
5635.00	10.700	87.800	5402.04	-179.83	158.72	1359.88	40°08'44.436"N	104°38'37.280"W	0.00	TIE-INTO BHI MWD+IFR SURVEYS
5643.00	11.399	91.237	5409.89	-179.86	158.73	1361.41	40°08'44.436"N	104°38'37.260"W	12.00	BUILD & TURN @ 12°/100'
5663.00	11.399	91.237	5429.50	-179.84	158.65	1365.36	40°08'44.435"N	104°38'37.209"W	0.00	HOLD @ 45° TFACE
5693.00	13.683	100.237	5458.79	-179.24	157.95	1371.82	40°08'44.429"N	104°38'37.126"W	10.00	BUILD @ TURN @ 10°/100'
5735.00†	13.683	100.237	5499.59	-177.63	156.19	1381.59	40°08'44.411"N	104°38'37.000"W	0.00	
5835.00†	13.683	100.237	5596.75	-173.79	151.98	1404.87	40°08'44.370"N	104°38'36.700"W	0.00	
5935.00†	13.683	100.237	5693.92	-169.95	147.78	1428.15	40°08'44.328"N	104°38'36.401"W	0.00	
6003.00	13.683	100.237	5759.99	-167.33	144.92	1443.98	40°08'44.300"N	104°38'36.197"W	0.00	BEGIN DROP
6035.00†	12.403	100.237	5791.16	-166.16	143.64	1451.09	40°08'44.287"N	104°38'36.105"W	4.00	
6135.00†	8.403	100.237	5889.50	-163.23	140.43	1468.86	40°08'44.255"N	104°38'35.877"W	4.00	
6235.00†	4.403	100.237	5988.85	-161.42	138.45	1479.83	40°08'44.236"N	104°38'35.735"W	4.00	
6335.00†	0.403	100.237	6088.74	-160.74	137.70	1483.95	40°08'44.228"N	104°38'35.682"W	4.00	
6345.08	0.000	180.890	6098.83	-160.73	137.70	1483.99	40°08'44.228"N	104°38'35.682"W	4.00	END DROP
6435.00†	0.000	180.890	6188.74	-160.73	137.70	1483.99	40°08'44.228"N	104°38'35.682"W	0.00	
6535.00†	0.000	180.890	6288.74	-160.73	137.70	1483.99	40°08'44.228"N	104°38'35.682"W	0.00	
6635.00†	0.000	180.890	6388.74	-160.73	137.70	1483.99	40°08'44.228"N	104°38'35.682"W	0.00	
6656.29	0.000	180.890	6410.04	-160.73	137.70	1483.99	40°08'44.228"N	104°38'35.682"W	0.00	KOP, BUILD @ 10°/100'
6735.00†	7.871	180.890	6488.50	-155.33	132.30	1483.91	40°08'44.175"N	104°38'35.683"W	10.00	
6835.00†	17.871	180.890	6585.86	-133.09	110.06	1483.56	40°08'43.955"N	104°38'35.687"W	10.00	
6935.00†	27.871	180.890	6677.88	-94.27	71.24	1482.96	40°08'43.572"N	104°38'35.695"W	10.00	
7035.00†	37.871	180.890	6761.77	-40.07	17.05	1482.11	40°08'43.036"N	104°38'35.706"W	10.00	
7069.04†	41.275	180.890	6788.00	-18.38	-4.63	1481.78	40°08'42.822"N	104°38'35.710"W	10.00	Sharon Springs
7135.00†	47.871	180.890	6834.96	27.88	-50.89	1481.06	40°08'42.365"N	104°38'35.719"W	10.00	
7157.93†	50.164	180.890	6850.00	45.19	-68.20	1480.79	40°08'42.194"N	104°38'35.723"W	10.00	Niobrara A
7235.00†	57.871	180.890	6895.25	107.51	-130.51	1479.82	40°08'41.578"N	104°38'35.735"W	10.00	
7238.31†	58.202	180.890	6897.00	110.32	-133.32	1479.78	40°08'41.550"N	104°38'35.736"W	10.00	Niobrara B
7335.00†	67.871	180.890	6940.79	196.39	-219.38	1478.44	40°08'40.700"N	104°38'35.753"W	10.00	
7434.03†	77.773	180.890	6970.00	290.89	-313.87	1476.97	40°08'39.766"N	104°38'35.772"W	10.00	Niobrara C
7435.00†	77.871	180.890	6970.20	291.84	-314.82	1476.96	40°08'39.757"N	104°38'35.772"W	10.00	
7535.00†	87.871	180.890	6982.60	390.94	-413.91	1475.42	40°08'38.777"N	104°38'35.792"W	10.00	
7556.29	90.000	180.890	6983.00	412.23	-435.19	1475.09	40°08'38.567"N	104°38'35.797"W	10.00	LANDING POINT
7635.00†	90.000	180.890	6983.00	490.93	-513.89	1473.87	40°08'37.789"N	104°38'35.812"W	0.00	
7735.00†	90.000	180.890	6983.00	590.93	-613.88	1472.31	40°08'36.801"N	104°38'35.833"W	0.00	
7835.00†	90.000	180.890	6983.00	690.93	-713.86	1470.76	40°08'35.813"N	104°38'35.853"W	0.00	
7935.00†	90.000	180.890	6983.00	790.93	-813.85	1469.21	40°08'34.825"N	104°38'35.873"W	0.00	
8035.00†	90.000	180.890	6983.00	890.93	-913.84	1467.65	40°08'33.837"N	104°38'35.893"W	0.00	
8135.00†	90.000	180.890	6983.00	990.93	-1013.83	1466.10	40°08'32.849"N	104°38'35.913"W	0.00	

REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#43 GREENLEAF 16N-15HZ (261'FNL & 2240'FEL, SEC.15)
Area	COLORADO	Well	GREENLEAF 16N-15HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	GREENLEAF 16N-15HZX PWB
Facility	SEC.15-T2N-R65W	Sidetrack from	GREENLEAF 16N-15HZ AWB <61-780> at 6155.00 MD

WELLPATH DATA (126 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
8235.00†	90.000	180.890	6983.00	1090.93	-1113.82	1464.55	40°08'31.861"N	104°38'35.933"W	0.00	
8335.00†	90.000	180.890	6983.00	1190.93	-1213.80	1462.99	40°08'30.873"N	104°38'35.953"W	0.00	
8435.00†	90.000	180.890	6983.00	1290.93	-1313.79	1461.44	40°08'29.885"N	104°38'35.973"W	0.00	
8535.00†	90.000	180.890	6983.00	1390.93	-1413.78	1459.88	40°08'28.896"N	104°38'35.993"W	0.00	
8635.00†	90.000	180.890	6983.00	1490.93	-1513.77	1458.33	40°08'27.908"N	104°38'36.013"W	0.00	
8735.00†	90.000	180.890	6983.00	1590.93	-1613.76	1456.78	40°08'26.920"N	104°38'36.033"W	0.00	
8835.00†	90.000	180.890	6983.00	1690.93	-1713.74	1455.22	40°08'25.932"N	104°38'36.053"W	0.00	
8935.00†	90.000	180.890	6983.00	1790.93	-1813.73	1453.67	40°08'24.944"N	104°38'36.074"W	0.00	
9035.00†	90.000	180.890	6983.00	1890.93	-1913.72	1452.12	40°08'23.956"N	104°38'36.094"W	0.00	
9135.00†	90.000	180.890	6983.00	1990.93	-2013.71	1450.56	40°08'22.968"N	104°38'36.114"W	0.00	
9235.00†	90.000	180.890	6983.00	2090.93	-2113.70	1449.01	40°08'21.980"N	104°38'36.134"W	0.00	
9335.00†	90.000	180.890	6983.00	2190.93	-2213.68	1447.45	40°08'20.992"N	104°38'36.154"W	0.00	
9435.00†	90.000	180.890	6983.00	2290.93	-2313.67	1445.90	40°08'20.004"N	104°38'36.174"W	0.00	
9535.00†	90.000	180.891	6983.00	2390.93	-2413.66	1444.35	40°08'19.016"N	104°38'36.194"W	0.00	
9635.00†	90.000	180.891	6983.00	2490.93	-2513.65	1442.79	40°08'18.028"N	104°38'36.214"W	0.00	
9735.00†	90.000	180.891	6983.00	2590.93	-2613.63	1441.24	40°08'17.039"N	104°38'36.234"W	0.00	
9835.00†	90.000	180.891	6983.00	2690.93	-2713.62	1439.68	40°08'16.051"N	104°38'36.254"W	0.00	
9935.00†	90.000	180.891	6983.00	2790.93	-2813.61	1438.13	40°08'15.063"N	104°38'36.274"W	0.00	
10035.00†	90.000	180.891	6983.00	2890.93	-2913.60	1436.57	40°08'14.075"N	104°38'36.294"W	0.00	
10135.00†	90.000	180.891	6983.00	2990.93	-3013.59	1435.02	40°08'13.087"N	104°38'36.315"W	0.00	
10235.00†	90.000	180.891	6983.00	3090.93	-3113.57	1433.46	40°08'12.099"N	104°38'36.335"W	0.00	
10335.00†	90.000	180.891	6983.00	3190.93	-3213.56	1431.91	40°08'11.111"N	104°38'36.355"W	0.00	
10435.00†	90.000	180.891	6983.00	3290.93	-3313.55	1430.36	40°08'10.123"N	104°38'36.375"W	0.00	
10535.00†	90.000	180.891	6983.00	3390.93	-3413.54	1428.80	40°08'09.135"N	104°38'36.395"W	0.00	
10635.00†	90.000	180.891	6983.00	3490.93	-3513.53	1427.25	40°08'08.147"N	104°38'36.415"W	0.00	
10735.00†	90.000	180.891	6983.00	3590.93	-3613.51	1425.69	40°08'07.159"N	104°38'36.435"W	0.00	
10835.00†	90.000	180.891	6983.00	3690.93	-3713.50	1424.14	40°08'06.170"N	104°38'36.455"W	0.00	
10935.00†	90.000	180.891	6983.00	3790.93	-3813.49	1422.58	40°08'05.182"N	104°38'36.475"W	0.00	
11035.00†	90.000	180.891	6983.00	3890.93	-3913.48	1421.03	40°08'04.194"N	104°38'36.495"W	0.00	
11135.00†	90.000	180.891	6983.00	3990.93	-4013.47	1419.47	40°08'03.206"N	104°38'36.515"W	0.00	
11235.00†	90.000	180.891	6983.00	4090.93	-4113.45	1417.92	40°08'02.218"N	104°38'36.536"W	0.00	
11335.00†	90.000	180.891	6983.00	4190.93	-4213.44	1416.36	40°08'01.230"N	104°38'36.556"W	0.00	
11435.00†	90.000	180.891	6983.00	4290.93	-4313.43	1414.81	40°08'00.242"N	104°38'36.576"W	0.00	
11535.00†	90.000	180.891	6983.00	4390.93	-4413.42	1413.25	40°07'59.254"N	104°38'36.596"W	0.00	
11635.00†	90.000	180.891	6983.00	4490.93	-4513.41	1411.70	40°07'58.266"N	104°38'36.616"W	0.00	
11711.32	90.000	180.891	6983.00 ¹	4567.26	-4589.72	1410.51	40°07'57.512"N	104°38'36.631"W	0.00	TOTAL DEPTH

REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#43 GREENLEAF 16N-15HZ (261'FNL & 2240'FEL, SEC.15)
Area	COLORADO	Well	GREENLEAF 16N-15HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	GREENLEAF 16N-15HZX PWB
Facility	SEC.15-T2N-R65W	Sidetrack from	GREENLEAF 16N-15HZ AWB <61-780> at 6155.00 MD

HOLE & CASING SECTIONS - Ref Wellbore: GREENLEAF 16N-15HZX PWB Ref Wellpath: GREENLEAF 16N-15HZX (REV-H.0.1) 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	16.00	792.00	776.00	16.00	792.00	0.00	0.00	0.02	0.76
9.625in Casing Surface	16.00	785.00	769.00	16.00	785.00	0.00	0.00	0.03	0.75
8.75in Open Hole	792.00	7556.29	6764.29	792.00	6983.00	0.02	0.76	-435.19	1475.09
7in Casing Intermediate	16.00	7556.29	7540.29	16.00	6983.00	0.00	0.00	-435.19	1475.09
6.125in Open Hole	7556.29	11711.32	4155.03	6983.00	6983.00	-435.19	1475.09	-4589.72	1410.51
4.5in Casing Production	16.00	11711.32	11695.32	16.00	6983.00	0.00	0.00	-4589.72	1410.51

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
GREENLEAF 16N-15HX LAND BOX		16.00	-0.04	0.02	3238024.26	1296897.51	40°08'42.868"N	104°38'54.791"W	polygon
SEC.15-T2N-R65W LINES		16.00	-68.53	-58.69	3237966.21	1296828.47	40°08'42.191"N	104°38'55.547"W	polygon
GREENLEAF 16N-15HZ BHL (460'FSL & 805'FEL, SEC.15) REV-2		6893.00	-4589.72	1410.51	3239478.70	1292321.79	40°07'57.512"N	104°38'36.631"W	point
GREENLEAF 16N-15HZ BHL ON PLAT (460'FSL & 705'FEL, SEC.15) REV-1		6893.00	-4589.72	1510.51	3239578.69	1292322.75	40°07'57.512"N	104°38'35.344"W	point
1) GREENLEAF 16N-15HZX BHL (460'FSL & 805'FEL, SEC.15) REV-4	11711.32	6983.00	-4589.72	1410.51	3239478.70	1292321.79	40°07'57.512"N	104°38'36.631"W	point
GREENLEAF 16N-15HZ BHL (460'FSL & 805'FEL, SEC.15) REV-3		6994.00	-4589.72	1410.51	3239478.70	1292321.79	40°07'57.512"N	104°38'36.631"W	point

SURVEY PROGRAM - Ref Wellbore: GREENLEAF 16N-15HZX PWB Ref Wellpath: GREENLEAF 16N-15HZX (REV-H.0.1) PWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
16.00	780.00	ISCWSA MWD, Rev. 2 (Standard)		GREENLEAF 16N-15HZ AWB <61-780>
780.00	5635.00	NaviTrak (MAGCORR,IFR)		GREENLEAF 16N-15HZ AWB <61-780>
5635.00	5935.00	Drift Indicator (Standard)		GREENLEAF 16N-15HZX PWB
5935.00	11711.32	NaviTrak (MAGCORR,IFR)		GREENLEAF 16N-15HZX PWB

REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#43 GREENLEAF 16N-15HZ (261'FNL & 2240'FEL, SEC.15)
Area	COLORADO	Well	GREENLEAF 16N-15HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	GREENLEAF 16N-15HZX PWB
Facility	SEC.15-T2N-R65W	Sidetrack from	GREENLEAF 16N-15HZ AWB <61-780> at 6155.00 MD

WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
699.00	0.068	243.168	699.00	Fox Hills Base
3975.49	21.009	79.054	3849.00	Parkman
4607.52	22.514	83.796	4433.00	Sussex
7069.04	41.275	180.890	6788.00	Sharon Springs
7157.93	50.164	180.890	6850.00	Niobrara A
7238.31	58.202	180.890	6897.00	Niobrara B
7434.03	77.773	180.890	6970.00	Niobrara C

DESIGN COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
5635.00	10.700	87.800	5402.04	TIE-INTO BHI MWD+IFR SURVEYS
5643.00	11.399	91.237	5409.89	BUILD & TURN @ 12°/100'
5663.00	11.399	91.237	5429.50	HOLD @ 45° TFACE
5693.00	13.683	100.237	5458.79	BUILD @ TURN @ 10°/100'
6003.00	13.683	100.237	5759.99	BEGIN DROP
6345.08	0.000	180.890	6098.83	END DROP
6656.29	0.000	180.890	6410.04	KOP, BUILD @ 10°/100'
7556.29	90.000	180.890	6983.00	LANDING POINT
11711.32	90.000	180.891	6983.00	TOTAL DEPTH