

KERR-MCGEE OIL & GAS ONSHORE LP

Location: COLORADO Slot: SLOT#22 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28)
 Field: WELD COUNTY (KERR MCGEE) Well: HOWARD 37C-33HZ
 Facility: SEC.28-T1N-R67W Wellbore: HOWARD 37C-33HZ PWB

Plot reference wellpath is HOWARD 37C-33HZ (PERMIT REV-1) PWB

True vertical depths are referenced to Rig on SLOT#12 HOWARD 37C-33HZ & 1397'FEL, SEC.28 (RKB)	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
Measured depths are referenced to Rig on SLOT#12 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28) (RKB)	North Reference: True north
Rig on SLOT#12 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28) (RKB) to Mean Sea Level: 5038 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: SLOT#22 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28)); 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: pcreain on 24/Jul/2013

Location Information

Facility Name	Grid East (US Ft)	Grid North (US Ft)	Latitude	Longitude
SEC.28-T1N-R67W	316623.760	121465.460	36°32'26.6567N	114°37'52.0067W
Slot	Local N (Ft)	Local E (Ft)	Latitude	Longitude
SLOT#22 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28)	141363.44	271910.09	31°05'46.484	104°10'09.3077N
Rig on SLOT#12 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28) (RKB) to Mud line (At Slot: SLOT#22 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28))	5038ft			
Mean Sea Level to Mud line (At Slot: SLOT#22 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28))	0ft			
Rig on SLOT#12 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28) (RKB) to Mean Sea Level	5038ft			

Survey Program

Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
17.00	8214.31	NaviTrak	NaviTrak (Standard)		HOWARD 37C-33HZ PWB
8214.31	12972.16	OnTrak	OnTrak (Standard)		HOWARD 37C-33HZ PWB

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	165.000	17.00	0.00	0.00	0.00	0.00
BEGIN NUDGE	1000.00	0.000	165.000	1000.00	0.00	0.00	0.00	0.00
END NUDGE	1650.00	13.000	165.000	1644.44	-70.92	19.00	2.00	70.97
BEGIN DROP	6023.66	13.000	165.000	5906.00	-1021.26	273.65	0.00	1021.98
END DROP	6673.66	0.000	179.848	6550.44	-1092.18	292.65	2.00	1092.95
KOP, BUILD @ 10°/100'	7315.27	0.000	179.848	7192.05	-1092.18	292.65	0.00	1092.95
LANDING POINT	8214.31	89.904	179.848	7765.00	-1664.17	294.16	10.00	1664.95
TOTAL DEPTH	12972.16	89.904	179.848	7773.00	-6422.01	306.76	0.00	6422.80

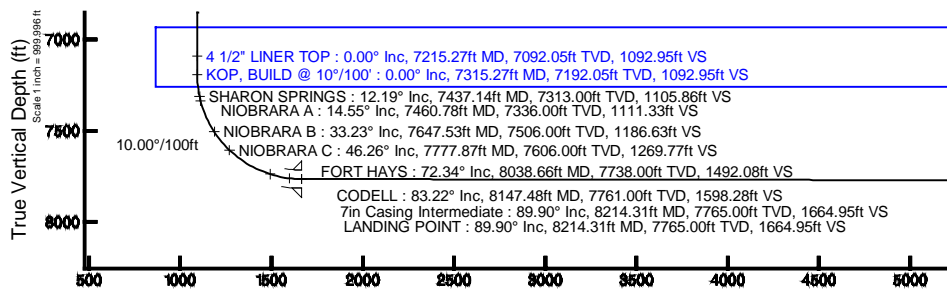
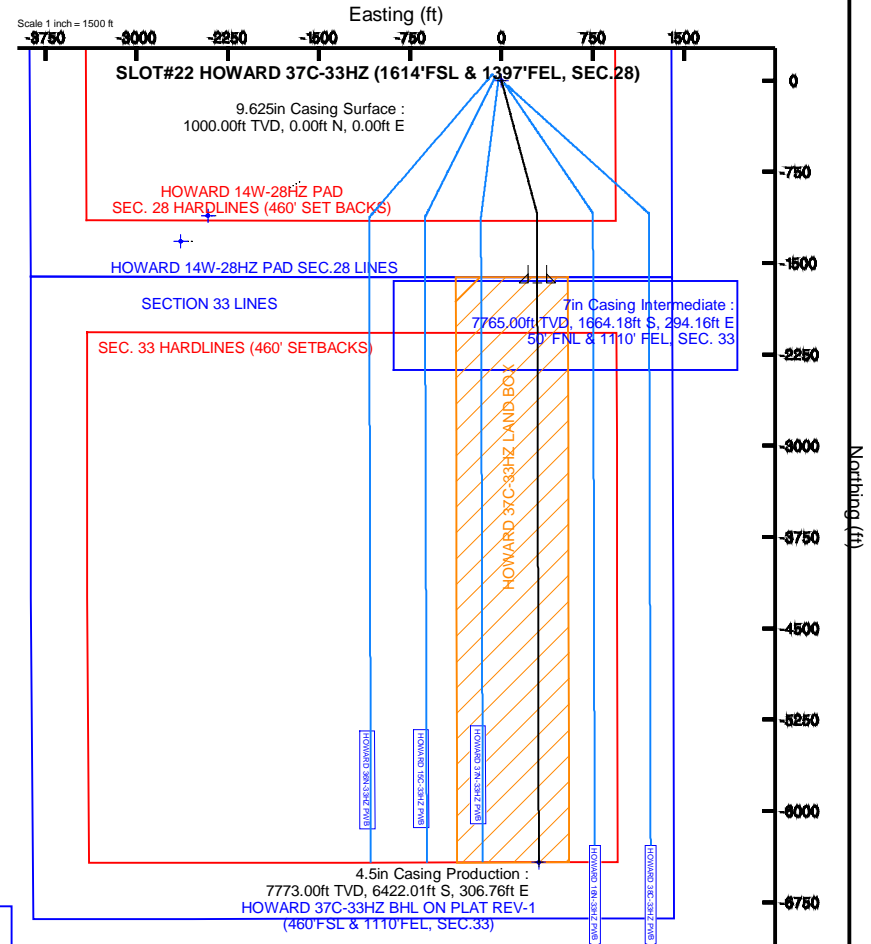
Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US Ft)	Grid North (US Ft)	Latitude	Longitude
SECTION 33 LINES	14.00	-1109.85	-2412.81	3168144.45	124919.07	40°00'58.338"N	104°53'58.798"W	
HOWARD 14W-28HZ PAD SEC. 28 HARDLINES (460' SET BACKS)	5038.00	-1320.71	-2636.05	3167922.66	1249106.69	40°00'56.254"N	104°54'01.687"W	
HOWARD 14W-28HZ PAD SEC.28 LINES	5038.00	-1320.71	-2636.05	3167922.66	1249106.69	40°00'56.254"N	104°54'01.687"W	
HOWARD 37C-33HZ BHL ON PLAT REV-1 (460'FSL & 1110'FEL, SEC.33)	12972.16	7773.00	-6422.01	306.76	3170900.32	1244025.91	40°00'05.843"N	104°53'23.845"W
HOWARD 37C-33HZ LAND BOX	7773.00	0.00	0.00	3170549.48	1250445.42	40°01'09.307"N	104°53'27.787"W	
SEC. 33 HARDLINES (460' SET BACKS)	7814.00	-1109.85	-2412.81	3168144.45	124919.07	40°00'58.338"N	104°53'58.798"W	



BGGM (1945.0 to 2015.0) Dip: 66.64° Field: 52624.9 nT
 Magnetic North is 8.65 degrees East of True North (at 23/Jul/2013)

To correct azimuth from Magnetic to True add 8.65 degrees



Vertical Section (ft)

Azimuth 179.85° with reference 0.00 N, 0.00 E

Scale 1 inch = 1000 ft



Planned Wellpath Report

HOWARD 37C-33HZ (PERMIT REV-1) PWP

Page 1 of 7



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#22 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 37C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 37C-33HZ PWB
Facility	SEC.28-T1N-R67W		

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	0.999965	Report Generated	24/Jul/2013 at 11:00
Convergence at slot	n/a	Database/Source file	WellArchitectDB/HOWARD_37C-33HZ_PWB.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	1413493.44	2717010.09	3170549.48	1250445.42	40°01'09.307"N	104°53'27.787"W
Facility Reference Pt			316923.76	121463.46	36°32'36.656"N	114°37'52.006"W
Field Reference Pt			3197771.84	1268891.29	40°04'09.600"N	104°47'36.000"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Rig on SLOT#12 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28) (RKB) to Facility Vertical Datum	5038.00ft
Horizontal Reference Pt	Slot	Rig on SLOT#12 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28) (RKB) to Mean Sea Level	5038.00ft
Vertical Reference Pt	Rig on SLOT#12 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28) (RKB)	Rig on SLOT#12 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28) (RKB) to Mud Line at Slot (SLOT#22 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28))	5038.00ft
MD Reference Pt	Rig on SLOT#12 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	179.85°



Planned Wellpath Report

HOWARD 37C-33HZ (PERMIT REV-1) PWP

Page 2 of 7



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#22 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 37C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 37C-33HZ PWB
Facility	SEC.28-T1N-R67W		

WELLPATH DATA (148 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	165.000	0.00	0.00	0.00	0.00	40°01'09.307"N	104°53'27.787"W	0.00	
17.00	0.000	165.000	17.00	0.00	0.00	0.00	40°01'09.307"N	104°53'27.787"W	0.00	TIE-ON
117.00†	0.000	165.000	117.00	0.00	0.00	0.00	40°01'09.307"N	104°53'27.787"W	0.00	
217.00†	0.000	165.000	217.00	0.00	0.00	0.00	40°01'09.307"N	104°53'27.787"W	0.00	
317.00†	0.000	165.000	317.00	0.00	0.00	0.00	40°01'09.307"N	104°53'27.787"W	0.00	
417.00†	0.000	165.000	417.00	0.00	0.00	0.00	40°01'09.307"N	104°53'27.787"W	0.00	
517.00†	0.000	165.000	517.00	0.00	0.00	0.00	40°01'09.307"N	104°53'27.787"W	0.00	
617.00†	0.000	165.000	617.00	0.00	0.00	0.00	40°01'09.307"N	104°53'27.787"W	0.00	
717.00†	0.000	165.000	717.00	0.00	0.00	0.00	40°01'09.307"N	104°53'27.787"W	0.00	
788.00†	0.000	165.000	788.00	0.00	0.00	0.00	40°01'09.307"N	104°53'27.787"W	0.00	FOX HILLS BASE
817.00†	0.000	165.000	817.00	0.00	0.00	0.00	40°01'09.307"N	104°53'27.787"W	0.00	
917.00†	0.000	165.000	917.00	0.00	0.00	0.00	40°01'09.307"N	104°53'27.787"W	0.00	
1000.00	0.000	165.000	1000.00	0.00	0.00	0.00	40°01'09.307"N	104°53'27.787"W	0.00	BEGIN NUDGE
1017.00†	0.340	165.000	1017.00	0.05	-0.05	0.01	40°01'09.307"N	104°53'27.787"W	2.00	
1117.00†	2.340	165.000	1116.97	2.31	-2.31	0.62	40°01'09.284"N	104°53'27.779"W	2.00	
1217.00†	4.340	165.000	1216.79	7.94	-7.93	2.13	40°01'09.229"N	104°53'27.760"W	2.00	
1317.00†	6.340	165.000	1316.35	16.94	-16.92	4.53	40°01'09.140"N	104°53'27.729"W	2.00	
1417.00†	8.340	165.000	1415.53	29.28	-29.26	7.84	40°01'09.018"N	104°53'27.686"W	2.00	
1517.00†	10.340	165.000	1514.20	44.97	-44.94	12.04	40°01'08.863"N	104°53'27.632"W	2.00	
1617.00†	12.340	165.000	1612.24	63.98	-63.93	17.13	40°01'08.675"N	104°53'27.567"W	2.00	
1650.00	13.000	165.000	1644.44	70.97	-70.92	19.00	40°01'08.606"N	104°53'27.543"W	2.00	END NUDGE
1717.00†	13.000	165.000	1709.72	85.54	-85.48	22.90	40°01'08.462"N	104°53'27.493"W	0.00	
1817.00†	13.000	165.000	1807.16	107.29	-107.21	28.73	40°01'08.248"N	104°53'27.418"W	0.00	
1917.00†	13.000	165.000	1904.59	129.03	-128.94	34.55	40°01'08.033"N	104°53'27.343"W	0.00	
2017.00†	13.000	165.000	2002.03	150.77	-150.67	40.37	40°01'07.818"N	104°53'27.268"W	0.00	
2117.00†	13.000	165.000	2099.47	172.52	-172.40	46.19	40°01'07.603"N	104°53'27.193"W	0.00	
2217.00†	13.000	165.000	2196.91	194.26	-194.12	52.02	40°01'07.389"N	104°53'27.118"W	0.00	
2317.00†	13.000	165.000	2294.34	216.00	-215.85	57.84	40°01'07.174"N	104°53'27.044"W	0.00	
2417.00†	13.000	165.000	2391.78	237.75	-237.58	63.66	40°01'06.959"N	104°53'26.969"W	0.00	
2517.00†	13.000	165.000	2489.22	259.49	-259.31	69.48	40°01'06.744"N	104°53'26.894"W	0.00	
2617.00†	13.000	165.000	2586.65	281.24	-281.04	75.30	40°01'06.530"N	104°53'26.819"W	0.00	
2717.00†	13.000	165.000	2684.09	302.98	-302.77	81.13	40°01'06.315"N	104°53'26.744"W	0.00	
2817.00†	13.000	165.000	2781.53	324.72	-324.50	86.95	40°01'06.100"N	104°53'26.669"W	0.00	
2917.00†	13.000	165.000	2878.96	346.47	-346.22	92.77	40°01'05.886"N	104°53'26.595"W	0.00	
3017.00†	13.000	165.000	2976.40	368.21	-367.95	98.59	40°01'05.671"N	104°53'26.520"W	0.00	
3117.00†	13.000	165.000	3073.84	389.96	-389.68	104.41	40°01'05.456"N	104°53'26.445"W	0.00	
3217.00†	13.000	165.000	3171.28	411.70	-411.41	110.24	40°01'05.241"N	104°53'26.370"W	0.00	
3317.00†	13.000	165.000	3268.71	433.44	-433.14	116.06	40°01'05.027"N	104°53'26.295"W	0.00	
3417.00†	13.000	165.000	3366.15	455.19	-454.87	121.88	40°01'04.812"N	104°53'26.220"W	0.00	
3517.00†	13.000	165.000	3463.59	476.93	-476.60	127.70	40°01'04.597"N	104°53'26.146"W	0.00	
3617.00†	13.000	165.000	3561.02	498.68	-498.32	133.53	40°01'04.382"N	104°53'26.071"W	0.00	
3717.00†	13.000	165.000	3658.46	520.42	-520.05	139.35	40°01'04.168"N	104°53'25.996"W	0.00	
3817.00†	13.000	165.000	3755.90	542.16	-541.78	145.17	40°01'03.953"N	104°53'25.921"W	0.00	
3917.00†	13.000	165.000	3853.33	563.91	-563.51	150.99	40°01'03.738"N	104°53'25.846"W	0.00	
4017.00†	13.000	165.000	3950.77	585.65	-585.24	156.81	40°01'03.523"N	104°53'25.771"W	0.00	



Planned Wellpath Report

HOWARD 37C-33HZ (PERMIT REV-1) PWP

Page 3 of 7



REFERENCE WELLPATH IDENTIFICATION			
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Area	COLORADO	Well	HOWARD 37C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 37C-33HZ PWB
Facility	SEC.28-T1N-R67W		

WELLPATH DATA (148 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4117.00†	13.000	165.000	4048.21	607.40	-606.97	162.64	40°01'03.309"N	104°53'25.697"W	0.00	
4217.00†	13.000	165.000	4145.65	629.14	-628.70	168.46	40°01'03.094"N	104°53'25.622"W	0.00	
4317.00†	13.000	165.000	4243.08	650.88	-650.42	174.28	40°01'02.879"N	104°53'25.547"W	0.00	
4417.00†	13.000	165.000	4340.52	672.63	-672.15	180.10	40°01'02.665"N	104°53'25.472"W	0.00	
4517.00†	13.000	165.000	4437.96	694.37	-693.88	185.92	40°01'02.450"N	104°53'25.397"W	0.00	
4617.00†	13.000	165.000	4535.39	716.12	-715.61	191.75	40°01'02.235"N	104°53'25.322"W	0.00	
4717.00†	13.000	165.000	4632.83	737.86	-737.34	197.57	40°01'02.020"N	104°53'25.248"W	0.00	
4817.00†	13.000	165.000	4730.27	759.60	-759.07	203.39	40°01'01.806"N	104°53'25.173"W	0.00	
4917.00†	13.000	165.000	4827.70	781.35	-780.80	209.21	40°01'01.591"N	104°53'25.098"W	0.00	
4964.51†	13.000	165.000	4874.00	791.68	-791.12	211.98	40°01'01.489"N	104°53'25.062"W	0.00	SUSSEX
5017.00†	13.000	165.000	4925.14	803.09	-802.52	215.04	40°01'01.376"N	104°53'25.023"W	0.00	
5117.00†	13.000	165.000	5022.58	824.84	-824.25	220.86	40°01'01.161"N	104°53'24.948"W	0.00	
5217.00†	13.000	165.000	5120.02	846.58	-845.98	226.68	40°01'00.947"N	104°53'24.874"W	0.00	
5317.00†	13.000	165.000	5217.45	868.32	-867.71	232.50	40°01'00.732"N	104°53'24.799"W	0.00	
5417.00†	13.000	165.000	5314.89	890.07	-889.44	238.32	40°01'00.517"N	104°53'24.724"W	0.00	
5433.53†	13.000	165.000	5331.00	893.66	-893.03	239.29	40°01'00.482"N	104°53'24.711"W	0.00	SHANNON
5517.00†	13.000	165.000	5412.33	911.81	-911.17	244.15	40°01'00.303"N	104°53'24.649"W	0.00	
5617.00†	13.000	165.000	5509.76	933.56	-932.90	249.97	40°01'00.088"N	104°53'24.574"W	0.00	
5717.00†	13.000	165.000	5607.20	955.30	-954.62	255.79	40°00'59.873"N	104°53'24.499"W	0.00	
5817.00†	13.000	165.000	5704.64	977.04	-976.35	261.61	40°00'59.658"N	104°53'24.425"W	0.00	
5917.00†	13.000	165.000	5802.07	998.79	-998.08	267.44	40°00'59.444"N	104°53'24.350"W	0.00	
6017.00†	13.000	165.000	5899.51	1020.53	-1019.81	273.26	40°00'59.229"N	104°53'24.275"W	0.00	
6023.66	13.000	165.000	5906.00	1021.98	-1021.26	273.65	40°00'59.215"N	104°53'24.270"W	0.00	BEGIN DROP
6117.00†	11.133	165.000	5997.27	1040.84	-1040.10	278.70	40°00'59.028"N	104°53'24.205"W	2.00	
6217.00†	9.133	165.000	6095.71	1057.85	-1057.10	283.25	40°00'58.860"N	104°53'24.146"W	2.00	
6317.00†	7.133	165.000	6194.70	1071.52	-1070.76	286.91	40°00'58.725"N	104°53'24.099"W	2.00	
6417.00†	5.133	165.000	6294.12	1081.85	-1081.08	289.68	40°00'58.623"N	104°53'24.064"W	2.00	
6517.00†	3.133	165.000	6393.86	1088.81	-1088.04	291.54	40°00'58.555"N	104°53'24.040"W	2.00	
6617.00†	1.133	165.000	6493.78	1092.41	-1091.64	292.50	40°00'58.519"N	104°53'24.028"W	2.00	
6673.66	0.000	179.848	6550.44	1092.95	-1092.18	292.65	40°00'58.514"N	104°53'24.026"W	2.00	END DROP
6717.00†	0.000	179.848	6593.78	1092.95	-1092.18	292.65	40°00'58.514"N	104°53'24.026"W	0.00	
6817.00†	0.000	179.848	6693.78	1092.95	-1092.18	292.65	40°00'58.514"N	104°53'24.026"W	0.00	
6917.00†	0.000	179.848	6793.78	1092.95	-1092.18	292.65	40°00'58.514"N	104°53'24.026"W	0.00	
7017.00†	0.000	179.848	6893.78	1092.95	-1092.18	292.65	40°00'58.514"N	104°53'24.026"W	0.00	
7117.00†	0.000	179.848	6993.78	1092.95	-1092.18	292.65	40°00'58.514"N	104°53'24.026"W	0.00	
7215.27†	0.000	179.848	7092.05	1092.95	-1092.18	292.65	40°00'58.514"N	104°53'24.026"W	0.00	4 1/2" LINER TOP
7217.00†	0.000	179.848	7093.78	1092.95	-1092.18	292.65	40°00'58.514"N	104°53'24.026"W	0.00	
7315.27	0.000	179.848	7192.05	1092.95	-1092.18	292.65	40°00'58.514"N	104°53'24.026"W	0.00	KOP, BUILD @ 10°/100'
7317.00†	0.173	179.848	7193.78	1092.96	-1092.18	292.65	40°00'58.514"N	104°53'24.026"W	10.00	
7417.00†	10.173	179.848	7293.24	1101.96	-1101.19	292.67	40°00'58.425"N	104°53'24.025"W	10.00	
7437.14†	12.187	179.848	7313.00	1105.86	-1105.09	292.68	40°00'58.386"N	104°53'24.025"W	10.00	SHARON SPRINGS
7460.78†	14.551	179.848	7336.00	1111.33	-1110.56	292.70	40°00'58.332"N	104°53'24.025"W	10.00	NIOBRARA A
7517.00†	20.173	179.848	7389.64	1128.10	-1127.33	292.74	40°00'58.166"N	104°53'24.024"W	10.00	
7617.00†	30.173	179.848	7480.02	1170.58	-1169.81	292.85	40°00'57.747"N	104°53'24.023"W	10.00	
7647.53†	33.227	179.848	7506.00	1186.63	-1185.85	292.90	40°00'57.588"N	104°53'24.023"W	10.00	NIOBRARA B



Planned Wellpath Report

HOWARD 37C-33HZ (PERMIT REV-1) PWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#22 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 37C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 37C-33HZ PWB
Facility	SEC.28-T1N-R67W		

WELLPATH DATA (148 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7717.00†	40.173	179.848	7561.66	1228.11	-1227.34	293.01	40°00'57.178"N	104°53'24.021"W	10.00	
7777.87†	46.260	179.848	7606.00	1269.77	-1269.00	293.12	40°00'56.766"N	104°53'24.020"W	10.00	NIOBRARA C
7817.00†	50.173	179.848	7632.07	1298.95	-1298.17	293.19	40°00'56.478"N	104°53'24.019"W	10.00	
7917.00†	60.173	179.848	7689.11	1380.93	-1380.16	293.41	40°00'55.668"N	104°53'24.016"W	10.00	
8017.00†	70.173	179.848	7731.04	1471.57	-1470.80	293.65	40°00'54.772"N	104°53'24.013"W	10.00	
8038.66†	72.339	179.848	7738.00	1492.08	-1491.31	293.71	40°00'54.569"N	104°53'24.012"W	10.00	FORT HAYS
8117.00†	80.173	179.848	7756.60	1568.12	-1567.35	293.91	40°00'53.818"N	104°53'24.010"W	10.00	
8147.48†	83.221	179.848	7761.00	1598.28	-1597.51	293.99	40°00'53.520"N	104°53'24.009"W	10.00	CODELL
8214.31	89.904	179.848	7765.00	1664.95	-1664.17	294.16	40°00'52.861"N	104°53'24.006"W	10.00	LANDING POINT
8217.00†	89.904	179.848	7765.01	1667.64	-1666.87	294.17	40°00'52.835"N	104°53'24.006"W	0.00	
8317.00†	89.904	179.848	7765.18	1767.64	-1766.87	294.43	40°00'51.846"N	104°53'24.003"W	0.00	
8417.00†	89.904	179.848	7765.34	1867.64	-1866.87	294.70	40°00'50.858"N	104°53'23.999"W	0.00	
8517.00†	89.904	179.848	7765.51	1967.64	-1966.87	294.96	40°00'49.870"N	104°53'23.996"W	0.00	
8617.00†	89.904	179.848	7765.68	2067.64	-2066.86	295.23	40°00'48.882"N	104°53'23.993"W	0.00	
8717.00†	89.904	179.848	7765.85	2167.64	-2166.86	295.49	40°00'47.893"N	104°53'23.989"W	0.00	
8817.00†	89.904	179.848	7766.02	2267.64	-2266.86	295.76	40°00'46.905"N	104°53'23.986"W	0.00	
8917.00†	89.904	179.848	7766.19	2367.64	-2366.86	296.02	40°00'45.917"N	104°53'23.983"W	0.00	
9017.00†	89.904	179.848	7766.35	2467.64	-2466.86	296.29	40°00'44.929"N	104°53'23.979"W	0.00	
9117.00†	89.904	179.848	7766.52	2567.64	-2566.86	296.55	40°00'43.940"N	104°53'23.976"W	0.00	
9217.00†	89.904	179.848	7766.69	2667.64	-2666.86	296.82	40°00'42.952"N	104°53'23.972"W	0.00	
9317.00†	89.904	179.848	7766.86	2767.64	-2766.86	297.08	40°00'41.964"N	104°53'23.969"W	0.00	
9417.00†	89.904	179.848	7767.03	2867.64	-2866.86	297.35	40°00'40.976"N	104°53'23.966"W	0.00	
9517.00†	89.904	179.848	7767.19	2967.64	-2966.86	297.61	40°00'39.988"N	104°53'23.962"W	0.00	
9617.00†	89.904	179.848	7767.36	3067.64	-3066.86	297.88	40°00'38.999"N	104°53'23.959"W	0.00	
9717.00†	89.904	179.848	7767.53	3167.64	-3166.86	298.14	40°00'38.011"N	104°53'23.955"W	0.00	
9817.00†	89.904	179.848	7767.70	3267.64	-3266.86	298.41	40°00'37.023"N	104°53'23.952"W	0.00	
9917.00†	89.904	179.848	7767.87	3367.64	-3366.86	298.67	40°00'36.035"N	104°53'23.949"W	0.00	
10017.00†	89.904	179.848	7768.03	3467.64	-3466.86	298.93	40°00'35.046"N	104°53'23.945"W	0.00	
10117.00†	89.904	179.848	7768.20	3567.64	-3566.86	299.20	40°00'34.058"N	104°53'23.942"W	0.00	
10217.00†	89.904	179.848	7768.37	3667.64	-3666.86	299.46	40°00'33.070"N	104°53'23.938"W	0.00	
10317.00†	89.904	179.848	7768.54	3767.64	-3766.86	299.73	40°00'32.082"N	104°53'23.935"W	0.00	
10417.00†	89.904	179.848	7768.71	3867.64	-3866.86	299.99	40°00'31.094"N	104°53'23.932"W	0.00	
10517.00†	89.904	179.848	7768.87	3967.64	-3966.86	300.26	40°00'30.105"N	104°53'23.928"W	0.00	
10617.00†	89.904	179.848	7769.04	4067.64	-4066.85	300.52	40°00'29.117"N	104°53'23.925"W	0.00	
10717.00†	89.904	179.848	7769.21	4167.64	-4166.85	300.79	40°00'28.129"N	104°53'23.922"W	0.00	
10817.00†	89.904	179.848	7769.38	4267.64	-4266.85	301.05	40°00'27.141"N	104°53'23.918"W	0.00	
10917.00†	89.904	179.848	7769.55	4367.64	-4366.85	301.32	40°00'26.152"N	104°53'23.915"W	0.00	
11017.00†	89.904	179.848	7769.71	4467.64	-4466.85	301.58	40°00'25.164"N	104°53'23.911"W	0.00	
11117.00†	89.904	179.848	7769.88	4567.64	-4566.85	301.85	40°00'24.176"N	104°53'23.908"W	0.00	
11217.00†	89.904	179.848	7770.05	4667.64	-4666.85	302.11	40°00'23.188"N	104°53'23.905"W	0.00	
11317.00†	89.904	179.848	7770.22	4767.64	-4766.85	302.38	40°00'22.200"N	104°53'23.901"W	0.00	
11417.00†	89.904	179.848	7770.39	4867.64	-4866.85	302.64	40°00'21.211"N	104°53'23.898"W	0.00	
11517.00†	89.904	179.848	7770.55	4967.64	-4966.85	302.90	40°00'20.223"N	104°53'23.894"W	0.00	
11617.00†	89.904	179.848	7770.72	5067.64	-5066.85	303.17	40°00'19.235"N	104°53'23.891"W	0.00	
11717.00†	89.904	179.848	7770.89	5167.64	-5166.85	303.43	40°00'18.247"N	104°53'23.888"W	0.00	



Planned Wellpath Report

HOWARD 37C-33HZ (PERMIT REV-1) PWP

Page 5 of 7



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#22 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 37C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 37C-33HZ PWB
Facility	SEC.28-T1N-R67W		

WELLPATH DATA (148 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
11817.00†	89.904	179.848	7771.06	5267.64	-5266.85	303.70	40°00'17.258"N	104°53'23.884"W	0.00	
11917.00†	89.904	179.848	7771.23	5367.64	-5366.85	303.96	40°00'16.270"N	104°53'23.881"W	0.00	
12017.00†	89.904	179.848	7771.39	5467.64	-5466.85	304.23	40°00'15.282"N	104°53'23.878"W	0.00	
12117.00†	89.904	179.848	7771.56	5567.64	-5566.85	304.49	40°00'14.294"N	104°53'23.874"W	0.00	
12217.00†	89.904	179.848	7771.73	5667.64	-5666.85	304.76	40°00'13.306"N	104°53'23.871"W	0.00	
12317.00†	89.904	179.848	7771.90	5767.64	-5766.85	305.02	40°00'12.317"N	104°53'23.867"W	0.00	
12417.00†	89.904	179.848	7772.07	5867.64	-5866.85	305.29	40°00'11.329"N	104°53'23.864"W	0.00	
12517.00†	89.904	179.848	7772.24	5967.63	-5966.85	305.55	40°00'10.341"N	104°53'23.861"W	0.00	
12617.00†	89.904	179.848	7772.40	6067.63	-6066.84	305.82	40°00'09.353"N	104°53'23.857"W	0.00	
12717.00†	89.904	179.848	7772.57	6167.63	-6166.84	306.08	40°00'08.364"N	104°53'23.854"W	0.00	
12817.00†	89.904	179.848	7772.74	6267.63	-6266.84	306.35	40°00'07.376"N	104°53'23.850"W	0.00	
12917.00†	89.904	179.848	7772.91	6367.63	-6366.84	306.61	40°00'06.388"N	104°53'23.847"W	0.00	
12972.16	89.904	179.848	7773.00 [†]	6422.80	-6422.01	306.76	40°00'05.843"N	104°53'23.845"W	0.00	TOTAL DEPTH

HOLE & CASING SECTIONS - Ref Wellbore: HOWARD 37C-33HZ PWB Ref Wellpath: HOWARD 37C-33HZ (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	1000.00	983.00	17.00	1000.00	0.00	0.00	0.00	0.00
9.625in Casing Surface	17.00	1000.00	983.00	17.00	1000.00	0.00	0.00	0.00	0.00
8.75in Open Hole	1000.00	8214.31	7214.31	1000.00	7765.00	0.00	0.00	-1664.18	294.16
7in Casing Intermediate	17.00	8214.31	8197.31	17.00	7765.00	0.00	0.00	-1664.18	294.16
6.125in Open Hole	8214.31	12972.16	4757.85	7765.00	7773.00	-1664.18	294.16	-6422.01	306.76
4.5in Casing Production	17.00	12972.16	12955.16	17.00	7773.00	0.00	0.00	-6422.01	306.76



Planned Wellpath Report

HOWARD 37C-33HZ (PERMIT REV-1) PWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#22 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 37C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 37C-33HZ PWB
Facility	SEC.28-T1N-R67W		

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SECTION 33 LINES		14.00	-1109.85	-2412.81	3168144.45	1249319.07	40°00'58.338"N	104°53'58.798"W	polygon
HOWARD 14W-28HZ PAD SEC. 28 HARDLINES (460' SET BACKS)		5038.00	-1320.71	-2636.05	3167922.66	1249106.69	40°00'56.254"N	104°54'01.667"W	polygon
HOWARD 14W-28HZ PAD SEC.28 LINES		5038.00	-1320.71	-2636.05	3167922.66	1249106.69	40°00'56.254"N	104°54'01.667"W	polygon
1) HOWARD 37C-33HZ BHL ON PLAT REV-1 (460'FSL & 1110'FEL, SEC.33)	12972.16	7773.00	-6422.01	306.76	3170900.32	1244025.91	40°00'05.843"N	104°53'23.845"W	point
HOWARD 37C-33HZ LAND BOX		7773.00	0.00	0.00	3170549.48	1250445.42	40°01'09.307"N	104°53'27.787"W	polygon
SEC. 33 HARDLINES (460' SETBACKS)		7814.00	-1109.85	-2412.81	3168144.45	1249319.07	40°00'58.338"N	104°53'58.798"W	polygon

SURVEY PROGRAM - Ref Wellbore: HOWARD 37C-33HZ PWB Ref Wellpath: HOWARD 37C-33HZ (PERMIT REV-1) PWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
17.00	8214.31	NaviTrak (Standard)		HOWARD 37C-33HZ PWB
8214.31	12972.16	OnTrak (Standard)		HOWARD 37C-33HZ PWB



Planned Wellpath Report

HOWARD 37C-33HZ (PERMIT REV-1) PWP

Page 7 of 7



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#22 HOWARD 37C-33HZ (1614'FSL & 1397'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 37C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 37C-33HZ PWB
Facility	SEC.28-T1N-R67W		

WELLPATH COMMENTS					
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment	
788.00	0.000	165.000	788.00	FOX HILLS BASE	
4964.51	13.000	165.000	4874.00	SUSSEX	
5433.53	13.000	165.000	5331.00	SHANNON	
7215.27	0.000	179.848	7092.05	4 1/2" LINER TOP	
7437.14	12.187	179.848	7313.00	SHARON SPRINGS	
7460.78	14.551	179.848	7336.00	NIOBRARA A	
7647.53	33.227	179.848	7506.00	NIOBRARA B	
7777.87	46.260	179.848	7606.00	NIOBRARA C	
8038.66	72.339	179.848	7738.00	FORT HAYS	
8147.48	83.221	179.848	7761.00	CODELL	

DESIGN COMMENTS					
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment	
17.00	0.000	165.000	17.00	TIE-ON	
1000.00	0.000	165.000	1000.00	BEGIN NUDGE	
1650.00	13.000	165.000	1644.44	END NUDGE	
6023.66	13.000	165.000	5906.00	BEGIN DROP	
6673.66	0.000	179.848	6550.44	END DROP	
7315.27	0.000	179.848	7192.05	KOP, BUILD @ 10°/100'	
8214.31	89.904	179.848	7765.00	LANDING POINT	
12972.16	89.904	179.848	7773.00	TOTAL DEPTH	