

KERR-MCGEE OIL & GAS ONSHORE LP

Location: COLORADO Slot: SLOT#19 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28)
 Field: WELD COUNTY (KERR MCGEE) Well: HOWARD 36N-33HZ
 Facility: SEC.28-T1N-R67W Wellbore: HOWARD 36N-33HZ PWB

Plot reference wellpath is HOWARD 36N-33HZ (PERMIT REV-1) PWP

True vertical depths are referenced to Rig on SLOT#09 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28) (RKB) Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
 Measured depths are referenced to Rig on SLOT#09 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28) (RKB) North Reference: True north
 Rig on SLOT#09 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28) (RKB) to Mean Sea Level: 5038 feet Scale: True distance
 Mean Sea Level to Mud line (At Slot: SLOT#19 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28)): 0 feet Depths are in feet
 Coordinates are in feet referenced to Slot Created by: preccain on 24/Jul/2013

Location Information

Facility Name	Grid East (US Ft)	Grid North (US Ft)	Latitude	Longitude		
SEC.28-T1N-R67W	316523.700	121463.450	38°32'36.000"N	104°53'52.000"W		
Slot	Local N (ft)	Local E (ft)	Grid East (US Ft)	Grid North (US Ft)	Latitude	Longitude
SLOT#19 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28)	141260.38	271655.16	3170479.528	1250502.517	40°10'05.876"N	104°53'28.676"W
Rig on SLOT#09 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28) (RKB) to Mud line (At Slot: SLOT#19 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28))					5038ft	
Mean Sea Level to Mud line (At Slot: SLOT#19 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28))					0ft	
Rig on SLOT#09 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28) (RKB) to Mean Sea Level					5038ft	

Survey Program

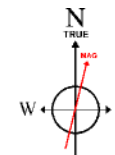
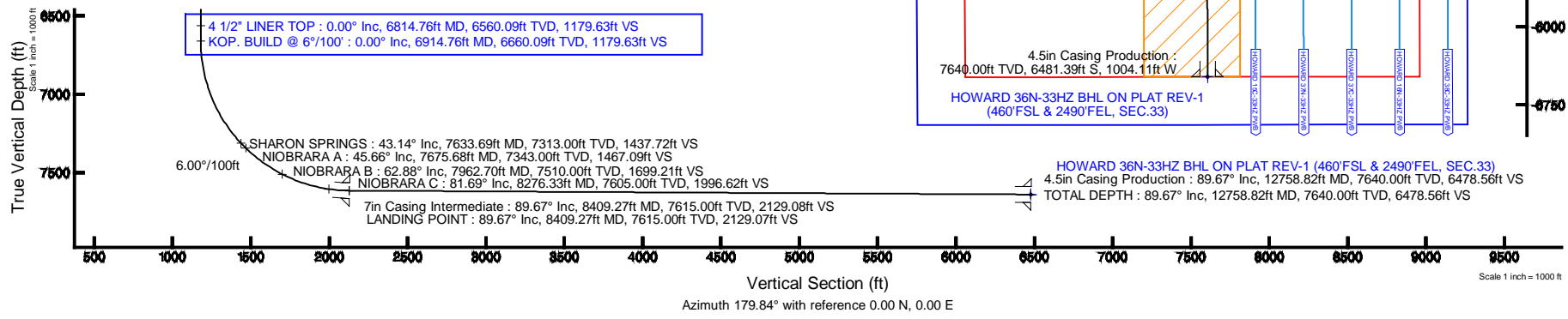
Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
17.00	8409.27	NaviTrak	NaviTrak (Standard)		HOWARD 36N-33HZ PWB
8409.27	12758.82	OnTrak	OnTrak (Standard)		HOWARD 36N-33HZ PWB

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	220.750	17.00	0.00	0.00	0.00	0.00
BEGIN NUDDGE	1100.00	0.000	220.750	1100.00	0.00	0.00	0.00	0.00
END NUDDGE	2100.00	20.000	220.750	2079.82	-130.88	-112.78	2.00	130.57
BEGIN DROP	5653.49	20.000	220.750	5419.00	-1051.60	-906.12	0.00	1049.07
END DROP	6653.49	0.000	179.840	6398.82	-1182.48	-1018.89	2.00	1179.63
KOP. BUILD @ 6°/100'	6914.76	0.000	179.840	6660.09	-1182.48	-1018.89	0.00	1179.63
LANDING POINT	8409.27	89.671	179.840	7615.00	-2131.92	-1016.24	6.00	2129.07
TOTAL DEPTH	12758.82	89.671	179.840	7640.00	-6481.39	-1004.11	0.00	6478.56

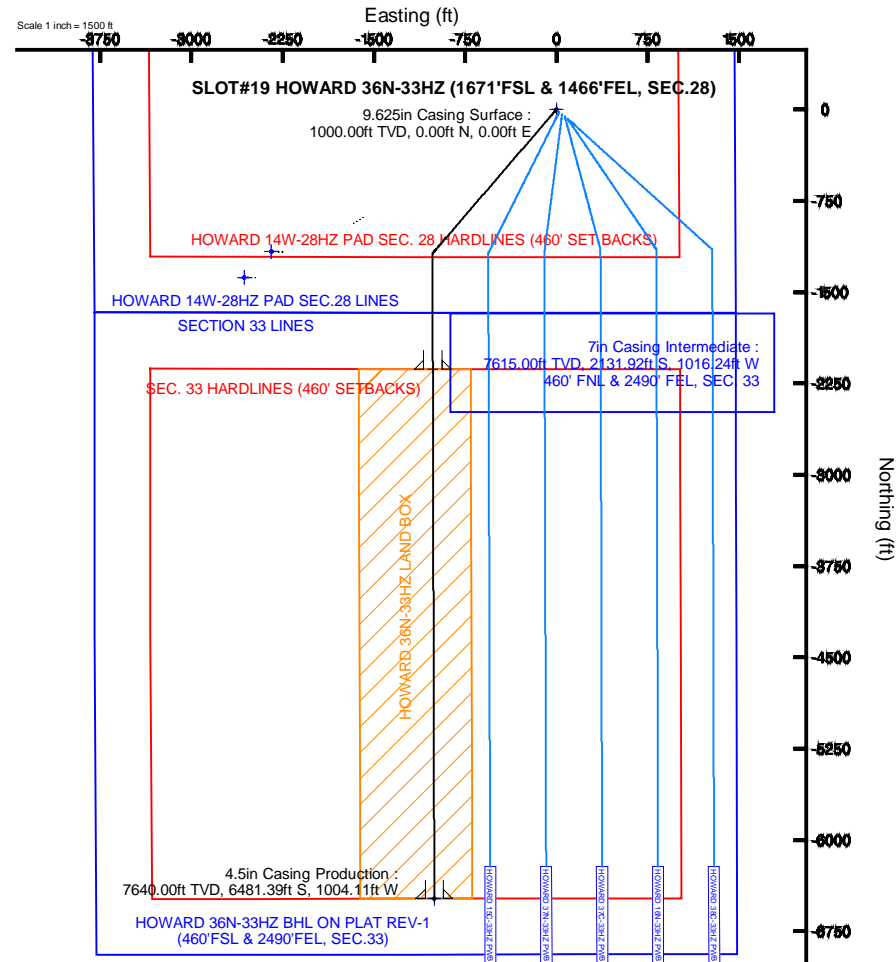
Targets

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	-1167.43	-2343.64	3168144.45	1248319.07	40°00'58.338"N	104°53'58.798"W
HOWARD 14W-28HZ PAD SEC.28 HARDLINES (460' SET BACKS)		5038.00	-1378.29	-2566.88	3167922.66	1249106.69	40°00'56.254"N	104°54'01.667"W
HOWARD 14W-28HZ PAD SEC.28 LINES		5038.00	-1378.29	-2566.88	3167922.66	1249106.69	40°00'56.254"N	104°54'01.667"W
HOWARD 36N-33HZ BHL ON PLAT REV-1 (460'FSL & 2490'FEL, SEC.33)	12758.82	7640.00	-6481.39	-1004.11	3169520.36	1248014.63	40°00'58.825"N	104°53'41.579"W
HOWARD 36N-33HZ LAND BOX		7600.00	0.00	0.00	3170479.53	1250502.52	40°10'05.876"N	104°53'28.676"W
SEC. 33 HARDLINES (460' SETBACKS)		7614.00	-1167.43	-2343.64	3168144.45	1248319.07	40°00'58.338"N	104°53'58.798"W



BGGM (1945.0 to 2015.0) Dip: 66.64° Field: 52625 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





Planned Wellpath Report

HOWARD 36N-33HZ (PERMIT REV-1) PWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#19 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 36N-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 36N-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 09:51
Convergence at slot	n/a	Database/Source file	WellArchitectDB/HOWARD_36N-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	1413542.99	2716935.18	3170479.93	1250502.52	40°01'09.876"N	104°53'28.676"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#09 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28) (RKB) to Facility Vertical Datum	5038.00ft
Horizontal Reference Pt	Slot	Rig on SLOT#09 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28) (RKB) to Mean Sea Level	5038.00ft
Vertical Reference Pt	Rig on SLOT#09 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28) (RKB)	Rig on SLOT#09 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28) (RKB) to Mud Line at Slot (SLOT#19 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28))	5038.00ft
MD Reference Pt	Rig on SLOT#09 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	179.84°



Planned Wellpath Report

HOWARD 36N-33HZ (PERMIT REV-1) PWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#19 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 36N-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 36N-33HZ PWB
Facility	SEC.28-T1N-R67W		

WELLPATH DATA (144 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	220.750	0.00	0.00	0.00	0.00	40°01'09.876"N	104°53'28.676"W	0.00	
17.00	0.000	220.750	17.00	0.00	0.00	0.00	40°01'09.876"N	104°53'28.676"W	0.00	TIE-ON
117.00†	0.000	220.750	117.00	0.00	0.00	0.00	40°01'09.876"N	104°53'28.676"W	0.00	
217.00†	0.000	220.750	217.00	0.00	0.00	0.00	40°01'09.876"N	104°53'28.676"W	0.00	
317.00†	0.000	220.750	317.00	0.00	0.00	0.00	40°01'09.876"N	104°53'28.676"W	0.00	
417.00†	0.000	220.750	417.00	0.00	0.00	0.00	40°01'09.876"N	104°53'28.676"W	0.00	
517.00†	0.000	220.750	517.00	0.00	0.00	0.00	40°01'09.876"N	104°53'28.676"W	0.00	
617.00†	0.000	220.750	617.00	0.00	0.00	0.00	40°01'09.876"N	104°53'28.676"W	0.00	
717.00†	0.000	220.750	717.00	0.00	0.00	0.00	40°01'09.876"N	104°53'28.676"W	0.00	
788.00†	0.000	220.750	788.00	0.00	0.00	0.00	40°01'09.876"N	104°53'28.676"W	0.00	FOX HILLS BASE
817.00†	0.000	220.750	817.00	0.00	0.00	0.00	40°01'09.876"N	104°53'28.676"W	0.00	
917.00†	0.000	220.750	917.00	0.00	0.00	0.00	40°01'09.876"N	104°53'28.676"W	0.00	
1017.00†	0.000	220.750	1017.00	0.00	0.00	0.00	40°01'09.876"N	104°53'28.676"W	0.00	
1100.00	0.000	220.750	1100.00	0.00	0.00	0.00	40°01'09.876"N	104°53'28.676"W	0.00	BEGIN NUDGE
1117.00†	0.340	220.750	1117.00	0.04	-0.04	-0.03	40°01'09.876"N	104°53'28.676"W	2.00	
1217.00†	2.340	220.750	1216.97	1.81	-1.81	-1.56	40°01'09.858"N	104°53'28.696"W	2.00	
1317.00†	4.340	220.750	1316.79	6.21	-6.22	-5.36	40°01'09.815"N	104°53'28.745"W	2.00	
1417.00†	6.340	220.750	1416.35	13.24	-13.27	-11.44	40°01'09.745"N	104°53'28.823"W	2.00	
1517.00†	8.340	220.750	1515.53	22.90	-22.95	-19.78	40°01'09.649"N	104°53'28.930"W	2.00	
1617.00†	10.340	220.750	1614.20	35.16	-35.25	-30.37	40°01'09.528"N	104°53'29.066"W	2.00	
1717.00†	12.340	220.750	1712.24	50.02	-50.14	-43.20	40°01'09.380"N	104°53'29.231"W	2.00	
1817.00†	14.340	220.750	1809.54	67.46	-67.62	-58.26	40°01'09.208"N	104°53'29.425"W	2.00	
1917.00†	16.340	220.750	1905.97	87.45	-87.66	-75.53	40°01'09.010"N	104°53'29.647"W	2.00	
2017.00†	18.340	220.750	2001.42	109.97	-110.24	-94.99	40°01'08.787"N	104°53'29.897"W	2.00	
2100.00	20.000	220.750	2079.82	130.57	-130.88	-112.78	40°01'08.583"N	104°53'30.126"W	2.00	END NUDGE
2117.00†	20.000	220.750	2095.79	134.96	-135.29	-116.57	40°01'08.539"N	104°53'30.174"W	0.00	
2217.00†	20.000	220.750	2189.76	160.81	-161.20	-138.90	40°01'08.283"N	104°53'30.461"W	0.00	
2317.00†	20.000	220.750	2283.73	186.66	-187.11	-161.22	40°01'08.027"N	104°53'30.748"W	0.00	
2417.00†	20.000	220.750	2377.70	212.51	-213.02	-183.55	40°01'07.771"N	104°53'31.035"W	0.00	
2517.00†	20.000	220.750	2471.67	238.35	-238.93	-205.87	40°01'07.515"N	104°53'31.322"W	0.00	
2617.00†	20.000	220.750	2565.64	264.20	-264.84	-228.20	40°01'07.259"N	104°53'31.609"W	0.00	
2717.00†	20.000	220.750	2659.61	290.05	-290.75	-250.53	40°01'07.003"N	104°53'31.896"W	0.00	
2817.00†	20.000	220.750	2753.58	315.90	-316.66	-272.85	40°01'06.747"N	104°53'32.183"W	0.00	
2917.00†	20.000	220.750	2847.54	341.74	-342.57	-295.18	40°01'06.491"N	104°53'32.470"W	0.00	
3017.00†	20.000	220.750	2941.51	367.59	-368.48	-317.50	40°01'06.235"N	104°53'32.757"W	0.00	
3117.00†	20.000	220.750	3035.48	393.44	-394.39	-339.83	40°01'05.978"N	104°53'33.044"W	0.00	
3217.00†	20.000	220.750	3129.45	419.29	-420.30	-362.15	40°01'05.722"N	104°53'33.331"W	0.00	
3317.00†	20.000	220.750	3223.42	445.14	-446.21	-384.48	40°01'05.466"N	104°53'33.618"W	0.00	
3417.00†	20.000	220.750	3317.39	470.98	-472.12	-406.81	40°01'05.210"N	104°53'33.905"W	0.00	
3517.00†	20.000	220.750	3411.36	496.83	-498.03	-429.13	40°01'04.954"N	104°53'34.192"W	0.00	
3617.00†	20.000	220.750	3505.33	522.68	-523.94	-451.46	40°01'04.698"N	104°53'34.479"W	0.00	
3717.00†	20.000	220.750	3599.30	548.53	-549.85	-473.78	40°01'04.442"N	104°53'34.766"W	0.00	
3817.00†	20.000	220.750	3693.27	574.37	-575.76	-496.11	40°01'04.186"N	104°53'35.052"W	0.00	
3917.00†	20.000	220.750	3787.24	600.22	-601.67	-518.43	40°01'03.930"N	104°53'35.339"W	0.00	
4017.00†	20.000	220.750	3881.21	626.07	-627.58	-540.76	40°01'03.674"N	104°53'35.626"W	0.00	



Planned Wellpath Report

HOWARD 36N-33HZ (PERMIT REV-1) PWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#19 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 36N-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 36N-33HZ PWB
Facility	SEC.28-T1N-R67W		

WELLPATH DATA (144 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4117.00†	20.000	220.750	3975.18	651.92	-653.49	-563.09	40°01'03.418"N	104°53'35.913"W	0.00	
4217.00†	20.000	220.750	4069.14	677.77	-679.40	-585.41	40°01'03.162"N	104°53'36.200"W	0.00	
4317.00†	20.000	220.750	4163.11	703.61	-705.31	-607.74	40°01'02.906"N	104°53'36.487"W	0.00	
4417.00†	20.000	220.750	4257.08	729.46	-731.22	-630.06	40°01'02.650"N	104°53'36.774"W	0.00	
4517.00†	20.000	220.750	4351.05	755.31	-757.13	-652.39	40°01'02.394"N	104°53'37.061"W	0.00	
4617.00†	20.000	220.750	4445.02	781.16	-783.04	-674.71	40°01'02.138"N	104°53'37.348"W	0.00	
4717.00†	20.000	220.750	4538.99	807.00	-808.95	-697.04	40°01'01.882"N	104°53'37.635"W	0.00	
4817.00†	20.000	220.750	4632.96	832.85	-834.86	-719.37	40°01'01.626"N	104°53'37.922"W	0.00	
4917.00†	20.000	220.750	4726.93	858.70	-860.77	-741.69	40°01'01.369"N	104°53'38.209"W	0.00	
5017.00†	20.000	220.750	4820.90	884.55	-886.68	-764.02	40°01'01.113"N	104°53'38.496"W	0.00	
5073.51†	20.000	220.750	4874.00	899.15	-901.33	-776.63	40°01'00.969"N	104°53'38.658"W	0.00	SUSSEX
5117.00†	20.000	220.750	4914.87	910.40	-912.60	-786.34	40°01'00.857"N	104°53'38.783"W	0.00	
5217.00†	20.000	220.750	5008.84	936.24	-938.51	-808.67	40°01'00.601"N	104°53'39.070"W	0.00	
5317.00†	20.000	220.750	5102.81	962.09	-964.42	-830.99	40°01'00.345"N	104°53'39.357"W	0.00	
5417.00†	20.000	220.750	5196.78	987.94	-990.33	-853.32	40°01'00.089"N	104°53'39.644"W	0.00	
5517.00†	20.000	220.750	5290.75	1013.79	-1016.24	-875.65	40°00'59.833"N	104°53'39.930"W	0.00	
5559.84†	20.000	220.750	5331.00	1024.86	-1027.34	-885.21	40°00'59.723"N	104°53'40.053"W	0.00	SHANNON
5617.00†	20.000	220.750	5384.71	1039.63	-1042.15	-897.97	40°00'59.577"N	104°53'40.217"W	0.00	
5653.49	20.000	220.750	5419.00	1049.07	-1051.60	-906.12	40°00'59.484"N	104°53'40.322"W	0.00	BEGIN DROP
5717.00†	18.730	220.750	5478.92	1064.98	-1067.55	-919.86	40°00'59.326"N	104°53'40.499"W	2.00	
5817.00†	16.730	220.750	5574.17	1087.99	-1090.62	-939.74	40°00'59.098"N	104°53'40.754"W	2.00	
5917.00†	14.730	220.750	5670.42	1108.48	-1111.16	-957.44	40°00'58.895"N	104°53'40.982"W	2.00	
6017.00†	12.730	220.750	5767.55	1126.42	-1129.14	-972.93	40°00'58.717"N	104°53'41.181"W	2.00	
6117.00†	10.730	220.750	5865.46	1141.78	-1144.54	-986.20	40°00'58.565"N	104°53'41.351"W	2.00	
6217.00†	8.730	220.750	5964.02	1154.55	-1157.34	-997.23	40°00'58.439"N	104°53'41.493"W	2.00	
6317.00†	6.730	220.750	6063.10	1164.72	-1167.53	-1006.01	40°00'58.338"N	104°53'41.606"W	2.00	
6417.00†	4.730	220.750	6162.60	1172.26	-1175.09	-1012.52	40°00'58.263"N	104°53'41.690"W	2.00	
6517.00†	2.730	220.750	6262.38	1177.18	-1180.02	-1016.77	40°00'58.214"N	104°53'41.744"W	2.00	
6617.00†	0.730	220.750	6362.33	1179.46	-1182.31	-1018.74	40°00'58.192"N	104°53'41.770"W	2.00	
6653.49	0.000	179.840	6398.82	1179.63	-1182.48	-1018.89	40°00'58.190"N	104°53'41.771"W	2.00	END DROP
6717.00†	0.000	179.840	6462.33	1179.63	-1182.48	-1018.89	40°00'58.190"N	104°53'41.771"W	0.00	
6814.76†	0.000	179.840	6560.09	1179.63	-1182.48	-1018.89	40°00'58.190"N	104°53'41.771"W	0.00	4 1/2" LINER TOP
6817.00†	0.000	179.840	6562.33	1179.63	-1182.48	-1018.89	40°00'58.190"N	104°53'41.771"W	0.00	
6914.76	0.000	179.840	6660.09	1179.63	-1182.48	-1018.89	40°00'58.190"N	104°53'41.771"W	0.00	KOP. BUILD @ 6°/100'
6917.00†	0.135	179.840	6662.33	1179.64	-1182.49	-1018.89	40°00'58.190"N	104°53'41.771"W	6.00	
7017.00†	6.135	179.840	6762.13	1185.10	-1187.95	-1018.88	40°00'58.136"N	104°53'41.771"W	6.00	
7117.00†	12.135	179.840	6860.82	1200.97	-1203.82	-1018.83	40°00'57.979"N	104°53'41.771"W	6.00	
7217.00†	18.135	179.840	6957.31	1227.07	-1229.92	-1018.76	40°00'57.721"N	104°53'41.770"W	6.00	
7317.00†	24.135	179.840	7050.54	1263.11	-1265.96	-1018.66	40°00'57.365"N	104°53'41.768"W	6.00	
7417.00†	30.135	179.840	7139.49	1308.69	-1311.54	-1018.53	40°00'56.915"N	104°53'41.767"W	6.00	
7517.00†	36.135	179.840	7223.19	1363.33	-1366.18	-1018.38	40°00'56.375"N	104°53'41.765"W	6.00	
7617.00†	42.135	179.840	7300.72	1426.42	-1429.26	-1018.20	40°00'55.751"N	104°53'41.763"W	6.00	
7633.69†	43.136	179.840	7313.00	1437.72	-1440.57	-1018.17	40°00'55.640"N	104°53'41.762"W	6.00	SHARON SPRINGS
7675.68†	45.655	179.840	7343.00	1467.09	-1469.94	-1018.09	40°00'55.349"N	104°53'41.761"W	6.00	NIOBRARA A
7717.00†	48.135	179.840	7371.24	1497.26	-1500.11	-1018.01	40°00'55.051"N	104°53'41.760"W	6.00	



Planned Wellpath Report

HOWARD 36N-33HZ (PERMIT REV-1) PWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#19 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 36N-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 36N-33HZ PWB
Facility	SEC.28-T1N-R67W		

WELLPATH DATA (144 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7817.00†	54.135	179.840	7433.96	1575.09	-1577.93	-1017.79	40°00'54.282"N	104°53'41.757"W	6.00	
7917.00†	60.135	179.840	7488.20	1659.04	-1661.89	-1017.56	40°00'53.453"N	104°53'41.754"W	6.00	
7962.70†	62.877	179.840	7510.00	1699.21	-1702.05	-1017.44	40°00'53.056"N	104°53'41.753"W	6.00	NIOBRARA B
8017.00†	66.135	179.840	7533.37	1748.21	-1751.06	-1017.31	40°00'52.571"N	104°53'41.751"W	6.00	
8117.00†	72.135	179.840	7568.97	1841.61	-1844.46	-1017.05	40°00'51.648"N	104°53'41.747"W	6.00	
8217.00†	78.135	179.840	7594.61	1938.22	-1941.06	-1016.78	40°00'50.694"N	104°53'41.744"W	6.00	
8276.33†	81.695	179.840	7605.00	1996.62	-1999.47	-1016.61	40°00'50.116"N	104°53'41.742"W	6.00	NIOBRARA C
8317.00†	84.135	179.840	7610.02	2036.98	-2039.82	-1016.50	40°00'49.718"N	104°53'41.740"W	6.00	
8409.27	89.671	179.840	7615.00	2129.07	-2131.92	-1016.24	40°00'48.808"N	104°53'41.737"W	6.00	LANDING POINT
8417.00†	89.671	179.840	7615.04	2136.81	-2139.65	-1016.22	40°00'48.731"N	104°53'41.737"W	0.00	
8517.00†	89.671	179.840	7615.62	2236.81	-2239.65	-1015.94	40°00'47.743"N	104°53'41.733"W	0.00	
8617.00†	89.671	179.840	7616.19	2336.80	-2339.65	-1015.67	40°00'46.755"N	104°53'41.729"W	0.00	
8717.00†	89.671	179.840	7616.77	2436.80	-2439.65	-1015.39	40°00'45.766"N	104°53'41.726"W	0.00	
8817.00†	89.671	179.840	7617.34	2536.80	-2539.64	-1015.11	40°00'44.778"N	104°53'41.722"W	0.00	
8917.00†	89.671	179.840	7617.92	2636.80	-2639.64	-1014.83	40°00'43.790"N	104°53'41.718"W	0.00	
9017.00†	89.671	179.840	7618.49	2736.80	-2739.64	-1014.55	40°00'42.802"N	104°53'41.715"W	0.00	
9117.00†	89.671	179.840	7619.07	2836.80	-2839.64	-1014.27	40°00'41.814"N	104°53'41.711"W	0.00	
9217.00†	89.671	179.840	7619.64	2936.79	-2939.64	-1013.99	40°00'40.825"N	104°53'41.708"W	0.00	
9317.00†	89.671	179.840	7620.22	3036.79	-3039.63	-1013.71	40°00'39.837"N	104°53'41.704"W	0.00	
9417.00†	89.671	179.840	7620.79	3136.79	-3139.63	-1013.43	40°00'38.849"N	104°53'41.700"W	0.00	
9517.00†	89.671	179.840	7621.37	3236.79	-3239.63	-1013.16	40°00'37.861"N	104°53'41.697"W	0.00	
9617.00†	89.671	179.840	7621.94	3336.79	-3339.63	-1012.88	40°00'36.873"N	104°53'41.693"W	0.00	
9717.00†	89.671	179.840	7622.52	3436.79	-3439.63	-1012.60	40°00'35.884"N	104°53'41.689"W	0.00	
9817.00†	89.671	179.840	7623.09	3536.78	-3539.62	-1012.32	40°00'34.896"N	104°53'41.686"W	0.00	
9917.00†	89.671	179.840	7623.67	3636.78	-3639.62	-1012.04	40°00'33.908"N	104°53'41.682"W	0.00	
10017.00†	89.671	179.840	7624.24	3736.78	-3739.62	-1011.76	40°00'32.920"N	104°53'41.678"W	0.00	
10117.00†	89.671	179.840	7624.82	3836.78	-3839.62	-1011.48	40°00'31.932"N	104°53'41.675"W	0.00	
10217.00†	89.671	179.840	7625.39	3936.78	-3939.62	-1011.20	40°00'30.943"N	104°53'41.671"W	0.00	
10317.00†	89.671	179.840	7625.96	4036.78	-4039.61	-1010.92	40°00'29.955"N	104°53'41.668"W	0.00	
10417.00†	89.671	179.840	7626.54	4136.77	-4139.61	-1010.65	40°00'28.967"N	104°53'41.664"W	0.00	
10517.00†	89.671	179.840	7627.11	4236.77	-4239.61	-1010.37	40°00'27.979"N	104°53'41.660"W	0.00	
10617.00†	89.671	179.840	7627.69	4336.77	-4339.61	-1010.09	40°00'26.991"N	104°53'41.657"W	0.00	
10717.00†	89.671	179.840	7628.26	4436.77	-4439.61	-1009.81	40°00'26.002"N	104°53'41.653"W	0.00	
10817.00†	89.671	179.840	7628.84	4536.77	-4539.60	-1009.53	40°00'25.014"N	104°53'41.649"W	0.00	
10917.00†	89.671	179.840	7629.41	4636.77	-4639.60	-1009.25	40°00'24.026"N	104°53'41.646"W	0.00	
11017.00†	89.671	179.840	7629.99	4736.76	-4739.60	-1008.97	40°00'23.038"N	104°53'41.642"W	0.00	
11117.00†	89.671	179.840	7630.56	4836.76	-4839.60	-1008.69	40°00'22.049"N	104°53'41.638"W	0.00	
11217.00†	89.671	179.840	7631.14	4936.76	-4939.60	-1008.41	40°00'21.061"N	104°53'41.635"W	0.00	
11317.00†	89.671	179.840	7631.71	5036.76	-5039.59	-1008.14	40°00'20.073"N	104°53'41.631"W	0.00	
11417.00†	89.671	179.840	7632.29	5136.76	-5139.59	-1007.86	40°00'19.085"N	104°53'41.628"W	0.00	
11517.00†	89.671	179.840	7632.86	5236.76	-5239.59	-1007.58	40°00'18.097"N	104°53'41.624"W	0.00	
11617.00†	89.671	179.840	7633.44	5336.75	-5339.59	-1007.30	40°00'17.108"N	104°53'41.620"W	0.00	
11717.00†	89.671	179.840	7634.01	5436.75	-5439.59	-1007.02	40°00'16.120"N	104°53'41.617"W	0.00	
11817.00†	89.671	179.840	7634.59	5536.75	-5539.58	-1006.74	40°00'15.132"N	104°53'41.613"W	0.00	
11917.00†	89.671	179.840	7635.16	5636.75	-5639.58	-1006.46	40°00'14.144"N	104°53'41.609"W	0.00	



Planned Wellpath Report

HOWARD 36N-33HZ (PERMIT REV-1) PWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#19 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 36N-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 36N-33HZ PWB
Facility	SEC.28-T1N-R67W		

WELLPATH DATA (144 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
12017.00†	89.671	179.840	7635.74	5736.75	-5739.58	-1006.18	40°00'13.156"N	104°53'41.606"W	0.00	
12117.00†	89.671	179.840	7636.31	5836.75	-5839.58	-1005.90	40°00'12.167"N	104°53'41.602"W	0.00	
12217.00†	89.671	179.840	7636.89	5936.74	-5939.58	-1005.63	40°00'11.179"N	104°53'41.598"W	0.00	
12317.00†	89.671	179.840	7637.46	6036.74	-6039.57	-1005.35	40°00'10.191"N	104°53'41.595"W	0.00	
12417.00†	89.671	179.840	7638.04	6136.74	-6139.57	-1005.07	40°00'09.203"N	104°53'41.591"W	0.00	
12517.00†	89.671	179.840	7638.61	6236.74	-6239.57	-1004.79	40°00'08.215"N	104°53'41.588"W	0.00	
12617.00†	89.671	179.840	7639.18	6336.74	-6339.57	-1004.51	40°00'07.226"N	104°53'41.584"W	0.00	
12717.00†	89.671	179.840	7639.76	6436.74	-6439.57	-1004.23	40°00'06.238"N	104°53'41.580"W	0.00	
12758.82	89.671	179.840	7640.00 ¹	6478.56	-6481.39	-1004.11	40°00'05.825"N	104°53'41.579"W	0.00	TOTAL DEPTH

HOLE & CASING SECTIONS - Ref Wellbore: HOWARD 36N-33HZ PWB Ref Wellpath: HOWARD 36N-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	8409.27	7409.27	1000.00	7615.00	0.00	0.00	-2131.92	-1016.24
7in Casing Intermediate	17.00	8409.27	8392.27	17.00	7615.00	0.00	0.00	-2131.92	-1016.24
6.125in Open Hole	8409.27	12758.82	4349.55	7615.00	7640.00	-2131.92	-1016.24	-6481.39	-1004.11
4.5in Casing Production	17.00	12758.82	12741.82	17.00	7640.00	0.00	0.00	-6481.39	-1004.11



Planned Wellpath Report

HOWARD 36N-33HZ (PERMIT REV-1) PWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#19 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 36N-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 36N-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	-1167.43	-2343.64	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	-1378.29	-2566.88	3167922.66	1249106.69	40°00'56.254"N	104°54'01.667"W	polygon
HOWARD 14W-28HZ PAD SEC.28 LINES		5038.00	-1378.29	-2566.88	3167922.66	1249106.69	40°00'56.254"N	104°54'01.667"W	polygon
1) HOWARD 36N-33HZ BHL ON PLAT REV-1 (460'FSL & 2490'FEL, SEC.33)	12758.82	7640.00	-6481.39	-1004.11	3169520.36	1244014.63	40°00'05.825"N	104°53'41.579"W	point
HOWARD 36N-33HZ LAND BOX		7800.00	0.00	0.00	3170479.93	1250502.52	40°01'09.876"N	104°53'28.676"W	polygon
SEC. 33 HARDLINES (460' SETBACKS)		7814.00	-1167.43	-2343.64	3168144.45	1249319.07	40°00'58.338"N	104°53'58.798"W	polygon

SURVEY PROGRAM - Ref Wellbore: HOWARD 36N-33HZ PWB Ref Wellpath: HOWARD 36N-33HZ (PERMIT REV-1) PWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
17.00	8409.27	NaviTrak (Standard)		HOWARD 36N-33HZ PWB
8409.27	12758.82	OnTrak (Standard)		HOWARD 36N-33HZ PWB



Planned Wellpath Report

HOWARD 36N-33HZ (PERMIT REV-1) PWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#19 HOWARD 36N-33HZ (1671'FSL & 1466'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 36N-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 36N-33HZ PWB
Facility	SEC.28-T1N-R67W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
788.00	0.000	220.750	788.00	FOX HILLS BASE
5073.51	20.000	220.750	4874.00	SUSSEX
5559.84	20.000	220.750	5331.00	SHANNON
6814.76	0.000	179.840	6560.09	4 1/2" LINER TOP
7633.69	43.136	179.840	7313.00	SHARON SPRINGS
7675.68	45.655	179.840	7343.00	NIOBRARA A
7962.70	62.877	179.840	7510.00	NIOBRARA B
8276.33	81.695	179.840	7605.00	NIOBRARA C

DESIGN COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
17.00	0.000	220.750	17.00	TIE-ON
1100.00	0.000	220.750	1100.00	BEGIN NUDGE
2100.00	20.000	220.750	2079.82	END NUDGE
5653.49	20.000	220.750	5419.00	BEGIN DROP
6653.49	0.000	179.840	6398.82	END DROP
6914.76	0.000	179.840	6660.09	KOP. BUILD @ 6°/100'
8409.27	89.671	179.840	7615.00	LANDING POINT
12758.82	89.671	179.840	7640.00	TOTAL DEPTH