

# KERR-MCGEE OIL & GAS ONSHORE LP

Location: COLORADO Slot: SLOT#20 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28)  
Field: WELD COUNTY (KERR MCGEE) Well: HOWARD 15C-33HZ  
Facility: SEC.28-T1N-R67W Wellbore: HOWARD 15C-33HZ PWB

Plot reference wellpath is HOWARD 15C-33HZ (PERMIT REV-1) PWP

True vertical depths are referenced to Rig on SLOT#10 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28) (RKB)  
Measured depths are referenced to Rig on SLOT#10 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28) (RKB)  
Rig on SLOT#10 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28) (RKB) to Mean Sea Level: 5038 feet  
Mean Sea Level to Mud line (At Slot: SLOT#20 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28)): 0 feet  
Coordinates are in feet referenced to Slot  
Created by precan on 24Jul2013

## Location Information

Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SEC.28-T1N-R67W	316633.750	121943.400	38°52'36.000"N	104°53'52.000"W
Site	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)
SLOT#20 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28)	1413038.33	2716860.06	3170503.010	1200463.348
Rig on SLOT#10 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28) (RKB) to Mud line (At Slot: SLOT#20 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28))				5038ft
Mean Sea Level to Mud line (At Slot: SLOT#20 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28))				0ft
Rig on SLOT#10 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28) (RKB) to Mean Sea Level				5038ft

## Survey Program

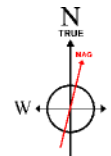
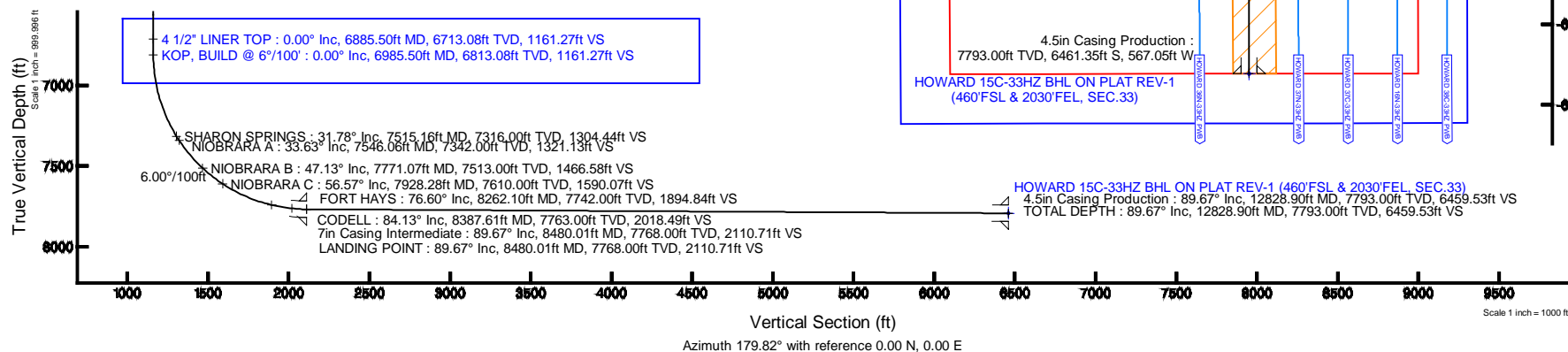
Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
17.00	8480.01	NaviTrak	NaviTrak (Standard)		HOWARD 15C-33HZ PWB
8480.01	12828.90	OnTrak	OnTrak (Standard)		HOWARD 15C-33HZ PWB

## 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	206.650	17.00	0.00	0.00	0.00	0.00
BEGIN NUDGE	1100.00	0.000	206.650	1100.00	0.00	0.00	0.00	0.00
END NUDGE	1900.00	16.000	206.650	1889.64	-99.19	-49.78	2.00	99.03
BEGIN DROP	5816.06	16.000	206.650	5654.00	-1063.93	-533.94	0.00	1062.24
END DROP	6616.06	0.000	179.820	6443.64	-1163.11	-583.71	2.00	1161.27
KOP, BUILD @ 6°/100'	6985.50	0.000	179.820	6813.08	-1163.11	-583.71	0.00	1161.27
LANDING POINT	8480.01	89.671	179.820	7768.00	-2112.55	-580.73	6.00	2110.71
TOTAL DEPTH	12828.90	89.671	179.820	7793.00	-6461.35	-567.05	0.00	6459.53

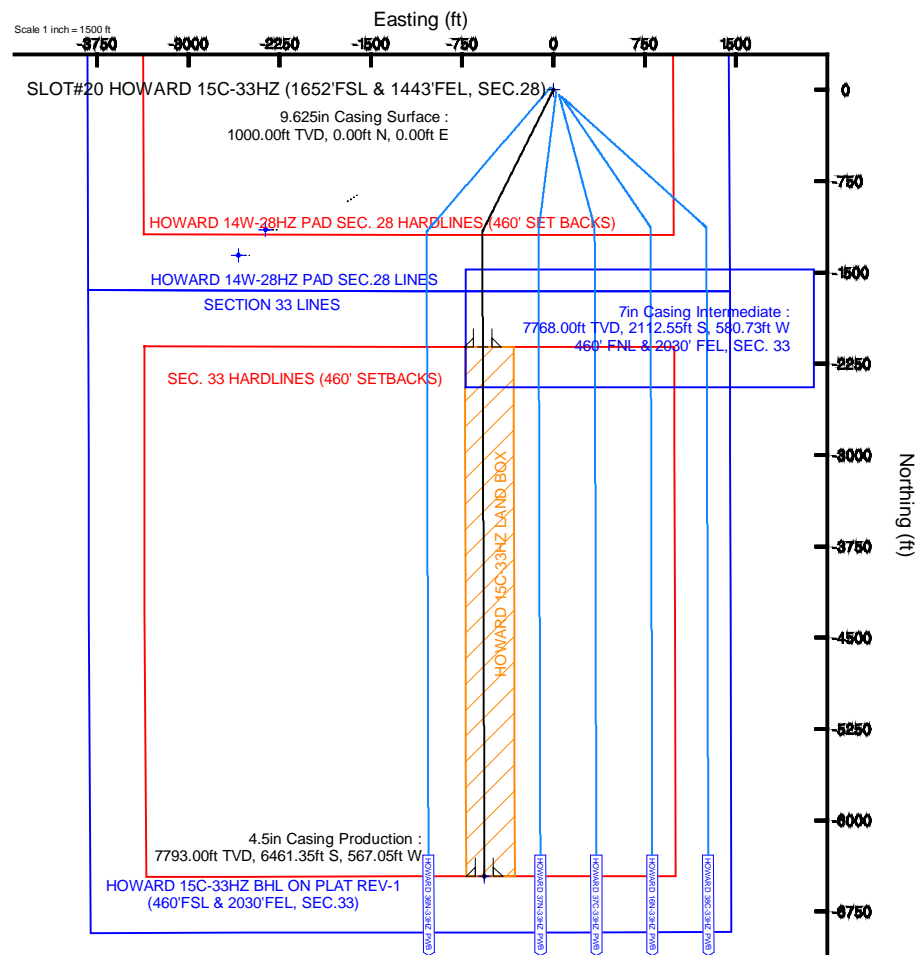
## Targets

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	-1148.10	-2366.59	3168144.45	1249319.07	40°00'58.338"N	104°53'58.798"W
HOWARD 14W-28HZ PAD SEC. 28 HARDLINES (460' SET BACKS)		5038.00	-1358.96	-2589.83	3167922.66	1249106.69	40°00'56.254"N	104°54'01.667"W
HOWARD 14W-28HZ PAD SEC.28 LINES		5038.00	-1358.96	-2589.83	3167922.66	1249106.69	40°00'56.254"N	104°54'01.667"W
HOWARD 15C-33HZ BHL ON PLAT REV-1 (460'FSL & 2030'FEL, SEC.33)	12828.90	7793.00	-6461.35	-567.05	3169980.35	1244018.50	40°00'55.832"N	104°53'35.666"W
HOWARD 15C-33HZ LAND BOX		7793.00	0.00	0.00	3170503.01	1200463.35	40°01'00.685"N	104°53'28.381"W
SEC. 33 HARDLINES (460' SETBACKS)		7814.00	-1148.10	-2366.59	3168144.45	1249319.07	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 23Jul2013)

To correct azimuth from Magnetic to True add 8.65 degrees





# Planned Wellpath Report

HOWARD 15C-33HZ (PERMIT REV-1) PWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#20 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 15C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 15C-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 10:21
Convergence at slot	n/a	Database/Source file	WellArchitectDB/HOWARD_15C-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	1413526.33	2716960.06	3170503.01	1250483.35	40°01'09.685"N	104°53'28.381"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#10 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28) (RKB) to Facility Vertical Datum	5038.00ft
Horizontal Reference Pt	Slot	Rig on SLOT#10 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28) (RKB) to Mean Sea Level	5038.00ft
Vertical Reference Pt	Rig on SLOT#10 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28) (RKB)	Rig on SLOT#10 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28) (RKB) to Mud Line at Slot (SLOT#20 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28))	5038.00ft
MD Reference Pt	Rig on SLOT#10 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	179.82°



# Planned Wellpath Report

HOWARD 15C-33HZ (PERMIT REV-1) PWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#20 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 15C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 15C-33HZ PWB
Facility	SEC.28-T1N-R67W		

WELLPATH DATA (147 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	206.650	0.00	0.00	0.00	0.00	40°01'09.685"N	104°53'28.381"W	0.00	
17.00	0.000	206.650	17.00	0.00	0.00	0.00	40°01'09.685"N	104°53'28.381"W	0.00	TIE-ON
117.00†	0.000	206.650	117.00	0.00	0.00	0.00	40°01'09.685"N	104°53'28.381"W	0.00	
217.00†	0.000	206.650	217.00	0.00	0.00	0.00	40°01'09.685"N	104°53'28.381"W	0.00	
317.00†	0.000	206.650	317.00	0.00	0.00	0.00	40°01'09.685"N	104°53'28.381"W	0.00	
417.00†	0.000	206.650	417.00	0.00	0.00	0.00	40°01'09.685"N	104°53'28.381"W	0.00	
517.00†	0.000	206.650	517.00	0.00	0.00	0.00	40°01'09.685"N	104°53'28.381"W	0.00	
617.00†	0.000	206.650	617.00	0.00	0.00	0.00	40°01'09.685"N	104°53'28.381"W	0.00	
717.00†	0.000	206.650	717.00	0.00	0.00	0.00	40°01'09.685"N	104°53'28.381"W	0.00	
788.00†	0.000	206.650	788.00	0.00	0.00	0.00	40°01'09.685"N	104°53'28.381"W	0.00	FOX HILLS BASE
817.00†	0.000	206.650	817.00	0.00	0.00	0.00	40°01'09.685"N	104°53'28.381"W	0.00	
917.00†	0.000	206.650	917.00	0.00	0.00	0.00	40°01'09.685"N	104°53'28.381"W	0.00	
1017.00†	0.000	206.650	1017.00	0.00	0.00	0.00	40°01'09.685"N	104°53'28.381"W	0.00	
1100.00	0.000	206.650	1100.00	0.00	0.00	0.00	40°01'09.685"N	104°53'28.381"W	0.00	BEGIN NUDGE
1117.00†	0.340	206.650	1117.00	0.05	-0.05	-0.02	40°01'09.685"N	104°53'28.381"W	2.00	
1217.00†	2.340	206.650	1216.97	2.13	-2.14	-1.07	40°01'09.664"N	104°53'28.395"W	2.00	
1317.00†	4.340	206.650	1316.79	7.33	-7.34	-3.68	40°01'09.612"N	104°53'28.428"W	2.00	
1417.00†	6.340	206.650	1416.35	15.63	-15.66	-7.86	40°01'09.530"N	104°53'28.482"W	2.00	
1517.00†	8.340	206.650	1515.53	27.03	-27.08	-13.59	40°01'09.417"N	104°53'28.556"W	2.00	
1617.00†	10.340	206.650	1614.20	41.52	-41.58	-20.87	40°01'09.274"N	104°53'28.649"W	2.00	
1717.00†	12.340	206.650	1712.24	59.06	-59.15	-29.69	40°01'09.100"N	104°53'28.763"W	2.00	
1817.00†	14.340	206.650	1809.54	79.65	-79.78	-40.04	40°01'08.897"N	104°53'28.896"W	2.00	
1900.00	16.000	206.650	1889.64	99.03	-99.19	-49.78	40°01'08.705"N	104°53'29.021"W	2.00	END NUDGE
1917.00†	16.000	206.650	1905.98	103.21	-103.38	-51.88	40°01'08.663"N	104°53'29.048"W	0.00	
2017.00†	16.000	206.650	2002.11	127.81	-128.01	-64.24	40°01'08.420"N	104°53'29.207"W	0.00	
2117.00†	16.000	206.650	2098.24	152.40	-152.65	-76.61	40°01'08.177"N	104°53'29.366"W	0.00	
2217.00†	16.000	206.650	2194.36	177.00	-177.28	-88.97	40°01'07.933"N	104°53'29.525"W	0.00	
2317.00†	16.000	206.650	2290.49	201.60	-201.92	-101.33	40°01'07.690"N	104°53'29.683"W	0.00	
2417.00†	16.000	206.650	2386.62	226.19	-226.55	-113.70	40°01'07.446"N	104°53'29.842"W	0.00	
2517.00†	16.000	206.650	2482.74	250.79	-251.19	-126.06	40°01'07.203"N	104°53'30.001"W	0.00	
2617.00†	16.000	206.650	2578.87	275.39	-275.82	-138.42	40°01'06.959"N	104°53'30.160"W	0.00	
2717.00†	16.000	206.650	2674.99	299.98	-300.46	-150.79	40°01'06.716"N	104°53'30.319"W	0.00	
2817.00†	16.000	206.650	2771.12	324.58	-325.09	-163.15	40°01'06.472"N	104°53'30.478"W	0.00	
2917.00†	16.000	206.650	2867.25	349.18	-349.73	-175.51	40°01'06.229"N	104°53'30.637"W	0.00	
3017.00†	16.000	206.650	2963.37	373.77	-374.37	-187.88	40°01'05.985"N	104°53'30.796"W	0.00	
3117.00†	16.000	206.650	3059.50	398.37	-399.00	-200.24	40°01'05.742"N	104°53'30.955"W	0.00	
3217.00†	16.000	206.650	3155.62	422.97	-423.64	-212.60	40°01'05.498"N	104°53'31.114"W	0.00	
3317.00†	16.000	206.650	3251.75	447.56	-448.27	-224.97	40°01'05.255"N	104°53'31.273"W	0.00	
3417.00†	16.000	206.650	3347.88	472.16	-472.91	-237.33	40°01'05.012"N	104°53'31.431"W	0.00	
3517.00†	16.000	206.650	3444.00	496.76	-497.54	-249.69	40°01'04.768"N	104°53'31.590"W	0.00	
3617.00†	16.000	206.650	3540.13	521.35	-522.18	-262.06	40°01'04.525"N	104°53'31.749"W	0.00	
3717.00†	16.000	206.650	3636.26	545.95	-546.81	-274.42	40°01'04.281"N	104°53'31.908"W	0.00	
3817.00†	16.000	206.650	3732.38	570.55	-571.45	-286.78	40°01'04.038"N	104°53'32.067"W	0.00	
3917.00†	16.000	206.650	3828.51	595.14	-596.08	-299.15	40°01'03.794"N	104°53'32.226"W	0.00	
4017.00†	16.000	206.650	3924.63	619.74	-620.72	-311.51	40°01'03.551"N	104°53'32.385"W	0.00	



# Planned Wellpath Report

HOWARD 15C-33HZ (PERMIT REV-1) PWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#20 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 15C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 15C-33HZ PWB
Facility	SEC.28-T1N-R67W		

## WELLPATH DATA (147 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4117.00†	16.000	206.650	4020.76	644.33	-645.36	-323.87	40°01'03.307"N	104°53'32.544"W	0.00	
4217.00†	16.000	206.650	4116.89	668.93	-669.99	-336.24	40°01'03.064"N	104°53'32.703"W	0.00	
4317.00†	16.000	206.650	4213.01	693.53	-694.63	-348.60	40°01'02.820"N	104°53'32.862"W	0.00	
4417.00†	16.000	206.650	4309.14	718.12	-719.26	-360.96	40°01'02.577"N	104°53'33.020"W	0.00	
4517.00†	16.000	206.650	4405.26	742.72	-743.90	-373.33	40°01'02.334"N	104°53'33.179"W	0.00	
4617.00†	16.000	206.650	4501.39	767.32	-768.53	-385.69	40°01'02.090"N	104°53'33.338"W	0.00	
4717.00†	16.000	206.650	4597.52	791.91	-793.17	-398.06	40°01'01.847"N	104°53'33.497"W	0.00	
4817.00†	16.000	206.650	4693.64	816.51	-817.80	-410.42	40°01'01.603"N	104°53'33.656"W	0.00	
4917.00†	16.000	206.650	4789.77	841.11	-842.44	-422.78	40°01'01.360"N	104°53'33.815"W	0.00	
5004.63†	16.000	206.650	4874.00	862.66	-864.03	-433.62	40°01'01.146"N	104°53'33.954"W	0.00	SUSSEX
5017.00†	16.000	206.650	4885.90	865.70	-867.07	-435.15	40°01'01.116"N	104°53'33.974"W	0.00	
5117.00†	16.000	206.650	4982.02	890.30	-891.71	-447.51	40°01'00.873"N	104°53'34.133"W	0.00	
5217.00†	16.000	206.650	5078.15	914.90	-916.35	-459.87	40°01'00.629"N	104°53'34.292"W	0.00	
5317.00†	16.000	206.650	5174.27	939.49	-940.98	-472.24	40°01'00.386"N	104°53'34.451"W	0.00	
5417.00†	16.000	206.650	5270.40	964.09	-965.62	-484.60	40°01'00.142"N	104°53'34.609"W	0.00	
5480.04†	16.000	206.650	5331.00	979.59	-981.15	-492.39	40°00'59.989"N	104°53'34.710"W	0.00	SHANNON
5517.00†	16.000	206.650	5366.53	988.69	-990.25	-496.96	40°00'59.899"N	104°53'34.768"W	0.00	
5617.00†	16.000	206.650	5462.65	1013.28	-1014.89	-509.33	40°00'59.656"N	104°53'34.927"W	0.00	
5717.00†	16.000	206.650	5558.78	1037.88	-1039.52	-521.69	40°00'59.412"N	104°53'35.086"W	0.00	
5816.06	16.000	206.650	5654.00	1062.24	-1063.93	-533.94	40°00'59.171"N	104°53'35.244"W	0.00	BEGIN DROP
5817.00†	15.981	206.650	5654.90	1062.47	-1064.16	-534.05	40°00'59.169"N	104°53'35.245"W	2.00	
5917.00†	13.981	206.650	5751.50	1085.54	-1087.26	-545.65	40°00'58.940"N	104°53'35.394"W	2.00	
6017.00†	11.981	206.650	5848.94	1105.58	-1107.34	-555.72	40°00'58.742"N	104°53'35.524"W	2.00	
6117.00†	9.981	206.650	5947.10	1122.58	-1124.36	-564.27	40°00'58.574"N	104°53'35.633"W	2.00	
6217.00†	7.981	206.650	6045.87	1136.51	-1138.31	-571.27	40°00'58.436"N	104°53'35.723"W	2.00	
6317.00†	5.981	206.650	6145.13	1147.36	-1149.17	-576.72	40°00'58.328"N	104°53'35.793"W	2.00	
6417.00†	3.981	206.650	6244.74	1155.10	-1156.93	-580.61	40°00'58.252"N	104°53'35.843"W	2.00	
6517.00†	1.981	206.650	6344.60	1159.75	-1161.58	-582.95	40°00'58.206"N	104°53'35.873"W	2.00	
6616.06	0.000	179.820	6443.64	1161.27	-1163.11	-583.71	40°00'58.191"N	104°53'35.883"W	2.00	END DROP
6617.00†	0.000	179.820	6444.58	1161.27	-1163.11	-583.71	40°00'58.191"N	104°53'35.883"W	0.00	
6717.00†	0.000	179.820	6544.58	1161.27	-1163.11	-583.71	40°00'58.191"N	104°53'35.883"W	0.00	
6817.00†	0.000	179.820	6644.58	1161.27	-1163.11	-583.71	40°00'58.191"N	104°53'35.883"W	0.00	
6885.50†	0.000	179.820	6713.08	1161.27	-1163.11	-583.71	40°00'58.191"N	104°53'35.883"W	0.00	4 1/2" LINER TOP
6917.00†	0.000	179.820	6744.58	1161.27	-1163.11	-583.71	40°00'58.191"N	104°53'35.883"W	0.00	
6985.50	0.000	179.820	6813.08	1161.27	-1163.11	-583.71	40°00'58.191"N	104°53'35.883"W	0.00	KOP, BUILD @ 6°/100'
7017.00†	1.890	179.820	6844.58	1161.79	-1163.63	-583.71	40°00'58.186"N	104°53'35.883"W	6.00	
7117.00†	7.890	179.820	6944.17	1170.31	-1172.15	-583.69	40°00'58.101"N	104°53'35.883"W	6.00	
7217.00†	13.890	179.820	7042.32	1189.20	-1191.04	-583.63	40°00'57.915"N	104°53'35.882"W	6.00	
7317.00†	19.890	179.820	7137.97	1218.24	-1220.08	-583.53	40°00'57.628"N	104°53'35.881"W	6.00	
7417.00†	25.890	179.820	7230.05	1257.12	-1258.96	-583.41	40°00'57.244"N	104°53'35.879"W	6.00	
7515.16†	31.780	179.820	7316.00	1304.44	-1306.28	-583.26	40°00'56.776"N	104°53'35.877"W	6.00	SHARON SPRINGS
7517.00†	31.890	179.820	7317.56	1305.41	-1307.25	-583.26	40°00'56.766"N	104°53'35.877"W	6.00	
7546.06†	33.634	179.820	7342.00	1321.13	-1322.97	-583.21	40°00'56.611"N	104°53'35.877"W	6.00	NIOBRARA A
7617.00†	37.890	179.820	7399.55	1362.58	-1364.42	-583.08	40°00'56.201"N	104°53'35.875"W	6.00	
7717.00†	43.890	179.820	7475.11	1428.01	-1429.85	-582.88	40°00'55.555"N	104°53'35.872"W	6.00	



# Planned Wellpath Report

HOWARD 15C-33HZ (PERMIT REV-1) PWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#20 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 15C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 15C-33HZ PWB
Facility	SEC.28-T1N-R67W		

## WELLPATH DATA (147 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7771.07†	47.134	179.820	7513.00	1466.58	-1468.42	-582.75	40°00'55.174"N	104°53'35.871"W	6.00	NIOBRARA B
7817.00†	49.890	179.820	7543.42	1500.98	-1502.82	-582.65	40°00'54.834"N	104°53'35.869"W	6.00	
7917.00†	55.890	179.820	7603.73	1580.70	-1582.53	-582.39	40°00'54.046"N	104°53'35.866"W	6.00	
7928.28†	56.567	179.820	7610.00	1590.07	-1591.91	-582.37	40°00'53.953"N	104°53'35.866"W	6.00	NIOBRARA C
8017.00†	61.890	179.820	7655.37	1666.27	-1668.11	-582.13	40°00'53.200"N	104°53'35.863"W	6.00	
8117.00†	67.890	179.820	7697.79	1756.78	-1758.62	-581.84	40°00'52.306"N	104°53'35.859"W	6.00	
8217.00†	73.890	179.820	7730.51	1851.23	-1853.06	-581.54	40°00'51.372"N	104°53'35.855"W	6.00	
8262.10†	76.596	179.820	7742.00	1894.84	-1896.67	-581.41	40°00'50.941"N	104°53'35.853"W	6.00	FORT HAYS
8317.00†	79.890	179.820	7753.19	1948.58	-1950.41	-581.24	40°00'50.410"N	104°53'35.851"W	6.00	
8387.61†	84.127	179.820	7763.00	2018.49	-2020.32	-581.02	40°00'49.719"N	104°53'35.848"W	6.00	CODELL
8417.00†	85.890	179.820	7765.56	2047.76	-2049.60	-580.93	40°00'49.430"N	104°53'35.847"W	6.00	
8480.01	89.671	179.820	7768.00	2110.71	-2112.55	-580.73	40°00'48.808"N	104°53'35.845"W	6.00	LANDING POINT
8517.00†	89.671	179.820	7768.21	2147.70	-2149.54	-580.61	40°00'48.443"N	104°53'35.843"W	0.00	
8617.00†	89.671	179.820	7768.78	2247.70	-2249.54	-580.30	40°00'47.454"N	104°53'35.839"W	0.00	
8717.00†	89.671	179.820	7769.36	2347.70	-2349.53	-579.98	40°00'46.466"N	104°53'35.835"W	0.00	
8817.00†	89.671	179.820	7769.93	2447.70	-2449.53	-579.67	40°00'45.478"N	104°53'35.831"W	0.00	
8917.00†	89.671	179.820	7770.51	2547.70	-2549.53	-579.35	40°00'44.490"N	104°53'35.827"W	0.00	
9017.00†	89.671	179.820	7771.08	2647.70	-2649.53	-579.04	40°00'43.502"N	104°53'35.823"W	0.00	
9117.00†	89.671	179.820	7771.66	2747.69	-2749.53	-578.73	40°00'42.513"N	104°53'35.819"W	0.00	
9217.00†	89.671	179.820	7772.23	2847.69	-2849.52	-578.41	40°00'41.525"N	104°53'35.815"W	0.00	
9317.00†	89.671	179.820	7772.81	2947.69	-2949.52	-578.10	40°00'40.537"N	104°53'35.811"W	0.00	
9417.00†	89.671	179.820	7773.38	3047.69	-3049.52	-577.78	40°00'39.549"N	104°53'35.806"W	0.00	
9517.00†	89.671	179.820	7773.96	3147.69	-3149.52	-577.47	40°00'38.560"N	104°53'35.802"W	0.00	
9617.00†	89.671	179.820	7774.53	3247.69	-3249.52	-577.15	40°00'37.572"N	104°53'35.798"W	0.00	
9717.00†	89.671	179.820	7775.11	3347.68	-3349.51	-576.84	40°00'36.584"N	104°53'35.794"W	0.00	
9817.00†	89.671	179.820	7775.68	3447.68	-3449.51	-576.52	40°00'35.596"N	104°53'35.790"W	0.00	
9917.00†	89.671	179.820	7776.26	3547.68	-3549.51	-576.21	40°00'34.608"N	104°53'35.786"W	0.00	
10017.00†	89.671	179.820	7776.83	3647.68	-3649.51	-575.90	40°00'33.619"N	104°53'35.782"W	0.00	
10117.00†	89.671	179.820	7777.41	3747.68	-3749.50	-575.58	40°00'32.631"N	104°53'35.778"W	0.00	
10217.00†	89.671	179.820	7777.98	3847.68	-3849.50	-575.27	40°00'31.643"N	104°53'35.774"W	0.00	
10317.00†	89.671	179.820	7778.56	3947.67	-3949.50	-574.95	40°00'30.655"N	104°53'35.770"W	0.00	
10417.00†	89.671	179.820	7779.13	4047.67	-4049.50	-574.64	40°00'29.667"N	104°53'35.766"W	0.00	
10517.00†	89.671	179.820	7779.71	4147.67	-4149.50	-574.32	40°00'28.678"N	104°53'35.762"W	0.00	
10617.00†	89.671	179.820	7780.28	4247.67	-4249.49	-574.01	40°00'27.690"N	104°53'35.758"W	0.00	
10717.00†	89.671	179.820	7780.86	4347.67	-4349.49	-573.69	40°00'26.702"N	104°53'35.754"W	0.00	
10817.00†	89.671	179.820	7781.43	4447.67	-4449.49	-573.38	40°00'25.714"N	104°53'35.749"W	0.00	
10917.00†	89.671	179.820	7782.01	4547.66	-4549.49	-573.07	40°00'24.726"N	104°53'35.745"W	0.00	
11017.00†	89.671	179.820	7782.58	4647.66	-4649.49	-572.75	40°00'23.737"N	104°53'35.741"W	0.00	
11117.00†	89.671	179.820	7783.16	4747.66	-4749.48	-572.44	40°00'22.749"N	104°53'35.737"W	0.00	
11217.00†	89.671	179.820	7783.73	4847.66	-4849.48	-572.12	40°00'21.761"N	104°53'35.733"W	0.00	
11317.00†	89.671	179.820	7784.31	4947.66	-4949.48	-571.81	40°00'20.773"N	104°53'35.729"W	0.00	
11417.00†	89.671	179.820	7784.88	5047.66	-5049.48	-571.49	40°00'19.785"N	104°53'35.725"W	0.00	
11517.00†	89.671	179.820	7785.46	5147.65	-5149.47	-571.18	40°00'18.796"N	104°53'35.721"W	0.00	
11617.00†	89.671	179.820	7786.03	5247.65	-5249.47	-570.86	40°00'17.808"N	104°53'35.717"W	0.00	
11717.00†	89.671	179.820	7786.61	5347.65	-5349.47	-570.55	40°00'16.820"N	104°53'35.713"W	0.00	





# Planned Wellpath Report

## HOWARD 15C-33HZ (PERMIT REV-1) PWP

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### REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#20 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 15C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 15C-33HZ PWB
Facility	SEC.28-T1N-R67W		

### WELLPATH DATA (147 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
11817.00†	89.671	179.820	7787.18	5447.65	-5449.47	-570.24	40°00'15.832"N	104°53'35.709"W	0.00	
11917.00†	89.671	179.820	7787.76	5547.65	-5549.47	-569.92	40°00'14.843"N	104°53'35.705"W	0.00	
12017.00†	89.671	179.820	7788.33	5647.65	-5649.46	-569.61	40°00'13.855"N	104°53'35.701"W	0.00	
12117.00†	89.671	179.820	7788.91	5747.64	-5749.46	-569.29	40°00'12.867"N	104°53'35.697"W	0.00	
12217.00†	89.671	179.820	7789.48	5847.64	-5849.46	-568.98	40°00'11.879"N	104°53'35.693"W	0.00	
12317.00†	89.671	179.820	7790.06	5947.64	-5949.46	-568.66	40°00'10.891"N	104°53'35.688"W	0.00	
12417.00†	89.671	179.820	7790.63	6047.64	-6049.45	-568.35	40°00'09.902"N	104°53'35.684"W	0.00	
12517.00†	89.671	179.820	7791.21	6147.64	-6149.45	-568.03	40°00'08.914"N	104°53'35.680"W	0.00	
12617.00†	89.671	179.820	7791.78	6247.64	-6249.45	-567.72	40°00'07.926"N	104°53'35.676"W	0.00	
12717.00†	89.671	179.820	7792.36	6347.63	-6349.45	-567.41	40°00'06.938"N	104°53'35.672"W	0.00	
12817.00†	89.671	179.820	7792.93	6447.63	-6449.45	-567.09	40°00'05.950"N	104°53'35.668"W	0.00	
12828.90	89.671	179.820	7793.00 <sup>1</sup>	6459.53	-6461.35	-567.05	40°00'05.832"N	104°53'35.668"W	0.00	TOTAL DEPTH

### HOLE & CASING SECTIONS - Ref Wellbore: HOWARD 15C-33HZ PWB Ref Wellpath: HOWARD 15C-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	8480.01	7480.01	1000.00	7768.00	0.00	0.00	-2112.55	-580.73
7in Casing Intermediate	17.00	8480.01	8463.01	17.00	7768.00	0.00	0.00	-2112.55	-580.73
6.125in Open Hole	8480.01	12828.90	4348.89	7768.00	7793.00	-2112.55	-580.73	-6461.35	-567.05
4.5in Casing Production	17.00	12828.90	12811.90	17.00	7793.00	0.00	0.00	-6461.35	-567.05



# Planned Wellpath Report

HOWARD 15C-33HZ (PERMIT REV-1) PWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#20 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 15C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 15C-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	-1148.10	-2366.59	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	-1358.96	-2589.83	3167922.66	1249106.69	40°00'56.254"N	104°54'01.667"W	polygon
HOWARD 14W-28HZ PAD SEC.28 LINES		5038.00	-1358.96	-2589.83	3167922.66	1249106.69	40°00'56.254"N	104°54'01.667"W	polygon
1) HOWARD 15C-33HZ BHL ON PLAT REV-1 (460'FSL & 2030'FEL, SEC.33)	12828.90	7793.00	-6461.35	-567.05	3169980.35	1244018.50	40°00'05.832"N	104°53'35.668"W	point
HOWARD 15C-33HZ LAND BOX		7793.00	0.00	0.00	3170503.01	1250483.35	40°01'09.685"N	104°53'28.381"W	polygon
SEC. 33 HARDLINES (460' SETBACKS)		7814.00	-1148.10	-2366.59	3168144.45	1249319.07	40°00'58.338"N	104°53'58.798"W	polygon

SURVEY PROGRAM - Ref Wellbore: HOWARD 15C-33HZ PWB Ref Wellpath: HOWARD 15C-33HZ (PERMIT REV-1) PWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
17.00	8480.01	NaviTrak (Standard)		HOWARD 15C-33HZ PWB
8480.01	12828.90	OnTrak (Standard)		HOWARD 15C-33HZ PWB



# Planned Wellpath Report

HOWARD 15C-33HZ (PERMIT REV-1) PWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#20 HOWARD 15C-33HZ (1652'FSL & 1443'FEL, SEC.28)
Area	COLORADO	Well	HOWARD 15C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 15C-33HZ PWB
Facility	SEC.28-T1N-R67W		

## WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
788.00	0.000	206.650	788.00	FOX HILLS BASE
5004.63	16.000	206.650	4874.00	SUSSEX
5480.04	16.000	206.650	5331.00	SHANNON
6885.50	0.000	179.820	6713.08	4 1/2" LINER TOP
7515.16	31.780	179.820	7316.00	SHARON SPRINGS
7546.06	33.634	179.820	7342.00	NIOBRARA A
7771.07	47.134	179.820	7513.00	NIOBRARA B
7928.28	56.567	179.820	7610.00	NIOBRARA C
8262.10	76.596	179.820	7742.00	FORT HAYS
8387.61	84.127	179.820	7763.00	CODELL

## DESIGN COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
17.00	0.000	206.650	17.00	TIE-ON
1100.00	0.000	206.650	1100.00	BEGIN NUDGE
1900.00	16.000	206.650	1889.64	END NUDGE
5816.06	16.000	206.650	5654.00	BEGIN DROP
6616.06	0.000	179.820	6443.64	END DROP
6985.50	0.000	179.820	6813.08	KOP, BUILD @ 6°/100'
8480.01	89.671	179.820	7768.00	LANDING POINT
12828.90	89.671	179.820	7793.00	TOTAL DEPTH