

KERR-MCGEE OIL & GAS ONSHORE LP

Location: COLORADO Slot: SLOT#15 HOWARD 28C-33HZ (340' FNL & 1094' FEL, SEC. 28)
Field: WELD COUNTY (KERR MCGEE) Well: HOWARD 28C-33HZ
Facility: SEC.28-T1N-R67W Wellbore: HOWARD 28C-33HZ PWB

Plot reference wellpath is HOWARD 28C-33HZ (PERMIT REV-2) PWB

True vertical depths are referenced to ENSIGN 145 (RKB)	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
Measured depths are referenced to ENSIGN 145 (RKB)	North Reference: True north
ENSIGN 145 (RKB) to Mean Sea Level: 4996 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: SLOT#15 HOWARD 28C-33HZ (340' FNL & 1094' FEL, SEC. 28)): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: wllajet02 on 8/8/2013

Location Information

Facility Name				Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SEC.28-T1N-R67W				316923.760	121463.460	36°32'36.656"N	114°37'52.006"W
Slot				Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SLOT#15 HOWARD 28C-33HZ (340' FNL & 1094' FEL, SEC. 28)				3170813.107	1253776.780	40°01'42.211"N	104°53'24.104"W
ENSIGN 145 (RKB) to Mud line (At Slot: SLOT#15 HOWARD 28C-33HZ (340' FNL & 1094' FEL, SEC. 28))				4996ft			
Mean Sea Level to Mud line (At Slot: SLOT#15 HOWARD 28C-33HZ (340' FNL & 1094' FEL, SEC. 28))				0ft			
ENSIGN 145 (RKB) to Mean Sea Level				4996ft			

Survey Program

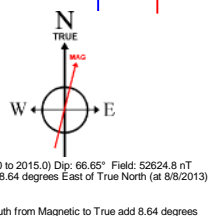
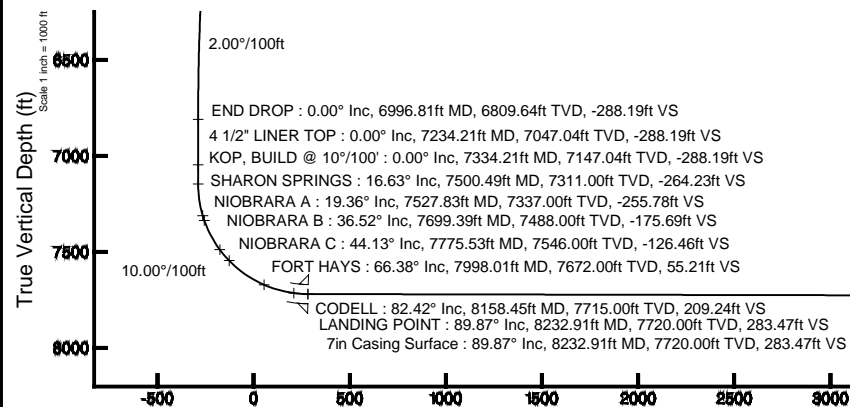
Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
13.00	8232.91	NaviTrak	NaviTrak (MagCorr)		HOWARD 28C-33HZ PWB
8232.91	13086.64	OnTrak	OnTrak (MagCorr)		HOWARD 28C-33HZ PWB

Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
HOWARD 27W-28HZ HARD LINES (460' SETBACKS, SEC. 28)		4996.00	0.00	-150.14	3170662.98	1253775.75	40°01'42.211"N	104°53'26.034"W
HOWARD 27W-28HZ HARD LINES (460' SETBACKS, SEC. 33)		4996.00	0.00	-150.14	3170662.98	1253775.75	40°01'42.211"N	104°53'26.034"W
HOWARD 27W-28HZ SECTION LINES (SEC. 28)		4996.00	0.00	-150.14	3170662.98	1253775.75	40°01'42.211"N	104°53'26.034"W
HOWARD 27W-28HZ SECTION LINES (SEC. 33)		4996.00	0.00	-150.14	3170662.98	1253775.75	40°01'42.211"N	104°53'26.034"W
HOWARD 28C-33HZ BHL ON PLAT (200' FNL & 2470' FEL, SEC. 33) REV-1		7727.00	-5143.72	-1351.82	3169496.75	1248624.08	40°00'51.379"N	104°53'41.478"W
HOWARD 28C-33HZ BHL ON PLAT (200' FNL & 2470' FEL, SEC. 33) REV-2	13086.62	7731.00	-5143.72	-1351.82	3169496.75	1248624.08	40°00'51.379"N	104°53'41.478"W

Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
TIE-ON	13.00	0.000	281.550	13.00	0.00	0.00	0.00	0.00
BEGIN NUDGE	1100.00	0.000	281.550	1100.00	0.00	0.00	0.00	0.00
END NUDGE	1900.00	16.000	281.550	1889.64	22.22	-108.73	2.00	-22.74
BEGIN DROP	6196.81	16.000	281.550	6020.00	259.36	-1269.11	0.00	-265.44
END DROP	6996.81	0.000	179.725	6809.64	281.58	-1377.84	2.00	-288.19
KOP, BUILD @ 10°/100'	7334.21	0.000	179.725	7147.04	281.58	-1377.84	0.00	-288.19
LANDING POINT	8232.91	89.870	179.725	7720.00	-290.08	-1375.10	10.00	283.47
TOTAL DEPTH	13086.62	89.870	179.725	7731.00	-5143.72	-1351.82	0.00	5137.17



Vertical Section (ft)

Azimuth 179.73° with reference 0.00 N, 0.00 E

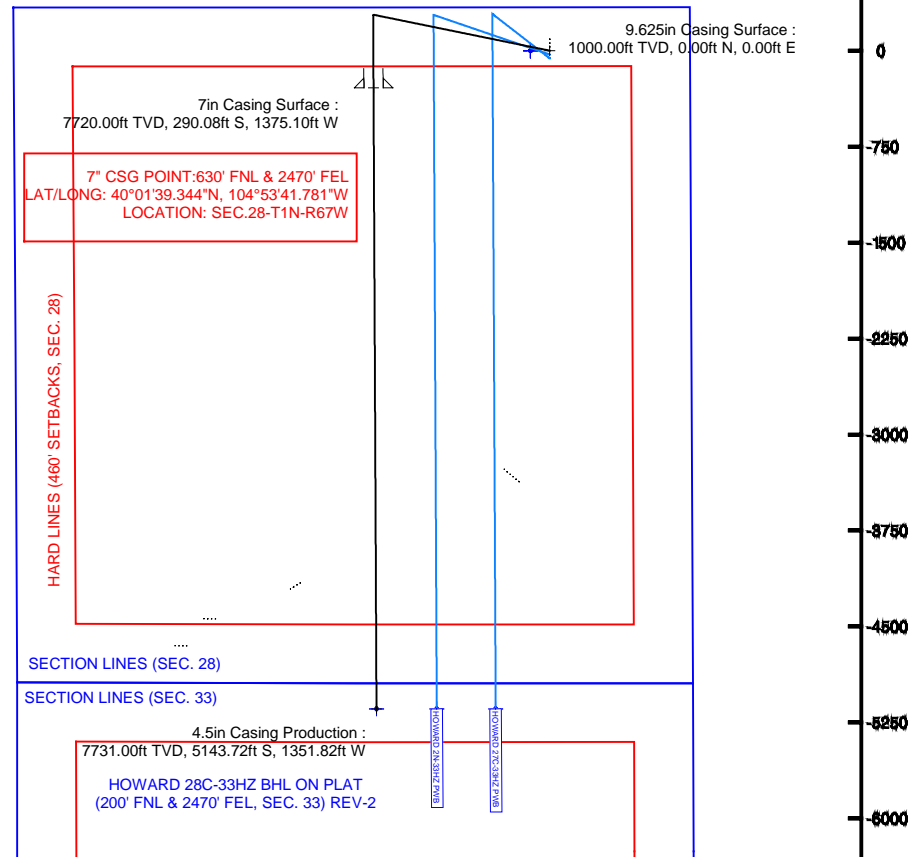


Scale 1 inch = 1500 ft

Easting (ft)



SLOT#15 HOWARD 28C-33HZ (340' FNL & 1094' FEL, SEC. 28)



4.5in Casing Production : 89.87° Inc, 13086.62ft MD, 7731.00ft TVD, 5137.17ft VS
TOTAL DEPTH : 89.87° Inc, 13086.62ft MD, 7731.00ft TVD, 5137.17ft VS
HOWARD 28C-33HZ BHL ON PLAT (200' FNL & 2470' FEL, SEC. 33) REV-2

Scale 1 inch = 1000 ft



Planned Wellpath Report

HOWARD 28C-33HZ (PERMIT REV-2) PWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#15 HOWARD 28C-33HZ (340' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 28C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 28C-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	Wilsjef02
Scale	0.999964	Report Generated	8/8/2013 at 08:28:12
Convergence at slot	n/a	Database/Source file	WellArchitectDB/_HOWARD_28C-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	1416827.57	2716930.04	3170813.11	1253776.78	40°01'42.211"N	104°53'24.104"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	ENSIGN 145 (RKB) to Facility Vertical Datum	4996.00ft
Horizontal Reference Pt	Slot	ENSIGN 145 (RKB) to Mean Sea Level	4996.00ft
Vertical Reference Pt	ENSIGN 145 (RKB)	ENSIGN 145 (RKB) to Mud Line at Slot (SLOT#15 HOWARD 28C-33HZ (340' FNL & 1094' FEL, SEC. 28))	4996.00ft
MD Reference Pt	ENSIGN 145 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	179.73°



Planned Wellpath Report

HOWARD 28C-33HZ (PERMIT REV-2) PWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#15 HOWARD 28C-33HZ (340' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 28C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 28C-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	281.550	0.00	0.00	0.00	0.00	40°01'42.211"N	104°53'24.104"W	0.00	
13.00	0.000	281.550	13.00	0.00	0.00	0.00	40°01'42.211"N	104°53'24.104"W	0.00	TIE-ON
113.00†	0.000	281.550	113.00	0.00	0.00	0.00	40°01'42.211"N	104°53'24.104"W	0.00	
213.00†	0.000	281.550	213.00	0.00	0.00	0.00	40°01'42.211"N	104°53'24.104"W	0.00	
313.00†	0.000	281.550	313.00	0.00	0.00	0.00	40°01'42.211"N	104°53'24.104"W	0.00	
413.00†	0.000	281.550	413.00	0.00	0.00	0.00	40°01'42.211"N	104°53'24.104"W	0.00	
513.00†	0.000	281.550	513.00	0.00	0.00	0.00	40°01'42.211"N	104°53'24.104"W	0.00	
613.00†	0.000	281.550	613.00	0.00	0.00	0.00	40°01'42.211"N	104°53'24.104"W	0.00	
713.00†	0.000	281.550	713.00	0.00	0.00	0.00	40°01'42.211"N	104°53'24.104"W	0.00	
813.00†	0.000	281.550	813.00	0.00	0.00	0.00	40°01'42.211"N	104°53'24.104"W	0.00	
913.00†	0.000	281.550	913.00	0.00	0.00	0.00	40°01'42.211"N	104°53'24.104"W	0.00	
1013.00†	0.000	281.550	1013.00	0.00	0.00	0.00	40°01'42.211"N	104°53'24.104"W	0.00	
1092.00†	0.000	281.550	1092.00	0.00	0.00	0.00	40°01'42.211"N	104°53'24.104"W	0.00	FOX HILLS BASE
1100.00	0.000	281.550	1100.00	0.00	0.00	0.00	40°01'42.211"N	104°53'24.104"W	0.00	BEGIN NUDGE
1113.00†	0.260	281.550	1113.00	-0.01	0.01	-0.03	40°01'42.211"N	104°53'24.104"W	2.00	
1213.00†	2.260	281.550	1212.97	-0.46	0.45	-2.18	40°01'42.215"N	104°53'24.132"W	2.00	
1313.00†	4.260	281.550	1312.80	-1.62	1.58	-7.75	40°01'42.227"N	104°53'24.204"W	2.00	
1413.00†	6.260	281.550	1412.38	-3.50	3.42	-16.74	40°01'42.245"N	104°53'24.319"W	2.00	
1513.00†	8.260	281.550	1511.57	-6.09	5.95	-29.12	40°01'42.270"N	104°53'24.478"W	2.00	
1613.00†	10.260	281.550	1610.26	-9.39	9.17	-44.88	40°01'42.302"N	104°53'24.681"W	2.00	
1713.00†	12.260	281.550	1708.33	-13.39	13.08	-64.01	40°01'42.340"N	104°53'24.927"W	2.00	
1813.00†	14.260	281.550	1805.66	-18.09	17.67	-86.48	40°01'42.386"N	104°53'25.216"W	2.00	
1900.00	16.000	281.550	1889.64	-22.74	22.22	-108.73	40°01'42.431"N	104°53'25.502"W	2.00	END NUDGE
1913.00†	16.000	281.550	1902.14	-23.48	22.94	-112.24	40°01'42.438"N	104°53'25.547"W	0.00	
2013.00†	16.000	281.550	1998.27	-29.12	28.46	-139.25	40°01'42.492"N	104°53'25.894"W	0.00	
2113.00†	16.000	281.550	2094.39	-34.77	33.98	-166.25	40°01'42.547"N	104°53'26.241"W	0.00	
2213.00†	16.000	281.550	2190.52	-40.42	39.49	-193.26	40°01'42.601"N	104°53'26.588"W	0.00	
2313.00†	16.000	281.550	2286.64	-46.07	45.01	-220.26	40°01'42.656"N	104°53'26.935"W	0.00	
2413.00†	16.000	281.550	2382.77	-51.72	50.53	-247.27	40°01'42.710"N	104°53'27.283"W	0.00	
2513.00†	16.000	281.550	2478.90	-57.37	56.05	-274.27	40°01'42.765"N	104°53'27.630"W	0.00	
2613.00†	16.000	281.550	2575.02	-63.02	61.57	-301.28	40°01'42.819"N	104°53'27.977"W	0.00	
2713.00†	16.000	281.550	2671.15	-68.66	67.09	-328.29	40°01'42.874"N	104°53'28.324"W	0.00	
2813.00†	16.000	281.550	2767.27	-74.31	72.61	-355.29	40°01'42.929"N	104°53'28.671"W	0.00	
2913.00†	16.000	281.550	2863.40	-79.96	78.13	-382.30	40°01'42.983"N	104°53'29.018"W	0.00	
3013.00†	16.000	281.550	2959.53	-85.61	83.65	-409.30	40°01'43.038"N	104°53'29.366"W	0.00	
3113.00†	16.000	281.550	3055.65	-91.26	89.16	-436.31	40°01'43.092"N	104°53'29.713"W	0.00	
3213.00†	16.000	281.550	3151.78	-96.91	94.68	-463.31	40°01'43.147"N	104°53'30.060"W	0.00	
3313.00†	16.000	281.550	3247.91	-102.55	100.20	-490.32	40°01'43.201"N	104°53'30.407"W	0.00	
3413.00†	16.000	281.550	3344.03	-108.20	105.72	-517.32	40°01'43.256"N	104°53'30.754"W	0.00	
3513.00†	16.000	281.550	3440.16	-113.85	111.24	-544.33	40°01'43.310"N	104°53'31.101"W	0.00	
3613.00†	16.000	281.550	3536.28	-119.50	116.76	-571.34	40°01'43.365"N	104°53'31.449"W	0.00	
3713.00†	16.000	281.550	3632.41	-125.15	122.28	-598.34	40°01'43.419"N	104°53'31.796"W	0.00	
3813.00†	16.000	281.550	3728.54	-130.80	127.80	-625.35	40°01'43.474"N	104°53'32.143"W	0.00	
3913.00†	16.000	281.550	3824.66	-136.45	133.32	-652.35	40°01'43.528"N	104°53'32.490"W	0.00	
4013.00†	16.000	281.550	3920.79	-142.09	138.83	-679.36	40°01'43.583"N	104°53'32.837"W	0.00	



Planned Wellpath Report

HOWARD 28C-33HZ (PERMIT REV-2) PWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#15 HOWARD 28C-33HZ (340' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 28C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 28C-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
4113.00†	16.000	281.550	4016.91	-147.74	144.35	-706.36	40°01'43.637"N	104°53'33.184"W	0.00	
4213.00†	16.000	281.550	4113.04	-153.39	149.87	-733.37	40°01'43.692"N	104°53'33.531"W	0.00	
4313.00†	16.000	281.550	4209.17	-159.04	155.39	-760.37	40°01'43.747"N	104°53'33.879"W	0.00	
4413.00†	16.000	281.550	4305.29	-164.69	160.91	-787.38	40°01'43.801"N	104°53'34.226"W	0.00	
4513.00†	16.000	281.550	4401.42	-170.34	166.43	-814.39	40°01'43.856"N	104°53'34.573"W	0.00	
4613.00†	16.000	281.550	4497.55	-175.98	171.95	-841.39	40°01'43.910"N	104°53'34.920"W	0.00	
4713.00†	16.000	281.550	4593.67	-181.63	177.47	-868.40	40°01'43.965"N	104°53'35.267"W	0.00	
4813.00†	16.000	281.550	4689.80	-187.28	182.99	-895.40	40°01'44.019"N	104°53'35.614"W	0.00	
4906.84†	16.000	281.550	4780.00	-192.58	188.16	-920.74	40°01'44.070"N	104°53'35.940"W	0.00	SUSEX
4913.00†	16.000	281.550	4785.92	-192.93	188.50	-922.41	40°01'44.074"N	104°53'35.962"W	0.00	
5013.00†	16.000	281.550	4882.05	-198.58	194.02	-949.41	40°01'44.128"N	104°53'36.309"W	0.00	
5113.00†	16.000	281.550	4978.18	-204.23	199.54	-976.42	40°01'44.183"N	104°53'36.656"W	0.00	
5213.00†	16.000	281.550	5074.30	-209.87	205.06	-1003.42	40°01'44.237"N	104°53'37.003"W	0.00	
5313.00†	16.000	281.550	5170.43	-215.52	210.58	-1030.43	40°01'44.292"N	104°53'37.350"W	0.00	
5413.00†	16.000	281.550	5266.56	-221.17	216.10	-1057.44	40°01'44.346"N	104°53'37.697"W	0.00	
5513.00†	16.000	281.550	5362.68	-226.82	221.62	-1084.44	40°01'44.401"N	104°53'38.045"W	0.00	
5613.00†	16.000	281.550	5458.81	-232.47	227.14	-1111.45	40°01'44.455"N	104°53'38.392"W	0.00	
5713.00†	16.000	281.550	5554.93	-238.12	232.66	-1138.45	40°01'44.510"N	104°53'38.739"W	0.00	
5813.00†	16.000	281.550	5651.06	-243.77	238.17	-1165.46	40°01'44.564"N	104°53'39.086"W	0.00	
5913.00†	16.000	281.550	5747.19	-249.41	243.69	-1192.46	40°01'44.619"N	104°53'39.433"W	0.00	
6013.00†	16.000	281.550	5843.31	-255.06	249.21	-1219.47	40°01'44.673"N	104°53'39.780"W	0.00	
6113.00†	16.000	281.550	5939.44	-260.71	254.73	-1246.47	40°01'44.728"N	104°53'40.128"W	0.00	
6196.81	16.000	281.550	6020.00	-265.44	259.36	-1269.11	40°01'44.774"N	104°53'40.419"W	0.00	BEGIN DROP
6213.00†	15.676	281.550	6035.58	-266.35	260.24	-1273.44	40°01'44.782"N	104°53'40.474"W	2.00	
6313.00†	13.676	281.550	6132.31	-271.54	265.31	-1298.26	40°01'44.833"N	104°53'40.793"W	2.00	
6413.00†	11.676	281.550	6229.87	-276.04	269.71	-1319.76	40°01'44.876"N	104°53'41.070"W	2.00	
6513.00†	9.676	281.550	6328.13	-279.83	273.42	-1337.91	40°01'44.913"N	104°53'41.303"W	2.00	
6613.00†	7.676	281.550	6426.98	-282.93	276.44	-1352.69	40°01'44.942"N	104°53'41.493"W	2.00	
6713.00†	5.676	281.550	6526.30	-285.31	278.76	-1364.08	40°01'44.965"N	104°53'41.639"W	2.00	
6813.00†	3.676	281.550	6625.96	-286.98	280.40	-1372.06	40°01'44.982"N	104°53'41.742"W	2.00	
6913.00†	1.676	281.550	6725.85	-287.94	281.33	-1376.64	40°01'44.991"N	104°53'41.801"W	2.00	
6996.81	0.000	179.725	6809.64	-288.19	281.58	-1377.84	40°01'44.993"N	104°53'41.816"W	2.00	END DROP
7013.00†	0.000	179.725	6825.83	-288.19	281.58	-1377.84	40°01'44.993"N	104°53'41.816"W	0.00	
7113.00†	0.000	179.725	6925.83	-288.19	281.58	-1377.84	40°01'44.993"N	104°53'41.816"W	0.00	
7213.00†	0.000	179.725	7025.83	-288.19	281.58	-1377.84	40°01'44.993"N	104°53'41.816"W	0.00	
7234.21†	0.000	179.725	7047.04	-288.19	281.58	-1377.84	40°01'44.993"N	104°53'41.816"W	0.00	4 1/2" LINER TOP
7313.00†	0.000	179.725	7125.83	-288.19	281.58	-1377.84	40°01'44.993"N	104°53'41.816"W	0.00	
7334.21	0.000	179.725	7147.04	-288.19	281.58	-1377.84	40°01'44.993"N	104°53'41.816"W	0.00	KOP, BUILD @ 10°/100'
7413.00†	7.879	179.725	7225.59	-282.78	276.17	-1377.81	40°01'44.940"N	104°53'41.816"W	10.00	
7500.49†	16.628	179.725	7311.00	-264.23	257.62	-1377.72	40°01'44.756"N	104°53'41.815"W	10.00	SHARON SPRINGS
7513.00†	17.879	179.725	7322.95	-260.52	253.91	-1377.70	40°01'44.720"N	104°53'41.815"W	10.00	
7527.83†	19.362	179.725	7337.00	-255.78	249.17	-1377.68	40°01'44.673"N	104°53'41.814"W	10.00	NIOBRARA A
7613.00†	27.879	179.725	7414.96	-221.69	215.08	-1377.52	40°01'44.336"N	104°53'41.812"W	10.00	
7699.39†	36.519	179.725	7488.00	-175.69	169.09	-1377.30	40°01'43.882"N	104°53'41.809"W	10.00	NIOBRARA B
7713.00†	37.879	179.725	7498.84	-167.47	160.86	-1377.26	40°01'43.800"N	104°53'41.809"W	10.00	



Planned Wellpath Report

HOWARD 28C-33HZ (PERMIT REV-2) PWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#15 HOWARD 28C-33HZ (340' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 28C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 28C-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
7775.53†	44.132	179.725	7546.00	-126.46	119.86	-1377.06	40°01'43.395"N	104°53'41.806"W	10.00	NIOBRARA C
7813.00†	47.879	179.725	7572.02	-99.51	92.90	-1376.93	40°01'43.129"N	104°53'41.804"W	10.00	
7913.00†	57.879	179.725	7632.30	-19.87	13.27	-1376.55	40°01'42.342"N	104°53'41.800"W	10.00	
7998.01†	66.380	179.725	7672.00	55.21	-61.81	-1376.19	40°01'41.600"N	104°53'41.795"W	10.00	FORT HAYS
8013.00†	67.879	179.725	7677.83	69.02	-75.62	-1376.12	40°01'41.463"N	104°53'41.794"W	10.00	
8113.00†	77.879	179.725	7707.23	164.47	-171.07	-1375.67	40°01'40.520"N	104°53'41.788"W	10.00	
8158.45†	82.425	179.725	7715.00	209.24	-215.84	-1375.45	40°01'40.078"N	104°53'41.785"W	10.00	CODELL
8213.00†	87.879	179.725	7719.61	263.57	-270.17	-1375.19	40°01'39.541"N	104°53'41.782"W	10.00	
8232.91	89.870	179.725	7720.00	283.47	-290.08	-1375.10	40°01'39.344"N	104°53'41.781"W	10.00	LANDING POINT
8313.00†	89.870	179.725	7720.18	363.56	-370.17	-1374.71	40°01'38.553"N	104°53'41.776"W	0.00	
8413.00†	89.870	179.725	7720.41	463.56	-470.16	-1374.23	40°01'37.564"N	104°53'41.769"W	0.00	
8513.00†	89.870	179.725	7720.63	563.56	-570.16	-1373.75	40°01'36.576"N	104°53'41.763"W	0.00	
8613.00†	89.870	179.725	7720.86	663.56	-670.16	-1373.27	40°01'35.588"N	104°53'41.757"W	0.00	
8713.00†	89.870	179.725	7721.09	763.56	-770.16	-1372.79	40°01'34.600"N	104°53'41.751"W	0.00	
8813.00†	89.870	179.725	7721.31	863.56	-870.16	-1372.31	40°01'33.611"N	104°53'41.744"W	0.00	
8913.00†	89.870	179.725	7721.54	963.56	-970.16	-1371.83	40°01'32.623"N	104°53'41.738"W	0.00	
9013.00†	89.870	179.725	7721.77	1063.56	-1070.16	-1371.36	40°01'31.635"N	104°53'41.732"W	0.00	
9113.00†	89.870	179.725	7721.99	1163.56	-1170.15	-1370.88	40°01'30.647"N	104°53'41.726"W	0.00	
9213.00†	89.870	179.725	7722.22	1263.56	-1270.15	-1370.40	40°01'29.659"N	104°53'41.719"W	0.00	
9313.00†	89.870	179.725	7722.45	1363.56	-1370.15	-1369.92	40°01'28.670"N	104°53'41.713"W	0.00	
9413.00†	89.870	179.725	7722.67	1463.56	-1470.15	-1369.44	40°01'27.682"N	104°53'41.707"W	0.00	
9513.00†	89.870	179.725	7722.90	1563.56	-1570.15	-1368.96	40°01'26.694"N	104°53'41.701"W	0.00	
9613.00†	89.870	179.725	7723.13	1663.56	-1670.15	-1368.48	40°01'25.706"N	104°53'41.695"W	0.00	
9713.00†	89.870	179.725	7723.35	1763.56	-1770.15	-1368.00	40°01'24.718"N	104°53'41.688"W	0.00	
9813.00†	89.870	179.725	7723.58	1863.56	-1870.14	-1367.52	40°01'23.729"N	104°53'41.682"W	0.00	
9913.00†	89.870	179.725	7723.81	1963.56	-1970.14	-1367.04	40°01'22.741"N	104°53'41.676"W	0.00	
10013.00†	89.870	179.725	7724.03	2063.56	-2070.14	-1366.56	40°01'21.753"N	104°53'41.670"W	0.00	
10113.00†	89.870	179.725	7724.26	2163.56	-2170.14	-1366.08	40°01'20.765"N	104°53'41.663"W	0.00	
10213.00†	89.870	179.725	7724.49	2263.56	-2270.14	-1365.60	40°01'19.776"N	104°53'41.657"W	0.00	
10313.00†	89.870	179.725	7724.71	2363.56	-2370.14	-1365.12	40°01'18.788"N	104°53'41.651"W	0.00	
10413.00†	89.870	179.725	7724.94	2463.56	-2470.14	-1364.64	40°01'17.800"N	104°53'41.645"W	0.00	
10513.00†	89.870	179.725	7725.17	2563.56	-2570.13	-1364.16	40°01'16.812"N	104°53'41.638"W	0.00	
10613.00†	89.870	179.725	7725.39	2663.56	-2670.13	-1363.68	40°01'15.824"N	104°53'41.632"W	0.00	
10713.00†	89.870	179.725	7725.62	2763.56	-2770.13	-1363.20	40°01'14.835"N	104°53'41.626"W	0.00	
10813.00†	89.870	179.725	7725.85	2863.56	-2870.13	-1362.72	40°01'13.847"N	104°53'41.620"W	0.00	
10913.00†	89.870	179.725	7726.07	2963.56	-2970.13	-1362.24	40°01'12.859"N	104°53'41.613"W	0.00	
11013.00†	89.870	179.725	7726.30	3063.56	-3070.13	-1361.76	40°01'11.871"N	104°53'41.607"W	0.00	
11113.00†	89.870	179.725	7726.53	3163.56	-3170.13	-1361.28	40°01'10.883"N	104°53'41.601"W	0.00	
11213.00†	89.870	179.725	7726.75	3263.56	-3270.12	-1360.81	40°01'09.894"N	104°53'41.595"W	0.00	
11313.00†	89.870	179.725	7726.98	3363.56	-3370.12	-1360.33	40°01'08.906"N	104°53'41.589"W	0.00	
11413.00†	89.870	179.725	7727.21	3463.55	-3470.12	-1359.85	40°01'07.918"N	104°53'41.582"W	0.00	
11513.00†	89.870	179.725	7727.43	3563.55	-3570.12	-1359.37	40°01'06.930"N	104°53'41.576"W	0.00	
11613.00†	89.870	179.725	7727.66	3663.55	-3670.12	-1358.89	40°01'05.941"N	104°53'41.570"W	0.00	
11713.00†	89.870	179.725	7727.89	3763.55	-3770.12	-1358.41	40°01'04.953"N	104°53'41.564"W	0.00	
11813.00†	89.870	179.725	7728.11	3863.55	-3870.12	-1357.93	40°01'03.965"N	104°53'41.557"W	0.00	



Planned Wellpath Report

HOWARD 28C-33HZ (PERMIT REV-2) PWP

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REFERENCE WELLPATH IDENTIFICATION				
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#15 HOWARD 28C-33HZ (340' FNL & 1094' FEL, SEC. 28)	
Area	COLORADO	Well	HOWARD 28C-33HZ	
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 28C-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
11913.00†	89.870	179.725	7728.34	3963.55	-3970.11	-1357.45	40°01'02.977"N	104°53'41.551"W	0.00	
12013.00†	89.870	179.725	7728.57	4063.55	-4070.11	-1356.97	40°01'01.989"N	104°53'41.545"W	0.00	
12113.00†	89.870	179.725	7728.79	4163.55	-4170.11	-1356.49	40°01'01.000"N	104°53'41.539"W	0.00	
12213.00†	89.870	179.725	7729.02	4263.55	-4270.11	-1356.01	40°01'00.012"N	104°53'41.532"W	0.00	
12313.00†	89.870	179.725	7729.25	4363.55	-4370.11	-1355.53	40°00'59.024"N	104°53'41.526"W	0.00	
12413.00†	89.870	179.725	7729.47	4463.55	-4470.11	-1355.05	40°00'58.036"N	104°53'41.520"W	0.00	
12513.00†	89.870	179.725	7729.70	4563.55	-4570.11	-1354.57	40°00'57.048"N	104°53'41.514"W	0.00	
12613.00†	89.870	179.725	7729.93	4663.55	-4670.10	-1354.09	40°00'56.059"N	104°53'41.508"W	0.00	
12713.00†	89.870	179.725	7730.15	4763.55	-4770.10	-1353.61	40°00'55.071"N	104°53'41.501"W	0.00	
12813.00†	89.870	179.725	7730.38	4863.55	-4870.10	-1353.13	40°00'54.083"N	104°53'41.495"W	0.00	
12913.00†	89.870	179.725	7730.61	4963.55	-4970.10	-1352.65	40°00'53.095"N	104°53'41.489"W	0.00	
13013.00†	89.870	179.725	7730.83	5063.55	-5070.10	-1352.17	40°00'52.106"N	104°53'41.483"W	0.00	
13086.62	89.870	179.725	7731.00 ¹	5137.17	-5143.72	-1351.82	40°00'51.379"N	104°53'41.478"W	0.00	TOTAL DEPTH

HOLE & CASING SECTIONS -									
Ref Wellbore: HOWARD 28C-33HZ PWB				Ref Wellpath: HOWARD 28C-33HZ (PERMIT REV-2) 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	13.00	1000.00	987.00	13.00	1000.00	0.00	0.00	0.00	0.00
9.625in Casing Surface	13.00	1000.00	987.00	13.00	1000.00	0.00	0.00	0.00	0.00
8.75in Open Hole	1000.00	8232.91	7232.91	1000.00	7720.00	0.00	0.00	-290.08	-1375.10
7in Casing Surface	13.00	8232.91	8219.91	13.00	7720.00	0.00	0.00	-290.08	-1375.10
6.125in Open Hole	8232.91	13086.62	4853.71	7720.00	7731.00	-290.08	-1375.10	-5143.72	-1351.82
4.5in Casing Production	13.00	13086.62	13073.62	13.00	7731.00	0.00	0.00	-5143.72	-1351.82



Planned Wellpath Report

HOWARD 28C-33HZ (PERMIT REV-2) PWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#15 HOWARD 28C-33HZ (340' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 28C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 28C-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
HOWARD 27W-28HZ HARD LINES (460' SETBACKS, SEC. 28)		4996.00	0.00	-150.14	3170662.98	1253775.75	40°01'42.211"N	104°53'26.034"W	polygon
HOWARD 27W-28HZ HARD LINES (460' SETBACKS, SEC. 33)		4996.00	0.00	-150.14	3170662.98	1253775.75	40°01'42.211"N	104°53'26.034"W	polygon
HOWARD 27W-28HZ SECTION LINES (SEC. 28)		4996.00	0.00	-150.14	3170662.98	1253775.75	40°01'42.211"N	104°53'26.034"W	polygon
HOWARD 27W-28HZ SECTION LINES (SEC. 33)		4996.00	0.00	-150.14	3170662.98	1253775.75	40°01'42.211"N	104°53'26.034"W	polygon
HOWARD 28C-33HZ BHL ON PLAT (200' FNL & 2470' FEL, SEC. 33) REV-1		7727.00	-5143.72	-1351.82	3169496.75	1248624.08	40°00'51.379"N	104°53'41.478"W	point
1) HOWARD 28C-33HZ BHL ON PLAT (200' FNL & 2470' FEL, SEC. 33) REV-2	13086.62	7731.00	-5143.72	-1351.82	3169496.75	1248624.08	40°00'51.379"N	104°53'41.478"W	point

SURVEY PROGRAM - Ref Wellbore: HOWARD 28C-33HZ PWB Ref Wellpath: HOWARD 28C-33HZ (PERMIT REV-2) PWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
13.00	8232.91	NaviTrak (MagCorr)		HOWARD 28C-33HZ PWB
8232.91	13086.64	OnTrak (MagCorr)		HOWARD 28C-33HZ PWB



Planned Wellpath Report

HOWARD 28C-33HZ (PERMIT REV-2) PWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#15 HOWARD 28C-33HZ (340' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 28C-33HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 28C-33HZ PWB
Facility	SEC.28-T1N-R67W		

WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
1092.00	0.000	281.550	1092.00	FOX HILLS BASE
4906.84	16.000	281.550	4780.00	SUSEX
7234.21	0.000	179.725	7047.04	4 1/2" LINER TOP
7500.49	16.628	179.725	7311.00	SHARON SPRINGS
7527.83	19.362	179.725	7337.00	NIOBRARA A
7699.39	36.519	179.725	7488.00	NIOBRARA B
7775.53	44.132	179.725	7546.00	NIOBRARA C
7998.01	66.380	179.725	7672.00	FORT HAYS
8158.45	82.425	179.725	7715.00	CODELL