

# KERR-MCGEE OIL & GAS ONSHORE LP

Location: COLORADO Slot: SLOT#17 HOWARD 1C-28HZ (280' FNL & 1094' FEL, SEC.28)  
Field: WELD COUNTY (KERR MCGEE) Well: HOWARD 1C-28HZ  
Facility: SEC.28-T1N-R67W Wellbore: HOWARD 1C-28HZ PWB

Plot reference wellpath is HOWARD 1C-28HZ (PERMIT REV-1) PWP

True vertical depths are referenced to ENSING 145 (RKB)	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
Measured depths are referenced to ENSING 145 (RKB)	North Reference: True north
ENSING 145 (RKB) to Mean Sea Level: 4995 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: SLOT#17 HOWARD 1C-28HZ (280' FNL & 1094' FEL, SEC.28): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: precain on 6/3/2013

## 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	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)
SLOT#17 HOWARD 1C-28HZ (280' FNL & 1094' FEL, SEC.28)	1416886.81	2716923.19	3170812.385	1253836.537
ENSING 145 (RKB) to Mud line (At Slot: SLOT#17 HOWARD 1C-28HZ (280' FNL & 1094' FEL, SEC.28))				4996R
Mean Sea Level to Mud line (At Slot: SLOT#17 HOWARD 1C-28HZ (280' FNL & 1094' FEL, SEC.28))				0R
ENSING 145 (RKB) to Mean Sea Level				4996R

## Survey Program

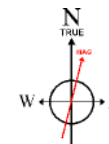
Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
13.00	8098.62	NaviTrak	NaviTrak (MagCorr)		HOWARD 1C-28HZ PWB
8098.62	12294.10	OnTrak	OnTrak (MagCorr)		HOWARD 1C-28HZ PWB

## 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	64.500	13.00	0.00	0.00	0.00	0.00
BEGIN NUDGE	1200.00	0.000	64.500	1200.00	0.00	0.00	0.00	0.00
END NUDGE	1700.00	10.000	64.500	1697.47	18.74	39.28	2.00	-18.55
BEGIN DROP	4216.77	10.000	64.500	4176.00	206.88	433.74	0.00	-204.82
END DROP	4716.77	0.000	179.727	4673.47	225.62	473.02	2.00	-223.36
KOP, BUILD @ 10°/100'	7198.35	0.000	179.727	7155.05	225.62	473.02	0.00	-223.36
LANDING POINT	8098.62	90.027	179.727	7728.00	-347.60	475.76	10.00	349.87
TOTAL DEPTH	12294.10	90.027	179.727	7726.00	-4543.04	495.77	0.00	4545.35

## Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SEC.28-T1N-R67W HARD LINES (460' SET BACKS)	4996.00	-29.91	0.00	3170812.59	1253836.63	40°01'42.506"N	104°53'24.108"W	
SEC.28-T1N-R67W SECTION LINES	4996.00	-29.91	0.00	3170812.59	1253836.63	40°01'42.506"N	104°53'24.108"W	
HOWARD 1C-28HZ BHL ON PLAT (460' FSL & 620' FEL, SEC. 28) REV-1	12294.10	7726.00	-4543.04	495.77	3171339.38	1246297.19	40°00'57.906"N	104°53'17.736"W



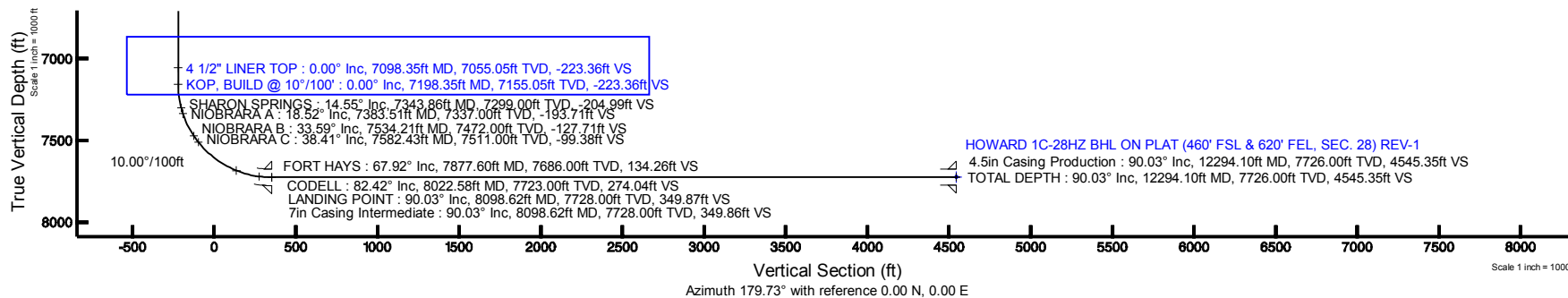
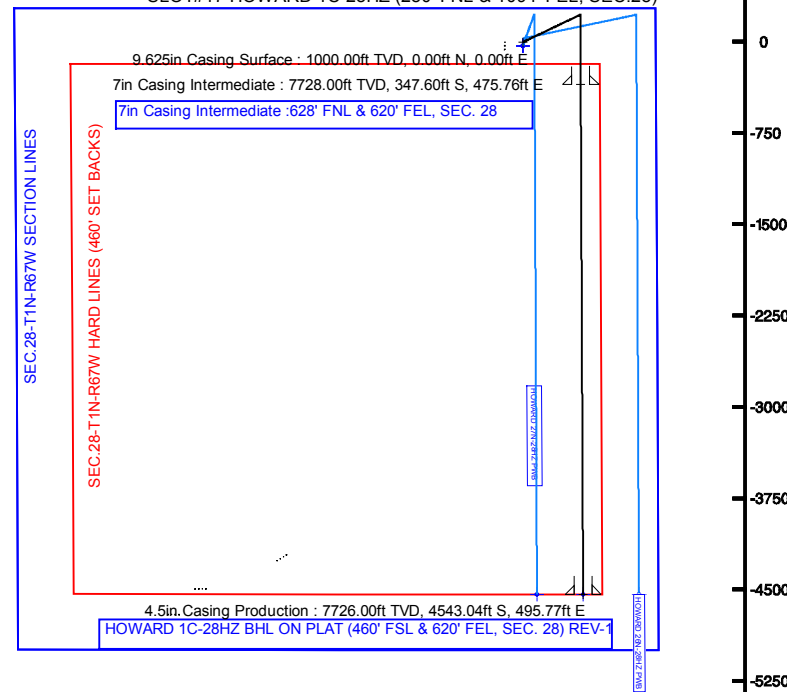
BGGM (1945.0 to 2014.0) Dip: 61.83° Field: 49366.8 nT  
Magnetic North is 12.08 degrees East of True North (at 4/11/2013)

To correct azimuth from Magnetic to True add 12.08 degrees  
For example: if the Magnetic North Azimuth = 90.00 degs, then the True North Azimuth = 90 + 12.08 = 102.08

Scale 1 inch = 1500 ft

Easting (ft)

SLOT#17 HOWARD 1C-28HZ (280' FNL & 1094' FEL, SEC.28)





# Planned Wellpath Report

## HOWARD 1C-28HZ (PERMIT REV-1) PWP

Page 1 of 6



### REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#17 HOWARD 1C-28HZ (280' FNL & 1094' FEL, SEC.28)
Area	COLORADO	Well	HOWARD 1C-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 1C-28HZ PWB
Facility	SEC.28-T1N-R67W		

### REPORT SETUP INFORMATION

Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 3.0.2
North Reference	True	User	Precain
Scale	0.999964	Report Generated	6/3/2013 at 3:32:47 PM
Convergence at slot	0.39° East	Database/Source file	WellArchitectDB/_HOWARD_1C-28HZ_PWB.xml

### WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	1416886.81	2716923.19	3170812.39	1253836.54	40°01'42.802"N	104°53'24.108"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	ENSING 145 (RKB) to Facility Vertical Datum	4996.00ft
Horizontal Reference Pt	Slot	ENSING 145 (RKB) to Mean Sea Level	4996.00ft
Vertical Reference Pt	ENSING 145 (RKB)	ENSING 145 (RKB) to Mud Line at Slot (SLOT#17 HOWARD 1C-28HZ (280' FNL & 1094' FEL, SEC.28))	4996.00ft
MD Reference Pt	ENSING 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 1C-28HZ (PERMIT REV-1) PWP

Page 2 of 6



### REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#17 HOWARD 1C-28HZ (280' FNL & 1094' FEL, SEC.28)
Area	COLORADO	Well	HOWARD 1C-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 1C-28HZ PWB
Facility	SEC.28-T1N-R67W		

### WELLPATH DATA (140 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	64.500	0.00	0.00	0.00	0.00	40°01'42.802"N	104°53'24.108"W	0.00	
13.00	0.000	64.500	13.00	0.00	0.00	0.00	40°01'42.802"N	104°53'24.108"W	0.00	TIE-ON
113.00†	0.000	64.500	113.00	0.00	0.00	0.00	40°01'42.802"N	104°53'24.108"W	0.00	
213.00†	0.000	64.500	213.00	0.00	0.00	0.00	40°01'42.802"N	104°53'24.108"W	0.00	
313.00†	0.000	64.500	313.00	0.00	0.00	0.00	40°01'42.802"N	104°53'24.108"W	0.00	
413.00†	0.000	64.500	413.00	0.00	0.00	0.00	40°01'42.802"N	104°53'24.108"W	0.00	
513.00†	0.000	64.500	513.00	0.00	0.00	0.00	40°01'42.802"N	104°53'24.108"W	0.00	
613.00†	0.000	64.500	613.00	0.00	0.00	0.00	40°01'42.802"N	104°53'24.108"W	0.00	
713.00†	0.000	64.500	713.00	0.00	0.00	0.00	40°01'42.802"N	104°53'24.108"W	0.00	
813.00†	0.000	64.500	813.00	0.00	0.00	0.00	40°01'42.802"N	104°53'24.108"W	0.00	
913.00†	0.000	64.500	913.00	0.00	0.00	0.00	40°01'42.802"N	104°53'24.108"W	0.00	
1013.00†	0.000	64.500	1013.00	0.00	0.00	0.00	40°01'42.802"N	104°53'24.108"W	0.00	
1088.00†	0.000	64.500	1088.00	0.00	0.00	0.00	40°01'42.802"N	104°53'24.108"W	0.00	FOX HILLS BASE
1113.00†	0.000	64.500	1113.00	0.00	0.00	0.00	40°01'42.802"N	104°53'24.108"W	0.00	
1200.00	0.000	64.500	1200.00	0.00	0.00	0.00	40°01'42.802"N	104°53'24.108"W	0.00	BEGIN NUDGE
1213.00†	0.260	64.500	1213.00	-0.01	0.01	0.03	40°01'42.802"N	104°53'24.108"W	2.00	
1313.00†	2.260	64.500	1312.97	-0.95	0.96	2.01	40°01'42.811"N	104°53'24.082"W	2.00	
1413.00†	4.260	64.500	1412.80	-3.37	3.41	7.14	40°01'42.835"N	104°53'24.016"W	2.00	
1513.00†	6.260	64.500	1512.38	-7.28	7.35	15.42	40°01'42.874"N	104°53'23.910"W	2.00	
1613.00†	8.260	64.500	1611.57	-12.67	12.79	26.82	40°01'42.928"N	104°53'23.763"W	2.00	
1700.00	10.000	64.500	1697.47	-18.55	18.74	39.28	40°01'42.987"N	104°53'23.603"W	2.00	END NUDGE
1713.00†	10.000	64.500	1710.27	-19.51	19.71	41.32	40°01'42.996"N	104°53'23.577"W	0.00	
1813.00†	10.000	64.500	1808.75	-26.91	27.18	56.99	40°01'43.070"N	104°53'23.375"W	0.00	
1913.00†	10.000	64.500	1907.23	-34.31	34.66	72.67	40°01'43.144"N	104°53'23.174"W	0.00	
2013.00†	10.000	64.500	2005.71	-41.71	42.14	88.34	40°01'43.218"N	104°53'22.972"W	0.00	
2113.00†	10.000	64.500	2104.19	-49.12	49.61	104.01	40°01'43.292"N	104°53'22.771"W	0.00	
2213.00†	10.000	64.500	2202.67	-56.52	57.09	119.69	40°01'43.366"N	104°53'22.569"W	0.00	
2313.00†	10.000	64.500	2301.15	-63.92	64.56	135.36	40°01'43.440"N	104°53'22.368"W	0.00	
2413.00†	10.000	64.500	2399.63	-71.32	72.04	151.03	40°01'43.514"N	104°53'22.166"W	0.00	
2513.00†	10.000	64.500	2498.11	-78.72	79.51	166.71	40°01'43.587"N	104°53'21.965"W	0.00	
2613.00†	10.000	64.500	2596.59	-86.12	86.99	182.38	40°01'43.661"N	104°53'21.764"W	0.00	
2713.00†	10.000	64.500	2695.08	-93.52	94.47	198.05	40°01'43.735"N	104°53'21.562"W	0.00	
2813.00†	10.000	64.500	2793.56	-100.92	101.94	213.73	40°01'43.809"N	104°53'21.361"W	0.00	
2913.00†	10.000	64.500	2892.04	-108.32	109.42	229.40	40°01'43.883"N	104°53'21.159"W	0.00	
3013.00†	10.000	64.500	2990.52	-115.72	116.89	245.07	40°01'43.957"N	104°53'20.958"W	0.00	
3113.00†	10.000	64.500	3089.00	-123.13	124.37	260.75	40°01'44.031"N	104°53'20.756"W	0.00	
3213.00†	10.000	64.500	3187.48	-130.53	131.85	276.42	40°01'44.105"N	104°53'20.555"W	0.00	
3313.00†	10.000	64.500	3285.96	-137.93	139.32	292.09	40°01'44.178"N	104°53'20.353"W	0.00	
3413.00†	10.000	64.500	3384.44	-145.33	146.80	307.77	40°01'44.252"N	104°53'20.152"W	0.00	
3513.00†	10.000	64.500	3482.92	-152.73	154.27	323.44	40°01'44.326"N	104°53'19.950"W	0.00	
3613.00†	10.000	64.500	3581.40	-160.13	161.75	339.11	40°01'44.400"N	104°53'19.749"W	0.00	
3713.00†	10.000	64.500	3679.88	-167.53	169.22	354.78	40°01'44.474"N	104°53'19.547"W	0.00	
3813.00†	10.000	64.500	3778.36	-174.93	176.70	370.46	40°01'44.548"N	104°53'19.346"W	0.00	
3913.00†	10.000	64.500	3876.84	-182.33	184.18	386.13	40°01'44.622"N	104°53'19.144"W	0.00	
4013.00†	10.000	64.500	3975.33	-189.73	191.65	401.80	40°01'44.696"N	104°53'18.943"W	0.00	



# Planned Wellpath Report

## HOWARD 1C-28HZ (PERMIT REV-1) PWP

Page 3 of 6



### REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#17 HOWARD 1C-28HZ (280' FNL & 1094' FEL, SEC.28)
Area	COLORADO	Well	HOWARD 1C-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 1C-28HZ PWB
Facility	SEC.28-T1N-R67W		

### WELLPATH DATA (140 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4113.00†	10.000	64.500	4073.81	-197.14	199.13	417.48	40°01'44.769"N	104°53'18.741"W	0.00	
4213.00†	10.000	64.500	4172.29	-204.54	206.60	433.15	40°01'44.843"N	104°53'18.540"W	0.00	
4216.77	10.000	64.500	4176.00	-204.82	206.88	433.74	40°01'44.846"N	104°53'18.532"W	0.00	BEGIN DROP
4313.00†	8.075	64.500	4271.03	-211.26	213.39	447.39	40°01'44.910"N	104°53'18.357"W	2.00	
4413.00†	6.075	64.500	4370.26	-216.51	218.69	458.50	40°01'44.963"N	104°53'18.214"W	2.00	
4513.00†	4.075	64.500	4469.87	-220.28	222.50	466.49	40°01'45.000"N	104°53'18.111"W	2.00	
4613.00†	2.075	64.500	4569.72	-222.56	224.81	471.33	40°01'45.023"N	104°53'18.049"W	2.00	
4713.00†	0.075	64.500	4669.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	2.00	
4716.77	0.000	179.727	4673.47	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	2.00	END DROP
4813.00†	0.000	179.727	4769.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
4819.30†	0.000	179.727	4776.00	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	SUSSEX
4913.00†	0.000	179.727	4869.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
5013.00†	0.000	179.727	4969.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
5113.00†	0.000	179.727	5069.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
5213.00†	0.000	179.727	5169.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
5313.00†	0.000	179.727	5269.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
5413.00†	0.000	179.727	5369.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
5513.00†	0.000	179.727	5469.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
5613.00†	0.000	179.727	5569.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
5713.00†	0.000	179.727	5669.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
5813.00†	0.000	179.727	5769.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
5913.00†	0.000	179.727	5869.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
6013.00†	0.000	179.727	5969.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
6113.00†	0.000	179.727	6069.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
6213.00†	0.000	179.727	6169.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
6313.00†	0.000	179.727	6269.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
6413.00†	0.000	179.727	6369.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
6513.00†	0.000	179.727	6469.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
6613.00†	0.000	179.727	6569.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
6713.00†	0.000	179.727	6669.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
6813.00†	0.000	179.727	6769.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
6913.00†	0.000	179.727	6869.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
7013.00†	0.000	179.727	6969.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
7098.35†	0.000	179.727	7055.05	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	4 1/2" LINER TOP
7113.00†	0.000	179.727	7069.70	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	
7198.35	0.000	179.727	7155.05	-223.36	225.62	473.02	40°01'45.031"N	104°53'18.027"W	0.00	KOP, BUILD @ 10°/100'
7213.00†	1.465	179.727	7169.69	-223.18	225.43	473.03	40°01'45.029"N	104°53'18.027"W	10.00	
7313.00†	11.465	179.727	7268.93	-211.93	214.19	473.08	40°01'44.918"N	104°53'18.027"W	10.00	
7343.86†	14.551	179.727	7299.00	-204.99	207.24	473.11	40°01'44.850"N	104°53'18.026"W	10.00	SHARON SPRINGS
7383.51†	18.516	179.727	7337.00	-193.71	195.96	473.17	40°01'44.738"N	104°53'18.025"W	10.00	NIOBRARA A
7413.00†	21.465	179.727	7364.71	-183.63	185.88	473.21	40°01'44.638"N	104°53'18.025"W	10.00	
7513.00†	31.465	179.727	7454.12	-139.12	141.37	473.43	40°01'44.199"N	104°53'18.022"W	10.00	
7534.21†	33.586	179.727	7472.00	-127.71	129.97	473.48	40°01'44.086"N	104°53'18.021"W	10.00	NIOBRARA B
7582.43†	38.408	179.727	7511.00	-99.38	101.64	473.62	40°01'43.806"N	104°53'18.020"W	10.00	NIOBRARA C
7613.00†	41.465	179.727	7534.44	-79.76	82.02	473.71	40°01'43.612"N	104°53'18.018"W	10.00	



# Planned Wellpath Report

## HOWARD 1C-28HZ (PERMIT REV-1) PWP

Page 4 of 6



### REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#17 HOWARD 1C-28HZ (280' FNL & 1094' FEL, SEC.28)
Area	COLORADO	Well	HOWARD 1C-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 1C-28HZ PWB
Facility	SEC.28-T1N-R67W		

### WELLPATH DATA (140 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7713.00†	51.465	179.727	7603.23	-7.36	9.61	474.06	40°01'42.897"N	104°53'18.014"W	10.00	
7813.00†	61.465	179.727	7658.40	75.89	-73.63	474.45	40°01'42.074"N	104°53'18.009"W	10.00	
7877.60†	67.925	179.727	7686.00	134.26	-132.00	474.73	40°01'41.497"N	104°53'18.005"W	10.00	FORT HAYS
7913.00†	71.465	179.727	7698.28	167.46	-165.20	474.89	40°01'41.169"N	104°53'18.003"W	10.00	
8013.00†	81.465	179.727	7721.66	264.56	-262.30	475.35	40°01'40.209"N	104°53'17.997"W	10.00	
8022.58†	82.423	179.727	7723.00	274.04	-271.78	475.40	40°01'40.116"N	104°53'17.997"W	10.00	CODELL
8098.62	90.027	179.727	7728.00	349.87	-347.60	475.76	40°01'39.366"N	104°53'17.992"W	10.00	LANDING POINT
8113.00†	90.027	179.727	7728.00	364.24	-361.98	475.83	40°01'39.224"N	104°53'17.991"W	0.00	
8213.00†	90.027	179.727	7727.95	464.24	-461.98	476.30	40°01'38.236"N	104°53'17.985"W	0.00	
8313.00†	90.027	179.727	7727.90	564.24	-561.98	476.78	40°01'37.248"N	104°53'17.979"W	0.00	
8413.00†	90.027	179.727	7727.85	664.24	-661.98	477.26	40°01'36.260"N	104°53'17.973"W	0.00	
8513.00†	90.027	179.727	7727.81	764.24	-761.98	477.74	40°01'35.272"N	104°53'17.967"W	0.00	
8613.00†	90.027	179.727	7727.76	864.24	-861.97	478.21	40°01'34.283"N	104°53'17.961"W	0.00	
8713.00†	90.027	179.727	7727.71	964.24	-961.97	478.69	40°01'33.295"N	104°53'17.955"W	0.00	
8813.00†	90.027	179.727	7727.66	1064.24	-1061.97	479.17	40°01'32.307"N	104°53'17.949"W	0.00	
8913.00†	90.027	179.727	7727.61	1164.24	-1161.97	479.64	40°01'31.319"N	104°53'17.942"W	0.00	
9013.00†	90.027	179.727	7727.57	1264.24	-1261.97	480.12	40°01'30.330"N	104°53'17.936"W	0.00	
9113.00†	90.027	179.727	7727.52	1364.24	-1361.97	480.60	40°01'29.342"N	104°53'17.930"W	0.00	
9213.00†	90.027	179.727	7727.47	1464.24	-1461.97	481.08	40°01'28.354"N	104°53'17.924"W	0.00	
9313.00†	90.027	179.727	7727.42	1564.24	-1561.97	481.55	40°01'27.366"N	104°53'17.918"W	0.00	
9413.00†	90.027	179.727	7727.38	1664.24	-1661.96	482.03	40°01'26.378"N	104°53'17.912"W	0.00	
9513.00†	90.027	179.727	7727.33	1764.24	-1761.96	482.51	40°01'25.389"N	104°53'17.906"W	0.00	
9613.00†	90.027	179.727	7727.28	1864.24	-1861.96	482.98	40°01'24.401"N	104°53'17.900"W	0.00	
9713.00†	90.027	179.727	7727.23	1964.24	-1961.96	483.46	40°01'23.413"N	104°53'17.894"W	0.00	
9813.00†	90.027	179.727	7727.18	2064.24	-2061.96	483.94	40°01'22.425"N	104°53'17.888"W	0.00	
9913.00†	90.027	179.727	7727.14	2164.24	-2161.96	484.41	40°01'21.436"N	104°53'17.881"W	0.00	
10013.00†	90.027	179.727	7727.09	2264.24	-2261.96	484.89	40°01'20.448"N	104°53'17.875"W	0.00	
10113.00†	90.027	179.727	7727.04	2364.24	-2361.96	485.37	40°01'19.460"N	104°53'17.869"W	0.00	
10213.00†	90.027	179.727	7726.99	2464.24	-2461.96	485.85	40°01'18.472"N	104°53'17.863"W	0.00	
10313.00†	90.027	179.727	7726.95	2564.24	-2561.95	486.32	40°01'17.484"N	104°53'17.857"W	0.00	
10413.00†	90.027	179.727	7726.90	2664.24	-2661.95	486.80	40°01'16.495"N	104°53'17.851"W	0.00	
10513.00†	90.027	179.727	7726.85	2764.24	-2761.95	487.28	40°01'15.507"N	104°53'17.845"W	0.00	
10613.00†	90.027	179.727	7726.80	2864.24	-2861.95	487.75	40°01'14.519"N	104°53'17.839"W	0.00	
10713.00†	90.027	179.727	7726.75	2964.24	-2961.95	488.23	40°01'13.531"N	104°53'17.833"W	0.00	
10813.00†	90.027	179.727	7726.71	3064.24	-3061.95	488.71	40°01'12.543"N	104°53'17.826"W	0.00	
10913.00†	90.027	179.727	7726.66	3164.24	-3161.95	489.19	40°01'11.554"N	104°53'17.820"W	0.00	
11013.00†	90.027	179.727	7726.61	3264.24	-3261.95	489.66	40°01'10.566"N	104°53'17.814"W	0.00	
11113.00†	90.027	179.727	7726.56	3364.24	-3361.95	490.14	40°01'09.578"N	104°53'17.808"W	0.00	
11213.00†	90.027	179.727	7726.52	3464.24	-3461.94	490.62	40°01'08.590"N	104°53'17.802"W	0.00	
11313.00†	90.027	179.727	7726.47	3564.24	-3561.94	491.09	40°01'07.601"N	104°53'17.796"W	0.00	
11413.00†	90.027	179.727	7726.42	3664.24	-3661.94	491.57	40°01'06.613"N	104°53'17.790"W	0.00	
11513.00†	90.027	179.727	7726.37	3764.24	-3761.94	492.05	40°01'05.625"N	104°53'17.784"W	0.00	
11613.00†	90.027	179.727	7726.33	3864.24	-3861.94	492.52	40°01'04.637"N	104°53'17.778"W	0.00	
11713.00†	90.027	179.727	7726.28	3964.24	-3961.94	493.00	40°01'03.649"N	104°53'17.771"W	0.00	
11813.00†	90.027	179.727	7726.23	4064.24	-4061.94	493.48	40°01'02.660"N	104°53'17.765"W	0.00	



# Planned Wellpath Report

## HOWARD 1C-28HZ (PERMIT REV-1) PWP

Page 5 of 6



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#17 HOWARD 1C-28HZ (280' FNL & 1094' FEL, SEC.28)
Area	COLORADO	Well	HOWARD 1C-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 1C-28HZ PWB
Facility	SEC.28-T1N-R67W		

WELLPATH DATA (140 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
11913.00†	90.027	179.727	7726.18	4164.24	-4161.94	493.96	40°01'01.672"N	104°53'17.759"W	0.00	
12013.00†	90.027	179.727	7726.13	4264.24	-4261.94	494.43	40°01'00.684"N	104°53'17.753"W	0.00	
12113.00†	90.027	179.727	7726.09	4364.24	-4361.93	494.91	40°00'59.696"N	104°53'17.747"W	0.00	
12213.00†	90.027	179.727	7726.04	4464.24	-4461.93	495.39	40°00'58.707"N	104°53'17.741"W	0.00	
12294.10	90.027	179.727	7726.00 <sup>1</sup>	4545.35	-4543.04	495.77	40°00'57.906"N	104°53'17.736"W	0.00	TOTAL DEPTH

HOLE & CASING SECTIONS - Ref Wellbore: HOWARD 1C-28HZ PWB Ref Wellpath: HOWARD 1C-28HZ (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	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	8098.62	7098.62	1000.00	7728.00	0.00	0.00	-347.60	475.76
7in Casing Intermediate	13.00	8098.62	8085.62	13.00	7728.00	0.00	0.00	-347.60	475.76
6.125in Open Hole	8098.62	12294.10	4195.48	7728.00	7726.00	-347.60	475.76	-4543.04	495.77
4.5in Casing Production	13.00	12294.10	12281.10	13.00	7726.00	0.00	0.00	-4543.04	495.77

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SEC.28-T1N-R67W HARD LINES (460' SET BACKS)		4996.00	-29.91	0.00	3170812.59	1253806.63	40°01'42.506"N	104°53'24.108"W	polygon
		4996.00	-29.91	0.00	3170812.59	1253806.63	40°01'42.506"N	104°53'24.108"W	polygon
SEC.28-T1N-R67W SECTION LINES									
1) HOWARD 1C-28HZ BHL ON PLAT (460' FSL & 620' FEL, SEC. 28) REV-1	12294.10	7726.00	-4543.04	495.77	3171339.38	1249297.19	40°00'57.906"N	104°53'17.736"W	point

SURVEY PROGRAM - Ref Wellbore: HOWARD 1C-28HZ PWB Ref Wellpath: HOWARD 1C-28HZ (PERMIT REV-1) PWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
13.00	8098.62	NaviTrak (MagCorr)		HOWARD 1C-28HZ PWB
8098.62	12294.10	OnTrak (MagCorr)		HOWARD 1C-28HZ PWB



# Planned Wellpath Report

## HOWARD 1C-28HZ (PERMIT REV-1) PWP

Page 6 of 6



### REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#17 HOWARD 1C-28HZ (280' FNL & 1094' FEL, SEC.28)
Area	COLORADO	Well	HOWARD 1C-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 1C-28HZ PWB
Facility	SEC.28-T1N-R67W		

### WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
1088.00	0.000	64.500	1088.00	FOX HILLS BASE
4819.30	0.000	179.727	4776.00	SUSSEX
7098.35	0.000	179.727	7055.05	4 1/2" LINER TOP
7343.86	14.551	179.727	7299.00	SHARON SPRINGS
7383.51	18.516	179.727	7337.00	NIOBRARA A
7534.21	33.586	179.727	7472.00	NIOBRARA B
7582.43	38.408	179.727	7511.00	NIOBRARA C
7877.60	67.925	179.727	7686.00	FORT HAYS
8022.58	82.423	179.727	7723.00	CODELL

### DESIGN COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
13.00	0.000	64.500	13.00	TIE-ON
1200.00	0.000	64.500	1200.00	BEGIN NUDGE
1700.00	10.000	64.500	1697.47	END NUDGE
4216.77	10.000	64.500	4176.00	BEGIN DROP
4716.77	0.000	179.727	4673.47	END DROP
7198.35	0.000	179.727	7155.05	KOP, BUILD @ 10°/100'
8098.62	90.027	179.727	7728.00	LANDING POINT
12294.10	90.027	179.727	7726.00	TOTAL DEPTH