

KERR-MCGEE OIL & GAS ONSHORE LP

Location: COLORADO Slot: SLOT#16 HOWARD 27N-28HZ (310' FNL & 1094' FEL, SEC. 28)
Field: WELD COUNTY (KERR MCGEE) Well: HOWARD 27N-28HZ
Facility: SEC.28-T1N-R67W Wellbore: HOWARD 27N-28HZ PWB

Plot reference wellpath is HOWARD 27N-28HZ (PERMIT REV-1) PWP

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
ENSGIN 145 (RKB) to Mean Sea Level: 4996 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: SLOT#16 HOWARD 27N-28HZ (310' FNL & 1094' FEL, SEC. 28)): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: precin on 6/3/2013

Location Information

Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SEC.28-T1N-R67W	316923.760	121453.460	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#16 HOWARD 27N-28HZ (310' FNL & 1094' FEL, SEC. 28)	1416857.14	2716926.46	3170812.591	1253806.627
ENSGIN 145 (RKB) to Mud line (At Slot: SLOT#16 HOWARD 27N-28HZ (310' FNL & 1094' FEL, SEC. 28))				4996R
Mean Sea Level to Mud line (At Slot: SLOT#16 HOWARD 27N-28HZ (310' FNL & 1094' FEL, SEC. 28))				0R
ENSGIN 145 (RKB) to Mean Sea Level				4996R

Survey Program

Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
13.00	7871.96	NaviTrak	NaviTrak (MagCorr)		HOWARD 27N-28HZ PWB
7871.96	12064.56	OnTrak	OnTrak (MagCorr)		HOWARD 27N-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	20.000	13.00	0.00	0.00	0.00	0.00
BEGIN NUDGE	1300.00	0.000	20.000	1300.00	0.00	0.00	0.00	0.00
END NUDGE	1700.00	8.000	20.000	1698.70	26.20	9.54	2.00	-26.15
BEGIN DROP	3266.54	8.000	20.000	3250.00	231.07	84.10	0.00	-230.68
END DROP	3666.54	0.000	179.735	3648.70	257.27	93.64	2.00	-256.83
KOP, BUILD @ 10°/100'	6966.90	0.000	179.735	6949.06	257.27	93.64	0.00	-256.83
LANDING POINT	7871.96	90.506	179.735	7522.00	-320.74	96.31	10.00	321.18
TOTAL DEPTH	12064.56	90.506	179.735	7485.00	-4513.13	115.68	0.00	4513.62

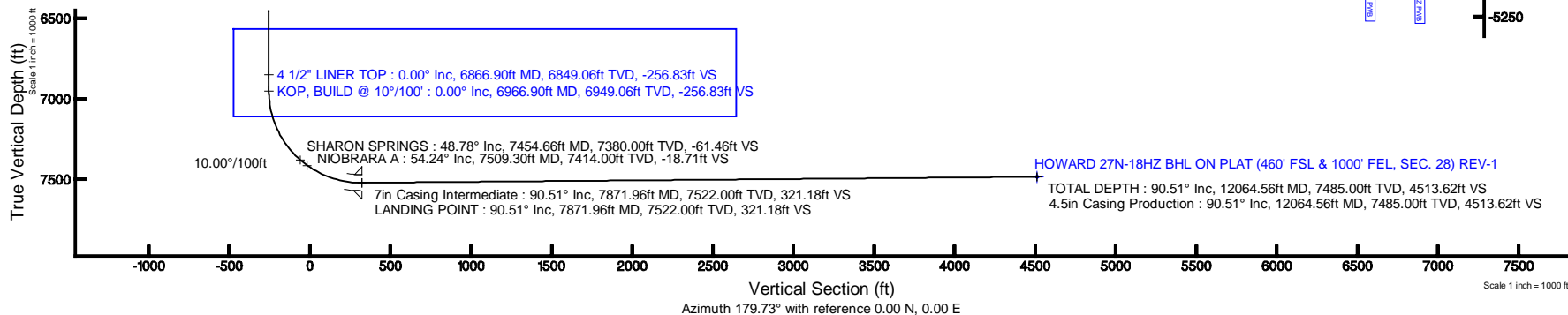
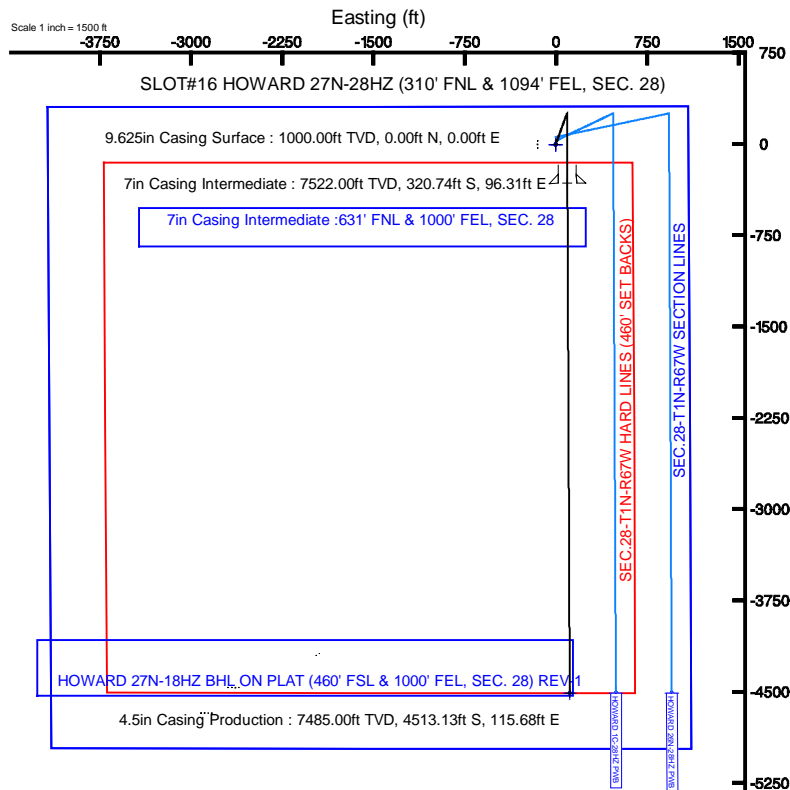
Targets

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	0.00	0.00	3170812.59	1253806.63	40°01'42.506"N	104°53'24.108"W
SEC.28-T1N-R67W SECTION LINES		4996.00	0.00	0.00	3170812.59	1253806.63	40°01'42.506"N	104°53'24.108"W
HOWARD 27N-18HZ BHL ON PLAT (460' FSL & 1000' FEL, SEC. 28) REV-1	12064.56	7485.00	-4513.13	115.68	3170699.31	1249294.57	40°00'57.906"N	104°53'22.621"W



BGGM (1945.0 to 2014.0) Dip: 66.64° Field: 52614.9 nT
Magnetic North is 8.69 degrees East of True North (at 5/30/2013)

To correct azimuth from Magnetic to True add 8.69 degrees
For example: if the Magnetic North Azimuth = 90 degs, then the True North Azimuth = 90 + 8.69 = 98.69





Planned Wellpath Report

HOWARD 27N-28HZ (PERMIT REV-1) PWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#16 HOWARD 27N-28HZ (310' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 27N-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 27N-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 3:09:24 PM
Convergence at slot	0.39° East	Database/Source file	WellArchitectDB/_HOWARD_27N-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	1416857.14	2716926.46	3170812.59	1253806.63	40°01'42.506"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	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#16 HOWARD 27N-28HZ (310' 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°



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Area	COLORADO	Well	HOWARD 27N-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 27N-28HZ PWB
Facility	SEC.28-T1N-R67W		

WELLPATH DATA (134 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	20.000	0.00	0.00	0.00	0.00	40°01'42.506"N	104°53'24.108"W	0.00	
13.00	0.000	20.000	13.00	0.00	0.00	0.00	40°01'42.506"N	104°53'24.108"W	0.00	TIE-ON
113.00†	0.000	20.000	113.00	0.00	0.00	0.00	40°01'42.506"N	104°53'24.108"W	0.00	
213.00†	0.000	20.000	213.00	0.00	0.00	0.00	40°01'42.506"N	104°53'24.108"W	0.00	
313.00†	0.000	20.000	313.00	0.00	0.00	0.00	40°01'42.506"N	104°53'24.108"W	0.00	
413.00†	0.000	20.000	413.00	0.00	0.00	0.00	40°01'42.506"N	104°53'24.108"W	0.00	
513.00†	0.000	20.000	513.00	0.00	0.00	0.00	40°01'42.506"N	104°53'24.108"W	0.00	
613.00†	0.000	20.000	613.00	0.00	0.00	0.00	40°01'42.506"N	104°53'24.108"W	0.00	
713.00†	0.000	20.000	713.00	0.00	0.00	0.00	40°01'42.506"N	104°53'24.108"W	0.00	
813.00†	0.000	20.000	813.00	0.00	0.00	0.00	40°01'42.506"N	104°53'24.108"W	0.00	
913.00†	0.000	20.000	913.00	0.00	0.00	0.00	40°01'42.506"N	104°53'24.108"W	0.00	
1013.00†	0.000	20.000	1013.00	0.00	0.00	0.00	40°01'42.506"N	104°53'24.108"W	0.00	
1088.00†	0.000	20.000	1088.00	0.00	0.00	0.00	40°01'42.506"N	104°53'24.108"W	0.00	FOX HILLS BASE
1113.00†	0.000	20.000	1113.00	0.00	0.00	0.00	40°01'42.506"N	104°53'24.108"W	0.00	
1213.00†	0.000	20.000	1213.00	0.00	0.00	0.00	40°01'42.506"N	104°53'24.108"W	0.00	
1300.00	0.000	20.000	1300.00	0.00	0.00	0.00	40°01'42.506"N	104°53'24.108"W	0.00	BEGIN NUDGE
1313.00†	0.260	20.000	1313.00	-0.03	0.03	0.01	40°01'42.506"N	104°53'24.108"W	2.00	
1413.00†	2.260	20.000	1412.97	-2.09	2.09	0.76	40°01'42.527"N	104°53'24.098"W	2.00	
1513.00†	4.260	20.000	1512.80	-7.42	7.44	2.71	40°01'42.579"N	104°53'24.073"W	2.00	
1613.00†	6.260	20.000	1612.38	-16.02	16.05	5.84	40°01'42.665"N	104°53'24.033"W	2.00	
1700.00	8.000	20.000	1698.70	-26.15	26.20	9.54	40°01'42.765"N	104°53'23.985"W	2.00	END NUDGE
1713.00†	8.000	20.000	1711.58	-27.85	27.90	10.15	40°01'42.782"N	104°53'23.977"W	0.00	
1813.00†	8.000	20.000	1810.60	-40.91	40.98	14.91	40°01'42.911"N	104°53'23.916"W	0.00	
1913.00†	8.000	20.000	1909.63	-53.96	54.05	19.67	40°01'43.040"N	104°53'23.855"W	0.00	
2013.00†	8.000	20.000	2008.66	-67.02	67.13	24.43	40°01'43.169"N	104°53'23.794"W	0.00	
2113.00†	8.000	20.000	2107.68	-80.07	80.21	29.19	40°01'43.299"N	104°53'23.733"W	0.00	
2213.00†	8.000	20.000	2206.71	-93.13	93.29	33.95	40°01'43.428"N	104°53'23.672"W	0.00	
2313.00†	8.000	20.000	2305.74	-106.19	106.37	38.71	40°01'43.557"N	104°53'23.610"W	0.00	
2413.00†	8.000	20.000	2404.76	-119.24	119.44	43.47	40°01'43.686"N	104°53'23.549"W	0.00	
2513.00†	8.000	20.000	2503.79	-132.30	132.52	48.23	40°01'43.816"N	104°53'23.488"W	0.00	
2613.00†	8.000	20.000	2602.82	-145.35	145.60	52.99	40°01'43.945"N	104°53'23.427"W	0.00	
2713.00†	8.000	20.000	2701.84	-158.41	158.68	57.75	40°01'44.074"N	104°53'23.366"W	0.00	
2813.00†	8.000	20.000	2800.87	-171.47	171.76	62.51	40°01'44.203"N	104°53'23.304"W	0.00	
2913.00†	8.000	20.000	2899.90	-184.52	184.83	67.27	40°01'44.333"N	104°53'23.243"W	0.00	
3013.00†	8.000	20.000	2998.92	-197.58	197.91	72.03	40°01'44.462"N	104°53'23.182"W	0.00	
3113.00†	8.000	20.000	3097.95	-210.63	210.99	76.79	40°01'44.591"N	104°53'23.121"W	0.00	
3213.00†	8.000	20.000	3196.98	-223.69	224.07	81.55	40°01'44.720"N	104°53'23.060"W	0.00	
3266.54	8.000	20.000	3250.00	-230.68	231.07	84.10	40°01'44.790"N	104°53'23.027"W	0.00	BEGIN DROP
3313.00†	7.071	20.000	3296.05	-236.39	236.80	86.19	40°01'44.846"N	104°53'23.000"W	2.00	
3413.00†	5.071	20.000	3395.49	-246.32	246.73	89.80	40°01'44.944"N	104°53'22.954"W	2.00	
3513.00†	3.071	20.000	3495.23	-252.97	253.40	92.23	40°01'45.010"N	104°53'22.922"W	2.00	
3613.00†	1.071	20.000	3595.16	-256.36	256.80	93.47	40°01'45.044"N	104°53'22.906"W	2.00	
3666.54	0.000	179.735	3648.70	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	2.00	END DROP
3713.00†	0.000	179.735	3695.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
3813.00†	0.000	179.735	3795.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	



Planned Wellpath Report

HOWARD 27N-28HZ (PERMIT REV-1) PWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#16 HOWARD 27N-28HZ (310' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 27N-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 27N-28HZ PWB
Facility	SEC.28-T1N-R67W		

WELLPATH DATA (134 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
3913.00†	0.000	179.735	3895.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
4013.00†	0.000	179.735	3995.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
4113.00†	0.000	179.735	4095.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
4213.00†	0.000	179.735	4195.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
4313.00†	0.000	179.735	4295.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
4413.00†	0.000	179.735	4395.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
4513.00†	0.000	179.735	4495.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
4613.00†	0.000	179.735	4595.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
4713.00†	0.000	179.735	4695.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
4793.84†	0.000	179.735	4776.00	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	SUSSEX
4813.00†	0.000	179.735	4795.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
4913.00†	0.000	179.735	4895.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
5013.00†	0.000	179.735	4995.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
5113.00†	0.000	179.735	5095.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
5213.00†	0.000	179.735	5195.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
5313.00†	0.000	179.735	5295.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
5413.00†	0.000	179.735	5395.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
5513.00†	0.000	179.735	5495.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
5613.00†	0.000	179.735	5595.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
5713.00†	0.000	179.735	5695.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
5813.00†	0.000	179.735	5795.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
5913.00†	0.000	179.735	5895.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
6013.00†	0.000	179.735	5995.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
6113.00†	0.000	179.735	6095.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
6213.00†	0.000	179.735	6195.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
6313.00†	0.000	179.735	6295.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
6413.00†	0.000	179.735	6395.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
6513.00†	0.000	179.735	6495.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
6613.00†	0.000	179.735	6595.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
6713.00†	0.000	179.735	6695.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
6813.00†	0.000	179.735	6795.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
6866.90†	0.000	179.735	6849.06	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	4 1/2" LINER TOP
6913.00†	0.000	179.735	6895.16	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	
6966.90	0.000	179.735	6949.06	-256.83	257.27	93.64	40°01'45.048"N	104°53'22.904"W	0.00	KOP, BUILD @ 10°/100'
7013.00†	4.610	179.735	6995.11	-254.98	255.42	93.65	40°01'45.030"N	104°53'22.904"W	10.00	
7113.00†	14.610	179.735	7093.58	-238.31	238.74	93.72	40°01'44.865"N	104°53'22.903"W	10.00	
7213.00†	24.610	179.735	7187.66	-204.79	205.23	93.88	40°01'44.534"N	104°53'22.901"W	10.00	
7313.00†	34.610	179.735	7274.49	-155.44	155.88	94.11	40°01'44.046"N	104°53'22.898"W	10.00	
7413.00†	44.610	179.735	7351.43	-91.77	92.21	94.40	40°01'43.417"N	104°53'22.894"W	10.00	
7454.66†	48.775	179.735	7380.00	-61.46	61.90	94.54	40°01'43.118"N	104°53'22.893"W	10.00	SHARON SPRINGS
7509.30†	54.240	179.735	7414.00	-18.71	19.15	94.74	40°01'42.695"N	104°53'22.890"W	10.00	NIOBRARA A
7513.00†	54.610	179.735	7416.15	-15.70	16.14	94.75	40°01'42.665"N	104°53'22.890"W	10.00	
7613.00†	64.610	179.735	7466.68	70.45	-70.01	95.15	40°01'41.814"N	104°53'22.885"W	10.00	
7713.00†	74.610	179.735	7501.47	164.06	-163.62	95.58	40°01'40.889"N	104°53'22.879"W	10.00	
7813.00†	84.610	179.735	7519.49	262.30	-261.86	96.04	40°01'39.918"N	104°53'22.873"W	10.00	



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Facility	SEC.28-T1N-R67W		

WELLPATH DATA (134 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7871.96	90.506	179.735	7522.00	321.18	-320.74	96.31	40°01'39.336"N	104°53'22.870"W	10.00	LANDING POINT
7913.00†	90.506	179.735	7521.63	362.22	-361.78	96.50	40°01'38.931"N	104°53'22.868"W	0.00	
8013.00†	90.506	179.735	7520.75	462.21	-461.77	96.96	40°01'37.943"N	104°53'22.862"W	0.00	
8113.00†	90.506	179.735	7519.87	562.21	-561.77	97.42	40°01'36.954"N	104°53'22.856"W	0.00	
8213.00†	90.506	179.735	7518.99	662.21	-661.76	97.88	40°01'35.966"N	104°53'22.850"W	0.00	
8313.00†	90.506	179.735	7518.11	762.20	-761.76	98.35	40°01'34.978"N	104°53'22.844"W	0.00	
8413.00†	90.506	179.735	7517.22	862.20	-861.75	98.81	40°01'33.990"N	104°53'22.838"W	0.00	
8513.00†	90.506	179.735	7516.34	962.20	-961.75	99.27	40°01'33.002"N	104°53'22.832"W	0.00	
8613.00†	90.506	179.735	7515.46	1062.19	-1061.74	99.73	40°01'32.014"N	104°53'22.826"W	0.00	
8713.00†	90.506	179.735	7514.58	1162.19	-1161.74	100.20	40°01'31.025"N	104°53'22.820"W	0.00	
8813.00†	90.506	179.735	7513.69	1262.18	-1261.73	100.66	40°01'30.037"N	104°53'22.814"W	0.00	
8913.00†	90.506	179.735	7512.81	1362.18	-1361.73	101.12	40°01'29.049"N	104°53'22.808"W	0.00	
9013.00†	90.506	179.735	7511.93	1462.18	-1461.72	101.58	40°01'28.061"N	104°53'22.802"W	0.00	
9113.00†	90.506	179.735	7511.05	1562.17	-1561.72	102.04	40°01'27.073"N	104°53'22.796"W	0.00	
9213.00†	90.506	179.735	7510.16	1662.17	-1661.71	102.51	40°01'26.085"N	104°53'22.790"W	0.00	
9313.00†	90.506	179.735	7509.28	1762.16	-1761.71	102.97	40°01'25.096"N	104°53'22.784"W	0.00	
9413.00†	90.506	179.735	7508.40	1862.16	-1861.70	103.43	40°01'24.108"N	104°53'22.779"W	0.00	
9513.00†	90.506	179.735	7507.52	1962.16	-1961.70	103.89	40°01'23.120"N	104°53'22.773"W	0.00	
9613.00†	90.506	179.735	7506.63	2062.15	-2061.69	104.35	40°01'22.132"N	104°53'22.767"W	0.00	
9713.00†	90.506	179.735	7505.75	2162.15	-2161.69	104.82	40°01'21.144"N	104°53'22.761"W	0.00	
9813.00†	90.506	179.735	7504.87	2262.14	-2261.68	105.28	40°01'20.155"N	104°53'22.755"W	0.00	
9913.00†	90.506	179.735	7503.99	2362.14	-2361.68	105.74	40°01'19.167"N	104°53'22.749"W	0.00	
10013.00†	90.506	179.735	7503.10	2462.14	-2461.67	106.20	40°01'18.179"N	104°53'22.743"W	0.00	
10113.00†	90.506	179.735	7502.22	2562.13	-2561.67	106.66	40°01'17.191"N	104°53'22.737"W	0.00	
10213.00†	90.506	179.735	7501.34	2662.13	-2661.66	107.13	40°01'16.203"N	104°53'22.731"W	0.00	
10313.00†	90.506	179.735	7500.46	2762.12	-2761.66	107.59	40°01'15.215"N	104°53'22.725"W	0.00	
10413.00†	90.506	179.735	7499.57	2862.12	-2861.65	108.05	40°01'14.226"N	104°53'22.719"W	0.00	
10513.00†	90.506	179.735	7498.69	2962.12	-2961.65	108.51	40°01'13.238"N	104°53'22.713"W	0.00	
10613.00†	90.506	179.735	7497.81	3062.11	-3061.64	108.97	40°01'12.250"N	104°53'22.707"W	0.00	
10713.00†	90.506	179.735	7496.93	3162.11	-3161.64	109.44	40°01'11.262"N	104°53'22.701"W	0.00	
10813.00†	90.506	179.735	7496.04	3262.11	-3261.63	109.90	40°01'10.274"N	104°53'22.695"W	0.00	
10913.00†	90.506	179.735	7495.16	3362.10	-3361.63	110.36	40°01'09.285"N	104°53'22.690"W	0.00	
11013.00†	90.506	179.735	7494.28	3462.10	-3461.62	110.82	40°01'08.297"N	104°53'22.684"W	0.00	
11113.00†	90.506	179.735	7493.40	3562.09	-3561.62	111.28	40°01'07.309"N	104°53'22.678"W	0.00	
11213.00†	90.506	179.735	7492.51	3662.09	-3661.61	111.75	40°01'06.321"N	104°53'22.672"W	0.00	
11313.00†	90.506	179.735	7491.63	3762.09	-3761.61	112.21	40°01'05.333"N	104°53'22.666"W	0.00	
11413.00†	90.506	179.735	7490.75	3862.08	-3861.60	112.67	40°01'04.345"N	104°53'22.660"W	0.00	
11513.00†	90.506	179.735	7489.87	3962.08	-3961.60	113.13	40°01'03.356"N	104°53'22.654"W	0.00	
11613.00†	90.506	179.735	7488.98	4062.07	-4061.59	113.59	40°01'02.368"N	104°53'22.648"W	0.00	
11713.00†	90.506	179.735	7488.10	4162.07	-4161.59	114.06	40°01'01.380"N	104°53'22.642"W	0.00	
11813.00†	90.506	179.735	7487.22	4262.07	-4261.58	114.52	40°01'00.392"N	104°53'22.636"W	0.00	
11913.00†	90.506	179.735	7486.34	4362.06	-4361.58	114.98	40°00'59.404"N	104°53'22.630"W	0.00	
12013.00†	90.506	179.735	7485.45	4462.06	-4461.57	115.44	40°00'58.415"N	104°53'22.624"W	0.00	
12064.56	90.506	179.735	7485.00 ¹	4513.62	-4513.13	115.68	40°00'57.906"N	104°53'22.621"W	0.00	TOTAL DEPTH



Planned Wellpath Report

HOWARD 27N-28HZ (PERMIT REV-1) PWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#16 HOWARD 27N-28HZ (310' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 27N-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 27N-28HZ PWB
Facility	SEC.28-T1N-R67W		

HOLE & CASING SECTIONS - Ref Wellbore: HOWARD 27N-28HZ PWB Ref Wellpath: HOWARD 27N-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	7871.96	6871.96	1000.00	7522.00	0.00	0.00	-320.74	96.31
7in Casing Intermediate	13.00	7871.96	7858.96	13.00	7522.00	0.00	0.00	-320.74	96.31
6.125in Open Hole	7871.96	12064.56	4192.60	7522.00	7485.00	-320.74	96.31	-4513.13	115.68
4.5in Casing Production	13.00	12064.56	12051.56	13.00	7485.00	0.00	0.00	-4513.13	115.68

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	0.00	0.00	3170812.59	1253806.63	40°01'42.506"N	104°53'24.108"W	polygon
SEC.28-T1N-R67W SECTION LINES		4996.00	0.00	0.00	3170812.59	1253806.63	40°01'42.506"N	104°53'24.108"W	polygon
1) HOWARD 27N-18HZ BHL ON PLAT (460' FSL & 1000' FEL, SEC. 28) REV-1	12064.56	7485.00	-4513.13	115.68	3170959.31	1249294.57	40°00'57.906"N	104°53'22.621"W	point

SURVEY PROGRAM - Ref Wellbore: HOWARD 27N-28HZ PWB Ref Wellpath: HOWARD 27N-28HZ (PERMIT REV-1) PWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
13.00	7871.96	NaviTrak (MagCorr)		HOWARD 27N-28HZ PWB
7871.96	12064.56	OnTrak (MagCorr)		HOWARD 27N-28HZ PWB



Planned Wellpath Report

HOWARD 27N-28HZ (PERMIT REV-1) PWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#16 HOWARD 27N-28HZ (310' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 27N-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 27N-28HZ PWB
Facility	SEC.28-T1N-R67W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
1088.00	0.000	20.000	1088.00	FOX HILLS BASE
4793.84	0.000	179.735	4776.00	SUSSEX
6866.90	0.000	179.735	6849.06	4 1/2" LINER TOP
7454.66	48.775	179.735	7380.00	SHARON SPRINGS
7509.30	54.240	179.735	7414.00	NIOBRARA A

DESIGN COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
13.00	0.000	20.000	13.00	TIE-ON
1300.00	0.000	20.000	1300.00	BEGIN NUDGE
1700.00	8.000	20.000	1698.70	END NUDGE
3266.54	8.000	20.000	3250.00	BEGIN DROP
3666.54	0.000	179.735	3648.70	END DROP
6966.90	0.000	179.735	6949.06	KOP, BUILD @ 10°/100'
7871.96	90.506	179.735	7522.00	LANDING POINT
12064.56	90.506	179.735	7485.00	TOTAL DEPTH