

Location:	COLORADO	Slot:	SLOT#18 HOWARD 26N-28HZ (250' FNL & 1094' FEL, SEC. 28)
Field:	WELD COUNTY (KERR MCGEE)	Well:	HOWARD 26N-28HZ
Facility:	SEC.28-T1N-R67W	Wellbore:	HOWARD 26N-28HZ PWB

Plot reference wellpath is HOWARD 26N-28HZ (REV-B.0) PWP

True vertical depths are referenced to XTREME 20 (16' KB) (RKB)

Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet

Measured depths are referenced to XTREME 20 (16" KB) (RKB)

North Reference: True north

XTREME 20 (16" KB) (RKB) to Mean Sea Level: 4999 feet

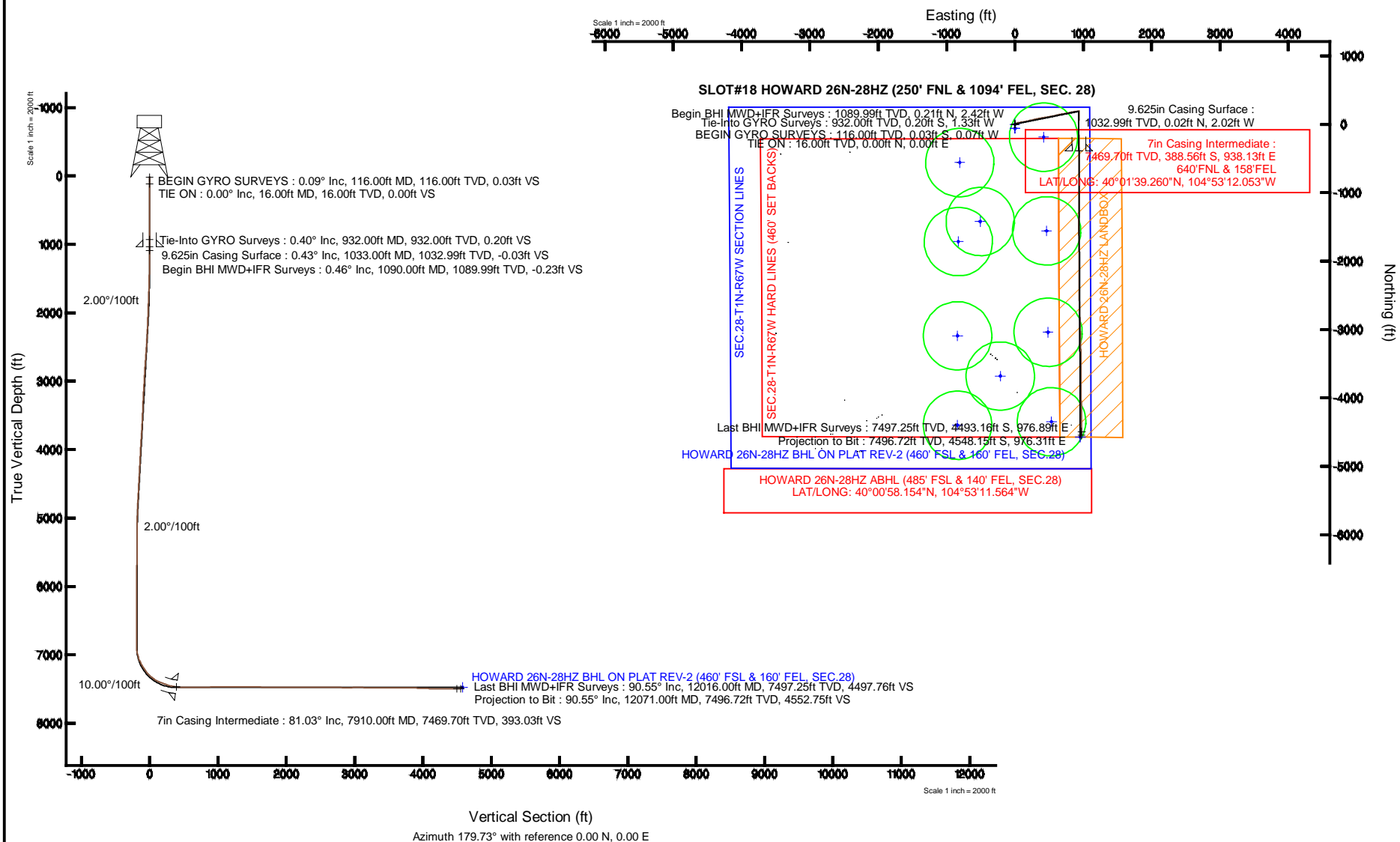
Scale: True distance

Mean Sea Level to Mud line (At Slot: SLOT#18 HOWARD 26N-28HZ (250' FNL & 1094' FEL, SEC. 28)): 0 feet

Depths are in feet

Coordinates are in feet referenced to Slot

Created by: precain on 16/Dec/2013



REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#18 HOWARD 26N-28HZ (250' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 26N-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 26N-28HZ AWB
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	0.999964	Report Generated	16/Dec/2013 at 10:17
Convergence at slot	n/a	Database/Source file	WellArchitectDB/HOWARD_26N-28HZ_AWB.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	1416916.73	2716919.58	3170811.87	1253866.73	40°01'43.100"N	104°53'24.112"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	XTREME 20 (16' KB) (RKB) to Facility Vertical Datum	4999.00ft
Horizontal Reference Pt	Slot	XTREME 20 (16' KB) (RKB) to Mean Sea Level	4999.00ft
Vertical Reference Pt	XTREME 20 (16' KB) (RKB)	XTREME 20 (16' KB) (RKB) to Mud Line at Slot (SLOT#18 HOWARD 26N-28HZ (250' FNL & 1094' FEL, SEC. 28))	4999.00ft
MD Reference Pt	XTREME 20 (16' KB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	179.73°

# Actual Wellpath Report

HOWARD 26N-28HZ AWP

Page 2 of 8

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#18 HOWARD 26N-28HZ (250' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 26N-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 26N-28HZ AWB
Facility	SEC.28-T1N-R67W		

WELLPATH DATA (127 stations) † = interpolated/extrapolated station								
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
0.00†	0.000	245.370	0.00	0.00	0.00	0.00	0.00	
16.00	0.000	245.370	16.00	0.00	0.00	0.00	0.00	TIE ON
116.00	0.090	245.370	116.00	0.03	-0.03	-0.07	0.09	BEGIN GYRO SURVEYS
216.00	0.150	104.040	216.00	0.10	-0.10	-0.02	0.23	
316.00	0.220	243.990	316.00	0.21	-0.21	-0.06	0.35	
416.00	0.160	339.070	416.00	0.17	-0.17	-0.28	0.28	
516.00	0.190	291.150	516.00	-0.03	0.02	-0.49	0.14	
616.00	0.070	220.100	616.00	-0.04	0.04	-0.68	0.18	
716.00	0.110	287.050	716.00	-0.02	0.02	-0.81	0.10	
816.00	0.130	200.060	816.00	0.06	-0.06	-0.94	0.17	
916.00	0.290	260.300	916.00	0.20	-0.21	-1.23	0.25	
932.00	0.400	282.430	932.00	0.20	-0.20	-1.33	1.07	Tie-Into GYRO Surveys
1090.00	0.460	298.210	1089.99	-0.23	0.21	-2.42	0.08	Begin BHI MWD+IFR Surveys
1183.00	0.470	295.090	1182.99	-0.57	0.55	-3.10	0.03	
1277.00	0.510	304.280	1276.99	-0.97	0.95	-3.79	0.09	
1371.00	1.320	30.160	1370.98	-2.14	2.12	-3.60	1.47	
1465.00	2.830	59.230	1464.91	-4.25	4.25	-1.06	1.91	
1561.00	3.800	65.290	1560.75	-6.77	6.79	3.87	1.07	
1653.00	5.190	66.700	1652.47	-9.66	9.71	10.46	1.52	
1745.00	6.290	70.130	1744.01	-12.98	13.07	19.02	1.25	
1836.00	7.720	72.520	1834.32	-16.46	16.60	29.54	1.60	
1928.00	9.390	74.390	1925.30	-20.27	20.47	42.66	1.84	
2021.00	11.120	81.540	2016.81	-23.56	23.84	58.84	2.31	
2113.00	12.930	80.960	2106.79	-26.39	26.76	77.79	1.97	
2204.00	14.950	80.920	2195.10	-29.74	30.21	99.43	2.22	
2296.00	15.880	78.490	2283.80	-34.01	34.60	123.49	1.23	
2388.00	16.370	79.140	2372.18	-38.84	39.55	148.55	0.57	
2480.00	16.730	79.230	2460.36	-43.64	44.47	174.29	0.39	
2571.00	17.310	76.120	2547.38	-49.21	50.16	200.30	1.19	
2663.00	16.320	74.720	2635.45	-55.77	56.85	226.06	1.16	
2755.00	16.890	75.920	2723.61	-62.31	63.51	251.49	0.72	
2847.00	16.890	77.350	2811.64	-68.37	69.69	277.50	0.45	
2939.00	16.630	80.110	2899.73	-73.43	74.88	303.51	0.91	
3030.00	16.490	80.000	2986.96	-77.79	79.36	329.05	0.16	
3122.00	17.090	76.620	3075.04	-83.06	84.75	355.06	1.25	
3212.00	16.470	78.570	3161.21	-88.53	90.34	380.43	0.93	
3304.00	15.940	81.050	3249.55	-92.96	94.89	405.70	0.95	
3389.00	16.040	81.430	3331.26	-96.41	98.46	428.84	0.17	
3474.00	17.950	81.630	3412.55	-99.95	102.11	453.41	2.25	
3560.00	16.120	81.610	3494.77	-103.50	105.78	478.34	2.13	
3645.00	15.930	79.670	3576.47	-107.21	109.60	501.49	0.67	
3730.00	15.720	78.670	3658.25	-111.45	113.95	524.25	0.40	
3815.00	16.330	78.410	3739.94	-116.01	118.61	547.25	0.72	
3900.00	16.530	76.860	3821.47	-121.04	123.76	570.73	0.57	
3985.00	14.560	76.720	3903.36	-126.14	128.97	592.91	2.32	

# Actual Wellpath Report

HOWARD 26N-28HZ AWP

Page 3 of 8

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#18 HOWARD 26N-28HZ (250' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 26N-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 26N-28HZ AWB
Facility	SEC.28-T1N-R67W		

WELLPATH DATA (127 stations)								
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
4071.00	14.890	76.810	3986.54	-131.04	133.97	614.18	0.38	
4156.00	15.470	77.960	4068.57	-135.80	138.83	635.90	0.77	
4241.00	15.740	80.530	4150.44	-139.95	143.09	658.36	0.87	
4326.00	15.840	79.690	4232.23	-143.82	147.06	681.15	0.29	
4412.00	16.330	80.320	4314.86	-147.84	151.20	704.61	0.60	
4497.00	17.300	79.510	4396.23	-152.03	155.51	728.82	1.17	
4582.00	15.980	78.990	4477.67	-156.45	160.04	752.74	1.56	
4667.00	15.940	79.270	4559.39	-160.75	164.45	775.69	0.10	
4751.00	14.090	76.110	4640.52	-165.25	169.05	796.95	2.41	
4837.00	13.020	75.490	4724.12	-170.10	173.99	816.49	1.26	
4922.00	12.480	78.020	4807.03	-174.32	178.30	834.74	0.91	
5007.00	12.020	82.300	4890.09	-177.33	181.39	852.50	1.20	
5091.00	10.310	82.540	4972.50	-179.40	183.54	868.62	2.04	
5177.00	8.770	82.320	5057.31	-181.21	185.41	882.75	1.79	
5262.00	8.130	80.880	5141.39	-182.97	187.23	895.11	0.79	
5347.00	6.810	82.770	5225.66	-184.50	188.82	906.04	1.58	
5432.00	5.810	84.670	5310.15	-185.49	189.85	915.32	1.20	
5517.00	4.800	88.490	5394.78	-185.95	190.35	923.16	1.26	
5603.00	3.440	90.800	5480.56	-185.98	190.41	929.34	1.59	
5688.00	1.940	101.330	5565.46	-185.64	190.09	933.30	1.85	
5773.00	1.120	47.460	5650.44	-185.91	190.37	935.32	1.84	
6028.00	0.720	288.940	5905.42	-188.11	192.57	935.65	0.63	
6283.00	0.440	16.170	6160.41	-189.58	194.03	934.40	0.32	
6539.00	0.630	41.910	6416.40	-191.56	196.02	935.62	0.12	
6794.00	1.350	112.310	6671.37	-191.45	195.93	939.33	0.50	
6880.00	0.950	85.090	6757.35	-191.12	195.60	940.98	0.77	
6965.00	0.610	53.040	6842.34	-191.44	195.94	942.04	0.64	
7008.00	2.660	169.590	6885.33	-190.60	195.09	942.41	6.94	
7050.00	6.700	181.110	6927.18	-187.19	191.68	942.54	9.83	
7093.00	11.290	183.310	6969.64	-180.48	184.97	942.24	10.70	
7135.00	14.920	183.760	7010.54	-170.98	175.47	941.65	8.65	
7178.00	19.740	184.980	7051.57	-158.22	162.70	940.66	11.24	
7220.00	23.730	183.060	7090.58	-142.71	147.19	939.59	9.65	
7263.00	27.950	182.840	7129.27	-124.00	128.48	938.63	9.82	
7306.00	31.380	181.680	7166.63	-102.74	107.21	937.80	8.09	
7349.00	34.190	182.560	7202.78	-79.48	83.95	936.93	6.63	
7391.00	37.770	181.660	7236.76	-54.83	59.29	936.03	8.62	
7434.00	42.790	181.200	7269.55	-27.05	31.51	935.34	11.69	
7476.00	44.600	180.220	7299.92	1.95	2.50	934.99	4.60	
7519.00	49.300	180.340	7329.27	33.37	-28.91	934.83	10.93	
7561.00	53.500	179.660	7355.46	66.18	-61.73	934.84	10.08	
7604.00	61.040	179.150	7378.70	102.33	-97.87	935.22	17.56	
7646.00	67.130	179.290	7397.04	140.08	-135.63	935.74	14.50	
7689.00	69.600	179.510	7412.89	180.05	-175.59	936.15	5.76	
7731.00	69.910	179.320	7427.43	219.46	-215.00	936.56	0.85	

# Actual Wellpath Report

HOWARD 26N-28HZ AWP

Page 4 of 8

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#18 HOWARD 26N-28HZ (250' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 26N-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 26N-28HZ AWB
Facility	SEC.28-T1N-R67W		

WELLPATH DATA (127 stations) † = interpolated/extrapolated station								
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
7774.00	72.360	179.360	7441.33	260.14	-255.68	937.02	5.70	
7816.00	77.150	179.270	7452.37	300.65	-296.19	937.51	11.41	
7859.00	79.820	179.650	7460.95	342.78	-338.32	937.91	6.27	
7902.00	80.250	179.810	7468.40	385.13	-380.67	938.10	1.07	
7910.00†	81.027	179.812	7469.70	393.03	-388.56	938.13	9.72	7" Casing Point
7948.00	84.720	179.820	7474.41	430.73	-426.26	938.25	9.72	
8052.00	90.710	180.730	7478.55	534.59	-530.13	937.75	5.83	
8137.00	90.580	179.570	7477.60	619.58	-615.12	937.53	1.37	
8223.00	91.040	179.670	7476.38	705.57	-701.11	938.10	0.55	
8308.00	91.810	180.150	7474.27	790.54	-786.08	938.23	1.07	
8393.00	91.040	179.900	7472.15	875.52	-871.06	938.20	0.95	
8478.00	89.870	180.510	7471.48	960.51	-956.05	937.89	1.55	
8648.00	90.270	179.910	7471.27	1130.50	-1126.05	937.27	0.42	
8818.00	90.180	180.580	7470.60	1300.49	-1296.04	936.54	0.40	
8988.00	89.810	180.020	7470.62	1470.48	-1466.04	935.65	0.39	
9159.00	89.130	179.710	7472.20	1641.47	-1637.03	936.05	0.44	
9329.00	89.070	179.720	7474.87	1811.45	-1807.01	936.90	0.04	
9500.00	90.150	180.030	7476.04	1982.45	-1978.00	937.27	0.66	
9670.00	89.470	179.580	7476.60	2152.44	-2148.00	937.85	0.48	
9840.00	90.030	179.640	7477.34	2322.44	-2317.99	939.01	0.33	
10011.00	89.840	178.870	7477.53	2493.43	-2488.98	941.23	0.46	
10180.00	89.810	178.700	7478.05	2662.41	-2657.94	944.82	0.10	
10351.00	89.470	177.430	7479.13	2833.33	-2828.83	950.59	0.77	
10436.00	90.400	178.120	7479.22	2918.28	-2913.77	953.89	1.36	
10521.00	90.520	178.590	7478.54	3003.25	-2998.73	956.33	0.57	
10691.00	88.670	178.640	7479.74	3173.21	-3168.67	960.44	1.09	
10777.00	89.630	177.750	7481.02	3259.17	-3254.61	963.15	1.52	
10861.00	90.360	179.680	7481.02	3343.15	-3338.59	965.03	2.46	
10947.00	89.810	179.120	7480.90	3429.15	-3424.58	965.93	0.91	
11032.00	90.490	180.770	7480.67	3514.14	-3509.58	966.01	2.10	
11202.00	89.010	179.460	7481.42	3684.13	-3679.57	965.67	1.16	
11372.00	88.890	179.750	7484.53	3854.10	-3849.54	966.84	0.18	
11543.00	87.400	177.790	7490.07	4024.97	-4020.39	970.51	1.44	
11713.00	88.610	178.460	7495.98	4194.80	-4190.20	976.07	0.81	
11883.00	90.060	180.290	7497.96	4364.77	-4360.16	977.92	1.37	
12016.00	90.550	180.600	7497.25	4497.76	-4493.16	976.89	0.44	Last BHI MWD+IFR Surveys
12071.00	90.550	180.600	7496.72	4552.75	-4548.15	976.31	0.00	Projection to Bit

# Actual Wellpath Report

HOWARD 26N-28HZ AWP

Page 5 of 8

## REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#18 HOWARD 26N-28HZ (250' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 26N-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 26N-28HZ AWB
Facility	SEC.28-T1N-R67W		

## HOLE & CASING SECTIONS - Ref Wellbore: HOWARD 26N-28HZ AWB Ref Wellpath: HOWARD 26N-28HZ AWP

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	16.00	1043.00	1027.00	16.00	1042.99	0.00	0.00	0.05	-2.09
9.625in Casing Surface	16.00	1033.00	1017.00	16.00	1032.99	0.00	0.00	0.02	-2.02
8.75in Open Hole	1043.00	8006.00	6963.00	1042.99	7478.06	0.05	-2.09	-484.14	938.18
7in Casing Intermediate	16.00	7910.00	7894.00	16.00	7469.70	0.00	0.00	-388.56	938.13
6.125in Open Hole	8006.00	12071.00	4065.00	7478.06	7496.72	-484.14	938.18	-4548.15	976.31

# Actual Wellpath Report

HOWARD 26N-28HZ AWP

Page 6 of 8

## REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#18 HOWARD 26N-28HZ (250' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 26N-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 26N-28HZ AWB
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
DAVID HOWARD B-2 (500' RADIUS)		905.28	-3092.79	-839.67	3169993.52	1250768.35	40°01'12.536"N	104°53'34.905"W	circle
DAVID HOWARD #B-1 (500' RADIUS)		913.24	-4348.50	535.97	3171377.71	1249522.18	40°01'00.127"N	104°53'17.223"W	circle
DAVID HOWARD B#4 (500' RADIUS)		915.05	-3039.50	484.12	3171316.86	1250830.75	40°01'13.063"N	104°53'17.889"W	circle
YOXALL FARMS #9 (500' RADIUS)		916.33	-1558.43	463.37	3171285.93	1252311.58	40°01'27.699"N	104°53'18.156"W	circle
YOXALL FARMS INC #C1 (PA) (500' RADIUS)		936.24	-1420.36	-507.52	3170314.15	1252442.97	40°01'29.064"N	104°53'30.636"W	circle
YOXALL FARMS #10 (500' RADIUS)		938.53	-187.20	419.85	3171232.98	1253682.43	40°01'41.250"N	104°53'18.715"W	circle
DAVID HOWARD #B-5 (500' RADIUS)		939.41	-3681.13	-213.73	3170623.47	1250184.35	40°01'06.722"N	104°53'26.859"W	circle
YOXALL FARMS #7 (500' RADIUS)		955.47	-1714.33	-828.66	3169995.05	1252146.80	40°01'26.158"N	104°53'34.764"W	circle
YOXALL FARMS #8 (500' RADIUS)		960.16	-559.17	-807.81	3170007.95	1253302.04	40°01'37.574"N	104°53'34.496"W	circle
DAVID HOWARD B#3 (500' RADIUS)		961.29	-4399.13	-840.21	3170001.97	1249462.09	40°00'59.626"N	104°53'34.911"W	circle
SEC.28-T1N-R67W HARD LINES (460' SET BACKS)		4999.00	-60.11	0.31	3170812.59	1253806.63	40°01'42.506"N	104°53'24.108"W	polygon
SEC.28-T1N-R67W SECTION LINES		4999.00	-60.11	0.31	3170812.59	1253806.63	40°01'42.506"N	104°53'24.108"W	polygon
HOWARD 26N-28HZ BHL ON PLAT REV-2 (460' FSL & 160' FEL, SEC.28)		7477.00	-4573.22	955.99	3171799.25	1249300.37	40°00'57.906"N	104°53'11.825"W	point
HOWARD 26N-28HZ LANDBOX		7477.00	0.00	0.00	3170811.87	1253866.73	40°01'43.100"N	104°53'24.112"W	polygon
HOWARD 26N-28HZ BHL ON PLAT (460' FSL & 160' FEL, SEC.28) REV-1		7479.00	-4573.22	956.01	3171799.27	1249300.37	40°00'57.906"N	104°53'11.825"W	point

# Actual Wellpath Report

HOWARD 26N-28HZ AWP

Page 7 of 8

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#18 HOWARD 26N-28HZ (250' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 26N-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 26N-28HZ AWB
Facility	SEC.28-T1N-R67W		

WELLPATH COMPOSITION - Ref Wellbore: HOWARD 26N-28HZ AWB    Ref Wellpath: HOWARD 26N-28HZ AWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
16.00	932.00	Generic gyro - continuous (Standard)	MS ENERGY GYRO SURVEYS <116-932>	HOWARD 26N-28HZ AWB
932.00	7948.00	NaviTrak (MAGCORR,IFR)	BHI MWD+IFR SURVEYS 8 3/4" HOLE <1090-7948>	HOWARD 26N-28HZ AWB
7948.00	12016.00	NaviTrak (MAGCORR,IFR)	BHI MWD+IFR SURVEYS 6 1/8" HOLE <8052-12016>	HOWARD 26N-28HZ AWB
12016.00	12071.00	Blind Drilling (std)	Projection to bit	HOWARD 26N-28HZ AWB



# Actual Wellpath Report

HOWARD 26N-28HZ AWP

Page 8 of 8

REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#18 HOWARD 26N-28HZ (250' FNL & 1094' FEL, SEC. 28)
Area	COLORADO	Well	HOWARD 26N-28HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 26N-28HZ AWB
Facility	SEC.28-T1N-R67W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
16.00	0.000	245.370	16.00	TIE ON
116.00	0.090	245.370	116.00	BEGIN GYRO SURVEYS
932.00	0.400	282.430	932.00	Tie-Into GYRO Surveys
1090.00	0.460	298.210	1089.99	Begin BHI MWD+IFR Surveys
7910.00	81.027	179.812	7469.70	7" Casing Point
12016.00	90.550	180.600	7497.25	Last BHI MWD+IFR Surveys
12071.00	90.550	180.600	7496.72	Projection to Bit