

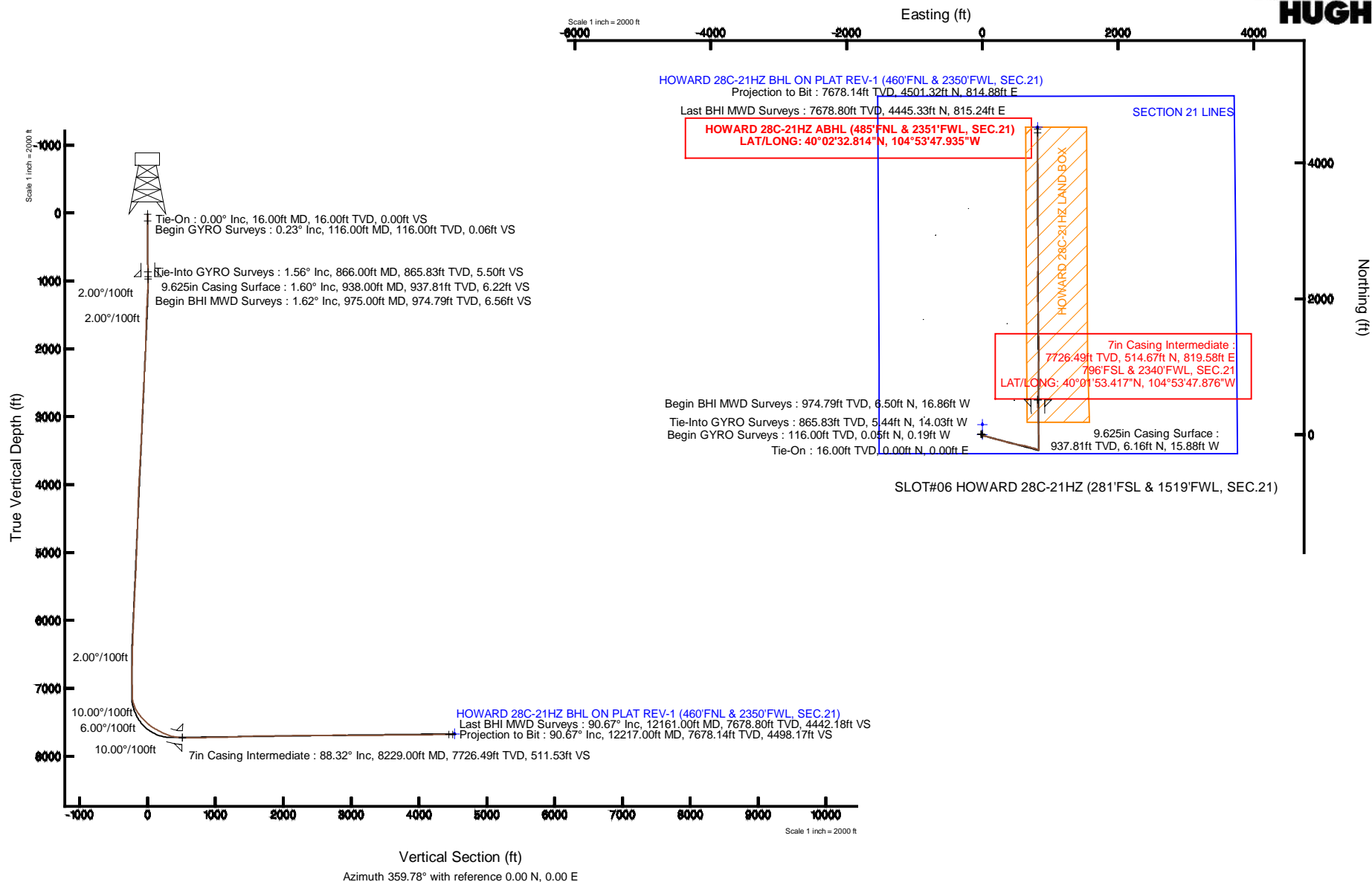
# KERR-MCGEE OIL & GAS ONSHORE LP

Location: COLORADO Slot: SLOT#06 HOWARD 28C-21HZ (281°FSL & 1519°FWL, SEC.21)  
 Field: WELD COUNTY (KERR MCGEE) Well: HOWARD 28C-21HZ  
 Facility: SEC.21-T1N-R67W Wellbore: HOWARD 28C-21HZ PWB



Plot reference wellpath is HOWARD 28C-21HZ (REV-B.0) PWP

True vertical depths are referenced to XTREME 6 (RKB)	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
Measured depths are referenced to XTREME 6 (RKB)	North Reference: True north
XTREME 6 (RKB) to Mean Sea Level: 5041 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: SLOT#06 HOWARD 28C-21HZ (281°FSL & 1519°FWL, SEC.21)): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: precain on 21/Jan/2014



# Actual Wellpath Report

HOWARD 28C-21HZ AWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#06 HOWARD 28C-21HZ (281'FSL & 1519'FWL, SEC.21)
Area	COLORADO	Well	HOWARD 28C-21HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 28C-21HZ AWB
Facility	SEC.21-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	21/Jan/2014 at 11:24
Convergence at slot	n/a	Database/Source file	WellArchitectDB/HOWARD_28C-21HZ_AWB.xml

## WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-149.86	-2.80	3168140.22	1254377.82	40°01'48.331"N	104°53'58.412"W
Facility Reference Pt			3168142.01	1254527.69	40°01'49.812"N	104°53'58.376"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 6 (RKB) to Facility Vertical Datum	5041.00ft
Horizontal Reference Pt	Slot	XTREME 6 (RKB) to Mean Sea Level	5041.00ft
Vertical Reference Pt	XTREME 6 (RKB)	XTREME 6 (RKB) to Mud Line at Slot (SLOT#06 HOWARD 28C-21HZ (281'FSL & 1519'FWL, SEC.21))	5041.00ft
MD Reference Pt	XTREME 6 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	359.78°

# Actual Wellpath Report

HOWARD 28C-21HZ AWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#06 HOWARD 28C-21HZ (281'FSL & 1519'FWL, SEC.21)
Area	COLORADO	Well	HOWARD 28C-21HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 28C-21HZ AWB
Facility	SEC.21-T1N-R67W		

## WELLPATH DATA (159 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
0.00†	0.000	286.210	0.00	0.00	0.00	0.00	0.00	
16.00	0.000	286.210	16.00	0.00	0.00	0.00	0.00	Tie-On
116.00†	0.225	286.210	116.00	0.06	0.05	-0.19	0.23	Begin GYRO Surveys
216.00	0.450	286.210	216.00	0.22	0.22	-0.75	0.22	
316.00	1.080	291.220	315.99	0.68	0.67	-2.01	0.63	
416.00	1.290	279.610	415.97	1.21	1.20	-4.00	0.32	
516.00	1.700	295.610	515.93	2.05	2.03	-6.45	0.58	
616.00	1.470	293.910	615.90	3.22	3.19	-8.96	0.23	
716.00	1.140	292.710	715.87	4.14	4.09	-11.05	0.33	
816.00	1.220	296.260	815.85	5.00	4.95	-12.92	0.11	
866.00	1.560	292.370	865.83	5.50	5.44	-14.03	0.71	Tie-Into GYRO Surveys
975.00	1.620	288.520	974.79	6.56	6.50	-16.86	0.11	Begin BHI MWD Surveys
1067.00	1.880	233.410	1066.75	6.08	6.01	-19.30	1.78	
1158.00	3.000	191.090	1157.68	2.86	2.78	-20.96	2.25	
1249.00	3.770	164.270	1248.52	-2.35	-2.43	-20.61	1.91	
1341.00	4.220	140.780	1340.31	-7.90	-7.97	-17.65	1.83	
1436.00	5.080	118.990	1435.00	-12.67	-12.71	-11.76	2.05	
1497.00	5.260	111.720	1495.75	-15.03	-15.06	-6.80	1.11	
1588.00	6.390	97.590	1586.29	-17.28	-17.27	2.10	2.00	
1681.00	8.000	104.330	1678.55	-19.61	-19.56	13.50	1.95	
1773.00	9.640	100.460	1769.46	-22.64	-22.54	27.28	1.89	
1864.00	10.850	99.200	1859.01	-25.46	-25.29	43.23	1.35	
1949.00	10.500	98.230	1942.54	-27.90	-27.68	58.79	0.46	
2035.00	9.480	97.760	2027.23	-30.04	-29.76	73.56	1.19	
2120.00	9.920	105.000	2111.02	-32.93	-32.60	87.57	1.52	
2205.00	10.840	108.010	2194.63	-37.36	-36.96	102.24	1.26	
2291.00	9.920	106.570	2279.22	-42.02	-41.58	117.04	1.11	
2376.00	8.810	103.120	2363.09	-45.64	-45.14	130.39	1.46	
2461.00	9.160	107.440	2447.05	-49.20	-48.65	143.19	0.89	
2546.00	10.160	110.150	2530.84	-53.86	-53.26	156.68	1.29	
2632.00	10.680	108.210	2615.42	-59.02	-58.36	171.37	0.73	
2717.00	10.600	106.280	2698.96	-63.73	-63.02	186.36	0.43	
2802.00	8.880	105.480	2782.73	-67.72	-66.96	200.19	2.03	
2887.00	9.100	109.810	2866.69	-71.80	-70.99	212.83	0.84	
2972.00	9.950	105.220	2950.52	-76.06	-75.19	226.24	1.34	
3057.00	11.020	101.890	3034.10	-79.72	-78.80	241.28	1.45	
3143.00	9.690	99.850	3118.69	-82.71	-81.73	256.45	1.60	
3228.00	10.250	100.560	3202.41	-85.37	-84.34	270.94	0.67	
3313.00	10.770	101.840	3285.98	-88.45	-87.35	286.14	0.67	
3398.00	10.640	105.980	3369.51	-92.29	-91.14	301.46	0.92	
3483.00	11.420	108.240	3452.94	-97.15	-95.94	317.00	1.05	
3568.00	10.470	106.280	3536.39	-102.01	-100.74	332.40	1.20	
3653.00	10.900	106.880	3619.92	-106.56	-105.23	347.51	0.52	
3735.00	9.890	105.780	3700.57	-110.78	-109.40	361.70	1.26	
3819.00	10.780	108.890	3783.21	-115.34	-113.91	376.08	1.25	

# Actual Wellpath Report

HOWARD 28C-21HZ AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#06 HOWARD 28C-21HZ (281'FSL & 1519'FWL, SEC.21)
Area	COLORADO	Well	HOWARD 28C-21HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 28C-21HZ AWB
Facility	SEC.21-T1N-R67W		

WELLPATH DATA (159 stations)								
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
3904.00	9.840	106.610	3866.83	-120.05	-118.56	390.56	1.21	
3989.00	9.580	108.820	3950.62	-124.46	-122.91	404.21	0.53	
4074.00	10.890	106.490	4034.26	-129.07	-127.47	418.61	1.62	
4160.00	9.650	101.690	4118.88	-132.90	-131.24	433.46	1.75	
4245.00	10.590	96.810	4202.56	-135.32	-133.61	448.19	1.50	
4330.00	11.050	96.060	4286.05	-137.17	-135.40	464.05	0.57	
4415.00	9.980	95.480	4369.62	-138.79	-136.96	479.48	1.26	
4500.00	10.280	103.570	4453.30	-141.33	-139.44	494.18	1.71	
4585.00	11.050	104.730	4536.83	-145.24	-143.29	509.44	0.94	
4670.00	9.890	100.970	4620.42	-148.76	-146.75	524.48	1.58	
4754.00	10.260	100.630	4703.12	-151.57	-149.51	538.91	0.45	
4840.00	11.540	101.270	4787.57	-154.72	-152.60	554.88	1.49	
4925.00	11.560	99.950	4870.85	-157.92	-155.73	571.61	0.31	
5010.00	11.480	99.700	4954.13	-160.88	-158.63	588.33	0.11	
5095.00	10.860	98.510	5037.52	-163.55	-161.24	604.59	0.78	
5181.00	9.960	97.060	5122.11	-165.72	-163.35	619.98	1.09	
5266.00	10.610	101.870	5205.74	-168.29	-165.87	634.94	1.27	
5351.00	11.490	106.270	5289.17	-172.34	-169.85	650.72	1.43	
5436.00	11.150	107.690	5372.51	-177.27	-174.72	666.68	0.52	
5521.00	10.080	107.170	5456.06	-182.02	-179.41	681.62	1.26	
5607.00	8.940	105.420	5540.87	-186.07	-183.41	695.25	1.37	
5692.00	9.860	106.030	5624.73	-189.88	-187.18	708.61	1.09	
5777.00	11.110	104.900	5708.31	-194.06	-191.29	723.52	1.49	
5863.00	10.120	104.260	5792.84	-198.11	-195.28	738.85	1.16	
5948.00	9.080	102.500	5876.65	-201.45	-198.58	752.64	1.27	
6033.00	8.460	108.030	5960.65	-204.89	-201.96	765.13	1.23	
6118.00	9.700	107.440	6044.59	-209.02	-206.04	777.91	1.46	
6203.00	8.640	104.870	6128.50	-212.85	-209.83	790.91	1.34	
6288.00	7.220	103.710	6212.69	-215.80	-212.73	802.27	1.68	
6374.00	5.720	101.530	6298.14	-217.97	-214.87	811.72	1.77	
6459.00	4.870	118.010	6382.78	-220.54	-217.41	819.06	2.04	
6544.00	4.010	114.390	6467.52	-223.49	-220.33	824.95	1.06	
6629.00	3.200	106.290	6552.35	-225.40	-222.23	829.93	1.12	
6714.00	2.800	101.630	6637.24	-226.50	-223.31	834.25	0.55	
6799.00	1.840	125.530	6722.17	-227.72	-224.52	837.39	1.58	
6884.00	0.580	53.320	6807.15	-228.26	-225.06	838.85	2.06	
6969.00	0.610	354.590	6892.15	-227.56	-224.35	839.15	0.69	
7055.00	0.980	345.390	6978.14	-226.39	-223.18	838.92	0.45	
7140.00	1.110	313.460	7063.12	-225.12	-221.91	838.14	0.69	
7182.00	1.620	324.920	7105.11	-224.35	-221.15	837.50	1.37	
7225.00	5.860	347.210	7148.01	-221.70	-218.51	836.67	10.24	
7267.00	11.830	354.440	7189.50	-215.32	-212.13	835.77	14.43	
7310.00	17.890	359.230	7231.04	-204.32	-201.13	835.26	14.37	
7353.00	22.870	359.320	7271.34	-189.35	-186.16	835.07	11.58	
7395.00	27.470	359.150	7309.34	-171.49	-168.30	834.83	10.95	

# Actual Wellpath Report

HOWARD 28C-21HZ AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#06 HOWARD 28C-21HZ (281'FSL & 1519'FWL, SEC.21)
Area	COLORADO	Well	HOWARD 28C-21HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 28C-21HZ AWB
Facility	SEC.21-T1N-R67W		

WELLPATH DATA (159 stations) † = interpolated/extrapolated station								
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
7437.00	32.020	0.410	7345.79	-150.66	-147.47	834.76	10.93	
7480.00	35.970	0.690	7381.44	-126.62	-123.43	835.00	9.19	
7522.00	39.920	0.910	7414.55	-100.81	-97.61	835.36	9.41	
7565.00	43.000	0.140	7446.77	-72.34	-69.15	835.62	7.26	
7608.00	45.870	358.490	7477.48	-42.24	-39.05	835.24	7.19	
7650.00	47.610	357.970	7506.26	-11.67	-8.48	834.30	4.24	
7693.00	49.290	357.040	7534.78	20.48	23.67	832.89	4.23	
7735.00	53.720	357.210	7560.91	53.31	56.49	831.25	10.55	
7778.00	59.430	357.620	7584.59	89.15	92.33	829.63	13.30	
7820.00	61.790	357.560	7605.20	125.72	128.88	828.09	5.62	
7863.00	63.150	358.050	7625.08	163.83	166.99	826.63	3.32	
7906.00	63.920	358.700	7644.24	202.31	205.46	825.54	2.24	
7948.00	64.400	358.600	7662.55	240.10	243.25	824.65	1.16	
7991.00	68.050	357.520	7679.88	279.43	282.58	823.32	8.79	
8034.00	72.980	357.700	7694.22	319.92	323.06	821.63	11.47	
8076.00	75.430	358.250	7705.65	360.31	363.45	820.20	5.97	
8119.00	79.400	359.250	7715.02	402.26	405.40	819.29	9.51	
8162.00	82.680	0.190	7721.71	444.73	447.87	819.08	7.93	
8192.00	86.020	0.490	7724.66	474.58	477.72	819.26	11.18	
8229.00†	88.325	0.490	7726.49	511.53	514.67	819.58	6.23	7" Casing Point
8240.00	89.010	0.490	7726.75	522.53	525.66	819.67	6.23	
8274.00	89.200	0.490	7727.28	556.52	559.66	819.96	0.56	
8359.00	90.430	0.780	7727.55	641.51	644.65	820.90	1.49	
8444.00	90.670	1.940	7726.74	726.47	729.62	822.92	1.39	
8529.00	90.490	2.620	7725.87	811.39	814.55	826.30	0.83	
8614.00	90.640	1.410	7725.04	896.32	899.49	829.29	1.43	
8699.00	91.010	1.650	7723.81	981.27	984.45	831.56	0.52	
8785.00	91.540	1.160	7721.90	1067.21	1070.40	833.67	0.84	
8870.00	91.750	0.580	7719.46	1152.16	1155.36	834.96	0.73	
8956.00	91.630	0.600	7716.92	1238.11	1241.32	835.84	0.14	
9041.00	92.330	359.770	7713.99	1323.06	1326.26	836.12	1.28	
9127.00	92.340	358.620	7710.48	1408.98	1412.18	834.91	1.34	
9212.00	92.400	358.500	7706.97	1493.89	1497.08	832.77	0.16	
9297.00	92.550	359.210	7703.30	1578.80	1581.99	831.08	0.85	
9383.00	91.350	358.720	7700.37	1664.74	1667.92	829.53	1.51	
9468.00	90.210	358.600	7699.21	1749.71	1752.89	827.54	1.35	
9554.00	90.580	357.660	7698.62	1835.67	1838.84	824.73	1.17	
9639.00	89.780	357.330	7698.35	1920.61	1923.76	821.02	1.02	
9724.00	90.210	359.440	7698.36	2005.58	2008.72	818.62	2.53	
9809.00	90.520	359.770	7697.82	2090.57	2093.71	818.04	0.53	
9895.00	90.920	0.320	7696.74	2176.56	2179.71	818.10	0.79	
9980.00	90.770	0.220	7695.48	2261.55	2264.70	818.50	0.21	
10066.00	91.230	0.600	7693.98	2347.53	2350.68	819.12	0.69	
10151.00	89.900	0.480	7693.15	2432.52	2435.67	819.92	1.57	
10236.00	90.460	0.010	7692.88	2517.52	2520.67	820.28	0.86	

# Actual Wellpath Report

HOWARD 28C-21HZ AWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#06 HOWARD 28C-21HZ (281'FSL & 1519'FWL, SEC.21)
Area	COLORADO	Well	HOWARD 28C-21HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 28C-21HZ AWB
Facility	SEC.21-T1N-R67W		

## WELLPATH DATA (159 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
10322.00	91.200	1.410	7691.63	2603.49	2606.65	821.35	1.84	
10413.00	90.240	0.890	7690.49	2694.46	2697.62	823.17	1.20	
10498.00	90.740	0.500	7689.76	2779.44	2782.61	824.21	0.75	
10583.00	89.410	0.430	7689.65	2864.44	2867.61	824.90	1.57	
10668.00	89.130	359.890	7690.73	2949.43	2952.60	825.13	0.72	
10754.00	88.950	0.410	7692.18	3035.41	3038.59	825.36	0.64	
10839.00	89.350	359.770	7693.44	3120.40	3123.58	825.49	0.89	
10925.00	90.430	359.200	7693.60	3206.40	3209.57	824.72	1.42	
11010.00	90.550	359.260	7692.87	3291.39	3294.56	823.58	0.16	
11094.00	90.860	359.850	7691.84	3375.38	3378.55	822.92	0.79	
11180.00	90.920	359.790	7690.50	3461.37	3464.54	822.65	0.10	
11265.00	91.230	0.660	7688.91	3546.36	3549.53	822.99	1.09	
11350.00	90.270	359.830	7687.80	3631.34	3634.52	823.35	1.49	
11435.00	90.090	359.940	7687.53	3716.34	3719.52	823.18	0.25	
11521.00	89.440	359.830	7687.88	3802.34	3805.52	823.01	0.77	
11604.00	89.560	358.880	7688.61	3885.34	3888.51	822.07	1.15	
11689.00	90.000	358.400	7688.93	3970.32	3973.48	820.06	0.77	
11774.00	91.590	359.310	7687.75	4055.29	4058.45	818.36	2.16	
11858.00	91.570	359.020	7685.44	4139.26	4142.41	817.13	0.35	
11943.00	91.630	359.910	7683.07	4224.22	4227.37	816.34	1.05	
12029.00	91.170	359.620	7680.96	4310.20	4313.35	815.99	0.63	
12114.00	90.890	359.730	7679.44	4395.18	4398.33	815.51	0.35	
12161.00	90.670	359.630	7678.80	4442.18	4445.33	815.24	0.51	Last BHI MWD Surveys
12217.00	90.670	359.630	7678.14	4498.17	4501.32	814.88	0.00	Projection to Bit

## HOLE & CASING SECTIONS - Ref Wellbore: HOWARD 28C-21HZ AWB Ref Wellpath: HOWARD 28C-21HZ 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	940.00	924.00	16.00	939.80	0.00	0.00	6.17	-15.93
9.625in Casing Surface	16.00	938.00	922.00	16.00	937.81	0.00	0.00	6.16	-15.88
8.75in Open Hole	940.00	8240.00	7300.00	939.80	7726.75	6.17	-15.93	525.66	819.67
7in Casing Intermediate	16.00	8229.00	8213.00	16.00	7726.49	0.00	0.00	514.67	819.58
6.125in Open Hole	8240.00	12217.00	3977.00	7726.75	7678.14	525.66	819.67	4501.32	814.88

# Actual Wellpath Report

HOWARD 28C-21HZ AWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#06 HOWARD 28C-21HZ (281'FSL & 1519'FWL, SEC.21)
Area	COLORADO	Well	HOWARD 28C-21HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 28C-21HZ AWB
Facility	SEC.21-T1N-R67W		

## TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SECTION 21 LINES		0.00	149.76	2.80	3168142.01	1254527.59	40°01'49.811"N	104°53'58.376"W	polygon
HOWARD 28C-21HZ LAND BOX		7600.00	0.02	-0.03	3168140.19	1254377.84	40°01'48.331"N	104°53'58.412"W	polygon
HOWARD 28C-21HZ BHL ON PLAT REV-1 (460'FNL & 2350'FWL, SEC.21)		7670.00	4526.30	814.15	3168923.67	1258909.36	40°02'33.061"N	104°53'47.944"W	point

## WELLPATH COMPOSITION - Ref Wellbore: HOWARD 28C-21HZ AWB Ref Wellpath: HOWARD 28C-21HZ AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
16.00	866.00	Generic gyro - continuous (Standard)	MS ENERGY GYRODATA SURVEYS <116-866>	HOWARD 28C-21HZ AWB
866.00	8240.00	NaviTrak (MagCorr)	BHI MWD SURVEYS 8 3/4" HOLE <975-8240>	HOWARD 28C-21HZ AWB
8240.00	12161.00	OnTrak (MagCorr)	BHI MWD SURVEYS 6 1/8" HOLE <8274-12161>	HOWARD 28C-21HZ AWB
12161.00	12217.00	Blind Drilling (std)	Projection to bit	HOWARD 28C-21HZ AWB

# Actual Wellpath Report

HOWARD 28C-21HZ AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	KERR-MCGEE OIL & GAS ONSHORE LP	Slot	SLOT#06 HOWARD 28C-21HZ (281'FSL & 1519'FWL, SEC.21)
Area	COLORADO	Well	HOWARD 28C-21HZ
Field	WELD COUNTY (KERR MCGEE)	Wellbore	HOWARD 28C-21HZ AWB
Facility	SEC.21-T1N-R67W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
16.00	0.000	286.210	16.00	Tie-On
116.00	0.225	286.210	116.00	Begin GYRO Surveys
866.00	1.560	292.370	865.83	Tie-Into GYRO Surveys
975.00	1.620	288.520	974.79	Begin BHI MWD Surveys
8229.00	88.325	0.490	7726.49	7" Casing Point
12161.00	90.670	359.630	7678.80	Last BHI MWD Surveys
12217.00	90.670	359.630	7678.14	Projection to Bit