

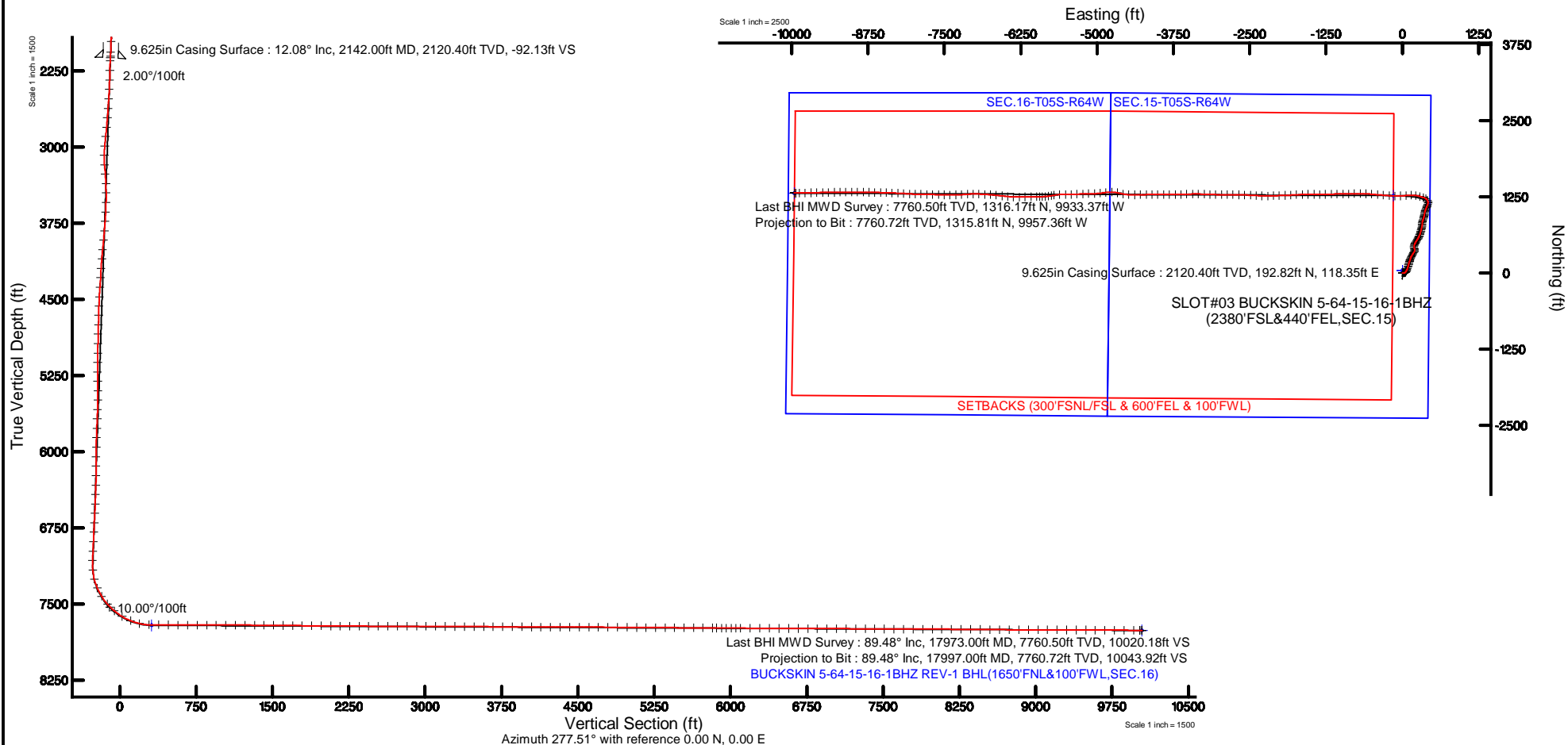
HIGHLANDS NATURAL RESOURCES

Location: COLORADO	Slot: SLOT#03 BUCKSKIN 5-64-15-16-1BHZ (2380'FSL&440'FEL,SEC.15)	
Field: ARAPAHOE COUNTY (NAD83/GRID)	Well: BUCKSKIN 5-64-15-16-1BHZ	
Facility: SEC.15-T05S-R64W	Wellbore: BUCKSKIN 5-64-15-16-1BHZ PWB	

Plot reference wellpath is BUCKSKIN 5-64-15-16-18HZ (REV-B.0) PWP	Grid System: NAD83 / Lambert Colorado SP, Central Zone (502), US feet
True vertical depths are referenced to Production Rig (27KB) (RKB)	* - Wellpath was transformed from a different geoidic datum
Measured depths are referenced to Production Rig (27KB) (RKB)	North Reference: Grid north
Production Rig (27KB) (RKB) to Mean Sea Level: 5961 feet	Scale: True distance
Mean Sea Level to Ground level (At Slot: SLO7W03 BUCKSKIN 5-64-15-16-18HZ (23807SL&440FSL,SEC.15): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: gusnater on 2018-08-20
	Database: WA_DEN_Denver_Deht

Location Information						
Facility Name			Grid East (U S ft)	Grid North (U S ft)	Latitude	Longitude
SEC 15-T05S-R64W			3272987.577	1650317.104	39°36'53.694"N	104°31'51.568"W
Slot	Local N (ft)	Local E (ft)	Grid East (U S ft)	Grid North (U S ft)	Latitude	Longitude
SLOT#03 BUCKSKIN 5-64-15-16-1BH2 (23807SL&440FEL,SEC.15)	-40.07	-0.12	3272987.457	1650277.033	39°36'53.298"N	104°31'51.575"W
Production Rig (27K8) (RKB) to Ground level (A Slot: SLOT#03 BUCKSKIN 5-64-15-16-1BH2 (23807SL&440FEL,SEC.15))					5961ft	
Mean Sea Level to Ground level (A Slot: SLOT#03 BUCKSKIN 5-64-15-16-1BH2 (23807SL&440FEL,SEC.15))					0ft	
Production Rig (27K8) (RKB) to Mean Sea Level					5961ft	

Survey Program				
Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment
27.00	2085.00	BHI AutoTrak Curve	Custom BHI AutoTrak Curve (Axial Corr, Short spacing) (Rockies 0.03Gt model)	BUCKSKIN 5-64-15-16-1BHZ AWB
2085.00	17985.78	BHI AutoTrak Curve	Custom BHI AutoTrak Curve (Short) (Rockies 0.03Gt model)	BUCKSKIN 5-64-15-16-1BHZ PWB





Actual Wellpath Report

BUCKSKIN 5-64-15-16-1BHZ AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	HIGHLANDS NATURAL RESOURCES	Slot	SLOT#03 BUCKSKIN 5-64-15-16-1BHZ (2380'FSL&440'FEL,SEC.15)
Area	COLORADO	Well	BUCKSKIN 5-64-15-16-1BHZ
Field	ARAPAHOE COUNTY (NAD83/GRID)	Wellbore	BUCKSKIN 5-64-15-16-1BHZ AWB
Facility	SEC.15-T05S-R64W		

REPORT SETUP INFORMATION			
Projection System	NAD83 / Lambert Colorado SP, Central Zone (502), US feet	Software System	WellArchitect® 5.0
North Reference	Grid	User	Guenaler
Scale	0.999976	Report Generated	8/20/2018 at 2:41:12 PM
Convergence at slot	0.62° East	Database/Source file	WA_DEN_Denver_Defn/BUCKSKIN_5-64-15-16-1BHZ_AWP.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-40.07	-0.12	3272987.46	1650277.03	39°36'53.298"N	104°31'51.575"W
Facility Reference Pt			3272987.58	1650317.10	39°36'53.694"N	104°31'51.568"W
Field Reference Pt			3272987.61	1650317.11	39°36'53.694"N	104°31'51.568"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Production Rig (27'KB) (RKB) to Facility Vertical Datum	5961.00ft
Horizontal Reference Pt	Slot	Production Rig (27'KB) (RKB) to Mean Sea Level	5961.00ft
Vertical Reference Pt	Production Rig (27'KB) (RKB)	Production Rig (27'KB) (RKB) to Ground Level at Slot (SLOT#03 BUCKSKIN 5-64-15-16-1BHZ (2380'FSL&440'FEL,SEC.15))	5961.00ft
MD Reference Pt	Production Rig (27'KB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	277.51°



Actual Wellpath Report
BUCKSKIN 5-64-15-16-1BHZ AWP
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REFERENCE WELLPATH IDENTIFICATION			
Operator	HIGHLANDS NATURAL RESOURCES	Slot	SLOT#03 BUCKSKIN 5-64-15-16-1BHZ (2380'FSL&440'FEL,SEC.15)
Area	COLORADO	Well	BUCKSKIN 5-64-15-16-1BHZ
Field	ARAPAHOE COUNTY (NAD83/GRID)	Wellbore	BUCKSKIN 5-64-15-16-1BHZ AWB
Facility	SEC.15-T05S-R64W		

WELLPATH DATA (194 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	88.070	0.00	0.00	0.00	0.00	39°36'53.298"N	104°31'51.575"W	0.00	
27.00	0.000	88.070	27.00	0.00	0.00	0.00	39°36'53.298"N	104°31'51.575"W	0.00	
264.00	0.270	88.070	264.00	-0.55	0.02	0.56	39°36'53.298"N	104°31'51.568"W	0.11	
359.00	0.750	67.500	359.00	-1.31	0.26	1.36	39°36'53.300"N	104°31'51.558"W	0.53	
454.00	2.590	60.530	453.95	-3.56	1.56	3.80	39°36'53.313"N	104°31'51.526"W	1.95	
581.00	3.840	77.970	580.75	-9.86	3.86	10.46	39°36'53.335"N	104°31'51.441"W	1.24	
644.00	4.680	85.620	643.58	-14.37	4.49	15.08	39°36'53.341"N	104°31'51.382"W	1.61	
739.00	3.850	88.350	738.31	-21.31	4.88	22.14	39°36'53.344"N	104°31'51.291"W	0.90	
834.00	3.940	84.560	833.09	-27.64	5.28	28.57	39°36'53.347"N	104°31'51.209"W	0.29	
929.00	3.330	84.600	927.90	-33.51	5.85	34.57	39°36'53.352"N	104°31'51.132"W	0.64	
1025.00	4.120	73.880	1023.70	-39.39	7.07	40.66	39°36'53.364"N	104°31'51.055"W	1.09	
1120.00	5.220	49.420	1118.39	-45.40	10.83	47.22	39°36'53.400"N	104°31'50.970"W	2.37	
1215.00	6.890	37.490	1212.86	-51.13	18.16	53.97	39°36'53.472"N	104°31'50.883"W	2.19	
1310.00	9.300	28.540	1306.91	-56.74	29.43	61.11	39°36'53.582"N	104°31'50.790"W	2.86	
1405.00	10.070	30.270	1400.56	-62.70	43.35	68.96	39°36'53.719"N	104°31'50.688"W	0.87	
1500.00	11.780	22.690	1493.84	-68.46	59.47	76.89	39°36'53.878"N	104°31'50.584"W	2.35	
1595.00	13.050	19.610	1586.62	-73.25	78.52	84.23	39°36'54.065"N	104°31'50.488"W	1.51	
1690.00	13.710	15.820	1679.04	-77.12	99.46	90.90	39°36'54.271"N	104°31'50.400"W	1.16	
1785.00	12.890	15.360	1771.49	-80.20	120.51	96.78	39°36'54.479"N	104°31'50.322"W	0.87	
1880.00	11.910	15.940	1864.27	-83.08	140.15	102.27	39°36'54.672"N	104°31'50.249"W	1.04	
1975.00	11.700	12.600	1957.26	-85.37	158.98	107.07	39°36'54.858"N	104°31'50.185"W	0.75	
2085.00	12.900	20.880	2064.75	-89.20	181.34	113.88	39°36'55.078"N	104°31'50.095"W	1.94	
2174.00	11.620	22.110	2151.71	-93.76	198.92	120.79	39°36'55.251"N	104°31'50.004"W	1.47	
2269.00	11.390	14.030	2244.81	-97.23	216.89	126.67	39°36'55.428"N	104°31'49.927"W	1.71	
2364.00	11.180	16.050	2337.98	-99.67	234.84	131.49	39°36'55.605"N	104°31'49.863"W	0.47	
2459.00	11.360	21.660	2431.15	-103.32	252.39	137.49	39°36'55.778"N	104°31'49.784"W	1.17	
2554.00	11.390	27.160	2524.28	-108.76	269.43	145.22	39°36'55.945"N	104°31'49.683"W	1.14	
2649.00	11.410	28.950	2617.41	-115.35	286.00	154.06	39°36'56.108"N	104°31'49.568"W	0.37	
2743.00	11.440	28.070	2709.55	-122.03	302.36	162.94	39°36'56.269"N	104°31'49.452"W	0.19	
2838.00	11.100	34.930	2802.72	-129.55	318.17	172.61	39°36'56.424"N	104°31'49.326"W	1.45	



Actual Wellpath Report

BUCKSKIN 5-64-15-16-1BHZ AWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	HIGHLANDS NATURAL RESOURCES	Slot	SLOT#03 BUCKSKIN 5-64-15-16-1BHZ (2380'FSL&440'FEL,SEC.15)
Area	COLORADO	Well	BUCKSKIN 5-64-15-16-1BHZ
Field	ARAPAHOE COUNTY (NAD83/GRID)	Wellbore	BUCKSKIN 5-64-15-16-1BHZ AWB
Facility	SEC.15-T05S-R64W		

WELLPATH DATA (194 stations)											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments	
2933.00	11.410	39.910	2895.89	-138.79	332.88	183.88	39°36'56.568"N	104°31'49.180"W	1.07		
3028.00	11.730	30.510	2988.97	-147.60	348.41	194.81	39°36'56.721"N	104°31'49.038"W	2.01		
3122.00	12.040	12.450	3080.99	-152.18	366.22	201.78	39°36'56.896"N	104°31'48.947"W	3.95		
3217.00	12.170	348.900	3173.93	-149.84	385.73	201.99	39°36'57.089"N	104°31'48.942"W	5.17		
3312.00	11.230	342.270	3266.96	-142.70	404.37	197.24	39°36'57.273"N	104°31'49.000"W	1.73		
3406.00	11.370	355.240	3359.16	-136.82	422.32	193.68	39°36'57.451"N	104°31'49.043"W	2.70		
3501.00	11.410	4.400	3452.29	-134.32	441.03	193.63	39°36'57.636"N	104°31'49.041"W	1.90		
3596.00	11.600	14.960	3545.39	-135.05	459.63	196.81	39°36'57.819"N	104°31'48.998"W	2.22		
3691.00	11.460	21.180	3638.48	-138.52	477.65	202.69	39°36'57.997"N	104°31'48.920"W	1.32		
3786.00	11.470	27.960	3731.59	-144.05	494.80	210.53	39°36'58.166"N	104°31'48.818"W	1.42		
3880.00	11.800	29.820	3823.66	-150.97	511.39	219.69	39°36'58.329"N	104°31'48.698"W	0.53		
3975.00	12.160	34.470	3916.59	-159.19	528.07	230.18	39°36'58.492"N	104°31'48.562"W	1.08		
4070.00	11.820	35.540	4009.52	-168.30	544.24	241.50	39°36'58.651"N	104°31'48.415"W	0.43		
4164.00	12.080	30.360	4101.48	-176.64	560.56	252.07	39°36'58.811"N	104°31'48.278"W	1.17		
4259.00	11.920	24.450	4194.41	-183.36	578.07	261.15	39°36'58.983"N	104°31'48.159"W	1.30		
4354.00	11.770	23.700	4287.39	-188.92	595.87	269.11	39°36'59.158"N	104°31'48.055"W	0.23		
4449.00	12.030	26.750	4380.35	-194.89	613.58	277.46	39°36'59.332"N	104°31'47.946"W	0.72		
4544.00	11.970	22.870	4473.27	-200.76	631.50	285.75	39°36'59.509"N	104°31'47.838"W	0.85		
4638.00	11.910	16.500	4565.24	-204.86	649.78	292.29	39°36'59.689"N	104°31'47.752"W	1.40		
4733.00	12.100	14.010	4658.17	-207.51	668.84	297.48	39°36'59.876"N	104°31'47.683"W	0.58		
4828.00	11.830	15.920	4751.10	-210.07	687.87	302.57	39°37'00.064"N	104°31'47.615"W	0.50		
4922.00	12.000	14.410	4843.08	-212.65	706.60	307.64	39°37'00.248"N	104°31'47.548"W	0.38		
5017.00	12.010	12.350	4936.00	-214.67	725.82	312.21	39°37'00.438"N	104°31'47.487"W	0.45		
5112.00	11.940	11.120	5028.93	-216.12	745.12	316.22	39°37'00.628"N	104°31'47.433"W	0.28		
5207.00	12.110	11.270	5121.85	-217.39	764.53	320.06	39°37'00.820"N	104°31'47.381"W	0.18		
5302.00	12.090	7.330	5214.74	-218.02	784.17	323.28	39°37'01.013"N	104°31'47.337"W	0.87		
5396.00	12.190	2.110	5306.64	-217.05	803.85	324.90	39°37'01.208"N	104°31'47.314"W	1.17		
5491.00	12.070	6.050	5399.52	-215.85	823.75	326.32	39°37'01.404"N	104°31'47.293"W	0.88		
5586.00	12.090	9.860	5492.42	-216.01	843.43	329.07	39°37'01.598"N	104°31'47.255"W	0.84		
5681.00	11.770	18.580	5585.37	-218.28	862.42	333.86	39°37'01.786"N	104°31'47.191"W	1.93		



Actual Wellpath Report

BUCKSKIN 5-64-15-16-1BHZ AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	HIGHLANDS NATURAL RESOURCES	Slot	SLOT#03 BUCKSKIN 5-64-15-16-1BHZ (2380'FSL&440'FEL,SEC.15)
Area	COLORADO	Well	BUCKSKIN 5-64-15-16-1BHZ
Field	ARAPAHOE COUNTY (NAD83/GRID)	Wellbore	BUCKSKIN 5-64-15-16-1BHZ AWB
Facility	SEC.15-T05S-R64W		

WELLPATH DATA (194 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
5776.00	11.390	19.660	5678.44	-222.11	880.44	340.10	39°37'01.963"N	104°31'47.109"W	0.46	
5870.00	11.570	18.310	5770.56	-225.83	898.13	346.19	39°37'02.137"N	104°31'47.029"W	0.34	
5965.00	11.510	17.960	5863.64	-229.34	916.19	352.10	39°37'02.315"N	104°31'46.951"W	0.10	
6060.00	11.430	12.090	5956.75	-231.81	934.41	357.00	39°37'02.495"N	104°31'46.886"W	1.23	
6155.00	11.360	8.660	6049.87	-232.75	952.87	360.38	39°37'02.677"N	104°31'46.840"W	0.72	
6250.00	11.390	9.050	6143.01	-233.19	971.38	363.26	39°37'02.859"N	104°31'46.801"W	0.09	
6345.00	11.420	9.100	6236.13	-233.70	989.93	366.23	39°37'03.042"N	104°31'46.760"W	0.03	
6440.00	11.440	14.690	6329.25	-235.14	1008.33	370.10	39°37'03.224"N	104°31'46.708"W	1.17	
6534.00	11.410	17.870	6421.39	-237.98	1026.20	375.32	39°37'03.400"N	104°31'46.639"W	0.67	
6629.00	11.260	20.820	6514.54	-241.80	1043.81	381.50	39°37'03.573"N	104°31'46.558"W	0.63	
6724.00	11.570	22.040	6607.66	-246.33	1061.31	388.37	39°37'03.745"N	104°31'46.468"W	0.41	
6819.00	11.390	23.290	6700.76	-251.27	1078.76	395.65	39°37'03.917"N	104°31'46.372"W	0.32	
6914.00	11.270	19.570	6793.91	-255.76	1096.12	402.47	39°37'04.088"N	104°31'46.283"W	0.78	
7009.00	11.170	19.690	6887.09	-259.64	1113.53	408.68	39°37'04.259"N	104°31'46.201"W	0.11	
7104.00	11.440	18.800	6980.25	-263.42	1131.11	414.82	39°37'04.432"N	104°31'46.120"W	0.34	
7199.00	11.270	21.790	7073.39	-267.56	1148.65	421.30	39°37'04.605"N	104°31'46.035"W	0.64	
7294.00	15.030	346.530	7166.03	-265.43	1169.29	421.88	39°37'04.809"N	104°31'46.025"W	9.14	
7389.00	21.580	330.690	7256.22	-250.53	1196.55	410.44	39°37'05.079"N	104°31'46.167"W	8.60	
7483.00	25.420	302.590	7342.68	-221.80	1222.58	384.89	39°37'05.339"N	104°31'46.490"W	12.47	
7578.00	32.650	289.340	7425.77	-178.14	1242.10	343.43	39°37'05.537"N	104°31'47.017"W	10.15	
7673.00	41.570	285.660	7501.47	-121.74	1259.13	288.79	39°37'05.711"N	104°31'47.713"W	9.67	
7768.00	49.520	280.510	7567.97	-54.33	1274.25	222.79	39°37'05.867"N	104°31'48.555"W	9.21	
7863.00	58.930	267.730	7623.59	22.23	1279.26	146.23	39°37'05.925"N	104°31'49.532"W	14.71	
7958.00	68.430	265.160	7665.67	105.67	1273.91	61.35	39°37'05.881"N	104°31'50.617"W	10.29	
8052.00	76.510	268.090	7693.97	193.62	1268.69	-28.04	39°37'05.839"N	104°31'51.760"W	9.09	
8147.00	89.290	270.940	7705.69	286.78	1267.92	-122.11	39°37'05.841"N	104°31'52.962"W	13.78	
8242.00	89.720	274.090	7706.51	381.40	1272.09	-217.00	39°37'05.892"N	104°31'54.174"W	3.35	
8337.00	89.720	275.350	7706.97	476.29	1279.91	-311.67	39°37'05.979"N	104°31'55.383"W	1.33	
8432.00	89.850	275.010	7707.33	571.21	1288.48	-406.29	39°37'06.074"N	104°31'56.591"W	0.38	
8527.00	89.750	274.480	7707.66	666.09	1296.34	-500.96	39°37'06.162"N	104°31'57.800"W	0.57	



Actual Wellpath Report
BUCKSKIN 5-64-15-16-1BHZ AWP
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REFERENCE WELLPATH IDENTIFICATION			
Operator	HIGHLANDS NATURAL RESOURCES	Slot	SLOT#03 BUCKSKIN 5-64-15-16-1BHZ (2380'FSL&440'FEL,SEC.15)
Area	COLORADO	Well	BUCKSKIN 5-64-15-16-1BHZ
Field	ARAPAHOE COUNTY (NAD83/GRID)	Wellbore	BUCKSKIN 5-64-15-16-1BHZ AWB
Facility	SEC.15-T05S-R64W		

WELLPATH DATA (194 stations)											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments	
8621.00	89.820	272.940	7708.02	759.88	1302.42	-594.76	39°37'06.232"N	104°31'58.997"W	1.64		
8716.00	89.970	270.570	7708.19	854.40	1305.33	-689.71	39°37'06.270"N	104°32'00.210"W	2.50		
8811.00	90.120	268.050	7708.11	948.42	1304.19	-784.69	39°37'06.269"N	104°32'01.424"W	2.66		
8906.00	89.780	267.890	7708.20	1042.11	1300.82	-879.63	39°37'06.246"N	104°32'02.638"W	0.40		
9001.00	90.090	270.170	7708.31	1136.06	1299.22	-974.61	39°37'06.240"N	104°32'03.852"W	2.42		
9096.00	89.380	269.310	7708.74	1230.19	1298.79	-1069.61	39°37'06.246"N	104°32'05.065"W	1.17		
9190.00	89.380	268.200	7709.76	1323.08	1296.74	-1163.58	39°37'06.235"N	104°32'06.267"W	1.18		
9285.00	89.780	267.920	7710.46	1416.79	1293.53	-1258.52	39°37'06.214"N	104°32'07.480"W	0.51		
9380.00	89.380	270.910	7711.15	1510.83	1292.56	-1353.50	39°37'06.214"N	104°32'08.694"W	3.18		
9475.00	89.480	270.980	7712.10	1605.20	1294.12	-1448.49	39°37'06.239"N	104°32'09.907"W	0.13		
9569.00	89.200	269.450	7713.18	1698.43	1294.48	-1542.48	39°37'06.253"N	104°32'11.108"W	1.65		
9664.00	89.230	267.270	7714.48	1792.21	1291.76	-1637.42	39°37'06.236"N	104°32'12.322"W	2.29		
9759.00	89.720	266.500	7715.36	1885.58	1286.60	-1732.28	39°37'06.195"N	104°32'13.535"W	0.96		
9854.00	89.600	267.000	7715.92	1978.90	1281.21	-1827.12	39°37'06.151"N	104°32'14.747"W	0.54		
9949.00	89.540	267.760	7716.63	2072.42	1276.87	-1922.02	39°37'06.118"N	104°32'15.961"W	0.80		
10043.00	89.570	267.980	7717.36	2165.09	1273.37	-2015.95	39°37'06.094"N	104°32'17.161"W	0.24		
10138.00	89.540	268.160	7718.10	2258.80	1270.17	-2110.90	39°37'06.072"N	104°32'18.375"W	0.19		
10233.00	89.510	269.100	7718.89	2352.66	1267.90	-2205.86	39°37'06.060"N	104°32'19.589"W	0.99		
10327.00	89.630	272.610	7719.59	2446.01	1269.31	-2299.84	39°37'06.083"N	104°32'20.789"W	3.74		
10421.00	89.940	273.230	7719.95	2539.70	1274.09	-2393.71	39°37'06.140"N	104°32'21.988"W	0.74		
10515.00	90.000	272.970	7719.99	2633.43	1279.18	-2487.58	39°37'06.200"N	104°32'23.187"W	0.28		
10610.00	89.880	271.980	7720.09	2728.06	1283.28	-2582.49	39°37'06.251"N	104°32'24.399"W	1.05		
10705.00	89.940	271.380	7720.24	2822.57	1286.07	-2677.44	39°37'06.288"N	104°32'25.612"W	0.63		
10800.00	89.970	269.780	7720.32	2916.87	1287.03	-2772.44	39°37'06.308"N	104°32'26.826"W	1.68		
10894.00	89.660	270.040	7720.62	3010.04	1286.88	-2866.44	39°37'06.316"N	104°32'28.027"W	0.43		
10989.00	89.690	270.890	7721.16	3104.32	1287.65	-2961.43	39°37'06.334"N	104°32'29.241"W	0.90		
11084.00	89.720	271.930	7721.65	3198.78	1289.99	-3056.40	39°37'06.367"N	104°32'30.454"W	1.10		
11179.00	89.630	271.000	7722.19	3293.25	1292.42	-3151.37	39°37'06.400"N	104°32'31.667"W	0.98		
11274.00	89.630	272.670	7722.80	3387.78	1295.46	-3246.31	39°37'06.440"N	104°32'32.880"W	1.76		
11368.00	89.540	271.410	7723.48	3481.35	1298.80	-3340.25	39°37'06.483"N	104°32'34.080"W	1.34		



Actual Wellpath Report
BUCKSKIN 5-64-15-16-1BHZ AWP
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REFERENCE WELLPATH IDENTIFICATION			
Operator	HIGHLANDS NATURAL RESOURCES	Slot	SLOT#03 BUCKSKIN 5-64-15-16-1BHZ (2380'FSL&440'FEL,SEC.15)
Area	COLORADO	Well	BUCKSKIN 5-64-15-16-1BHZ
Field	ARAPAHOE COUNTY (NAD83/GRID)	Wellbore	BUCKSKIN 5-64-15-16-1BHZ AWB
Facility	SEC.15-T05S-R64W		

WELLPATH DATA (194 stations)											
MD [ft]	Inclination [°]		Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
11463.00	89.690		268.500	7724.12	3575.51	1298.73	-3435.23	39°37'06.492"N	104°32'35.294"W	3.07	
11558.00	89.630		267.450	7724.69	3669.20	1295.37	-3530.17	39°37'06.469"N	104°32'36.507"W	1.11	
11653.00	89.660		268.820	7725.27	3762.92	1292.28	-3625.12	39°37'06.448"N	104°32'37.721"W	1.44	
11748.00	89.570		270.360	7725.91	3857.01	1291.60	-3720.11	39°37'06.452"N	104°32'38.935"W	1.62	
11843.00	89.750		270.550	7726.48	3951.29	1292.36	-3815.11	39°37'06.469"N	104°32'40.149"W	0.28	
11937.00	89.600		270.430	7727.01	4044.58	1293.16	-3909.10	39°37'06.487"N	104°32'41.349"W	0.20	
12032.00	89.600		269.780	7727.67	4138.79	1293.33	-4004.10	39°37'06.498"N	104°32'42.563"W	0.68	
12127.00	89.750		268.950	7728.21	4232.83	1292.28	-4099.09	39°37'06.498"N	104°32'43.777"W	0.89	
12222.00	89.600		268.260	7728.75	4326.68	1289.97	-4194.06	39°37'06.485"N	104°32'44.991"W	0.74	
12317.00	90.060		269.180	7729.03	4420.56	1287.85	-4289.03	39°37'06.474"N	104°32'46.205"W	1.08	
12412.00	89.690		268.180	7729.24	4514.44	1285.66	-4384.01	39°37'06.462"N	104°32'47.419"W	1.12	
12507.00	90.150		273.560	7729.37	4608.76	1287.10	-4478.96	39°37'06.486"N	104°32'48.632"W	5.68	
12601.00	89.880		281.930	7729.35	4702.68	1299.76	-4572.02	39°37'06.621"N	104°32'49.819"W	8.91	
12696.00	89.750		281.240	7729.65	4797.44	1318.83	-4665.08	39°37'06.819"N	104°32'51.006"W	0.74	
12791.00	89.350		271.530	7730.40	4892.30	1329.39	-4759.38	39°37'06.933"N	104°32'52.210"W	10.23	
12886.00	89.570		262.760	7731.30	4985.66	1324.66	-4854.16	39°37'06.896"N	104°32'53.421"W	9.23	
12981.00	89.540		262.620	7732.04	5077.49	1312.57	-4948.39	39°37'06.786"N	104°32'54.627"W	0.15	
13076.00	89.720		268.580	7732.65	5170.41	1305.29	-5043.06	39°37'06.724"N	104°32'55.838"W	6.28	
13170.00	89.600		268.670	7733.21	5263.28	1303.03	-5137.04	39°37'06.712"N	104°32'57.039"W	0.16	
13265.00	89.720		268.000	7733.77	5357.06	1300.27	-5231.99	39°37'06.694"N	104°32'58.253"W	0.72	
13360.00	89.510		266.840	7734.41	5450.59	1296.00	-5326.89	39°37'06.662"N	104°32'59.466"W	1.24	
13455.00	89.780		268.150	7735.00	5544.13	1291.84	-5421.80	39°37'06.630"N	104°33'00.679"W	1.41	
13550.00	89.600		273.480	7735.51	5638.45	1293.19	-5516.75	39°37'06.654"N	104°33'01.892"W	5.61	
13644.00	89.510		265.030	7736.25	5731.39	1291.97	-5610.66	39°37'06.651"N	104°33'03.092"W	8.99	
13739.00	89.690		259.630	7736.91	5823.04	1279.30	-5704.77	39°37'06.536"N	104°33'04.297"W	5.69	
13784.00	89.450		261.310	7737.25	5866.06	1271.85	-5749.15	39°37'06.467"N	104°33'04.865"W	3.77	
13834.00	89.540		262.350	7737.69	5914.20	1264.74	-5798.64	39°37'06.402"N	104°33'05.498"W	2.09	
13880.00	89.630		265.100	7738.02	5958.87	1259.72	-5844.35	39°37'06.357"N	104°33'06.083"W	5.98	
13929.00	89.480		266.790	7738.40	6006.87	1256.25	-5893.23	39°37'06.327"N	104°33'06.708"W	3.46	
13974.00	89.660		268.650	7738.74	6051.21	1254.46	-5938.19	39°37'06.314"N	104°33'07.283"W	4.15	



Actual Wellpath Report
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REFERENCE WELLPATH IDENTIFICATION			
Operator	HIGHLANDS NATURAL RESOURCES	Slot	SLOT#03 BUCKSKIN 5-64-15-16-1BHZ (2380'FSL&440'FEL,SEC.15)
Area	COLORADO	Well	BUCKSKIN 5-64-15-16-1BHZ
Field	ARAPAHOE COUNTY (NAD83/GRID)	Wellbore	BUCKSKIN 5-64-15-16-1BHZ AWB
Facility	SEC.15-T05S-R64W		

WELLPATH DATA (194 stations)											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments	
14024.00	89.600	270.370	7739.06	6100.72	1254.03	-5988.19	39°37'06.315"N	104°33'07.921"W	3.44		
14118.00	89.600	269.880	7739.72	6193.94	1254.24	-6082.18	39°37'06.327"N	104°33'09.123"W	0.52		
14213.00	89.540	267.470	7740.43	6287.80	1252.04	-6177.15	39°37'06.315"N	104°33'10.336"W	2.54		
14308.00	89.660	268.920	7741.09	6381.54	1249.05	-6272.10	39°37'06.295"N	104°33'11.550"W	1.53		
14403.00	89.660	273.710	7741.66	6475.96	1251.23	-6367.04	39°37'06.327"N	104°33'12.763"W	5.04		
14498.00	89.780	275.980	7742.12	6570.85	1259.25	-6461.69	39°37'06.416"N	104°33'13.971"W	2.39		
14593.00	89.970	275.930	7742.33	6665.81	1269.11	-6556.18	39°37'06.523"N	104°33'15.177"W	0.21		
14688.00	89.540	275.330	7742.74	6760.76	1278.43	-6650.72	39°37'06.625"N	104°33'16.384"W	0.78		
14782.00	89.910	274.670	7743.19	6854.67	1286.62	-6744.36	39°37'06.715"N	104°33'17.580"W	0.80		
14877.00	89.820	273.270	7743.41	6949.49	1293.20	-6839.13	39°37'06.790"N	104°33'18.790"W	1.48		
14972.00	89.850	273.410	7743.69	7044.23	1298.73	-6933.97	39°37'06.854"N	104°33'20.001"W	0.15		
15067.00	89.510	268.380	7744.22	7138.57	1300.22	-7028.93	39°37'06.879"N	104°33'21.214"W	5.31		
15162.00	89.570	265.770	7744.98	7231.99	1295.37	-7123.79	39°37'06.841"N	104°33'22.427"W	2.75		
15257.00	89.630	266.260	7745.64	7325.08	1288.77	-7218.56	39°37'06.785"N	104°33'23.639"W	0.52		
15352.00	89.600	269.720	7746.28	7418.75	1285.44	-7313.48	39°37'06.762"N	104°33'24.852"W	3.64		
15446.00	89.720	269.790	7746.84	7511.89	1285.03	-7407.48	39°37'06.768"N	104°33'26.053"W	0.15		
15541.00	89.660	270.910	7747.35	7606.15	1285.61	-7502.48	39°37'06.783"N	104°33'27.267"W	1.18		
15636.00	89.750	272.000	7747.84	7700.62	1288.03	-7597.44	39°37'06.817"N	104°33'28.480"W	1.15		
15731.00	89.820	271.590	7748.20	7795.14	1291.00	-7692.40	39°37'06.856"N	104°33'29.693"W	0.44		
15826.00	89.600	271.250	7748.68	7889.61	1293.36	-7787.36	39°37'06.889"N	104°33'30.906"W	0.43		
15921.00	89.780	270.960	7749.19	7984.01	1295.19	-7882.35	39°37'06.917"N	104°33'32.120"W	0.36		
16015.00	90.000	270.980	7749.37	8077.40	1296.78	-7976.33	39°37'06.942"N	104°33'33.321"W	0.24		
16110.00	89.850	274.690	7749.50	8172.07	1301.48	-8071.20	39°37'06.998"N	104°33'34.532"W	3.91		
16205.00	89.600	273.730	7749.95	8266.91	1308.45	-8165.94	39°37'07.077"N	104°33'35.742"W	1.04		
16300.00	89.420	272.190	7750.77	8361.60	1313.36	-8260.81	39°37'07.135"N	104°33'36.953"W	1.63		
16395.00	89.350	272.030	7751.79	8456.17	1316.85	-8355.74	39°37'07.179"N	104°33'38.166"W	0.18		
16490.00	89.380	271.870	7752.84	8550.72	1320.09	-8450.68	39°37'07.221"N	104°33'39.379"W	0.17		
16584.00	89.420	271.620	7753.82	8644.24	1322.95	-8544.63	39°37'07.259"N	104°33'40.579"W	0.27		
16679.00	89.660	271.240	7754.59	8738.70	1325.32	-8639.59	39°37'07.292"N	104°33'41.792"W	0.47		
16774.00	89.660	271.480	7755.15	8833.15	1327.57	-8734.57	39°37'07.324"N	104°33'43.005"W	0.25		



Actual Wellpath Report

BUCKSKIN 5-64-15-16-1BHZ AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	HIGHLANDS NATURAL RESOURCES	Slot	SLOT#03 BUCKSKIN 5-64-15-16-1BHZ (2380'FSL&440'FEL,SEC.15)
Area	COLORADO	Well	BUCKSKIN 5-64-15-16-1BHZ
Field	ARAPAHOE COUNTY (NAD83/GRID)	Wellbore	BUCKSKIN 5-64-15-16-1BHZ AWB
Facility	SEC.15-T05S-R64W		

WELLPATH DATA (194 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
16869.00	89.820	271.120	7755.58	8927.60	1329.73	-8829.54	39°37'07.355"N	104°33'44.219"W	0.41	
16964.00	89.780	270.480	7755.91	9021.94	1331.06	-8924.53	39°37'07.377"N	104°33'45.432"W	0.67	
17058.00	89.780	269.770	7756.27	9115.16	1331.26	-9018.53	39°37'07.389"N	104°33'46.633"W	0.76	
17153.00	89.910	269.330	7756.53	9209.25	1330.52	-9113.53	39°37'07.391"N	104°33'47.847"W	0.48	
17248.00	89.940	269.000	7756.65	9303.24	1329.13	-9208.51	39°37'07.387"N	104°33'49.061"W	0.35	
17343.00	89.880	269.270	7756.80	9397.23	1327.70	-9303.50	39°37'07.383"N	104°33'50.275"W	0.29	
17438.00	89.780	268.870	7757.09	9491.20	1326.15	-9398.49	39°37'07.377"N	104°33'51.489"W	0.43	
17533.00	89.850	268.940	7757.39	9585.13	1324.34	-9493.47	39°37'07.369"N	104°33'52.703"W	0.10	
17628.00	89.850	267.740	7757.64	9678.91	1321.59	-9588.43	39°37'07.352"N	104°33'53.917"W	1.26	
17724.00	89.420	269.390	7758.25	9773.74	1319.18	-9684.40	39°37'07.338"N	104°33'55.143"W	1.78	
17819.00	89.540	269.300	7759.11	9867.77	1318.10	-9779.39	39°37'07.336"N	104°33'56.357"W	0.16	
17914.00	89.450	269.320	7759.95	9961.80	1316.95	-9874.37	39°37'07.335"N	104°33'57.571"W	0.10	
17973.00	89.480	269.150	7760.50	10020.18	1316.17	-9933.37	39°37'07.333"N	104°33'58.325"W	0.29	Last BHI MWD Survey
17997.00	89.480	269.150	7760.72	10043.92	1315.81	-9957.36	39°37'07.332"N	104°33'58.632"W	0.00	Projection to Bit

HOLE & CASING SECTIONS - Ref Wellbore: BUCKSKIN 5-64-15-16-1BHZ AWB Ref Wellpath: BUCKSKIN 5-64-15-16-1BHZ 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	27.00	2142.00	2115.00	27.00	2120.40	0.00	0.00	192.82	118.35
9.625in Casing Surface	27.00	2142.00	2115.00	27.00	2120.40	0.00	0.00	192.82	118.35
8.5in Open Hole	2141.00	17997.00	15856.00	2119.42	7760.72	192.63	118.27	1315.81	-9957.36



Actual Wellpath Report
BUCKSKIN 5-64-15-16-1BHZ AWP
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REFERENCE WELLPATH IDENTIFICATION			
Operator	HIGHLANDS NATURAL RESOURCES	Slot	SLOT#03 BUCKSKIN 5-64-15-16-1BHZ (2380'FSL&440'FEL,SEC.15)
Area	COLORADO	Well	BUCKSKIN 5-64-15-16-1BHZ
Field	ARAPAHOE COUNTY (NAD83/GRID)	Wellbore	BUCKSKIN 5-64-15-16-1BHZ AWB
Facility	SEC.15-T05S-R64W		

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SEC.15-T05S-R64W	-3.00	40.07	0.15	3272987.61	1650317.10	39°36'53.694"N	104°31'51.568"W	polygon
SEC.16-T05S-R64W	-3.00	40.07	0.15	3272987.61	1650317.10	39°36'53.694"N	104°31'51.568"W	polygon
BUCKSKIN 5-64-15-16-1BHZ Landing Point (1650'FNL&600'FEL,SEC.15)	7711.00	1273.04	-149.08	3272838.38	1651550.04	39°37'05.894"N	104°31'53.306"W	point
BUCKSKIN 5-64-15-16-1BHZ REV-1 BHL(1650'FNL&100'FWL,SEC.16)	7761.00	1312.77	-9958.00	3263029.72	1651589.77	39°37'07.302"N	104°33'58.640"W	point
SEC.15/16-T05S-R64W SETBACKS (300'FSNL/FSL & 600'FEL & 100'FWL)	7825.00	40.07	0.15	3272987.61	1650317.10	39°36'53.694"N	104°31'51.568"W	polygon

WELLPATH COMPOSITION - Ref Wellbore: BUCKSKIN 5-64-15-16-1BHZ AWB Ref Wellpath: BUCKSKIN 5-64-15-16-1BHZ AWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
27.00	2085.00	Custom BHI AutoTrak Curve (Axial Corr, Short spacing) (Rockies 0.03Gt model)	BHI/ATC Surface Surveys 13.5" Hole <264'-2085'>	BUCKSKIN 5-64-15-16-1BHZ AWB
2085.00	17973.00	BHI AutoTrak Curve (Short)	BH/ATC Axial Corr, Short spacing 8.5" Hole <2174'-17973'>	BUCKSKIN 5-64-15-16-1BHZ AWB
17973.00	17997.00	Blind Drilling (std)	Projection to bit	BUCKSKIN 5-64-15-16-1BHZ AWB



Actual Wellpath Report

BUCKSKIN 5-64-15-16-1BHZ AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	HIGHLANDS NATURAL RESOURCES	Slot	SLOT#03 BUCKSKIN 5-64-15-16-1BHZ (2380'FSL&440'FEL,SEC.15)
Area	COLORADO	Well	BUCKSKIN 5-64-15-16-1BHZ
Field	ARAPAHOE COUNTY (NAD83/GRID)	Wellbore	BUCKSKIN 5-64-15-16-1BHZ AWB
Facility	SEC.15-T05S-R64W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
17973.00	89.480	269.150	7760.50	Last BHI MWD Survey
17997.00	89.480	269.150	7760.72	Projection to Bit