

CUB CREEK ENERGY, LLC

Location: COLORADO

Slot: SLOT#04 LITZENBERGER 7 (1928'FNL & 1139'FEL SEC.8)

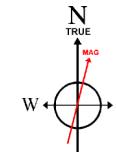
Field: WELD COUNTY (NAD83, TRUE NORTH)

Well: LITZENBERGER 7

Facility: SEC.08-T03N-R68W

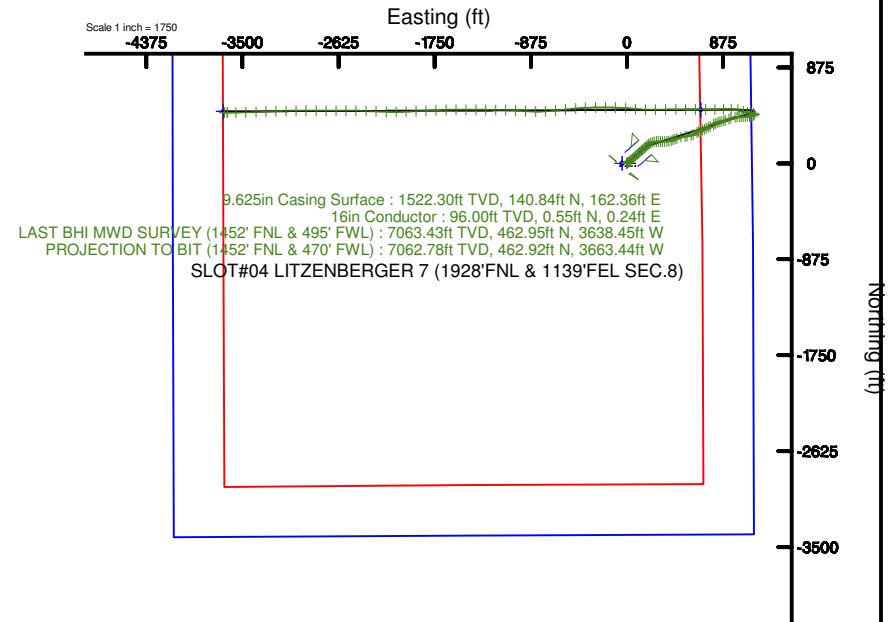
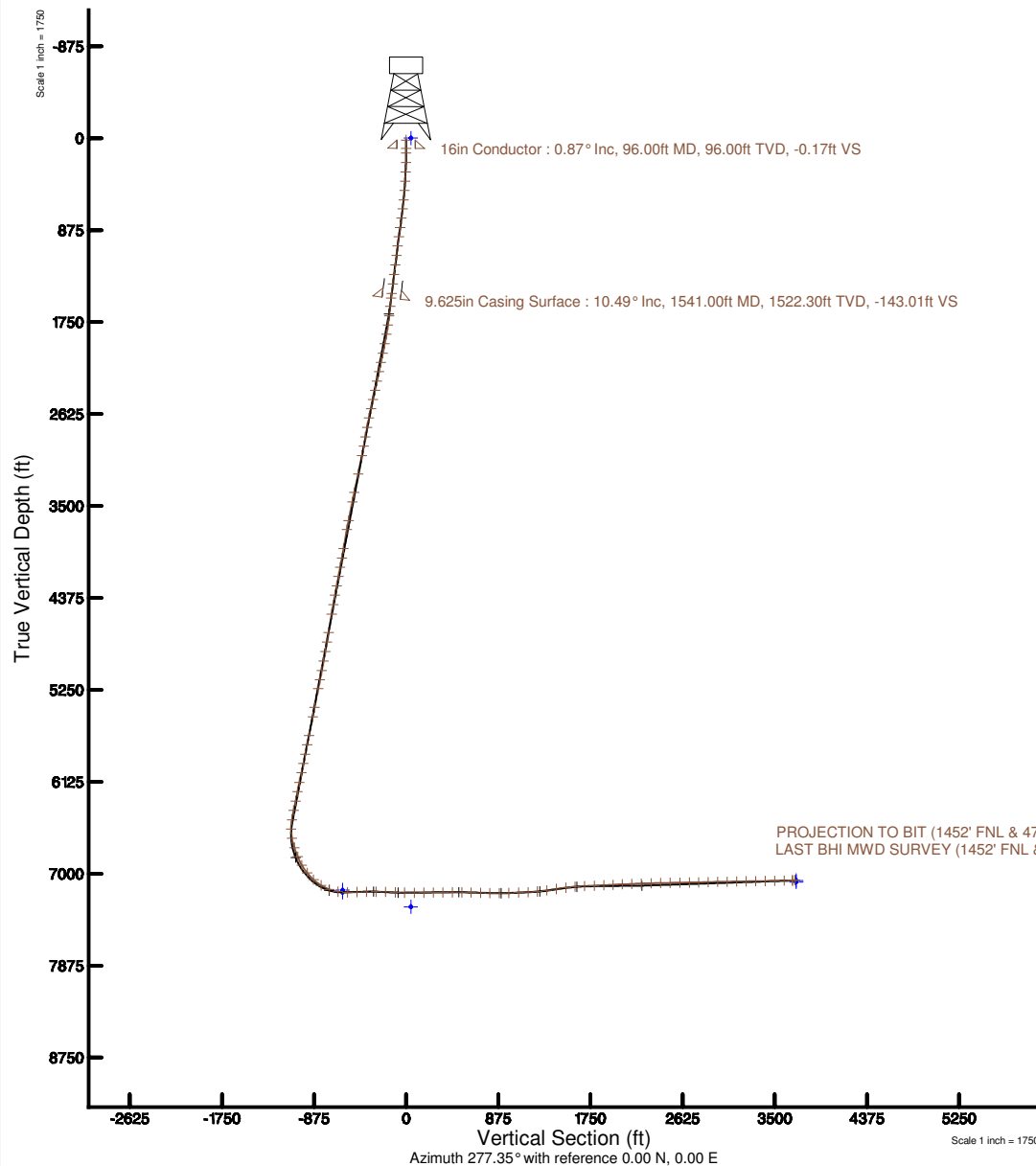
Wellbore: LITZENBERGER 7 PWB

Plot reference wellpath = LITZENBERGER 7 PWB REV 6.0	Grid System: NAD83 - Lambert Colorado SP - Northern Zone (501) US feet
True vertical depths are referenced to XTREME 16 (17) (R68)	Wellpath was transformed from a different geodetic datum
Measured depths are referenced to XTREME 16 (17) (R68)	North Reference: True north
XTREME 16 (17) (R68) to Mean Sea Level: 5508 feet	South: True distance
Mean Sea Level to Mud line (in Slot) = LITZENBERGER 7 (1928'FNL & 1139'FEL SEC.8) 0 feet	Depth: True distance
Coordinates are in feet referenced to Slot	Created by: carlson on 2017-07-05
	Database: Denver



BGGM (1900.0 to 2018.0) Dip: 66.70° Field: 52313.3 nT
Magnetic North is 8.50 degrees East of True North (at 6/23/2017)

To correct azimuth from Magnetic to True add 8.50 degrees





Actual Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#04 LITZENBERGER 7 (1928'FNL & 1139'FEL SEC.8)
Area	COLORADO	Well	LITZENBERGER 7
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	LITZENBERGER 7 AWB
Facility	SEC.08-T03N-R68W		

REPORT SETUP INFORMATION

Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 5.1
North Reference	True	User	Wagnjam
Scale	0.999957	Report Generated	10/25/2017 at 4:18:53 PM
Convergence at slot	0.31° East	Database/Source file	WA_DEN_Denver_Defn/LITZENBERGER_7_AWP.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	0.00	44.67	3133529.04	1331482.76	40°14'32.388"N	105°01'18.012"W
Facility Reference Pt			3133484.38	1331482.52	40°14'32.388"N	105°01'18.588"W
Field Reference Pt			3133072.77	1341057.53	40°16'07.032"N	105°01'23.232"W

WELLPATH DATUM

Calculation method	Minimum curvature	XTREME 18 (17') (RKB) to Facility Vertical Datum	5098.00ft
Horizontal Reference Pt	Slot	XTREME 18 (17') (RKB) to Mean Sea Level	5098.00ft
Vertical Reference Pt	XTREME 18 (17') (RKB)	XTREME 18 (17') (RKB) to Mud Line at Slot (SLOT#04 LITZENBERGER 7 (1928'FNL & 1139'FEL SEC.8))	5098.00ft
MD Reference Pt	XTREME 18 (17') (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	277.35°



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Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	LITZENBERGER 7 AWB
Facility	SEC.08-T03N-R68W		

WELLPATH DATA (126 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
0.00†	0.000	23.620	0.00	0.00	0.00	0.00	0.00	
17.00	0.000	23.620	17.00	0.00	0.00	0.00	0.00	
140.00	1.350	23.620	139.99	-0.41	1.33	0.58	1.10	
231.00	2.250	65.080	230.95	-2.22	3.06	2.63	1.68	
323.00	3.890	52.940	322.81	-5.97	5.70	6.76	1.91	
411.00	5.290	46.910	410.53	-10.69	10.27	12.10	1.68	
498.00	6.800	50.290	497.04	-16.75	16.31	19.00	1.78	
588.00	8.000	52.340	586.29	-24.81	23.54	28.05	1.37	
676.00	9.510	51.080	673.26	-34.17	31.85	38.56	1.73	
765.00	11.220	49.690	760.81	-45.08	42.07	50.88	1.94	
857.00	12.550	48.570	850.83	-57.70	54.47	65.20	1.47	
947.00	12.310	44.690	938.73	-69.96	67.76	79.28	0.97	
1036.00	10.660	47.620	1025.94	-81.04	80.06	92.03	1.97	
1128.00	11.030	45.110	1116.30	-91.93	92.00	104.55	0.65	
1220.00	10.630	50.690	1206.66	-103.14	103.59	117.35	1.22	
1311.00	10.260	48.390	1296.15	-114.22	114.29	129.91	0.61	
1403.00	10.720	51.250	1386.62	-125.53	125.09	142.71	0.76	
1495.00	10.400	52.680	1477.06	-137.37	135.48	155.98	0.45	
1619.00	10.840	38.410	1598.96	-151.35	151.40	172.13	2.14	
1711.00	10.890	46.030	1689.31	-161.25	164.21	183.76	1.56	
1800.00	11.910	53.170	1776.56	-173.09	175.56	197.16	1.95	
1892.00	11.720	64.280	1866.62	-187.73	185.30	213.18	2.48	
1984.00	11.920	73.890	1956.68	-204.27	192.00	230.73	2.15	
2075.00	11.730	80.120	2045.75	-221.73	196.19	248.87	1.42	
2165.00	12.070	86.260	2133.82	-239.70	198.38	267.28	1.46	
2255.00	12.020	90.420	2221.84	-258.24	198.92	286.04	0.97	
2346.00	12.420	92.590	2310.78	-277.40	198.41	305.29	0.67	
2436.00	12.180	89.750	2398.71	-296.46	198.01	324.45	0.72	
2527.00	12.350	86.070	2487.64	-315.52	198.72	343.76	0.88	
2617.00	12.170	85.450	2575.59	-334.24	200.13	362.82	0.25	



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Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#04 LITZENBERGER 7 (1928'FNL & 1139'FEL SEC.8)
Area	COLORADO	Well	LITZENBERGER 7
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	LITZENBERGER 7 AWB
Facility	SEC.08-T03N-R68W		

WELLPATH DATA (126 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
2706.00	12.520	82.000	2662.53	-352.72	202.22	381.73	0.92	
2799.00	12.110	71.760	2753.40	-371.24	206.68	400.98	2.39	
2891.00	12.070	64.530	2843.37	-388.03	213.84	418.83	1.65	
2981.00	12.210	67.820	2931.35	-404.22	221.47	436.13	0.78	
3072.00	12.120	72.810	3020.31	-421.28	227.93	454.17	1.16	
3252.00	12.310	78.640	3196.24	-456.65	237.30	491.04	0.69	
3432.00	12.210	81.700	3372.14	-493.15	243.82	528.69	0.37	
3524.00	12.150	81.180	3462.07	-511.82	246.71	547.88	0.14	
3704.00	12.270	72.170	3638.01	-547.32	255.47	584.81	1.06	
3793.00	12.040	64.730	3725.02	-563.70	262.33	602.21	1.78	
3978.00	12.160	60.140	3905.92	-595.47	280.27	636.56	0.52	
4070.00	12.060	62.050	3995.87	-611.03	289.60	653.45	0.45	
4160.00	12.060	65.750	4083.89	-626.71	297.87	670.33	0.86	
4250.00	12.220	73.650	4171.88	-643.45	304.41	688.04	1.85	
4341.00	12.180	66.500	4260.83	-660.51	310.95	706.09	1.66	
4431.00	11.790	63.680	4348.87	-676.31	318.81	723.03	0.78	
4523.00	11.800	63.440	4438.93	-691.94	327.19	739.87	0.05	
4616.00	11.870	62.470	4529.95	-707.68	335.86	756.86	0.23	
4795.00	11.410	60.280	4705.27	-736.91	353.15	788.56	0.36	
4887.00	11.550	62.060	4795.43	-751.69	361.97	804.60	0.41	
4979.00	11.690	67.840	4885.55	-767.32	369.81	821.37	1.27	
5071.00	12.150	72.360	4975.56	-784.20	376.25	839.23	1.13	
5163.00	11.970	72.690	5065.53	-801.65	382.03	857.56	0.21	
5253.00	11.970	75.860	5153.58	-818.81	387.08	875.53	0.73	
5341.00	11.990	76.060	5239.66	-835.82	391.52	893.25	0.05	
5523.00	12.190	69.550	5417.63	-870.44	402.78	929.60	0.76	
5615.00	12.310	69.060	5507.54	-887.66	409.68	947.86	0.17	
5797.00	12.000	80.120	5685.48	-922.82	419.86	984.62	1.29	
5886.00	12.210	81.980	5772.50	-940.74	422.76	1003.06	0.50	
5978.00	11.850	82.900	5862.48	-959.26	425.29	1022.07	0.44	



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Area	COLORADO	Well	LITZENBERGER 7
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	LITZENBERGER 7 AWB
Facility	SEC.08-T03N-R68W		

WELLPATH DATA (126 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
6067.00	11.460	91.190	5949.65	-976.90	426.24	1039.98	1.93	
6158.00	11.990	92.670	6038.75	-995.31	425.61	1058.46	0.67	
6252.00	11.970	85.460	6130.71	-1014.58	425.92	1077.93	1.59	
6342.00	11.330	89.150	6218.86	-1032.47	426.79	1096.07	1.09	
6433.00	11.890	88.500	6308.00	-1050.58	427.17	1114.38	0.63	
6525.00	11.910	76.320	6398.03	-1068.81	429.67	1133.08	2.73	
6615.00	11.890	70.670	6486.10	-1085.76	434.93	1150.85	1.29	
6705.00	8.470	7.540	6574.92	-1094.09	444.60	1160.50	12.24	
6795.00	12.640	302.780	6663.65	-1085.19	456.55	1153.07	13.11	
6886.00	18.770	265.710	6751.42	-1061.78	460.86	1130.02	12.60	
6978.00	21.390	280.800	6837.88	-1030.51	462.89	1098.75	6.29	
7068.00	30.800	288.890	6918.64	-991.45	473.46	1060.73	11.16	
7158.00	39.060	282.810	6992.39	-940.54	487.23	1011.18	9.95	
7247.00	47.740	271.330	7057.09	-879.67	494.24	950.70	13.15	
7336.00	58.290	267.850	7110.57	-809.36	493.58	879.73	12.26	
7425.00	69.970	268.670	7149.34	-730.42	491.18	799.83	13.15	
7512.00	80.540	270.340	7171.45	-647.19	490.48	715.82	12.29	
7604.00	91.750	271.100	7177.63	-556.16	491.64	624.18	12.21	
7694.00	91.780	269.720	7174.85	-466.86	492.28	534.23	1.53	
7784.00	91.690	269.600	7172.13	-377.71	491.75	444.27	0.17	
7877.00	89.510	268.720	7171.15	-285.67	490.39	351.29	2.53	
7968.00	87.480	268.850	7173.54	-195.72	488.46	260.35	2.24	
8060.00	87.380	272.420	7177.67	-104.46	489.48	168.46	3.88	
8150.00	89.230	275.050	7180.33	-14.69	495.34	78.70	3.57	
8242.00	90.220	274.080	7180.78	77.20	502.66	-13.00	1.51	
8334.00	90.550	272.150	7180.16	168.94	507.66	-104.86	2.13	
8424.00	90.550	270.470	7179.29	258.43	509.71	-194.83	1.87	
8516.00	90.710	268.610	7178.28	349.57	508.98	-286.82	2.03	
8607.00	90.680	267.530	7177.18	439.37	505.91	-377.76	1.19	
8697.00	89.570	264.920	7176.98	527.67	499.99	-467.55	3.15	



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REFERENCE WELLPATH IDENTIFICATION

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Area	COLORADO	Well	LITZENBERGER 7
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	LITZENBERGER 7 AWB
Facility	SEC.08-T03N-R68W		

WELLPATH DATA (126 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
8789.00	88.220	263.270	7178.76	617.20	490.52	-559.04	2.32	
8881.00	88.240	265.480	7181.60	706.80	481.51	-650.55	2.40	
8971.00	88.280	266.270	7184.33	794.96	475.04	-740.27	0.88	
9061.00	90.120	270.570	7185.59	883.84	472.56	-830.21	5.20	
9153.00	92.590	273.920	7183.41	975.43	476.16	-922.09	4.52	
9245.00	92.740	273.300	7179.13	1067.13	481.95	-1013.81	0.69	
9335.00	92.680	271.220	7174.88	1156.67	485.49	-1103.63	2.31	
9425.00	95.080	270.550	7168.79	1245.89	486.88	-1193.41	2.77	
9517.00	97.930	270.310	7158.37	1336.62	487.57	-1284.80	3.11	
9609.00	97.940	270.140	7145.67	1427.03	487.92	-1375.92	0.18	
9699.00	97.900	271.010	7133.26	1515.55	488.82	-1465.06	0.96	
9789.00	95.170	269.880	7123.02	1604.31	489.51	-1554.46	3.28	
9881.00	91.940	267.460	7117.32	1695.06	487.38	-1646.24	4.38	
9973.00	92.220	268.440	7113.98	1785.76	484.09	-1738.12	1.11	
10065.00	93.050	267.390	7109.75	1876.42	480.74	-1829.96	1.45	
10155.00	93.020	266.560	7104.98	1964.83	476.00	-1919.71	0.92	
10245.00	92.310	266.980	7100.80	2053.20	470.94	-2009.46	0.92	
10335.00	92.400	269.840	7097.10	2142.02	468.44	-2099.34	3.18	
10427.00	92.400	272.180	7093.25	2233.37	470.06	-2191.24	2.54	
10519.00	91.230	272.030	7090.33	2324.94	473.44	-2283.13	1.28	
10610.00	91.110	272.330	7088.48	2415.55	476.90	-2374.05	0.36	
10702.00	90.830	271.190	7086.92	2507.10	479.73	-2465.99	1.28	
10794.00	90.800	269.580	7085.61	2598.41	480.34	-2557.98	1.75	
10885.00	91.450	270.060	7083.82	2688.60	480.06	-2648.96	0.89	
10975.00	91.320	270.010	7081.65	2777.85	480.11	-2738.93	0.15	
11065.00	91.540	270.900	7079.40	2867.17	480.83	-2828.90	1.02	
11157.00	90.920	269.970	7077.43	2958.47	481.53	-2920.87	1.21	
11247.00	90.920	268.560	7075.98	3047.57	480.37	-3010.85	1.57	
11339.00	91.290	268.530	7074.21	3138.46	478.04	-3102.81	0.40	
11430.00	90.920	268.600	7072.45	3228.38	475.76	-3193.76	0.41	



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Facility	SEC.08-T03N-R68W		

WELLPATH DATA (126 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
11522.00	90.950	267.610	7070.95	3319.17	472.71	-3285.70	1.08	
11613.00	90.860	267.600	7069.51	3408.85	468.91	-3376.61	0.10	
11705.00	91.420	268.300	7067.68	3499.59	465.62	-3468.53	0.97	
11796.00	91.420	269.140	7065.43	3589.54	463.59	-3559.48	0.92	
11875.00	91.480	269.930	7063.43	3667.78	462.95	-3638.45	1.00	LAST BHI MWD SURVEY (1452' FNL & 495' FWL)
11900.00	91.480	269.930	7062.78	3692.56	462.92	-3663.44	0.00	PROJECTION TO BIT (1452' FNL & 470' FWL)

HOLE & CASING SECTIONS - Ref Wellbore: LITZENBERGER 7 AWB Ref Wellpath: LITZENBERGER 7 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]
16in Conductor	17.00	96.00	79.00	17.00	96.00	0.00	0.00	0.55	0.24
13.5in Open Hole	96.00	1552.00	1456.00	96.00	1533.11	0.55	0.24	142.21	163.82
9.625in Casing Surface	17.00	1541.00	1524.00	17.00	1522.30	0.00	0.00	140.84	162.36
8.5in Open Hole	1552.00	11900.00	10348.00	1533.11	7062.78	142.21	163.82	462.92	-3663.44



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TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SEC.08-T03N-R68W	-1.00	0.00	-44.67	3133484.38	1331482.52	40°14'32.388"N	105°01'18.588"W	polygon
LITZENBERGER 7 BHL REV-2 (1441'FNL & 460'FWL SEC.8)	7064.00	473.87	-3673.82	3129852.89	1331936.78	40°14'37.068"N	105°02'05.388"W	point
LITZENBERGER 7 BHL REV-1 (1441'FNL & 460'FWL SEC.8)	7079.10	473.87	-3673.82	3129852.89	1331936.78	40°14'37.068"N	105°02'05.388"W	point
LITZENBERGER 7 EP REV-1 (1441'FNL & 460'FEL SEC.8)	7155.00	488.17	672.79	3134199.16	1331974.53	40°14'37.212"N	105°01'09.336"W	point
LITZENBERGER 7 EP REV-2 (1441'FNL & 460'FEL SEC.8)	7177.00	488.17	672.79	3134199.16	1331974.53	40°14'37.212"N	105°01'09.336"W	point
SEC.08-T03N-R68W HARDLINES 460' SETBACKS	7315.00	0.00	-44.67	3133484.38	1331482.52	40°14'32.388"N	105°01'18.588"W	polygon

WELLPATH COMPOSITION - Ref Wellbore: LITZENBERGER 7 AWB Ref Wellpath: LITZENBERGER 7 AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
17.00	1495.00	Custom BHI NaviTrak (Standard Rotating+Axial Corr) (Rockies 0.03Gt model)	BHI NAVITRAK 13.5 (STD ROTATING, AXIAL, ROCKIES GT)<140-1495>	LITZENBERGER 7 AWB
1495.00	11875.00	Custom BHI AutoTrak Curve (Axial Corr, Short spacing) (Rockies 0.03Gt model)	BHI ATC 8.5" (AXIAL, SHORT, ROCKIES GT)<1619-11875>	LITZENBERGER 7 AWB
11875.00	11900.00	Blind Drilling (std)	Projection to bit	LITZENBERGER 7 AWB



Actual Wellpath Report

LITZENBERGER 7 AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#04 LITZENBERGER 7 (1928'FNL & 1139'FEL SEC.8)
Area	COLORADO	Well	LITZENBERGER 7
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	LITZENBERGER 7 AWB
Facility	SEC.08-T03N-R68W		

WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
11875.00	91.480	269.930	7063.43	LAST BHI MWD SURVEY (1452' FNL & 495' FWL)
11900.00	91.480	269.930	7062.78	PROJECTION TO BIT (1452' FNL & 470' FWL)