

CUB CREEK ENERGY, LLC

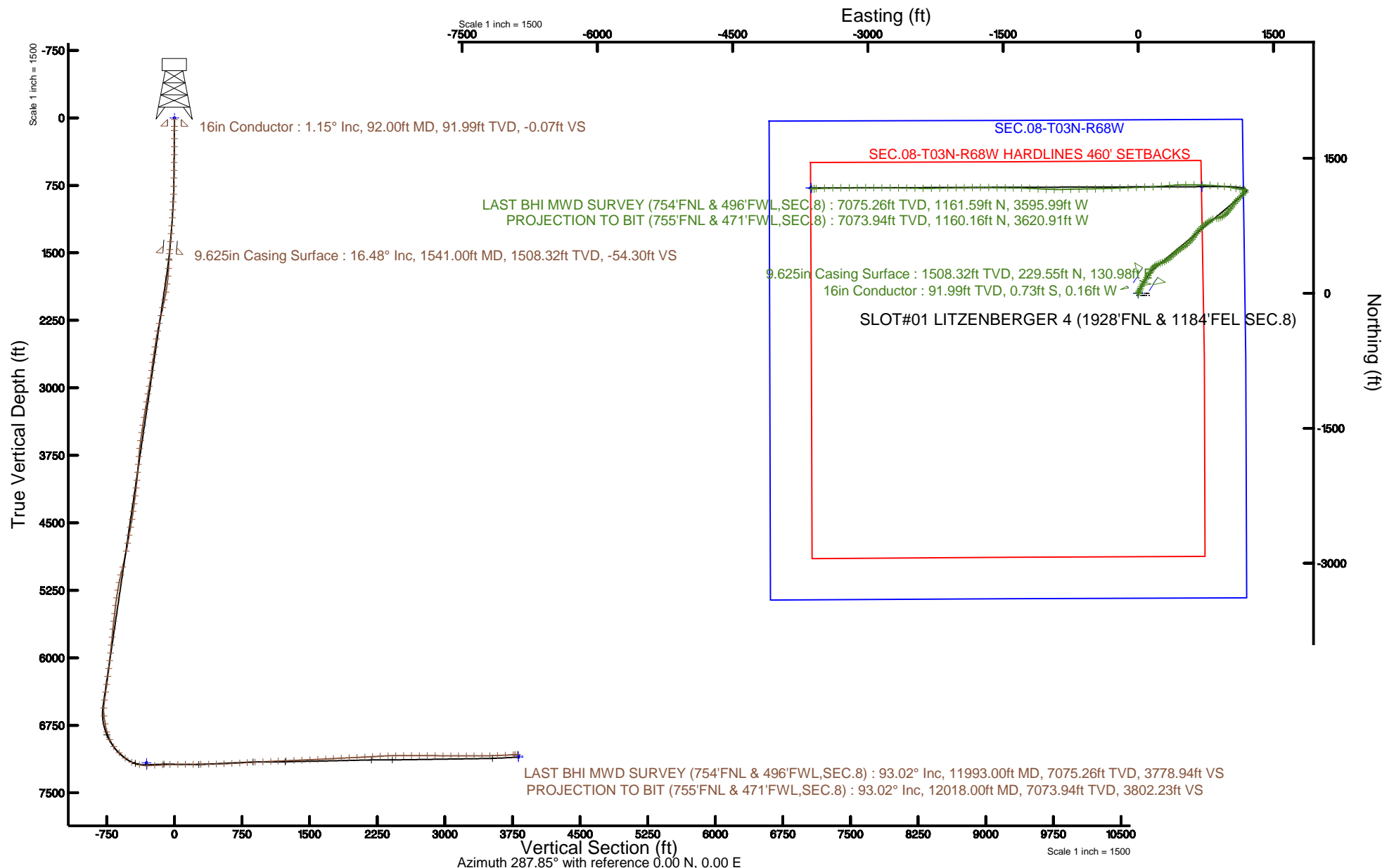
Location: COLORADO Slot: SLOT#01 LITZENBERGER 4 (1928'FNL & 1184'FEL SEC.8)
 Field: WELD COUNTY (NAD83, TRUE NORTH) Well: LITZENBERGER 4
 Facility: SEC.08-T03N-R68W Wellbore: LITZENBERGER 4 PWB



BGGM (1900.0 to 2018.0) Dip: 66.70° Field: 52313.3 nT
 Magnetic North is 8.50 degrees East of True North (at 23-Jun-17)

To correct azimuth from Magnetic to True add 8.50 degrees

Plot reference wellpath is LITZENBERGER 4 PWB REV-C-D	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (SP1), US feet
True vertical depths are referenced to XTREME 18 (17) (RKB)	* = Wellpath was transformed from a different geoidic datum
Measured depths are referenced to XTREME 18 (17) (RKB)	North Reference: True north
XTREME 18 (17) (RKB) to Mean Sea Level 1009 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: SLOT#01 LITZENBERGER 4 (1928'FNL & 1184'FEL SEC.8)): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: cooldarm on 2017-06-28
	Database: WA_Denver



Actual Wellpath Report

LITZENBERGER 4 AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#01 LITZENBERGER 4 (1928'FNL & 1184'FEL SEC.8)
Area	COLORADO	Well	LITZENBERGER 4
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	LITZENBERGER 4 AWP
Facility	SEC.08-T03N-R68W		

REPORT SETUP INFORMATION

Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 5.0
North Reference	True	User	Cookdanm
Scale	0.999957	Report Generated	28-Jun-17 at 3:14:59 PM
Convergence at slot	0.31° East	Database/Source file	WA_Denver/LITZENBERGER_4_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	0.00	3133484.38	1331482.52	40°14'32.388"N	105°01'18.588"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	5099.00ft
Horizontal Reference Pt	Slot	XTREME 18 (17') (RKB) to Mean Sea Level	5099.00ft
Vertical Reference Pt	XTREME 18 (17') (RKB)	XTREME 18 (17') (RKB) to Mud Line at Slot (SLOT#01 LITZENBERGER 4 (1928'FNL & 1184'FEL SEC.8))	5099.00ft
MD Reference Pt	XTREME 18 (17') (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	287.77°

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Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	LITZENBERGER 4 AWB
Facility	SEC.08-T03N-R68W		

WELLPATH DATA (134 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
0.00†	0.000	192.170	0.00	0.00	0.00	0.00	0.00	
17.00	0.000	192.170	17.00	0.00	0.00	0.00	0.00	
140.00	1.880	192.170	139.98	-0.20	-1.97	-0.43	1.53	
232.00	0.220	341.640	231.96	-0.24	-3.28	-0.80	2.25	
320.00	2.470	31.920	319.93	-0.60	-1.51	0.15	2.65	
408.00	4.530	32.020	407.76	-1.92	3.05	3.00	2.34	
497.00	6.790	23.620	496.33	-3.33	10.85	6.97	2.70	
585.00	9.090	20.870	583.48	-4.23	22.11	11.53	2.65	
672.00	11.590	21.200	669.06	-5.13	36.68	17.14	2.87	
765.00	13.630	21.360	759.81	-6.38	55.60	24.51	2.19	
856.00	13.370	28.410	848.30	-8.99	74.84	33.42	1.83	
944.00	14.460	30.430	933.72	-13.28	93.26	43.83	1.36	
1035.00	14.980	29.620	1021.73	-18.19	113.29	55.39	0.61	
1128.00	16.070	29.670	1111.34	-23.31	134.92	67.71	1.17	
1218.00	15.550	33.420	1197.93	-29.14	155.81	80.52	1.27	
1310.00	15.520	34.620	1286.57	-36.03	176.23	94.30	0.35	
1402.00	16.290	34.740	1375.05	-43.37	196.97	108.65	0.84	
1494.00	16.670	34.750	1463.27	-50.99	218.41	123.52	0.41	
1619.00	16.210	29.610	1583.17	-59.81	248.31	142.36	1.22	
1711.00	14.580	31.520	1671.86	-65.20	269.35	154.76	1.86	
1800.00	13.050	39.530	1758.29	-71.59	286.65	167.02	2.75	
1890.00	13.200	50.860	1845.96	-80.97	300.98	181.46	2.86	
1982.00	14.480	59.940	1935.30	-94.43	313.37	199.56	2.74	
2072.00	15.780	66.920	2022.18	-111.24	323.81	220.56	2.48	
2163.00	15.960	68.940	2109.71	-130.35	333.15	243.62	0.64	
2253.00	16.100	70.090	2196.21	-149.86	341.85	266.90	0.39	
2344.00	16.100	63.120	2283.65	-168.83	351.85	290.02	2.12	
2434.00	16.240	58.620	2370.10	-185.94	364.05	311.90	1.40	
2524.00	16.340	52.770	2456.49	-201.44	378.26	332.72	1.83	
2615.00	16.010	48.920	2543.89	-215.27	394.25	352.37	1.23	

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REFERENCE WELLPATH IDENTIFICATION

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Area	COLORADO	Well	LITZENBERGER 4
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	LITZENBERGER 4 AWB
Facility	SEC.08-T03N-R68W		

WELLPATH DATA (134 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
2704.00	16.130	49.640	2629.41	-228.15	410.32	371.05	0.26	
2796.00	15.950	47.230	2717.83	-241.12	427.18	390.06	0.75	
2888.00	15.950	45.760	2806.29	-253.27	444.59	408.40	0.44	
2978.00	14.990	49.040	2893.03	-265.11	460.84	426.05	1.44	
3069.00	15.900	56.240	2980.75	-278.98	475.49	445.30	2.33	
3159.00	16.000	53.490	3067.29	-293.89	489.72	465.52	0.85	
3249.00	15.410	54.940	3153.93	-308.36	503.97	485.28	0.79	
3337.00	16.000	54.430	3238.64	-322.67	517.74	504.71	0.69	
3428.00	16.000	51.420	3326.12	-337.11	532.85	524.72	0.91	
3520.00	15.670	49.230	3414.63	-350.62	548.88	544.04	0.74	
3607.00	16.080	48.120	3498.31	-362.84	564.59	561.91	0.59	
3699.00	16.300	46.280	3586.66	-375.44	582.02	580.73	0.61	
3789.00	16.410	39.630	3673.03	-386.21	600.54	597.96	2.08	
3881.00	16.390	34.020	3761.29	-394.68	621.31	613.52	1.72	
3973.00	15.690	34.460	3849.71	-401.89	642.33	627.82	0.77	
4065.00	15.360	35.830	3938.35	-409.24	662.46	641.99	0.54	
4156.00	15.330	38.020	4026.11	-417.14	681.71	656.45	0.64	
4246.00	15.370	41.380	4112.90	-426.04	700.03	671.67	0.99	
4336.00	16.130	43.300	4199.52	-436.20	718.08	688.13	1.02	
4427.00	16.230	44.820	4286.92	-447.44	736.30	705.76	0.48	
4515.00	15.790	46.830	4371.50	-458.85	753.22	723.16	0.80	
4607.00	15.820	56.250	4460.04	-472.73	768.75	742.72	2.79	
4699.00	15.520	57.220	4548.62	-488.36	782.38	763.49	0.43	
4791.00	15.630	55.550	4637.24	-503.77	796.05	784.06	0.50	
4883.00	15.530	55.860	4725.86	-518.97	809.98	804.48	0.14	
4974.00	15.230	65.920	4813.62	-535.39	821.69	825.48	2.95	
5157.00	14.860	85.860	4990.46	-575.09	833.20	870.86	2.82	
5247.00	14.860	78.450	5077.46	-595.87	836.35	893.68	2.11	
5335.00	14.880	66.520	5162.54	-614.20	843.11	915.10	3.47	
5423.00	14.870	57.530	5247.60	-629.92	853.67	934.99	2.62	

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Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#01 LITZENBERGER 4 (1928'FNL & 1184'FEL SEC.8)
Area	COLORADO	Well	LITZENBERGER 4
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	LITZENBERGER 4 AWP
Facility	SEC.08-T03N-R68W		

WELLPATH DATA (134 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
5510.00	14.860	47.960	5331.70	-642.68	867.14	952.70	2.82	
5599.00	15.110	45.890	5417.67	-653.89	882.86	969.50	0.66	
5692.00	15.740	42.760	5507.32	-664.93	900.56	986.77	1.12	
5781.00	15.960	41.300	5592.94	-674.92	918.61	1003.04	0.51	
5873.00	16.190	37.730	5681.35	-684.35	938.26	1019.24	1.10	
5965.00	16.070	36.620	5769.72	-692.84	958.62	1034.68	0.36	
6056.00	16.240	38.210	5857.13	-701.35	978.73	1050.07	0.52	
6148.00	15.970	39.360	5945.52	-710.51	998.62	1066.05	0.45	
6236.00	16.340	39.980	6030.05	-719.64	1017.47	1081.68	0.46	
6328.00	16.220	42.720	6118.36	-729.96	1036.83	1098.71	0.84	
6420.00	16.190	44.080	6206.70	-741.06	1055.48	1116.35	0.41	
6512.00	16.260	46.100	6295.04	-752.86	1073.62	1134.56	0.62	
6601.00	15.630	46.360	6380.62	-764.51	1090.54	1152.21	0.71	
6693.00	15.540	49.890	6469.23	-777.00	1107.03	1170.61	1.04	
6785.00	12.230	34.270	6558.57	-786.33	1123.03	1185.53	5.41	
6875.00	12.460	335.520	6646.81	-782.49	1139.81	1186.88	13.38	
6963.00	8.060	276.720	6733.59	-770.02	1149.20	1176.79	12.21	
7054.00	15.590	281.980	6822.60	-751.56	1152.49	1158.46	8.35	
7146.00	25.160	276.990	6908.75	-719.98	1157.45	1126.88	10.56	
7237.00	35.930	281.860	6987.02	-674.27	1165.31	1081.41	12.13	
7326.00	46.710	280.520	7053.76	-615.99	1176.63	1023.84	12.15	
7417.00	51.430	276.160	7113.38	-548.24	1186.50	955.85	6.32	
7505.00	65.040	274.200	7159.60	-475.41	1193.14	881.51	15.58	
7597.00	78.540	273.280	7188.28	-390.83	1198.80	794.50	14.70	
7685.00	90.680	272.450	7196.54	-306.33	1203.17	707.17	13.83	
7775.00	92.370	270.980	7194.14	-219.87	1205.86	617.25	2.49	
7867.00	93.540	269.120	7189.40	-132.35	1205.94	525.37	2.39	
7955.00	92.190	266.710	7185.00	-49.69	1202.74	437.55	3.14	
8047.00	90.400	265.390	7182.92	35.75	1196.41	345.80	2.42	
8138.00	90.000	265.680	7182.60	119.98	1189.32	255.08	0.54	

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REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#01 LITZENBERGER 4 (1928'FNL & 1184'FEL SEC.8)
Area	COLORADO	Well	LITZENBERGER 4
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	LITZENBERGER 4 AWP
Facility	SEC.08-T03N-R68W		

WELLPATH DATA (134 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
8230.00	90.180	266.410	7182.46	205.45	1182.98	163.29	0.82	
8322.00	89.940	267.950	7182.36	291.57	1178.45	71.41	1.69	
8414.00	90.920	268.020	7181.67	378.14	1175.22	-20.53	1.07	
8506.00	91.880	268.500	7179.42	464.83	1172.42	-112.46	1.17	
8596.00	91.850	267.850	7176.49	549.58	1169.56	-202.37	0.72	
8688.00	92.710	267.850	7172.83	636.01	1166.11	-294.23	0.93	
8780.00	93.540	268.550	7167.82	722.56	1163.23	-386.04	1.18	
8869.00	92.650	269.020	7163.01	806.60	1161.34	-474.89	1.13	
8961.00	92.770	269.530	7158.66	893.75	1160.18	-566.78	0.57	
9053.00	92.310	268.090	7154.59	980.68	1158.27	-658.67	1.64	
9145.00	92.460	268.500	7150.76	1067.34	1155.53	-750.55	0.47	
9234.00	92.520	269.110	7146.89	1151.43	1153.68	-839.44	0.69	
9326.00	92.280	271.040	7143.04	1239.00	1153.80	-931.36	2.11	
9417.00	92.490	272.500	7139.25	1326.40	1156.61	-1022.23	1.62	
9508.00	92.400	272.940	7135.37	1414.20	1160.92	-1113.05	0.49	
9600.00	92.310	272.640	7131.59	1503.00	1165.40	-1204.86	0.34	
9690.00	92.460	271.800	7127.84	1589.63	1168.88	-1294.72	0.95	
9781.00	92.520	270.490	7123.89	1676.74	1170.70	-1385.61	1.44	
9872.00	93.140	270.420	7119.40	1763.52	1171.42	-1476.50	0.69	
9963.00	93.170	271.290	7114.39	1850.45	1172.77	-1567.35	0.96	
10054.00	92.280	271.020	7110.06	1937.55	1174.61	-1658.22	1.02	
10146.00	92.150	270.130	7106.51	2025.37	1175.53	-1750.15	0.98	
10238.00	93.050	269.010	7102.33	2112.68	1174.84	-1842.05	1.56	
10328.00	92.860	268.900	7097.69	2197.76	1173.20	-1931.92	0.24	
10418.00	93.600	269.310	7092.62	2282.89	1171.80	-2021.76	0.94	
10510.00	91.970	268.640	7088.15	2369.88	1170.15	-2113.63	1.92	
10600.00	90.950	268.700	7085.86	2454.90	1168.06	-2203.58	1.14	
10692.00	89.910	268.800	7085.17	2541.88	1166.06	-2295.55	1.14	
10784.00	90.060	270.820	7085.19	2629.39	1165.75	-2387.55	2.20	
10875.00	89.420	271.110	7085.60	2716.51	1167.29	-2478.53	0.77	

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WELLPATH DATA (134 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
10967.00	89.540	271.390	7086.44	2804.71	1169.29	-2570.51	0.33	
11057.00	89.510	271.090	7087.19	2890.99	1171.24	-2660.48	0.33	
11148.00	89.420	270.640	7088.04	2978.05	1172.61	-2751.47	0.50	
11240.00	89.450	270.150	7088.94	3065.85	1173.25	-2843.46	0.53	
11330.00	90.000	270.050	7089.37	3151.61	1173.41	-2933.46	0.62	
11422.00	89.940	270.070	7089.42	3239.25	1173.50	-3025.46	0.07	
11512.00	89.970	269.560	7089.49	3324.87	1173.21	-3115.46	0.57	
11603.00	90.920	269.640	7088.79	3411.33	1172.58	-3206.45	1.05	
11695.00	90.770	268.960	7087.43	3498.58	1171.45	-3298.44	0.76	
11786.00	92.060	268.510	7085.18	3584.58	1169.44	-3389.38	1.50	
11878.00	92.830	268.060	7081.26	3671.23	1166.69	-3481.26	0.97	
11970.00	93.110	267.110	7076.49	3757.47	1162.82	-3573.05	1.08	
11993.00	93.020	266.730	7075.26	3778.93	1161.59	-3595.99	1.70	LAST BHI MWD SURVEY (754'FNL & 496'FWL, SEC.8)
12018.00	93.020	266.730	7073.94	3802.23	1160.16	-3620.91	0.00	PROJECTION TO BIT (755'FNL & 471'FWL, SEC.8)

HOLE & CASING SECTIONS - Ref Wellbore: LITZENBERGER 4 AWB Ref Wellpath: LITZENBERGER 4 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	92.00	75.00	17.00	91.99	0.00	0.00	-0.73	-0.16
13.5in Open Hole	92.00	1551.00	1459.00	91.99	1517.91	-0.73	-0.16	231.94	132.51
9.625in Casing Surface	17.00	1541.00	1524.00	17.00	1508.32	0.00	0.00	229.55	130.98
8.5in Open Hole	1551.00	12018.00	10467.00	1517.91	7073.94	231.94	132.51	1160.16	-3620.91

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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	0.00	0.00	0.00	3133484.38	1331482.52	40°14'32.388"N	105°01'18.588"W	polygon
LITZENBERGER 4 BHL REV-1 (746'FNL & 460'FWL SEC.8)	7091.30	1169.68	-3631.84	3129846.45	1332632.54	40°14'43.944"N	105°02'05.424"W	point
LITZENBERGER 4 BHL REV-2 (746'FNL & 460'FWL SEC.8)	7104.00	1169.68	-3631.84	3129846.45	1332632.54	40°14'43.944"N	105°02'05.424"W	point
LITZENBERGER 4 EP REV-1 (746'FNL & 460'FEL SEC.8)	7167.00	1183.99	706.27	3134184.22	1332670.25	40°14'44.088"N	105°01'09.480"W	point
LITZENBERGER 4 EP REV-2 (746'FNL & 460'FEL SEC.8)	7189.00	1183.99	706.27	3134184.22	1332670.25	40°14'44.088"N	105°01'09.480"W	point
SEC.08-T03N-R68W HARDLINES 460' SETBACKS	7316.00	0.00	0.00	3133484.38	1331482.52	40°14'32.388"N	105°01'18.588"W	polygon

WELLPATH COMPOSITION - Ref Wellbore: LITZENBERGER 4 AWB Ref Wellpath: LITZENBERGER 4 AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
17.00	1494.00	Custom BHI NaviTrak (Standard Rotating+Axial Corr) (Rockies 0.03Gt model)	BHI NAVITRAK 13.5" (STD ROTATING, AXIAL, ROCKIES GT)<140-1494>	LITZENBERGER 4 AWB
1494.00	11993.00	Custom BHI AutoTrak Curve (Short) (Rockies 0.03Gt model)	BHI ATC 8.5" (SHORT, ROCKIES GT)<1619-11993>	LITZENBERGER 4 AWB
11993.00	12018.00	Blind Drilling (std)	Projection to bit	LITZENBERGER 4 AWB

Actual Wellpath Report

LITZENBERGER 4 AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#01 LITZENBERGER 4 (1928'FNL & 1184'FEL SEC.8)
Area	COLORADO	Well	LITZENBERGER 4
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	LITZENBERGER 4 AWB
Facility	SEC.08-T03N-R68W		

WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
11993.00	93.020	266.730	7075.26	LAST BHI MWD SURVEY (754'FNL & 496'FWL, SEC.8)
12018.00	93.020	266.730	7073.94	PROJECTION TO BIT (755'FNL & 471'FWL, SEC.8)