



# **Cub Creek Energy, LLC**

**SEC.30-T3N-R68W**

**Knight Pad SEC.30-3N-68W**

**Knight 12**

**Wellbore #1**

**Design: Knight 12\_Final Surveys**

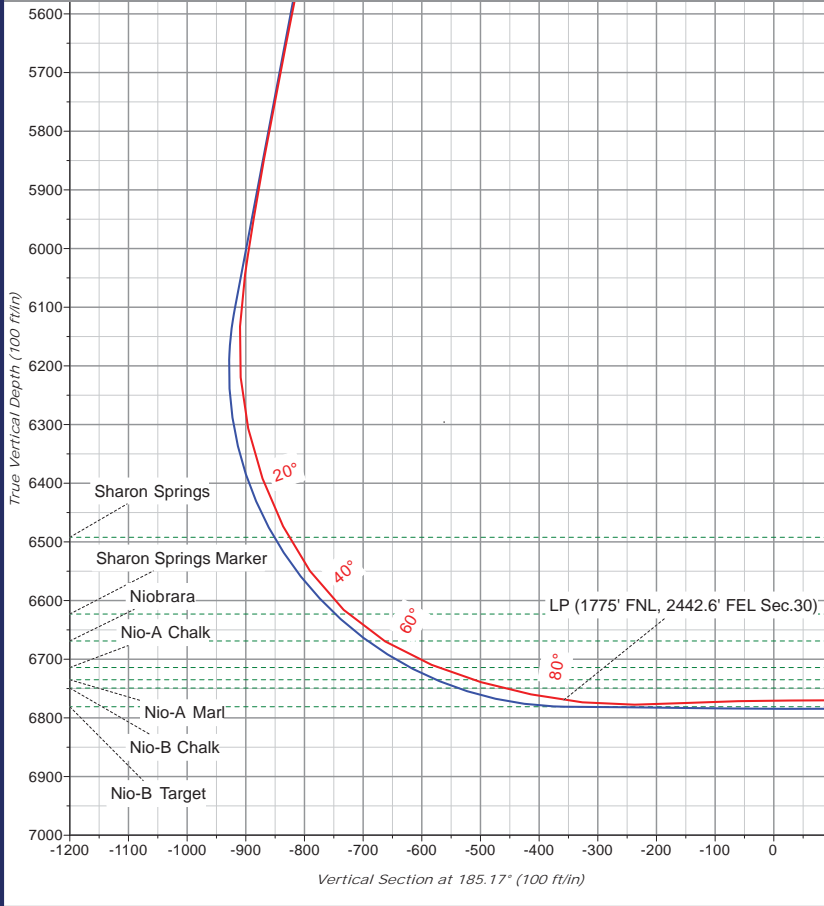
## **Standard Survey Report**

**03 May, 2021**



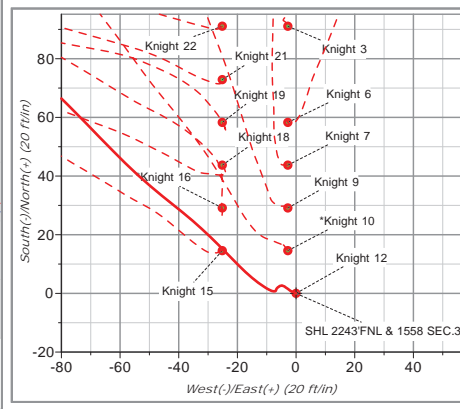


Company: Cub Creek Energy, LLC  
 Project: SEC.30-T3N-R68W  
 Site: Knight Pad SEC.30-3N-68W  
 Well: Knight 12  
 Design: Knight 12\_Final Surveys

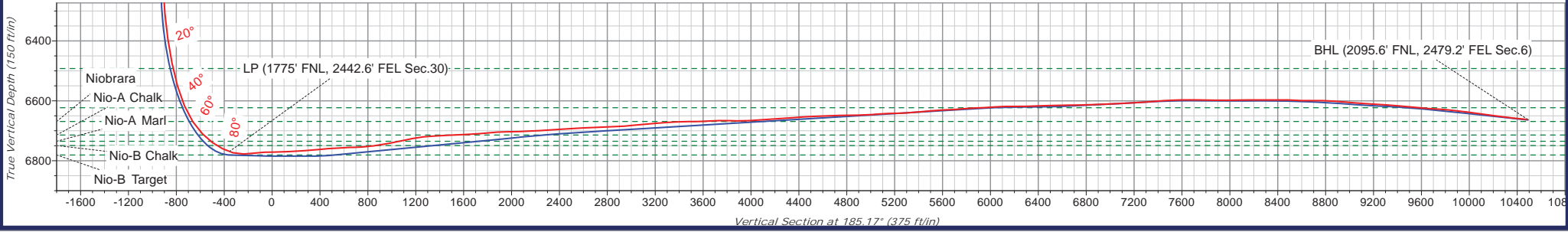
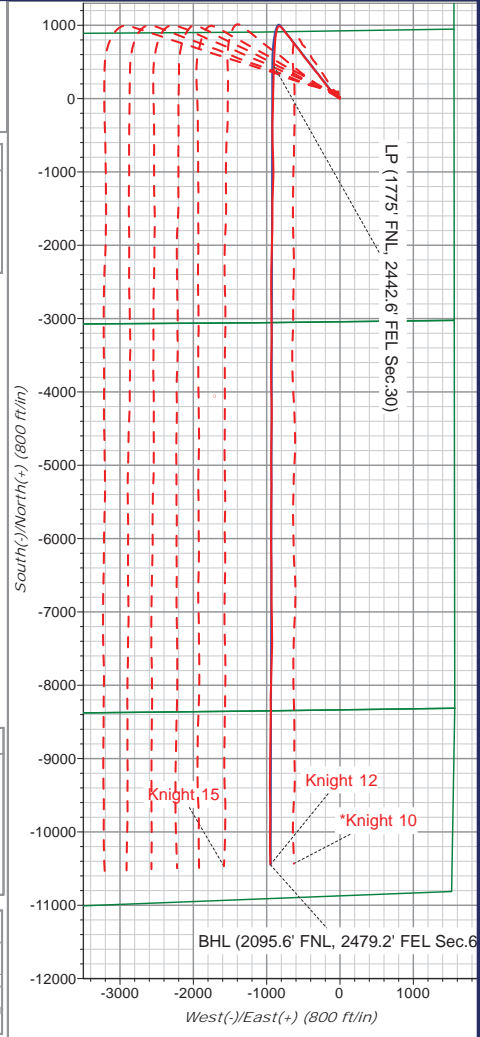
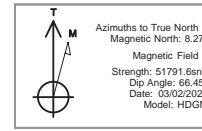


ANNOTATIONS							
TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Annotation
6769.5	7235.0	81.94	181.71	440.6	-899.9	-357.7	LP (1775' FNL, 2442.6' FEL Sec.30)
6662.3	18128.0	87.93	178.60	-10445.6	-948.8	10488.6	BHL (2095.6' FNL, 2479.2' FEL Sec.6)

**FINAL SURVEY**  
**Projected Bottom Hole Location**  
**18128' MD / 6662.3' TVD**  
**87.93° INC / 178.6° AZM**  
**2095.6' FNL / 2479.2" FEL (SEC.6)**



FORMATION TOP DETAILS		
VDPPath	MDPath	Formation
4389.0	4492.4	Shannon
6492.2	6667.2	Sharon Springs
6623.1	6833.6	Sharon Springs Marker
6668.9	6910.5	Niobrara
6714.3	7013.1	Nio-A Chalk
6735.0	7075.7	Nio-A Marl
6749.3	7129.0	Nio-B Chalk





<b>Company:</b>	Cub Creek Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Knight 12
<b>Project:</b>	SEC.30-T3N-R68W	<b>TVD Reference:</b>	RKB @ 5010.0ft (Akita 518)
<b>Site:</b>	Knight Pad SEC.30-3N-68W	<b>MD Reference:</b>	RKB @ 5010.0ft (Akita 518)
<b>Well:</b>	Knight 12	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Knight 12_Final Surveys	<b>Database:</b>	US_EDM

<b>Project</b>	SEC.30-T3N-R68W		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

<b>Site</b>	Knight Pad SEC.30-3N-68W				
<b>Site Position:</b>		<b>Northing:</b>	1,315,245.93 usft	<b>Latitude:</b>	40.197840
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,127,923.58 usft	<b>Longitude:</b>	-105.042050
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.30 °

<b>Well</b>	Knight 12					
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,315,154.98 usft	<b>Latitude:</b>	40.197590
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	3,127,949.19 usft	<b>Longitude:</b>	-105.041960
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	0.0 ft	<b>Ground Level:</b>	4,993.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	03/02/2021	8.27	66.45	51,792

<b>Design</b>	Knight 12_Final Surveys				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	185.17	

<b>Survey Program</b>	<b>Date</b>	05/03/2021			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
90.0	18,128.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
90.0	0.22	286.76	90.0	0.0	-0.2	0.0	0.24	0.24	0.00	
121.0	0.13	272.87	121.0	0.1	-0.3	0.0	0.32	-0.29	-44.81	
151.0	0.18	299.85	151.0	0.1	-0.3	-0.1	0.29	0.17	89.93	
182.0	0.48	300.56	182.0	0.2	-0.5	-0.1	0.97	0.97	2.29	
212.0	0.62	314.88	212.0	0.4	-0.7	-0.3	0.65	0.47	47.73	
239.0	0.66	283.07	239.0	0.5	-1.0	-0.4	1.31	0.15	-117.82	
269.0	0.57	282.28	269.0	0.6	-1.3	-0.5	0.30	-0.30	-2.63	
299.0	0.97	297.39	299.0	0.7	-1.7	-0.6	1.48	1.33	50.37	
329.0	1.05	307.76	329.0	1.0	-2.1	-0.8	0.66	0.27	34.57	



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<b>Well:</b>	Knight 12	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Knight 12_Final Surveys	<b>Database:</b>	US_EDM

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
359.0	0.84	309.78	359.0	1.3	-2.5	-1.1	0.71	-0.70	6.73	
389.0	1.32	303.76	389.0	1.6	-2.9	-1.4	1.64	1.60	-20.07	
419.0	1.19	303.63	419.0	2.0	-3.5	-1.7	0.43	-0.43	-0.43	
449.0	0.79	305.48	449.0	2.3	-3.9	-1.9	1.34	-1.33	6.17	
479.0	0.75	298.89	479.0	2.5	-4.3	-2.1	0.32	-0.13	-21.97	
509.0	0.84	280.08	509.0	2.7	-4.6	-2.2	0.92	0.30	-62.70	
539.0	0.62	271.20	539.0	2.7	-5.0	-2.2	0.82	-0.73	-29.60	
569.0	0.75	238.15	569.0	2.6	-5.3	-2.1	1.36	0.43	-110.17	
599.0	0.84	240.70	599.0	2.4	-5.7	-1.9	0.32	0.30	8.50	
629.0	0.66	242.72	629.0	2.2	-6.1	-1.6	0.61	-0.60	6.73	
659.0	0.97	221.19	658.9	1.9	-6.4	-1.3	1.44	1.03	-71.77	
689.0	0.62	216.80	688.9	1.6	-6.6	-1.0	1.18	-1.17	-14.63	
719.0	0.66	195.26	718.9	1.3	-6.8	-0.7	0.81	0.13	-71.80	
749.0	0.66	190.61	748.9	1.0	-6.9	-0.4	0.18	0.00	-15.50	
779.0	0.88	255.03	778.9	0.7	-7.1	-0.1	2.81	0.73	214.73	
809.0	1.05	276.03	808.9	0.7	-7.6	0.0	1.30	0.57	70.00	
838.0	1.63	286.85	837.9	0.9	-8.3	-0.1	2.17	2.00	37.31	
868.0	2.90	298.36	867.9	1.3	-9.3	-0.5	4.48	4.23	38.37	
898.0	4.13	302.31	897.8	2.3	-10.9	-1.3	4.18	4.10	13.17	
928.0	4.93	306.80	927.8	3.6	-12.9	-2.5	2.91	2.67	14.97	
958.0	5.54	309.78	957.6	5.3	-15.0	-4.0	2.23	2.03	9.93	
988.0	5.71	312.42	987.5	7.3	-17.2	-5.7	1.03	0.57	8.80	
1,018.0	6.07	315.94	1,017.3	9.4	-19.4	-7.6	1.70	1.20	11.73	
1,048.0	6.29	314.97	1,047.1	11.7	-21.7	-9.7	0.81	0.73	-3.23	
1,078.0	6.55	315.94	1,077.0	14.1	-24.1	-11.9	0.94	0.87	3.23	
1,108.0	7.08	314.88	1,106.7	16.6	-26.6	-14.2	1.82	1.77	-3.53	
1,138.0	7.21	314.00	1,136.5	19.2	-29.2	-16.5	0.57	0.43	-2.93	
1,168.0	7.82	312.51	1,166.3	21.9	-32.1	-19.0	2.13	2.03	-4.97	
1,198.0	8.40	311.10	1,196.0	24.8	-35.2	-21.5	2.04	1.93	-4.70	
1,228.0	8.31	308.99	1,225.6	27.6	-38.6	-24.0	1.07	-0.30	-7.03	
1,258.0	8.57	308.11	1,255.3	30.3	-42.0	-26.4	0.97	0.87	-2.93	
1,288.0	9.36	309.52	1,284.9	33.2	-45.6	-29.0	2.73	2.63	4.70	
1,318.0	10.37	310.31	1,314.5	36.5	-49.6	-31.9	3.40	3.37	2.63	
1,348.0	11.30	311.89	1,344.0	40.2	-53.8	-35.2	3.25	3.10	5.27	
1,378.0	12.00	314.97	1,373.4	44.4	-58.2	-39.0	3.12	2.33	10.27	
1,407.0	12.13	315.06	1,401.7	48.7	-62.5	-42.9	0.45	0.45	0.31	
1,437.0	12.31	316.03	1,431.0	53.2	-67.0	-47.0	0.91	0.60	3.23	
1,467.0	12.84	315.85	1,460.3	57.9	-71.5	-51.2	1.77	1.77	-0.60	
1,507.0	13.05	314.88	1,499.3	64.3	-77.8	-57.0	0.76	0.53	-2.43	
1,652.0	11.78	313.25	1,640.9	86.0	-100.2	-76.6	0.91	-0.88	-1.12	
1,740.0	13.01	312.72	1,726.8	98.9	-114.0	-88.2	1.40	1.40	-0.60	
1,829.0	14.25	318.17	1,813.3	113.8	-128.7	-101.8	2.00	1.39	6.12	
1,918.0	14.25	318.52	1,899.6	130.2	-143.2	-116.8	0.10	0.00	0.39	
2,007.0	15.56	322.57	1,985.6	147.9	-157.7	-133.1	1.88	1.47	4.55	



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<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Knight 12_Final Surveys	<b>Database:</b>	US_EDM

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
2,096.0	15.21	321.51	2,071.4	166.5	-172.3	-150.3	0.50	-0.39	-1.19	
2,185.0	14.33	319.05	2,157.5	184.0	-186.7	-166.4	1.21	-0.99	-2.76	
2,273.0	14.95	323.97	2,242.6	201.4	-200.6	-182.5	1.58	0.70	5.59	
2,362.0	13.89	321.69	2,328.8	219.0	-213.9	-198.9	1.35	-1.19	-2.56	
2,470.0	14.51	325.03	2,433.5	240.3	-229.7	-218.6	0.95	0.57	3.09	
2,559.0	13.01	322.74	2,520.0	257.4	-242.2	-234.5	1.79	-1.69	-2.57	
2,648.0	14.07	325.56	2,606.5	274.3	-254.4	-250.3	1.40	1.19	3.17	
2,737.0	12.22	322.22	2,693.2	290.7	-266.3	-265.5	2.25	-2.08	-3.75	
2,826.0	13.54	323.09	2,779.9	306.4	-278.3	-280.1	1.50	1.48	0.98	
2,914.0	15.21	321.86	2,865.2	323.8	-291.6	-296.2	1.93	1.90	-1.40	
3,003.0	13.63	317.82	2,951.4	340.7	-305.9	-311.8	2.10	-1.78	-4.54	
3,092.0	14.86	319.40	3,037.6	357.1	-320.3	-326.9	1.45	1.38	1.78	
3,180.0	16.53	319.58	3,122.3	375.2	-335.8	-343.5	1.90	1.90	0.20	
3,269.0	17.41	325.20	3,207.5	395.8	-351.6	-362.6	2.09	0.99	6.31	
3,357.0	17.06	323.62	3,291.5	417.0	-366.8	-382.3	0.66	-0.40	-1.80	
3,446.0	16.62	322.57	3,376.7	437.6	-382.2	-401.4	0.60	-0.49	-1.18	
3,535.0	15.48	321.34	3,462.2	457.0	-397.4	-419.4	1.34	-1.28	-1.38	
3,623.0	13.81	319.75	3,547.4	474.2	-411.5	-435.2	1.95	-1.90	-1.81	
3,712.0	15.30	322.74	3,633.5	491.7	-425.5	-451.4	1.87	1.67	3.36	
3,800.0	14.60	321.69	3,718.5	509.6	-439.4	-468.0	0.85	-0.80	-1.19	
3,889.0	13.98	319.23	3,804.8	526.6	-453.4	-483.6	0.97	-0.70	-2.76	
3,978.0	15.56	321.34	3,890.8	544.0	-467.9	-499.7	1.88	1.78	2.37	
4,067.0	14.42	319.40	3,976.8	561.8	-482.5	-516.0	1.40	-1.28	-2.18	
4,156.0	14.95	324.85	4,062.9	579.6	-496.3	-532.5	1.66	0.60	6.12	
4,244.0	14.42	325.73	4,148.0	597.9	-509.1	-549.6	0.65	-0.60	1.00	
4,333.0	14.07	324.32	4,234.3	615.8	-521.6	-566.4	0.55	-0.39	-1.58	
4,422.0	13.54	322.92	4,320.7	632.9	-534.2	-582.3	0.70	-0.60	-1.57	
4,492.4	14.51	324.34	4,389.0	646.7	-544.3	-595.0	1.46	1.38	2.01	
<b>Shannon</b>										
4,511.0	14.77	324.68	4,407.0	650.5	-547.0	-598.6	1.46	1.39	1.85	
4,600.0	13.63	321.69	4,493.3	668.0	-560.1	-614.8	1.52	-1.28	-3.36	
4,689.0	13.89	321.69	4,579.7	684.6	-573.2	-630.2	0.29	0.29	0.00	
4,778.0	15.74	323.62	4,665.8	702.7	-587.0	-647.0	2.15	2.08	2.17	
4,867.0	14.51	320.28	4,751.7	721.0	-601.3	-663.9	1.69	-1.38	-3.75	
4,956.0	15.39	320.98	4,837.7	738.8	-615.9	-680.3	1.01	0.99	0.79	
5,044.0	14.16	320.11	4,922.8	756.1	-630.1	-696.3	1.42	-1.40	-0.99	
5,133.0	13.19	319.93	5,009.2	772.2	-643.6	-711.1	1.09	-1.09	-0.20	
5,222.0	15.12	330.83	5,095.6	790.1	-655.8	-727.9	3.69	2.17	12.25	
5,311.0	13.45	325.20	5,181.8	808.8	-667.4	-745.4	2.44	-1.88	-6.33	
5,400.0	13.72	321.69	5,268.3	825.5	-679.8	-761.0	0.97	0.30	-3.94	
5,489.0	15.12	320.11	5,354.5	842.7	-693.8	-776.8	1.63	1.57	-1.78	
5,578.0	13.54	316.41	5,440.7	859.2	-708.5	-791.9	2.05	-1.78	-4.16	
5,667.0	14.86	318.17	5,527.0	875.2	-723.2	-806.6	1.56	1.48	1.98	



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5,755.0	15.92	323.80	5,611.9	893.4	-737.9	-823.3	2.08	1.20	6.40	
5,844.0	14.33	320.63	5,697.8	911.7	-752.1	-840.3	2.01	-1.79	-3.56	
5,933.0	14.95	323.80	5,783.9	929.5	-765.9	-856.8	1.14	0.70	3.56	
6,022.0	13.28	321.69	5,870.2	946.8	-779.0	-872.8	1.96	-1.88	-2.37	
6,111.0	13.28	320.81	5,956.8	962.8	-791.8	-887.6	0.23	0.00	-0.99	
6,200.0	11.96	317.65	6,043.7	977.5	-804.5	-901.1	1.67	-1.48	-3.55	
6,291.0	10.99	290.40	6,132.9	987.5	-818.9	-909.7	5.99	-1.07	-29.95	
6,379.0	9.67	248.56	6,219.6	987.7	-833.7	-908.6	8.46	-1.50	-47.55	
6,468.0	13.81	212.35	6,306.8	976.0	-846.4	-895.8	9.27	4.65	-40.69	
6,557.0	19.96	197.23	6,392.0	952.5	-856.6	-871.5	8.44	6.91	-16.99	
6,646.0	27.08	190.20	6,473.6	918.0	-864.7	-836.4	8.59	8.00	-7.90	
6,667.2	29.02	190.45	6,492.2	908.2	-866.5	-826.5	9.21	9.19	1.18	
<b>Sharon Springs</b>										
6,735.0	35.26	191.08	6,549.7	872.8	-873.2	-790.6	9.21	9.19	0.93	
6,823.0	46.78	186.69	6,616.0	815.8	-881.9	-733.1	13.49	13.09	-4.99	
6,833.6	48.19	186.23	6,623.1	808.0	-882.7	-725.3	13.76	13.39	-4.33	
<b>Sharon Springs Marker</b>										
6,910.5	58.54	183.40	6,668.9	746.6	-887.8	-663.6	13.76	13.44	-3.68	
<b>Niobrara</b>										
6,912.0	58.74	183.35	6,669.7	745.3	-887.9	-662.3	13.76	13.48	-3.23	
7,001.0	67.71	182.12	6,709.8	666.0	-891.6	-583.0	10.15	10.08	-1.38	
7,013.1	68.53	182.19	6,714.3	654.8	-892.1	-571.9	6.84	6.82	0.62	
<b>Nio-A Chalk</b>										
7,075.7	72.80	182.57	6,735.0	595.8	-894.5	-512.9	6.84	6.82	0.60	
<b>Nio-A Marl</b>										
7,090.0	73.78	182.65	6,739.1	582.1	-895.1	-499.2	6.84	6.82	0.58	
7,129.0	76.00	182.17	6,749.3	544.5	-896.7	-461.6	5.81	5.69	-1.22	
<b>Nio-B Chalk</b>										
7,178.0	78.79	181.59	6,760.0	496.7	-898.3	-413.8	5.81	5.69	-1.19	
7,235.0	81.94	181.71	6,769.5	440.6	-899.9	-357.7	5.53	5.53	0.20	
<b>LP (1775' FNL, 2442.6' FEL Sec.30)</b>										
7,267.0	83.71	181.77	6,773.5	408.8	-900.9	-326.0	5.53	5.53	0.20	
7,356.0	91.10	182.29	6,777.5	320.0	-904.0	-237.3	8.32	8.30	0.58	
7,445.0	92.59	181.06	6,774.7	231.1	-906.6	-148.5	2.17	1.67	-1.38	
7,533.0	91.45	182.65	6,771.6	143.2	-909.5	-60.8	2.22	-1.30	1.81	
7,622.0	90.04	180.54	6,770.4	54.3	-911.9	28.1	2.85	-1.58	-2.37	
7,711.0	90.48	180.18	6,770.0	-34.7	-912.5	116.7	0.64	0.49	-0.40	
7,799.0	91.45	181.94	6,768.5	-122.7	-914.1	204.5	2.28	1.10	2.00	
7,888.0	91.98	181.77	6,765.9	-211.6	-917.0	293.3	0.63	0.60	-0.19	
7,977.0	92.59	181.77	6,762.3	-300.5	-919.8	382.1	0.69	0.69	0.00	
8,065.0	91.10	180.54	6,759.5	-388.4	-921.5	469.8	2.20	-1.69	-1.40	
8,153.0	91.28	179.13	6,757.7	-476.4	-921.3	557.4	1.61	0.20	-1.60	
8,242.0	91.36	177.90	6,755.6	-565.3	-919.0	645.8	1.38	0.09	-1.38	
8,331.0	90.31	178.43	6,754.3	-654.3	-916.1	734.1	1.32	-1.18	0.60	
8,420.0	93.03	178.25	6,751.7	-743.2	-913.5	822.4	3.06	3.06	-0.20	



<b>Company:</b>	Cub Creek Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Knight 12
<b>Project:</b>	SEC.30-T3N-R68W	<b>TVD Reference:</b>	RKB @ 5010.0ft (Akita 518)
<b>Site:</b>	Knight Pad SEC.30-3N-68W	<b>MD Reference:</b>	RKB @ 5010.0ft (Akita 518)
<b>Well:</b>	Knight 12	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Knight 12_Final Surveys	<b>Database:</b>	US_EDM

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,508.0	93.65	178.43	6,746.6	-831.0	-911.0	909.7	0.73	0.70	0.20	
8,597.0	94.35	178.07	6,740.4	-919.8	-908.3	997.8	0.88	0.79	-0.40	
8,686.0	95.06	180.36	6,733.1	-1,008.4	-907.1	1,086.0	2.69	0.80	2.57	
8,775.0	94.26	181.77	6,725.8	-1,097.1	-908.7	1,174.5	1.82	-0.90	1.58	
8,864.0	92.77	182.65	6,720.4	-1,185.9	-912.1	1,263.2	1.94	-1.67	0.99	
8,952.0	90.75	182.65	6,717.7	-1,273.8	-916.2	1,351.1	2.30	-2.30	0.00	
9,041.0	91.63	181.94	6,715.8	-1,362.7	-919.8	1,439.9	1.27	0.99	-0.80	
9,130.0	90.84	180.18	6,713.9	-1,451.6	-921.4	1,528.7	2.17	-0.89	-1.98	
9,219.0	91.28	179.66	6,712.3	-1,540.6	-921.3	1,617.3	0.77	0.49	-0.58	
9,308.0	91.10	179.83	6,710.4	-1,629.6	-920.9	1,705.9	0.28	-0.20	0.19	
9,396.0	92.59	180.54	6,707.6	-1,717.5	-921.2	1,793.5	1.88	1.69	0.81	
9,485.0	91.45	181.77	6,704.5	-1,806.5	-923.0	1,882.2	1.88	-1.28	1.38	
9,574.0	90.13	181.77	6,703.2	-1,895.4	-925.7	1,971.1	1.48	-1.48	0.00	
9,663.0	90.48	180.89	6,702.8	-1,984.4	-927.8	2,059.9	1.06	0.39	-0.99	
9,752.0	90.84	181.06	6,701.7	-2,073.4	-929.3	2,148.6	0.45	0.40	0.19	
9,840.0	92.51	181.94	6,699.2	-2,161.3	-931.6	2,236.4	2.14	1.90	1.00	
9,929.0	90.66	181.24	6,696.7	-2,250.2	-934.1	2,325.2	2.22	-2.08	-0.79	
10,018.0	91.80	181.59	6,694.8	-2,339.2	-936.3	2,414.0	1.34	1.28	0.39	
10,106.0	90.48	179.48	6,693.0	-2,427.1	-937.1	2,501.7	2.83	-1.50	-2.40	
10,195.0	92.07	180.36	6,691.1	-2,516.1	-937.0	2,590.3	2.04	1.79	0.99	
10,284.0	90.40	179.83	6,689.1	-2,605.1	-937.1	2,678.9	1.97	-1.88	-0.60	
10,372.0	91.54	180.71	6,687.6	-2,693.1	-937.5	2,766.6	1.64	1.30	1.00	
10,461.0	90.31	178.25	6,686.2	-2,782.0	-936.7	2,855.1	3.09	-1.38	-2.76	
10,549.0	91.89	179.66	6,684.5	-2,870.0	-935.1	2,942.6	2.41	1.80	1.60	
10,638.0	92.42	178.78	6,681.2	-2,958.9	-933.9	3,031.0	1.15	0.60	-0.99	
10,726.0	91.71	179.83	6,678.0	-3,046.9	-932.8	3,118.5	1.44	-0.81	1.19	
10,815.0	92.07	179.13	6,675.1	-3,135.8	-932.0	3,207.0	0.88	0.40	-0.79	
10,904.0	91.36	180.01	6,672.4	-3,224.8	-931.4	3,295.5	1.27	-0.80	0.99	
10,993.0	91.36	181.06	6,670.3	-3,313.7	-932.2	3,384.2	1.18	0.00	1.18	
11,082.0	89.87	181.24	6,669.3	-3,402.7	-934.0	3,473.0	1.69	-1.67	0.20	
11,171.0	90.48	180.89	6,669.1	-3,491.7	-935.6	3,561.8	0.79	0.69	-0.39	
11,259.0	91.71	182.29	6,667.4	-3,579.7	-938.1	3,649.6	2.12	1.40	1.59	
11,348.0	89.96	180.01	6,666.1	-3,668.6	-939.9	3,738.3	3.23	-1.97	-2.56	
11,437.0	89.69	179.48	6,666.4	-3,757.6	-939.5	3,826.9	0.67	-0.30	-0.60	
11,526.0	89.96	179.31	6,666.6	-3,846.6	-938.5	3,915.5	0.36	0.30	-0.19	
11,615.0	91.10	178.60	6,665.8	-3,935.6	-936.9	4,004.0	1.51	1.28	-0.80	
11,704.0	91.89	178.43	6,663.5	-4,024.5	-934.6	4,092.3	0.91	0.89	-0.19	
11,792.0	91.71	178.95	6,660.7	-4,112.5	-932.6	4,179.7	0.63	-0.20	0.59	
11,881.0	91.10	179.66	6,658.5	-4,201.4	-931.5	4,268.2	1.05	-0.69	0.80	
11,970.0	91.89	179.66	6,656.2	-4,290.4	-931.0	4,356.8	0.89	0.89	0.00	
12,059.0	91.63	180.89	6,653.5	-4,379.3	-931.4	4,445.4	1.41	-0.29	1.38	
12,147.0	90.48	181.06	6,651.9	-4,467.3	-932.9	4,533.2	1.32	-1.31	0.19	
12,236.0	91.19	180.71	6,650.6	-4,556.3	-934.3	4,621.9	0.89	0.80	-0.39	



<b>Company:</b>	Cub Creek Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Knight 12
<b>Project:</b>	SEC.30-T3N-R68W	<b>TVD Reference:</b>	RKB @ 5010.0ft (Akita 518)
<b>Site:</b>	Knight Pad SEC.30-3N-68W	<b>MD Reference:</b>	RKB @ 5010.0ft (Akita 518)
<b>Well:</b>	Knight 12	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Knight 12_Final Surveys	<b>Database:</b>	US_EDM

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
12,325.0	90.57	180.89	6,649.2	-4,645.3	-935.5	4,710.6	0.73	-0.70	0.20	
12,414.0	90.31	180.54	6,648.5	-4,734.3	-936.6	4,799.4	0.49	-0.29	-0.39	
12,503.0	90.40	180.36	6,648.0	-4,823.3	-937.3	4,888.1	0.23	0.10	-0.20	
12,591.0	91.36	180.36	6,646.6	-4,911.3	-937.9	4,975.8	1.09	1.09	0.00	
12,680.0	91.98	180.36	6,644.0	-5,000.2	-938.4	5,064.4	0.70	0.70	0.00	
12,768.0	90.22	178.25	6,642.3	-5,088.2	-937.4	5,151.9	3.12	-2.00	-2.40	
12,857.0	90.92	179.48	6,641.4	-5,177.2	-935.6	5,240.4	1.59	0.79	1.38	
12,946.0	91.71	179.66	6,639.4	-5,266.1	-934.9	5,328.9	0.91	0.89	0.20	
13,035.0	91.89	180.71	6,636.6	-5,355.1	-935.2	5,417.5	1.20	0.20	1.18	
13,123.0	92.51	180.71	6,633.2	-5,443.0	-936.3	5,505.2	0.70	0.70	0.00	
13,212.0	90.40	180.01	6,631.0	-5,532.0	-936.9	5,593.9	2.50	-2.37	-0.79	
13,301.0	91.45	180.54	6,629.5	-5,621.0	-937.3	5,682.5	1.32	1.18	0.60	
13,390.0	92.24	180.71	6,626.7	-5,709.9	-938.3	5,771.2	0.91	0.89	0.19	
13,479.0	90.84	180.01	6,624.3	-5,798.9	-938.8	5,859.9	1.76	-1.57	-0.79	
13,567.0	91.01	180.01	6,622.8	-5,886.9	-938.9	5,947.5	0.19	0.19	0.00	
13,656.0	91.98	180.54	6,620.5	-5,975.8	-939.3	6,036.1	1.24	1.09	0.60	
13,745.0	90.40	179.83	6,618.7	-6,064.8	-939.6	6,124.8	1.95	-1.78	-0.80	
13,834.0	89.78	179.13	6,618.5	-6,153.8	-938.8	6,213.3	1.05	-0.70	-0.79	
13,922.0	90.40	179.13	6,618.4	-6,241.8	-937.4	6,300.8	0.70	0.70	0.00	
14,011.0	91.28	178.43	6,617.1	-6,330.8	-935.5	6,389.3	1.26	0.99	-0.79	
14,100.0	90.22	179.31	6,615.9	-6,419.7	-933.8	6,477.7	1.55	-1.19	0.99	
14,188.0	90.66	178.95	6,615.3	-6,507.7	-932.4	6,565.2	0.65	0.50	-0.41	
14,278.0	90.31	181.06	6,614.5	-6,597.7	-932.4	6,654.9	2.38	-0.39	2.34	
14,368.0	90.31	180.36	6,614.0	-6,687.7	-933.6	6,744.6	0.78	0.00	-0.78	
14,457.0	90.92	179.83	6,613.1	-6,776.7	-933.7	6,833.2	0.91	0.69	-0.60	
14,546.0	90.84	179.13	6,611.7	-6,865.7	-932.9	6,921.8	0.79	-0.09	-0.79	
14,635.0	91.01	177.72	6,610.2	-6,954.6	-930.5	7,010.2	1.60	0.19	-1.58	
14,723.0	91.10	180.01	6,608.6	-7,042.6	-928.7	7,097.6	2.60	0.10	2.60	
14,812.0	91.19	179.48	6,606.8	-7,131.6	-928.3	7,186.2	0.60	0.10	-0.60	
14,901.0	91.45	179.13	6,604.8	-7,220.5	-927.2	7,274.7	0.49	0.29	-0.39	
14,990.0	92.07	178.78	6,602.1	-7,309.5	-925.6	7,363.1	0.80	0.70	-0.39	
15,078.0	91.54	180.18	6,599.3	-7,397.4	-924.8	7,450.7	1.70	-0.60	1.59	
15,167.0	90.48	181.41	6,597.7	-7,486.4	-926.1	7,539.4	1.82	-1.19	1.38	
15,256.0	90.57	181.59	6,596.9	-7,575.4	-928.4	7,628.2	0.23	0.10	0.20	
15,345.0	89.60	182.12	6,596.8	-7,664.3	-931.3	7,717.1	1.24	-1.09	0.60	
15,433.0	89.52	181.77	6,597.5	-7,752.3	-934.2	7,804.9	0.41	-0.09	-0.40	
15,522.0	89.78	181.41	6,598.0	-7,841.2	-936.7	7,893.7	0.50	0.29	-0.40	
15,611.0	90.13	180.89	6,598.1	-7,930.2	-938.5	7,982.5	0.70	0.39	-0.58	
15,699.0	90.48	181.24	6,597.6	-8,018.2	-940.1	8,070.3	0.56	0.40	0.40	
15,788.0	90.22	182.47	6,597.1	-8,107.2	-943.0	8,159.1	1.41	-0.29	1.38	
15,877.0	89.69	179.66	6,597.1	-8,196.1	-944.7	8,247.9	3.21	-0.60	-3.16	
15,965.0	89.96	179.66	6,597.4	-8,284.1	-944.2	8,335.5	0.31	0.31	0.00	
16,053.0	90.57	179.48	6,597.0	-8,372.1	-943.5	8,423.1	0.72	0.69	-0.20	



<b>Company:</b>	Cub Creek Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Knight 12
<b>Project:</b>	SEC.30-T3N-R68W	<b>TVD Reference:</b>	RKB @ 5010.0ft (Akita 518)
<b>Site:</b>	Knight Pad SEC.30-3N-68W	<b>MD Reference:</b>	RKB @ 5010.0ft (Akita 518)
<b>Well:</b>	Knight 12	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Knight 12_Final Surveys	<b>Database:</b>	US_EDM

**Survey**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,142.0	88.72	180.89	6,597.5	-8,461.1	-943.8	8,511.7	2.61	-2.08	1.58
16,231.0	89.08	180.54	6,599.2	-8,550.1	-944.9	8,600.4	0.56	0.40	-0.39
16,320.0	90.75	181.41	6,599.4	-8,639.1	-946.4	8,689.2	2.12	1.88	0.98
16,408.0	89.25	180.54	6,599.4	-8,727.1	-947.9	8,777.0	1.97	-1.70	-0.99
16,497.0	88.55	180.89	6,601.1	-8,816.0	-949.0	8,865.7	0.88	-0.79	0.39
16,586.0	87.85	180.01	6,603.9	-8,905.0	-949.7	8,954.3	1.26	-0.79	-0.99
16,675.0	88.29	180.36	6,606.9	-8,993.9	-950.0	9,042.9	0.63	0.49	0.39
16,763.0	88.37	181.59	6,609.4	-9,081.9	-951.5	9,130.7	1.40	0.09	1.40
16,852.0	88.90	181.06	6,611.6	-9,170.8	-953.6	9,219.4	0.84	0.60	-0.60
16,941.0	88.29	180.54	6,613.7	-9,259.8	-954.8	9,308.2	0.90	-0.69	-0.58
17,029.0	88.20	180.36	6,616.4	-9,347.8	-955.5	9,395.8	0.23	-0.10	-0.20
17,118.0	87.85	178.78	6,619.5	-9,436.7	-954.8	9,484.3	1.82	-0.39	-1.78
17,207.0	87.93	177.90	6,622.8	-9,525.6	-952.2	9,572.6	0.99	0.09	-0.99
17,296.0	88.11	180.36	6,625.9	-9,614.5	-950.9	9,661.1	2.77	0.20	2.76
17,385.0	89.08	180.01	6,628.0	-9,703.5	-951.2	9,749.7	1.16	1.09	-0.39
17,473.0	87.14	180.36	6,630.9	-9,791.4	-951.5	9,837.3	2.24	-2.20	0.40
17,562.0	88.02	180.18	6,634.7	-9,880.4	-951.9	9,925.9	1.01	0.99	-0.20
17,651.0	86.35	180.54	6,639.1	-9,969.3	-952.4	10,014.5	1.92	-1.88	0.40
17,740.0	86.70	180.18	6,644.5	-10,058.1	-953.0	10,103.0	0.56	0.39	-0.40
17,828.0	87.67	180.71	6,648.8	-10,146.0	-953.7	10,190.6	1.26	1.10	0.60
17,917.0	86.61	179.13	6,653.2	-10,234.9	-953.6	10,279.1	2.14	-1.19	-1.78
18,006.0	87.58	178.60	6,657.7	-10,323.7	-951.8	10,367.5	1.24	1.09	-0.60
18,068.0	87.93	178.60	6,660.2	-10,385.7	-950.3	10,429.0	0.56	0.56	0.00
18,128.0	87.93	178.60	6,662.3	-10,445.6	-948.8	10,488.6	0.00	0.00	0.00
<b>BHL (2095.6' FNL, 2479.2' FEL Sec.6)</b>									

**Formations**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,492.4	4,389.0	Shannon			
6,667.2	6,492.2	Sharon Springs			
6,833.6	6,623.1	Sharon Springs Marker			
6,910.5	6,668.9	Niobrara			
7,013.1	6,714.3	Nio-A Chalk			
7,075.7	6,735.0	Nio-A Marl			
7,129.0	6,749.3	Nio-B Chalk			



# Ensign Energy Services Inc.

## Survey Report



<b>Company:</b>	Cub Creek Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Knight 12
<b>Project:</b>	SEC.30-T3N-R68W	<b>TVD Reference:</b>	RKB @ 5010.0ft (Akita 518)
<b>Site:</b>	Knight Pad SEC.30-3N-68W	<b>MD Reference:</b>	RKB @ 5010.0ft (Akita 518)
<b>Well:</b>	Knight 12	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Knight 12_Final Surveys	<b>Database:</b>	US_EDM

### Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
7,235.0	6,769.5	440.6	-899.9	LP (1775' FNL, 2442.6' FEL Sec.30)
18,128.0	6,662.3	-10,445.6	-948.8	BHL (2095.6' FNL, 2479.2' FEL Sec.6)

Checked By: _____	Approved By: _____	Date: _____
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