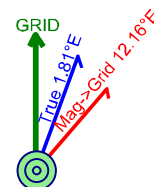




**Job Number:** 12xxx  
**Company:** Black Hills Plateau Productin Co.  
**Lease/Well:** Homer Deep Unit 7-23CH  
**Location:** Garfield County, CO  
**Rig Name:**  
**State/Country:** CO/ Garfield  
**Country:** USA  
**API Number:**

**Elevation:** 5669.00 ft **RKB:** 15.00 ft  
**Projection System:** US State Plane 1927 (Exact solution)  
**Projection Group:** Colorado Central 502  
**Projection Datum:** CLARKE 1866  
**Mag. Declination:** 10.35°  
**Grid Convergence:** -1.80841 W  
**Date:** Friday, October 11, 2013

Calculated by HawkEye Software  
 Minimum Curvature Method  
 Vertical Section Plane 145.35°  
 Northing (US ft): 573220.45 Easting (US ft): 1189253.00  
 Latitude: 39°22'19.6943" N Longitude: -108°22'5.8890" W  
 Well Location: 1894 FSL, 2698 FWL, Section 7, T8S, R98W, Meridian 06, Garfield County, CO  
 Direction Reference: Grid North



Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	Subsea TVD (Ft)	EW (Ft)	NS (Ft)	VS (Ft)	Closure (Ft)	Closure Dir Deg	DLS %/100Ft
<b>Surface</b>										
0.00	0.00	0.00	0.00	5684.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Nudge - Build @ 2.00°/ 100 Ft</b>										
500.00	0.00	0.00	500.00	5184.00	0.00	0.00	0.00	0.00	0.00	0.00
560.00	1.20	120.00	560.00	5124.00	0.54	-0.31	0.57	0.63	119.96	2.00
620.00	2.40	120.00	619.96	5064.04	2.18	-1.26	2.27	2.51	119.99	2.00
680.00	3.60	120.00	679.88	5004.12	4.90	-2.83	5.11	5.65	119.99	2.00
740.00	4.80	120.00	739.72	4944.28	8.70	-5.02	9.08	10.05	120.00	2.00
<b>Begin Hold @ 5.00°, 120.00° Azm</b>										
750.00	5.00	120.00	749.68	4934.32	9.44	-5.45	9.85	10.90	120.00	2.00
<b>Mesaverde</b>										
859.74	5.00	120.00	859.00	4825.00	17.72	-10.23	18.49	20.47	120.00	0.00
<b>Casing 10 3/4"</b>										
1001.28	5.00	120.00	1000.01	4683.99	28.41	-16.40	29.64	32.80	120.00	0.00
<b>Begin Drop @ -2.00°/ 100 Ft</b>										
1250.00	5.00	120.00	1247.78	4436.22	47.18	-27.24	49.23	54.48	120.00	0.00
1310.00	3.80	120.00	1307.60	4376.40	51.17	-29.54	53.39	59.08	120.00	2.00
1370.00	2.60	120.00	1367.51	4316.49	54.07	-31.22	56.42	62.43	120.00	2.00
1430.00	1.40	120.00	1427.47	4256.53	55.88	-32.26	58.31	64.52	120.00	2.00
1490.00	0.20	119.98	1487.46	4196.54	56.61	-32.68	59.07	65.36	120.00	2.00
<b>Hold Vertical</b>										
1500.00	0.00	0.00	1497.46	4186.54	56.62	-32.69	59.08	65.38	120.00	2.00
2000.00	0.00	0.00	1997.46	3686.54	56.62	-32.69	59.08	65.38	120.00	0.00
2500.00	0.00	0.00	2497.46	3186.54	56.62	-32.69	59.08	65.38	120.00	0.00
<b>Cameo</b>										
2897.54	0.00	0.00	2895.00	2789.00	56.62	-32.69	59.08	65.38	120.00	0.00
3000.00	0.00	0.00	2997.46	2686.54	56.62	-32.69	59.08	65.38	120.00	0.00
<b>Rollins</b>										
3216.54	0.00	0.00	3214.00	2470.00	56.62	-32.69	59.08	65.38	120.00	0.00
<b>Cozzette</b>										
3385.54	0.00	0.00	3383.00	2301.00	56.62	-32.69	59.08	65.38	120.00	0.00
3500.00	0.00	0.00	3497.46	2186.54	56.62	-32.69	59.08	65.38	120.00	0.00
<b>Corcoran</b>										
3591.54	0.00	0.00	3589.00	2095.00	56.62	-32.69	59.08	65.38	120.00	0.00
<b>Mancos</b>										
3799.54	0.00	0.00	3797.00	1887.00	56.62	-32.69	59.08	65.38	120.00	0.00
4000.00	0.00	0.00	3997.46	1686.54	56.62	-32.69	59.08	65.38	120.00	0.00
<b>Mancos A</b>										
4266.54	0.00	0.00	4264.00	1420.00	56.62	-32.68	59.08	65.38	120.00	0.00
4500.00	0.00	0.00	4497.46	1186.54	56.62	-32.68	59.08	65.38	120.00	0.00
5000.00	0.00	0.00	4997.46	686.54	56.62	-32.68	59.08	65.38	119.99	0.00
<b>MOAB</b>										
5002.54	0.00	0.00	5000.00	684.00	56.62	-32.68	59.08	65.38	119.99	0.00
<b>Mancos B</b>										
5456.54	0.00	0.00	5454.00	230.00	56.62	-32.68	59.08	65.38	119.99	0.00

Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	Subsea TVD (Ft)	EW (Ft)	NS (Ft)	VS (Ft)	Closure (Ft)	Closure Dir Deg	DLS %/100Ft
5500.00	0.00	0.00	5497.46	186.54	56.62	-32.68	59.08	65.38	119.99	0.00
6000.00	0.00	0.00	5997.46	-313.46	56.62	-32.68	59.08	65.38	119.99	0.00
<b>Casing 7 5/8"</b>										
6322.54	0.00	0.00	6320.00	-636.00	56.62	-32.68	59.08	65.38	119.99	0.00
<b>KOP - Begin Build @ 8.00°/ 100 Ft</b>										
6325.20	0.00	0.00	6322.66	-638.66	56.62	-32.68	59.08	65.38	119.99	0.00
6385.20	4.80	120.00	6382.59	-698.59	58.80	-33.94	61.35	67.89	119.99	8.00
6445.20	9.60	120.00	6442.10	-758.10	65.31	-37.70	68.14	75.41	119.99	8.00
<b>Niobrara</b>										
6473.60	11.87	120.00	6470.00	-786.00	69.89	-40.34	72.92	80.70	119.99	8.00
6505.20	14.40	120.00	6500.77	-816.77	76.11	-43.93	79.41	87.88	119.99	8.00
6565.20	19.20	120.00	6558.20	-874.20	91.12	-52.60	95.08	105.21	120.00	8.00
6625.20	24.00	120.00	6613.97	-929.97	110.24	-63.64	115.03	127.29	120.00	8.00
6685.20	28.80	120.00	6667.69	-983.69	133.34	-76.97	139.14	153.96	120.00	8.00
6745.20	33.60	120.00	6719.00	-1035.00	160.25	-92.51	167.22	185.04	120.00	8.00
6805.20	38.40	120.00	6767.53	-1083.53	190.78	-110.14	199.08	220.29	120.00	8.00
6865.20	43.20	120.00	6812.93	-1128.93	224.73	-129.74	234.50	259.49	120.00	8.00
6925.20	48.00	120.00	6854.90	-1170.90	261.84	-151.16	273.23	302.34	120.00	8.00
6985.20	52.80	120.00	6893.14	-1209.14	301.87	-174.27	314.99	348.56	120.00	8.00
7045.20	57.60	120.00	6927.37	-1243.37	344.52	-198.90	359.51	397.81	120.00	8.00
<b>Build and Turn @ 8.00°/100 Ft</b>										
7047.70	57.80	120.00	6928.70	-1244.70	346.35	-199.96	361.42	399.93	120.00	8.00
7107.70	61.40	123.68	6959.07	-1275.07	390.28	-227.27	408.86	451.63	120.21	8.00
7167.70	65.09	127.12	6986.08	-1302.08	433.92	-258.32	459.21	504.99	120.77	8.00
7227.70	68.86	130.36	7009.55	-1325.55	476.96	-292.88	512.12	559.71	121.55	8.00
7287.70	72.68	133.43	7029.32	-1345.32	519.11	-330.71	567.20	615.50	122.50	8.00
7347.70	76.55	136.38	7045.23	-1361.23	560.06	-371.54	624.07	672.09	123.56	8.00
7407.70	80.45	139.23	7057.19	-1373.19	599.53	-415.09	682.34	729.21	124.70	8.00
7467.70	84.38	142.02	7065.11	-1381.11	637.25	-461.05	741.60	786.55	125.89	8.00
7527.70	88.32	144.77	7068.94	-1384.94	672.95	-509.11	801.42	843.83	127.11	8.00
<b>Target - Hold @ 91.54°,147.00° Azm</b>										
7576.73	91.54	147.00	7069.00	-1385.00	700.44	-549.69	850.44	890.38	128.12	8.00
8076.73	91.54	147.00	7055.59	-1371.59	972.63	-968.89	1350.05	1372.87	134.89	0.00
8576.73	91.54	147.00	7042.18	-1358.18	1244.82	-1388.10	1849.66	1864.51	138.11	0.00
9076.73	91.54	147.00	7028.77	-1344.77	1517.01	-1807.30	2349.27	2359.59	139.99	0.00
9576.73	91.54	147.00	7015.36	-1331.36	1789.20	-2226.51	2848.89	2856.32	141.21	0.00
10076.73	91.54	147.00	7001.95	-1317.95	2061.39	-2645.71	3348.50	3353.97	142.08	0.00
10576.73	91.54	147.00	6988.54	-1304.54	2333.58	-3064.92	3848.11	3852.18	142.71	0.00
11076.73	91.54	147.00	6975.13	-1291.13	2605.77	-3484.12	4347.72	4350.76	143.21	0.00
11576.73	91.54	147.00	6961.72	-1277.72	2877.96	-3903.33	4847.33	4849.60	143.60	0.00
12076.73	91.54	147.00	6948.31	-1264.31	3150.15	-4322.53	5346.95	5348.62	143.92	0.00
12576.73	91.54	147.00	6934.89	-1250.89	3422.34	-4741.73	5846.56	5847.78	144.18	0.00
13076.73	91.54	147.00	6921.48	-1237.48	3694.54	-5160.94	6346.17	6347.04	144.40	0.00
13576.73	91.54	147.00	6908.07	-1224.07	3966.73	-5580.14	6845.78	6846.38	144.59	0.00
14076.73	91.54	147.00	6894.66	-1210.66	4238.92	-5999.35	7345.39	7345.79	144.76	0.00
14576.73	91.54	147.00	6881.25	-1197.25	4511.11	-6418.55	7845.00	7845.25	144.90	0.00
15076.73	91.54	147.00	6867.84	-1183.84	4783.30	-6837.76	8344.62	8344.75	145.03	0.00
15576.73	91.54	147.00	6854.43	-1170.43	5055.49	-7256.96	8844.23	8844.29	145.14	0.00
16076.73	91.54	147.00	6841.02	-1157.02	5327.68	-7676.17	9343.84	9343.86	145.24	0.00
16576.73	91.54	147.00	6827.61	-1143.61	5599.87	-8095.37	9843.45	9843.45	145.33	0.00
<b>Proposed End of 7-23CH Lateral</b>										
16711.53	91.54	147.00	6823.99	-1139.99	5673.25	-8208.39	9978.15	9978.15	145.35	0.00

TARGET DATA										
Name	Shape	Latitude	Longitude	Subsea (Ft)	TVD (Ft)	NS (Ft)	EW (Ft)	Side A (Ft)	Side B (Ft)	Diameter (Ft)
7-23CH BHL	CYLINDER	39°21'0.3651"	-108°20'50.4049"	-1140.0	-6824.0	-8208.4	5673.3	-	-	100.0
7-23CH Landing	CYLINDER	39°22'17.7885"	-108°22'1.3425"	-1385.0	-7069.0	-204.0	350.8	-	-	100.0

CASING DATA						
Size (in)	Weight (Lbs/Ft)	ID (in)	OD (in)	Top TVD (Ft)	Set TVD (Ft)	
10 3/4	40.5	10.1	11.8	1000.0		1000.0
7 5/8	29.7	6.9	8.5	6320.0		6320.0



Job ID : 12xxx  
Company : Black Hills Plateau Productin Co.  
Lease/Well : Homer Deep Unit 7-23CH  
Location : Garfield County, CO  
Rig Name :

Elevation (To MSL) : 5669 ft  
RKB : 15 ft  
North Reference : Grid North  
Latitude : 39°22'19.6943" N  
Longitude : -108°22'5.8890" W

