



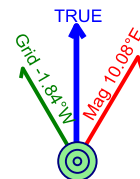
Job Number: 15xxxD
Company: Black Hills Plateau Production
Lease/Well: Winter Flats 10-31-99DH
Location: Mesa County, CO
Rig Name:
State/Country: CO/ Mesa
Country: USA

Elev. GL: 6094.00 ft **RKB:** 24.00 ft
System: US State Plane 1983
Group: Colorado Central Zone
Datum: GRS80
Mag. Decl.: 10.08° (C:\HawkEye\IGRF2015.MIF)
Grid Conv.: -1.84407 W
Date: Thursday, July 09, 2015





NOVA Directional Inc. Survey Report

Calculated by HawkEye Software
Minimum Curvature Method
Vertical Section Plane 142.00°

Northing (US ft): 1544529.67 Easting (US ft): 2172628.11
Latitude: 39°17'30.9038" N Longitude: -108°25'25.9940" W
Well Location: Section 10, T9S, R99W, Sixth Principal Meridian, Mesa County, CO
Direction Reference: True North



Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	NS (Ft)	EW (Ft)	VS (Ft)	DLS °/100 Ft	Latitude Dec. Deg	Longitude Dec. Deg
Surface									
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.2919177	-108.4238872
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	39.2919177	-108.4238872
Casing 10 3/4 "									
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	39.2919177	-108.4238872
KOP-Begin Build @ 2.00°/ 100 Ft									
1100.00	0.00	102.24	1100.00	0.00	0.00	0.00	0.00	39.2919177	-108.4238872
1160.00	1.20	102.24	1160.00	-0.13	0.61	0.48	2.00	39.2919174	-108.4238850
1220.00	2.40	102.24	1219.96	-0.53	2.46	1.93	2.00	39.2919163	-108.4238785
1280.00	3.60	102.24	1279.88	-1.20	5.52	4.35	2.00	39.2919144	-108.4238677
1340.00	4.80	102.24	1339.72	-2.13	9.82	7.72	2.00	39.2919119	-108.4238525
1400.00	6.00	102.24	1399.45	-3.33	15.34	12.06	2.00	39.2919086	-108.4238330
1460.00	7.20	102.24	1459.05	-4.79	22.08	17.37	2.00	39.2919046	-108.4238092
1520.00	8.40	102.24	1518.50	-6.52	30.03	23.63	2.00	39.2918998	-108.4237811
1580.00	9.60	102.24	1577.76	-8.51	39.21	30.84	2.00	39.2918944	-108.4237487
1640.00	10.80	102.24	1636.81	-10.76	49.59	39.01	2.00	39.2918882	-108.4237120
1700.00	12.00	102.24	1695.62	-13.27	61.18	48.13	2.00	39.2918813	-108.4236710
1760.00	13.20	102.24	1754.18	-16.05	73.97	58.19	2.00	39.2918737	-108.4236259
1820.00	14.40	102.24	1812.44	-19.08	87.96	69.19	2.00	39.2918653	-108.4235764
1880.00	15.60	102.24	1870.40	-22.38	103.13	81.13	2.00	39.2918563	-108.4235228
Cameo									
1886.85	15.74	102.24	1877.00	-22.77	104.94	82.55	2.00	39.2918552	-108.4235164
1940.00	16.80	102.24	1928.02	-25.93	119.49	94.00	2.00	39.2918465	-108.4234650
2000.00	18.00	102.24	1985.27	-29.73	137.02	107.79	2.00	39.2918361	-108.4234031
2060.00	19.20	102.24	2042.13	-33.79	155.73	122.50	2.00	39.2918249	-108.4233370
2120.00	20.40	102.24	2098.59	-38.10	175.59	138.13	2.00	39.2918131	-108.4232668
2180.00	21.60	102.24	2154.60	-42.66	196.60	154.65	2.00	39.2918006	-108.4231926
2240.00	22.80	102.24	2210.15	-47.46	218.76	172.08	2.00	39.2917874	-108.4231143
2300.00	24.00	102.24	2265.21	-52.52	242.04	190.40	2.00	39.2917735	-108.4230320
Begin Hold @ 24.19°,102.24° Azm									
2309.51	24.19	102.24	2273.89	-53.34	245.84	193.38	2.00	39.2917713	-108.4230186
Rollins									
2331.55	24.19	102.24	2294.00	-55.26	254.66	200.33	0.00	39.2917660	-108.4229874
Cozzette									
2501.47	24.19	102.24	2449.00	-70.02	322.71	253.86	0.00	39.2917255	-108.4227470
Corcoran									
2742.65	24.19	102.24	2669.00	-90.98	419.29	329.83	0.00	39.2916679	-108.4224057
2809.51	24.19	102.24	2729.99	-96.78	446.06	350.89	0.00	39.2916520	-108.4223111
Mancos									
2992.59	24.19	102.24	2897.00	-112.69	519.38	408.56	0.00	39.2916083	-108.4220521
3309.51	24.19	102.24	3186.08	-140.23	646.28	508.39	0.00	39.2915327	-108.4216037
Mancos A									
3425.62	24.19	102.24	3292.00	-150.32	692.78	544.97	0.00	39.2915050	-108.4214394
3809.51	24.19	102.24	3642.18	-183.67	846.51	665.90	0.00	39.2914134	-108.4208962

Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	NS (Ft)	EW (Ft)	VS (Ft)	DLS °/100 Ft	Latitude Dec. Deg	Longitude Dec. Deg
 MOAB									
4171.08	24.19	102.24	3972.00	-215.09	991.30	779.80	0.00	39.2913271	-108.4203847
4309.51	24.19	102.24	4098.27	-227.12	1046.73	823.40	0.00	39.2912941	-108.4201888
 Mancos B									
4634.80	24.19	102.24	4395.00	-255.38	1176.99	925.87	0.00	39.2912165	-108.4197285
4809.51	24.19	102.24	4554.37	-270.56	1246.96	980.91	0.00	39.2911748	-108.4194813
5309.51	24.19	102.24	5010.47	-314.00	1447.18	1138.41	0.00	39.2910555	-108.4187739
 Niobrara									
5732.15	24.19	102.24	5396.00	-350.73	1616.43	1271.55	0.00	39.2909546	-108.4181759
 Casing 7 5/8 "									
5782.00	24.19	102.24	5441.47	-355.06	1636.39	1287.25	0.00	39.2909427	-108.4181054
5809.51	24.19	102.24	5466.56	-357.45	1647.40	1295.92	0.00	39.2909362	-108.4180665
KOP - Build and Turn @ 8.00°/100 Ft									
6237.86	24.19	102.24	5857.30	-394.67	1818.94	1430.85	0.00	39.2908339	-108.4174604
6297.86	27.92	109.13	5911.20	-401.88	1844.24	1452.11	8.00	39.2908141	-108.4173710
6357.86	31.92	114.47	5963.20	-413.06	1871.96	1477.99	8.00	39.2907834	-108.4172730
6417.86	36.10	118.70	6012.93	-428.13	1901.92	1508.31	8.00	39.2907421	-108.4171672
6477.86	40.40	122.16	6060.05	-446.98	1933.90	1542.85	8.00	39.2906903	-108.4170542
6537.86	44.78	125.05	6104.22	-469.48	1967.68	1581.38	8.00	39.2906285	-108.4169348
6597.86	49.23	127.52	6145.13	-495.46	2003.02	1623.62	8.00	39.2905572	-108.4168100
6657.86	53.72	129.68	6182.49	-524.76	2039.68	1669.27	8.00	39.2904767	-108.4166805
6717.86	58.25	131.61	6216.05	-557.16	2077.39	1718.02	8.00	39.2903877	-108.4165473
6777.86	62.80	133.35	6245.56	-592.44	2115.89	1769.52	8.00	39.2902909	-108.4164112
6837.86	67.38	134.96	6270.83	-630.35	2154.91	1823.41	8.00	39.2901868	-108.4162734
6897.86	71.97	136.46	6291.67	-670.61	2194.18	1879.32	8.00	39.2900762	-108.4161347
6957.86	76.56	137.89	6307.94	-712.96	2233.42	1936.85	8.00	39.2899599	-108.4159960
7017.86	81.17	139.26	6319.52	-757.10	2272.35	1995.60	8.00	39.2898388	-108.4158585
7077.86	85.78	140.60	6326.33	-802.70	2310.71	2055.16	8.00	39.2897135	-108.4157229
7137.86	90.40	141.92	6328.33	-849.46	2348.23	2115.10	8.00	39.2895852	-108.4155904
Target - Hold @ 91.75°,142.31° Azm									
7155.47	91.75	142.31	6328.00	-863.36	2359.04	2132.71	8.00	39.2895470	-108.4155522
7655.47	91.75	142.31	6312.70	-1258.83	2664.61	2632.47	0.00	39.2884611	-108.4144727
8155.47	91.75	142.31	6297.40	-1654.30	2970.18	3132.23	0.00	39.2873752	-108.4133933
8655.47	91.75	142.31	6282.10	-2049.76	3275.74	3631.99	0.00	39.2862893	-108.4123138
9155.47	91.75	142.31	6266.80	-2445.23	3581.31	4131.74	0.00	39.2852034	-108.4112344
9655.47	91.75	142.31	6251.50	-2840.70	3886.88	4631.50	0.00	39.2841175	-108.4101551
10155.47	91.75	142.31	6236.19	-3236.17	4192.44	5131.26	0.00	39.2830316	-108.4090758
10655.47	91.75	142.31	6220.89	-3631.64	4498.01	5631.02	0.00	39.2819456	-108.4079965
11155.47	91.75	142.31	6205.59	-4027.11	4803.58	6130.78	0.00	39.2808597	-108.4069172
11655.47	91.75	142.31	6190.29	-4422.57	5109.14	6630.54	0.00	39.2797737	-108.4058380
12155.47	91.75	142.31	6174.99	-4818.04	5414.71	7130.30	0.00	39.2786878	-108.4047588
12655.47	91.75	142.31	6159.69	-5213.51	5720.28	7630.05	0.00	39.2776018	-108.4036797
13155.47	91.75	142.31	6144.39	-5608.98	6025.84	8129.81	0.00	39.2765158	-108.4026005
13655.47	91.75	142.31	6129.09	-6004.45	6331.41	8629.57	0.00	39.2754298	-108.4015214
14155.47	91.75	142.31	6113.79	-6399.91	6636.97	9129.33	0.00	39.2743438	-108.4004424
DH - Proposed End of Lateral									
14344.90	91.75	142.31	6107.99	-6549.74	6752.74	9318.67	0.00	39.2739323	-108.4000336



Job ID : 15xxxD
Company : Black Hills Plateau Production
Lease/Well : Winter Flats 10-31-99DH
Location : Mesa County, CO
Rig Name :

Elevation (To MSL) : 6094 ft
RKB : 24 ft
North Reference : True North
Latitude : 39°17'30.9038" N
Longitude : -108°25'25.9940" W



CRITICAL POINTS - WINTER FLATS					
MD	Inc	Azm	TVD	EW	
0.00	0.00	0.00	0.00	0.00	
1100.00	0.00	102.24	1100.00	0.00	
2309.51	24.19	102.24	2273.89	245.84	
6237.86	24.19	102.24	5857.30	1818.94	
7155.47	91.75	142.31	6328.00	2359.04	
14344.90	91.75	142.31	6107.99	6752.74	

CURVES LEGEND	
—	Winter Flats 10-31-99AH plan 5-20-15
—	Winter Flats 10-31-99BH plan 7-20-15
—	Winter Flats 10-31-99CH plan 5-20-15
—	Winter Flats 10-31-99DH plan 1-20-15
—	WF 10-43-99 Survey

