



Job Number: 0810330
Company: Black Hills Gas Resources
Lease/Well: Many Canyons 29-04-28 #121
Location: Rio Arriba County, NM
Rig Name: ☐
RKB: 13'
G.L. or M.S.L.: 7472'

State/Country: NM/USA
Declination: 10.01822
Grid: 53.63
File name: C:\CURRENT-1\081033-1\29042821.SVY
Date/Time: 06-Aug-08 / 07:52
Curve Name: MC 29-04-28 #121 upper lat surveys

MC 29-4-28 #121
WINDOW-UPPER LATERAL

API#: 30-039-30231

MC 29-04-28 #121 upper lat surveys

MC 29-4-28 #121
UPPER PL LATERAL

E
SURF: 1895' FN 670' FW
847 405
2742' FN 1075' FW
5277'
L 2535' FS
WINDOW'S

WINSERVE SURVEY CALCULATIONS
Minimum Curvature Method
Vertical Section Plane 125.39
Vertical Section Referenced to Wellhead
tangular Coordinates Referenced to Well

E
SURF: 1895' FN 670' FW
2393 3151
4289' FN 3821' FW
5266 5160
O BH 978' FS 1339' FE

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	CLOSURE		Dogleg Severity Deg/100
Distance FT	Direction Deg								
Nevis Survey Tie-In									
4653.00	59.70	154.50	4214.90	820.85	-846.70	405.40	938.75	154.41	.00
4733.00	61.60	165.10	4254.19	878.22	-912.02	429.37	1008.04	154.79	11.79
4764.00	63.00	164.70	4268.60	899.40	-938.52	436.52	1035.07	155.06	4.66
4796.00	65.10	170.80	4282.62	920.63	-966.62	442.61	1063.14	155.40	18.35
4840.00	69.30	172.90	4299.67	948.56	-1006.76	448.34	1102.08	156.00	10.51
4871.00	72.90	170.70	4309.71	968.78	-1035.78	452.53	1130.33	156.40	13.41
4903.00	77.40	167.80	4317.91	991.08	-1066.16	458.31	1160.49	156.74	16.57
4934.00	81.80	167.50	4323.50	1013.64	-1095.94	464.83	1190.44	157.02	14.23
4997.00	89.80	166.90	4328.11	1060.44	-1157.16	478.74	1252.28	157.52	12.73
5028.00	90.90	166.50	4327.92	1083.72	-1187.32	485.87	1282.89	157.74	3.78
5060.00	90.90	165.40	4327.42	1108.03	-1218.36	493.64	1314.57	157.94	3.44
5091.00	92.20	163.90	4326.58	1132.02	-1248.24	501.84	1345.35	158.10	6.40
5123.00	91.90	164.50	4325.44	1156.94	-1279.02	510.55	1377.15	158.24	2.10
5153.00	92.80	161.10	4324.21	1180.75	-1307.65	519.41	1407.03	158.34	11.71
5185.00	94.30	154.90	4322.22	1207.64	-1337.24	531.37	1438.95	158.33	19.90
5216.00	94.00	152.00	4319.98	1234.92	-1364.90	545.19	1469.75	158.23	9.38
5247.00	93.00	148.00	4318.09	1263.04	-1391.69	560.65	1500.38	158.06	13.28
5279.00	92.10	146.40	4316.66	1292.72	-1418.56	577.97	1531.78	157.83	5.73
5311.00	91.90	143.80	4315.55	1322.83	-1444.79	596.27	1562.99	157.57	8.14
5342.00	91.30	141.10	4314.68	1352.45	-1469.35	615.15	1592.92	157.28	8.92
5374.00	91.10	138.40	4314.01	1383.44	-1493.77	635.82	1623.46	156.94	8.46
5404.00	91.70	137.40	4313.28	1412.72	-1516.02	655.93	1651.83	156.60	3.89
5433.00	91.50	135.00	4312.47	1441.19	-1536.94	675.99	1679.03	156.26	8.30

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
5463.00	91.90	133.40	4311.58	1470.82	-1557.85	697.49	1706.86	155.88	5.50
5493.00	93.00	131.50	4310.29	1500.56	-1578.07	719.60	1734.40	155.49	7.31
5524.00	94.10	129.00	4308.37	1531.39	-1598.06	743.21	1762.43	155.06	8.80
5554.00	95.00	126.60	4305.99	1561.27	-1616.39	766.84	1789.07	154.62	8.52
5583.00	94.60	124.90	4303.57	1590.16	-1633.28	790.29	1814.43	154.18	6.00
5614.00	93.50	122.90	4301.38	1621.07	-1650.52	815.96	1841.20	153.69	7.35
5644.00	93.00	120.50	4299.68	1650.96	-1666.26	841.44	1866.66	153.21	8.16
5675.00	93.10	117.60	4298.03	1681.72	-1681.29	868.50	1892.36	152.68	9.35
5705.00	93.00	114.60	4296.43	1711.29	-1694.47	895.40	1916.49	152.15	9.99
5734.00	93.10	114.70	4294.89	1739.74	-1706.54	921.72	1939.55	151.63	.49
5763.00	93.00	114.00	4293.34	1768.16	-1718.48	948.10	1962.67	151.11	2.43
5793.00	93.00	113.50	4291.77	1797.50	-1730.55	975.52	1986.57	150.59	1.66
5823.00	92.80	113.10	4290.26	1826.80	-1742.40	1003.04	2010.49	150.07	1.49
5853.00	93.00	112.00	4288.74	1856.01	-1753.89	1030.71	2034.33	149.56	3.72
5883.00	92.40	111.00	4287.33	1885.10	-1764.87	1058.59	2058.01	149.04	3.88
5913.00	92.30	110.30	4286.10	1914.09	-1775.44	1086.64	2081.58	148.53	2.36
5945.00	92.60	110.20	4284.73	1944.95	-1786.51	1116.63	2106.77	147.99	.99
5975.00	92.40	110.30	4283.42	1973.88	-1796.88	1144.75	2130.55	147.50	.75
6005.00	91.20	110.20	4282.48	2002.83	-1807.26	1172.88	2154.50	147.02	4.01
6035.00	88.10	109.40	4282.66	2031.72	-1817.42	1201.11	2178.46	146.54	10.67
6065.00	87.40	109.30	4283.84	2060.53	-1827.35	1229.39	2202.41	146.07	2.36
6095.00	87.30	109.10	4285.22	2089.31	-1837.21	1257.69	2226.46	145.61	.74
6126.00	87.40	109.30	4286.66	2119.04	-1847.39	1286.94	2251.46	145.14	.72
6156.00	87.20	109.40	4288.07	2147.84	-1857.32	1315.21	2275.84	144.70	.75
6186.00	89.20	109.20	4289.01	2176.65	-1867.23	1343.51	2300.34	144.26	6.70
6276.00	90.20	110.00	4289.48	2263.26	-1897.42	1428.29	2374.92	143.03	1.42
6366.00	90.30	109.60	4289.09	2349.94	-1927.91	1512.97	2450.70	141.88	.46
6455.00	90.60	108.50	4288.39	2435.34	-1956.96	1597.09	2525.94	140.78	1.28
6578.00	88.60	108.00	4289.25	2552.87	-1995.47	1713.89	2630.46	139.34	1.68
6671.00	90.80	107.60	4289.74	2641.52	-2023.90	1802.44	2710.16	138.31	2.40
6764.00	92.50	105.20	4287.06	2729.41	-2050.15	1891.60	2789.49	137.30	3.16
6858.00	92.50	104.70	4282.96	2817.41	-2074.37	1982.34	2869.26	136.30	.53
6954.00	92.10	104.70	4279.11	2907.14	-2098.71	2075.12	2951.39	135.32	.42
7048.00	91.30	105.30	4276.32	2995.21	-2123.03	2165.87	3032.87	134.43	1.06
7143.00	90.00	106.20	4275.24	3084.68	-2148.82	2257.30	3116.54	133.59	1.66
7238.00	89.10	106.10	4275.99	3174.37	-2175.24	2348.55	3201.15	132.81	.95
7333.00	89.00	106.40	4277.56	3264.10	-2201.82	2439.74	3286.39	132.07	.33
7427.00	90.60	106.30	4277.89	3352.96	-2228.28	2529.93	3371.32	131.37	1.71
7521.00	89.90	106.30	4277.48	3441.79	-2254.66	2620.15	3456.69	130.71	.74
7614.00	91.80	105.20	4276.10	3529.36	-2279.90	2709.65	3541.21	130.08	2.36
7708.00	91.70	106.20	4273.23	3617.82	-2305.33	2800.10	3626.99	129.46	1.07
7803.00	88.60	105.50	4272.98	3707.34	-2331.27	2891.47	3714.22	128.88	3.35
7901.00	90.70	104.00	4273.58	3799.04	-2356.22	2986.23	3803.86	128.27	2.63
7963.00	92.00	102.40	4272.12	3856.43	-2370.37	3046.58	3860.09	127.88	3.32
Last Nevis MWD Survey									
7993.00	93.20	102.20	4270.76	3884.00	-2376.75	3075.86	3887.14	127.69	4.06

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
Survey Projection to TD									
8070.00	93.20	102.20	4266.46	3954.67	-2393.00	3151.00	3956.67	127.21	.00