



1724-B Townhurst Dr, Houston, Tx 77043
(713) 827-8302
www.nevisenergy.com

Job Number: 71047
Company: Black Hills Gas Resources
Lease/Well: Jicarilla 452-08 #31
Location: Rio Arriba Co., NM
Rig Name: ☐
RKB: ☐
G.L. or M.S.L.: ☐

State/Country: NM/USA
Declination: ☐
Grid: ☐
File name: Z:\BLACKH-1\71047J-1\4520831.SVY
Date/Time: 09-Mar-07 / 11:39
Curve Name: Actual

30-039-29461

LATERAL

WINSERVE SURVEY CALCULATIONS
Minimum Curvature Method
Vertical Section Plane 86.10
Vertical Section Referenced to Wellhead
Rectangular Coordinates Referenced to Wellhead

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								
Pilot Tie-In									
3961.00	63.70	92.40	3598.88	764.05	-51.84	769.36	771.10	93.86	.00
3986.00	73.20	94.20	3608.05	787.09	-53.19	792.54	794.33	93.84	38.58
4026.00	91.90	96.90	3613.22	826.03	-57.03	831.84	833.79	93.92	47.22
4057.00	98.70	98.40	3610.35	856.26	-61.14	862.41	864.58	94.05	22.46
4088.00	96.50	93.20	3606.25	886.53	-64.24	892.97	895.28	94.11	18.08
4120.00	90.80	88.00	3604.21	918.35	-64.57	924.88	927.13	93.99	24.08
4150.00	85.80	86.00	3605.10	948.32	-63.00	954.81	956.89	93.77	17.95
4181.00	85.60	84.80	3607.43	979.23	-60.52	985.63	987.48	93.51	3.91
4214.00	85.70	84.10	3609.93	1012.12	-57.34	1018.38	1019.99	93.22	2.14
4245.00	85.40	83.60	3612.34	1043.00	-54.03	1049.11	1050.50	92.95	1.88
4276.00	86.20	83.80	3614.61	1073.89	-50.63	1079.84	1081.02	92.68	2.66
4307.00	88.60	84.80	3616.01	1104.84	-47.56	1110.65	1111.67	92.45	8.39
4339.00	91.70	82.40	3615.93	1136.80	-43.99	1142.44	1143.29	92.21	12.25
4370.00	92.20	81.90	3614.87	1167.71	-39.76	1173.13	1173.81	91.94	2.28
4402.00	91.60	82.70	3613.81	1199.62	-35.47	1204.83	1205.35	91.69	3.12
4432.00	90.90	85.10	3613.16	1229.59	-32.29	1234.65	1235.07	91.50	8.33
4464.00	91.20	85.00	3612.57	1261.58	-29.53	1266.52	1266.87	91.34	.99
4495.00	90.10	85.20	3612.22	1292.57	-26.88	1297.41	1297.69	91.19	3.61
4527.00	91.60	85.60	3611.75	1324.57	-24.31	1329.30	1329.52	91.05	4.85
4559.00	89.50	85.40	3611.44	1356.56	-21.80	1361.20	1361.37	90.92	6.59
4590.00	89.40	85.40	3611.74	1387.56	-19.32	1392.10	1392.23	90.80	.32
4622.00	89.40	85.70	3612.07	1419.56	-16.83	1424.00	1424.10	90.68	.94
4653.00	89.50	85.70	3612.37	1450.55	-14.51	1454.91	1454.98	90.57	.32

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	
4685.00	89.60	85.40	3612.62	1482.55	-12.03	1486.81	1486.86	90.46	.99
4717.00	89.80	85.30	3612.79	1514.55	-9.43	1518.71	1518.74	90.36	.70
4748.00	89.90	85.50	3612.87	1545.55	-6.95	1549.61	1549.62	90.26	.72
4780.00	89.90	84.90	3612.93	1577.54	-4.27	1581.49	1581.50	90.15	1.87
4811.00	89.50	84.50	3613.09	1608.53	-1.41	1612.36	1612.36	90.05	1.82
4843.00	89.30	83.70	3613.42	1640.51	1.88	1644.19	1644.19	89.93	2.58
4874.00	89.00	83.80	3613.88	1671.48	5.26	1675.00	1675.01	89.82	1.02
4906.00	88.60	83.60	3614.55	1703.45	8.77	1706.80	1706.82	89.71	1.40
4938.00	88.90	83.30	3615.25	1735.40	12.42	1738.59	1738.63	89.59	1.33
4970.00	90.90	84.80	3615.31	1767.38	15.73	1770.41	1770.48	89.49	7.81
5001.00	91.00	84.20	3614.79	1798.36	18.71	1801.26	1801.36	89.41	1.96
5032.00	91.00	84.30	3614.25	1829.34	21.81	1832.10	1832.23	89.32	.32
5063.00	90.80	83.70	3613.77	1860.32	25.05	1862.93	1863.10	89.23	2.04
5093.00	90.70	84.10	3613.37	1890.29	28.24	1892.76	1892.97	89.15	1.37
5124.00	90.80	83.90	3612.97	1921.27	31.48	1923.58	1923.84	89.06	.72
5156.00	90.90	84.00	3612.49	1953.24	34.85	1955.40	1955.71	88.98	.44
5188.00	91.10	84.30	3611.93	1985.22	38.11	1987.23	1987.60	88.90	1.13
5219.00	91.40	84.10	3611.26	2016.20	41.24	2018.06	2018.49	88.83	1.16
5251.00	91.50	83.50	3610.45	2048.16	44.70	2049.87	2050.35	88.75	1.90
5282.00	91.50	83.40	3609.64	2079.12	48.23	2080.65	2081.21	88.67	.32
5313.00	90.10	84.10	3609.20	2110.09	51.61	2111.47	2112.10	88.60	5.05
5345.00	90.10	83.90	3609.15	2142.06	54.95	2143.29	2143.99	88.53	.62
5375.00	90.20	83.90	3609.07	2172.04	58.14	2173.12	2173.90	88.47	.33
5407.00	90.70	84.10	3608.82	2204.02	61.49	2204.94	2205.80	88.40	1.68
5439.00	89.90	83.50	3608.65	2235.99	64.94	2236.76	2237.70	88.34	3.12
5470.00	90.10	83.30	3608.65	2266.96	68.50	2267.55	2268.58	88.27	.91
5500.00	89.90	83.50	3608.65	2296.93	71.95	2297.35	2298.48	88.21	.94
5532.00	89.70	82.70	3608.76	2328.88	75.80	2329.12	2330.35	88.14	2.58
5563.00	89.70	82.80	3608.92	2359.83	79.71	2359.87	2361.22	88.07	.32
5595.00	89.40	82.30	3609.18	2391.77	83.86	2391.60	2393.07	87.99	1.82
5626.00	89.50	82.10	3609.47	2422.69	88.07	2422.31	2423.91	87.92	.72
5657.00	89.40	81.60	3609.77	2453.61	92.46	2453.00	2454.74	87.84	1.64
5689.00	89.40	81.70	3610.11	2485.51	97.11	2484.66	2486.55	87.76	.31
5721.00	89.60	82.70	3610.38	2517.43	101.45	2516.36	2518.40	87.69	3.19
5751.00	89.90	82.00	3610.52	2547.37	105.44	2546.09	2548.27	87.63	2.54
5783.00	89.90	81.60	3610.57	2579.28	110.01	2577.76	2580.11	87.56	1.25
5814.00	89.90	81.40	3610.63	2610.18	114.59	2608.42	2610.94	87.48	.65
5846.00	90.60	82.50	3610.49	2642.09	119.07	2640.11	2642.79	87.42	4.07
5877.00	91.00	82.80	3610.05	2673.03	123.04	2670.85	2673.68	87.36	1.61
5908.00	90.90	81.90	3609.54	2703.96	127.16	2701.57	2704.56	87.31	2.92
5940.00	91.10	82.20	3608.98	2735.88	131.59	2733.26	2736.42	87.24	1.13
5972.00	91.10	81.30	3608.37	2767.78	136.18	2764.92	2768.27	87.18	2.81
6003.00	91.30	82.00	3607.72	2798.68	140.68	2795.58	2799.12	87.12	2.35
6034.00	91.40	82.00	3606.99	2829.59	144.99	2826.27	2829.99	87.06	.32
6066.00	91.60	81.10	3606.15	2861.48	149.69	2857.91	2861.83	87.00	2.88

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	
6097.00	90.20	82.40	3605.66	2892.38	154.14	2888.59	2892.70	86.95	6.16
6128.00	90.40	82.60	3605.50	2923.32	158.19	2919.32	2923.61	86.90	.91
6160.00	89.60	82.20	3605.50	2955.25	162.42	2951.04	2955.51	86.85	2.80
6191.00	89.80	81.80	3605.66	2986.17	166.73	2981.74	2986.40	86.80	1.44
6223.00	90.10	82.00	3605.69	3018.09	171.24	3013.42	3018.28	86.75	1.13
6254.00	90.60	81.80	3605.50	3049.00	175.61	3044.11	3049.17	86.70	1.74
6286.00	90.80	82.00	3605.11	3080.92	180.12	3075.79	3081.06	86.65	.88
6317.00	91.00	81.30	3604.62	3111.82	184.62	3106.46	3111.94	86.60	2.35
6349.00	90.90	81.10	3604.09	3143.70	189.51	3138.07	3143.79	86.54	.70
6380.00	89.80	81.40	3603.90	3174.59	194.23	3168.71	3174.66	86.49	3.68

Last Nevis MWD Survey

6411.00	90.40	81.50	3603.85	3205.48	198.84	3199.37	3205.54	86.44	1.96
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Survey Projection to TD

6460.00	90.00	81.50	3603.68	3254.32	206.08	3247.83	3254.36	86.37	.82
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