

Job Number: 204-119
 Company: Mallon Oil Company
 Lease/Well: Jicarilla 29-02-16 # 4
 Location: Rio Arriba
 Rig Name: Key Drilling
 RKB:
 G.L. or M.S.L.: API No. 300-39-27462

State/Country: New Mexico
 Declination:
 Grid: 10.29° Total Correction
 File name: N:\JOB DAT~1\BLACKH~1\204-11~1\FINALS~1\JIC#4
 Date/Time: 22-Mar-04 / 13:52
 Curve Name: Final NM OCD Filing



Nevis Energy Services, Inc
 724-B Townhurst Dr. Houston, Texas 77043
 (713) 827-8302
 www.nevisenergy.com

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 107.51
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
Tie-in to Gyrodata Survey									
3450.00	1.19	264.20	3449.40	28.70	-41.90	-48.59	50.79	304.41	.00
First Nevis MWD Survey									
3574.00	24.30	103.40	3569.88	22.56	-17.97	-23.92	28.84	321.46	20.51
3600.00	41.00	114.10	3591.71	17.80	-4.88	-10.00	18.45	344.68	67.74
3610.00	47.00	116.40	3598.90	14.83	1.40	-3.13	14.89	5.40	62.08
3616.00	50.90	117.20	3602.84	12.79	5.44	1.34	13.90	23.04	65.77
3624.00	56.00	117.80	3607.60	9.82	11.14	7.67	14.85	48.60	64.03
3655.00	63.40	116.20	3623.23	-2.31	34.97	34.05	35.05	93.78	24.28
3666.00	65.20	115.60	3628.00	-6.64	43.89	43.85	44.39	98.60	17.09
3676.00	66.70	114.90	3632.08	-10.53	52.15	52.90	53.20	101.42	16.31
3687.00	68.50	114.40	3636.27	-14.77	61.39	62.99	63.14	103.53	16.89
3697.00	71.40	114.60	3639.70	-18.67	69.94	72.32	72.39	104.95	29.06
3702.00	73.90	114.90	3641.19	-20.67	74.27	77.05	77.09	105.55	50.33
3707.00	76.50	115.30	3642.47	-22.72	78.65	81.84	81.87	106.11	52.57
3718.00	83.20	116.90	3644.40	-27.48	88.37	92.54	92.54	107.28	62.57
3750.00	90.60	113.90	3646.13	-41.17	117.21	124.17	124.23	109.36	24.95
3781.00	90.50	108.20	3645.83	-52.30	146.13	155.09	155.21	109.69	18.39
3812.00	93.30	104.10	3644.81	-60.92	175.88	186.06	186.13	109.10	16.01
3844.00	98.30	102.00	3641.57	-68.11	206.88	217.79	217.80	108.22	16.93

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
3875.00	101.10	102.30	3636.35	-74.54	236.75	248.21	248.21	107.48	9.08
3906.00	101.10	101.90	3630.38	-80.91	266.49	278.49	278.51	106.89	1.27
3938.00	101.10	102.40	3624.22	-87.52	297.19	309.75	309.81	106.41	1.53
3970.00	100.80	101.80	3618.14	-94.11	327.91	341.03	341.15	106.01	2.07
4001.00	100.70	102.90	3612.36	-100.62	357.66	371.36	371.55	105.71	3.50
4033.00	100.70	101.80	3606.42	-107.35	388.38	402.68	402.94	105.45	3.38
4064.00	100.30	101.80	3600.77	-113.58	418.21	433.01	433.36	105.19	1.29
4095.00	100.40	101.60	3595.20	-119.77	448.07	463.35	463.80	104.96	.71
4127.00	100.50	101.60	3589.40	-126.09	478.90	494.65	495.22	104.75	.31
4159.00	100.70	102.20	3583.51	-132.58	509.68	525.95	526.64	104.58	1.95
4191.00	100.80	102.20	3577.54	-139.22	540.41	557.26	558.05	104.45	.31
4222.00	101.00	101.50	3571.68	-145.47	570.20	587.55	588.46	104.31	2.31
4253.00	101.30	101.70	3565.68	-151.59	599.99	617.80	618.85	104.18	1.16
4285.00	99.40	103.00	3559.94	-158.32	630.74	649.15	650.31	104.09	7.16
4316.00	97.60	103.90	3555.35	-165.45	660.56	679.73	680.96	104.06	6.48
4348.00	95.70	105.60	3551.65	-173.55	691.29	711.48	712.74	104.09	7.94
4379.00	92.80	107.20	3549.35	-182.27	720.95	742.38	743.63	104.19	10.68
4411.00	92.60	107.70	3547.84	-191.86	751.44	774.35	775.55	104.32	1.68
4442.00	92.60	107.40	3546.44	-201.20	780.97	805.31	806.47	104.45	.97
4472.00	90.10	107.70	3545.73	-210.24	809.56	835.30	836.41	104.56	8.39
4504.00	90.20	108.00	3545.65	-220.05	840.02	867.30	868.36	104.68	.99
4534.00	90.30	108.00	3545.52	-229.32	868.55	897.30	898.31	104.79	.33
4566.00	91.20	108.00	3545.10	-239.21	898.98	929.30	930.26	104.90	2.81
4597.00	90.90	108.00	3544.53	-248.79	928.46	960.29	961.21	105.00	.97
4629.00	91.10	108.40	3543.97	-258.78	958.85	992.28	993.16	105.10	1.40
4661.00	91.30	108.30	3543.30	-268.85	989.22	1024.27	1025.10	105.20	.70
4692.00	91.00	107.90	3542.68	-278.48	1018.68	1055.26	1056.06	105.29	1.61
4724.00	90.60	107.40	3542.23	-288.18	1049.17	1087.26	1088.03	105.36	2.00
4755.00	91.10	107.30	3541.77	-297.42	1078.76	1118.26	1119.01	105.41	1.64
4792.00	91.50	107.20	3540.93	-308.39	1114.08	1155.25	1155.98	105.47	1.11
4829.00	91.30	106.00	3540.03	-318.96	1149.53	1192.23	1192.96	105.51	3.29
4861.00	91.50	106.80	3539.25	-327.99	1180.22	1224.22	1224.95	105.53	2.58
4892.00	89.90	106.90	3538.87	-336.98	1209.88	1255.21	1255.93	105.56	5.17
4924.00	90.00	107.00	3538.89	-346.31	1240.49	1287.21	1287.93	105.60	.44
4955.00	90.00	106.10	3538.89	-355.14	1270.21	1318.20	1318.92	105.62	2.90
4986.00	89.70	106.20	3538.98	-363.76	1299.99	1349.20	1349.92	105.63	1.02
5017.00	89.70	105.80	3539.14	-372.31	1329.78	1380.18	1380.92	105.64	1.29
5048.00	90.00	105.90	3539.22	-380.77	1359.60	1411.17	1411.92	105.65	1.02
5080.00	90.90	106.40	3538.97	-389.67	1390.34	1443.16	1443.92	105.66	3.22
5111.00	91.10	106.50	3538.43	-398.45	1420.07	1474.15	1474.91	105.67	.72
5143.00	91.10	106.00	3537.81	-407.40	1450.78	1506.14	1506.90	105.69	1.56
5174.00	91.50	105.90	3537.11	-415.92	1480.58	1537.12	1537.89	105.69	1.33
5200.00	91.60	106.00	3536.41	-423.06	1505.57	1563.10	1563.88	105.70	.54
5231.00	91.80	106.40	3535.49	-431.71	1535.33	1594.08	1594.87	105.71	1.44

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
5263.00	92.50	106.60	3534.29	-440.79	1565.99	1626.05	1626.84	105.72	2.27
5294.00	91.60	107.20	3533.18	-449.79	1595.63	1657.03	1657.81	105.74	3.49
5325.00	91.70	107.30	3532.28	-458.98	1625.22	1688.01	1688.79	105.77	.46
5357.00	90.70	108.10	3531.61	-468.71	1655.70	1720.01	1720.77	105.81	4.00
5388.00	91.00	107.80	3531.15	-478.26	1685.19	1751.00	1751.74	105.84	1.37
5419.00	89.80	107.60	3530.94	-487.69	1714.72	1782.00	1782.72	105.88	3.92
5451.00	89.70	107.10	3531.08	-497.23	1745.26	1814.00	1814.71	105.90	1.59
5482.00	89.60	107.20	3531.27	-506.37	1774.88	1845.00	1845.71	105.92	.46
5513.00	89.90	107.30	3531.40	-515.56	1804.49	1876.00	1876.70	105.95	1.02
5545.00	90.30	107.20	3531.35	-525.05	1835.05	1908.00	1908.69	105.97	1.29
5578.00	90.50	106.50	3531.12	-534.62	1866.63	1940.99	1941.68	105.98	2.21
5609.00	90.60	106.40	3530.82	-543.40	1896.36	1971.99	1972.68	105.99	.46
5641.00	90.50	106.50	3530.51	-552.46	1927.05	2003.98	2004.68	106.00	.44
5672.00	90.50	106.30	3530.24	-561.21	1956.79	2034.97	2035.68	106.00	.65
5704.00	90.40	106.40	3529.99	-570.22	1987.49	2066.96	2067.67	106.01	.44
5735.00	90.50	106.20	3529.75	-578.92	2017.25	2097.96	2098.67	106.01	.72
5767.00	90.50	106.10	3529.47	-587.82	2047.98	2129.95	2130.67	106.01	.31
5798.00	90.50	105.80	3529.20	-596.34	2077.79	2160.93	2161.67	106.01	.97
5830.00	90.30	106.00	3528.97	-605.10	2108.56	2192.92	2193.67	106.01	.88
5861.00	90.10	106.30	3528.86	-613.73	2138.34	2223.91	2224.67	106.01	1.16
5893.00	90.20	105.70	3528.78	-622.55	2169.10	2255.90	2256.67	106.01	1.90
5924.00	90.00	106.00	3528.73	-631.01	2198.92	2286.89	2287.67	106.01	1.16
5955.00	89.60	106.20	3528.83	-639.61	2228.70	2317.88	2318.67	106.01	1.44
5987.00	89.60	106.40	3529.06	-648.59	2259.42	2349.87	2350.67	106.02	.62
6019.00	90.20	106.40	3529.11	-657.63	2290.12	2381.86	2382.67	106.02	1.87
6050.00	90.40	106.30	3528.95	-666.35	2319.86	2412.86	2413.67	106.03	.72
6082.00	90.70	106.60	3528.64	-675.41	2350.55	2444.85	2445.66	106.03	1.33
6113.00	89.00	106.70	3528.73	-684.30	2380.25	2475.84	2476.66	106.04	5.49
6145.00	88.70	106.90	3529.37	-693.54	2410.88	2507.84	2508.65	106.05	1.13
6176.00	89.10	107.20	3529.96	-702.63	2440.51	2538.83	2539.64	106.06	1.61
6208.00	89.90	107.20	3530.24	-712.09	2471.08	2570.83	2571.63	106.08	2.50
6239.00	90.00	107.20	3530.27	-721.26	2500.69	2601.83	2602.63	106.09	.32
6271.00	90.00	107.70	3530.27	-730.86	2531.22	2633.83	2634.62	106.11	1.56
6302.00	90.10	107.80	3530.24	-740.31	2560.74	2664.83	2665.61	106.12	.46
6333.00	90.10	107.30	3530.19	-749.65	2590.30	2695.83	2696.60	106.14	1.61
6365.00	90.40	107.30	3530.05	-759.17	2620.85	2727.83	2728.59	106.15	.94
6396.00	90.00	107.60	3529.94	-768.47	2650.42	2758.83	2759.58	106.17	1.61
6428.00	90.20	107.50	3529.88	-778.11	2680.93	2790.83	2791.57	106.18	.70
6458.00	90.60	108.00	3529.67	-787.26	2709.51	2820.82	2821.56	106.20	2.13
6489.00	89.60	108.10	3529.62	-796.87	2738.98	2851.82	2852.54	106.22	3.24
6520.00	89.30	108.80	3529.92	-806.68	2768.38	2882.82	2883.52	106.25	2.46
6552.00	89.20	108.30	3530.34	-816.85	2798.72	2914.81	2915.49	106.27	1.59
6583.00	89.00	107.80	3530.82	-826.46	2828.19	2945.80	2946.47	106.29	1.74
6615.00	89.00	108.00	3531.38	-836.29	2858.64	2977.80	2978.45	106.31	.62

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
6646.00	88.90	108.10	3531.95	-845.90	2888.11	3008.79	3009.43	106.32	.46
6678.00	88.70	107.10	3532.62	-855.57	2918.60	3040.78	3041.42	106.34	3.19
6710.00	88.60	107.50	3533.37	-865.08	2949.14	3072.77	3073.41	106.35	1.29
6741.00	88.70	107.70	3534.11	-874.45	2978.69	3103.77	3104.39	106.36	.72
6777.00	89.30	107.30	3534.73	-885.28	3013.01	3139.76	3140.38	106.37	2.00
6808.00	89.40	107.80	3535.09	-894.62	3042.57	3170.76	3171.37	106.39	1.64
6839.00	90.00	108.20	3535.25	-904.20	3072.05	3201.76	3202.36	106.40	2.33
6871.00	90.20	108.20	3535.19	-914.20	3102.45	3233.75	3234.34	106.42	.62
6902.00	90.40	108.10	3535.03	-923.86	3131.91	3264.75	3265.33	106.44	.72
6934.00	91.40	108.80	3534.53	-933.98	3162.26	3296.74	3297.30	106.45	3.81
6965.00	91.80	108.90	3533.66	-943.99	3191.58	3327.72	3328.26	106.48	1.33
6997.00	91.90	109.00	3532.63	-954.38	3221.83	3359.69	3360.22	106.50	.44
7028.00	92.00	108.00	3531.57	-964.21	3251.21	3390.67	3391.18	106.52	3.24
7059.00	91.80	108.40	3530.55	-973.89	3280.65	3421.65	3422.15	106.53	1.44
7091.00	91.80	108.40	3529.54	-983.98	3311.00	3453.63	3454.12	106.55	.00
7123.00	91.40	108.40	3528.65	-994.08	3341.35	3485.62	3486.09	106.57	1.25
7154.00	91.60	107.10	3527.84	-1003.53	3370.86	3516.60	3517.07	106.58	4.24
7185.00	92.00	107.00	3526.86	-1012.61	3400.48	3547.59	3548.05	106.58	1.33
7217.00	92.10	106.40	3525.72	-1021.80	3431.12	3579.56	3580.03	106.58	1.90
7248.00	92.10	106.30	3524.58	-1030.52	3460.84	3610.54	3611.01	106.58	.32
7279.00	91.90	107.30	3523.50	-1039.48	3490.50	3641.52	3641.99	106.58	3.29
Last Nevis MWD Survey									
7312.00	91.90	107.30	3522.40	-1049.28	3521.99	3674.50	3674.97	106.59	.00
Projection to bit									
7355.00	91.90	107.30	3520.98	-1062.07	3563.02	3717.47	3717.94	106.60	.00