

Job Number: 35113HM State/Cour New Mexico
 Company: Legend Natural Gas III, LLC Declinator 7.43
 Lease/Well Buckshot State Com 2H Grid: -0.11
 Location: Southwest of Malaga File name: D:\AAA201~2\LEGEND\35137123.SVY
 Rig Name: Patterson #444 Date/Time: 13-Nov-13 / 10:14
 RKB: 24 Curve Name: Legend / Buckshot State Com #2H (As Drilled)
 G.L. or M.S.L.:

15-40193

Scientific Drilling

WINSERVE SURVEY CALCULATIONS

Minimum Curvature Method

Vertical Section Plane 5.25

Vertical Section Reference to offset from Wellhead: EW 0 Ft NS=.00 Ft
 Rectangular Coordinate Reference to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TRUE Vertical Depth	Vertical N-S FT	CLOSURE E-W FT	CLOSURE Section FT	Dogleg Distance FT	Direction Deg	Severity Deg/100
0	0	0	0	0	0	0	0	0	0
100	0.32	312.84	100	0.19	-0.2	0.17	0.28	312.84	0.32
200	0.8	291.17	199.99	0.63	-1.06	0.53	1.23	300.79	0.52
300	1.47	326.78	299.98	1.96	-2.41	1.73	3.11	309.03	0.94
Last Gyro by	Multi-Shot								
342	1.55	327.27	341.96	2.89	-3.02	2.6	4.17	313.73	0.19
443	1.94	313.92	442.91	5.22	-4.99	4.74	7.22	316.31	0.56
530	1.41	347.39	529.88	7.29	-6.28	6.68	9.62	319.24	1.25
624	3.25	49.27	623.81	10.15	-4.51	9.7	11.11	336.03	3.05
718	5.28	62.1	717.55	13.92	1.33	13.98	13.98	5.45	2.37
813	6.86	69.13	812.01	17.98	10.49	18.87	20.82	30.26	1.84
908	7.74	75.46	906.24	21.61	21.99	23.53	30.83	45.49	1.25
1002	8.53	76.07	999.3	24.88	34.88	27.97	42.84	54.5	0.85
1096	9.41	82.23	1092.15	27.6	49.26	31.99	56.47	60.74	1.38
1191	9.5	90.49	1185.86	28.58	64.8	34.39	70.82	66.2	1.43
1285	8.62	97.61	1278.69	27.58	79.54	34.74	84.18	70.88	1.51
1380	6.6	100.86	1372.85	25.61	91.96	33.92	95.46	74.44	2.17
1474	5.45	97.17	1466.33	24.03	101.69	33.24	104.49	76.7	1.29
1568	4.74	93.19	1559.96	23.26	110	33.23	112.43	78.06	0.84
1663	5.28	93.04	1654.59	22.81	118.28	33.54	120.46	79.08	0.57
1757	6.68	95.32	1748.08	22.07	128.05	33.7	129.93	80.22	1.51
1851	7.47	96.38	1841.36	20.89	139.56	33.57	141.12	81.49	0.85
1945	6.33	97.52	1934.68	19.53	150.77	33.24	152.03	82.62	1.22
2040	5.63	94.53	2029.16	18.48	160.61	33.1	161.67	83.44	0.81
2135	6.24	93.21	2123.65	17.82	170.41	33.34	171.34	84.03	0.66
2229	6.24	97.96	2217.1	16.83	180.57	33.28	181.35	84.68	0.55
2323	4.57	101.04	2310.68	15.4	189.31	32.66	189.93	85.35	1.8
2415	3.87	94.18	2402.43	14.47	196	32.35	196.53	85.78	0.94
2470	4.13	93.83	2457.29	14.21	199.83	32.43	200.33	85.93	0.47
2590	4.22	90.4	2576.97	13.89	208.55	32.91	209.02	86.19	0.22
2685	4.31	91.98	2671.71	13.74	215.62	33.41	216.05	86.35	0.16
2779	4.4	91.28	2765.44	13.54	222.75	33.86	223.16	86.52	0.11
2873	4.48	90.14	2859.16	13.45	230.03	34.44	230.42	86.65	0.13
2967	4.31	90.14	2952.88	13.43	237.23	35.08	237.61	86.76	0.18
3062	4.57	90.4	3047.6	13.39	244.59	35.72	244.95	86.87	0.27
3157	4.31	97.17	3142.31	12.92	251.91	35.92	252.24	87.06	0.62
3250	4.04	97.96	3235.07	12.03	258.62	35.65	258.9	87.34	0.3
3344	3.78	96.73	3328.85	11.21	264.98	35.41	265.22	87.58	0.29
3439	3.87	95.5	3423.63	10.54	271.28	35.31	271.49	87.78	0.13
3533	3.87	97.61	3517.42	9.81	277.58	35.17	277.76	87.98	0.15
3628	3.96	98.84	3612.2	8.88	284	34.83	284.14	88.21	0.13
3722	3.61	100.51	3705.99	7.84	290.12	34.36	290.22	88.45	0.39
3816	4.04	88.03	3799.79	7.42	296.34	34.5	296.43	88.57	0.99
3911	3.78	90.84	3894.56	7.49	302.81	35.16	302.91	88.58	0.34
4005	3.87	87.94	3988.36	7.56	309.08	35.81	309.17	88.6	0.23
4100	3.69	94.53	4083.15	7.43	315.33	36.25	315.42	88.65	0.49

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4194	3.52	92.42	4176.96	7.07	321.23	36.43	321.31	88.74	0.23
4288	3.78	93.21	4270.77	6.77	327.21	36.69	327.28	88.81	0.28
4382	3.43	93.92	4364.59	6.41	333.11	36.86	333.17	88.9	0.38
4477	3.17	96.03	4459.43	5.94	338.55	36.89	338.61	89	0.3
4571	2.99	90.58	4553.29	5.64	343.59	37.06	343.64	89.06	0.37
4665	3.43	89.43	4647.15	5.64	348.85	37.54	348.9	89.07	0.47
4759	3.08	88.73	4740.99	5.73	354.19	38.11	354.24	89.07	0.37
4853	3.52	88.55	4834.84	5.86	359.6	38.74	359.65	89.07	0.47
4948	3.43	87.59	4929.66	6.05	365.36	39.46	365.41	89.05	0.11
5041	3.25	91.63	5022.5	6.09	370.77	39.99	370.82	89.06	0.32
5136	2.99	94	5117.36	5.84	375.93	40.22	375.98	89.11	0.31
5231	2.64	94	5212.25	5.52	380.59	40.32	380.63	89.17	0.37
5325	2.9	92.07	5306.14	5.28	385.12	40.5	385.16	89.21	0.29
5420	3.52	83.81	5400.99	5.51	390.42	41.21	390.46	89.19	0.81
5514	3.61	85.39	5494.81	6.06	396.24	42.29	396.29	89.12	0.14
5609	3.25	86.45	5589.64	6.46	401.91	43.21	401.96	89.08	0.38
5703	3.25	90.49	5683.49	6.61	407.24	43.84	407.29	89.07	0.24
5797	3.25	95.59	5777.34	6.32	412.55	44.05	412.6	89.12	0.31
5892	3.17	100.51	5872.19	5.58	417.82	43.79	417.85	89.23	0.3
5987	2.99	105.61	5967.05	4.44	422.78	43.1	422.81	89.4	0.34
6082	2.46	101.56	6061.94	3.36	427.17	42.43	427.18	89.55	0.59
6176	2.46	92.16	6155.86	2.88	431.16	42.32	431.17	89.62	0.43
6271	1.93	91.81	6250.79	2.75	434.8	42.53	434.81	89.64	0.56
6366	1.58	91.37	6345.74	2.67	437.7	42.71	437.71	89.65	0.37
6460	0.62	46.28	6439.72	2.99	439.37	43.18	439.38	89.61	1.3
6554	0.35	58.14	6533.72	3.5	439.98	43.74	439.99	89.54	0.3
6649	0.7	45.93	6628.72	4.05	440.64	44.35	440.66	89.47	0.38
6743	1.06	42.68	6722.71	5.09	441.64	45.48	441.67	89.34	0.39
6837	1.06	52.34	6816.69	6.26	442.92	46.76	442.97	89.19	0.19
6932	0.88	50.32	6911.68	7.26	444.18	47.88	444.24	89.06	0.19
7026	0.88	58.5	7005.66	8.1	445.35	48.82	445.42	88.96	0.13
7120	0.88	53.13	7099.65	8.91	446.54	49.73	446.63	88.86	0.09
7215	0.88	44.26	7194.64	9.87	447.64	50.79	447.75	88.74	0.14
7309	1.32	50.67	7288.62	11.08	448.98	52.11	449.11	88.59	0.49
7372	1.67	61.4	7351.6	11.97	450.34	53.13	450.5	88.48	0.71
7409	1.41	67.37	7388.59	12.41	451.24	53.64	451.41	88.42	0.82
7440	1.68	42.39	7419.58	12.89	451.9	54.19	452.08	88.37	2.32
7472	4.59	6.34	7451.53	14.51	452.35	55.84	452.59	88.16	10.56
7504	8.18	358.73	7483.33	18.06	452.45	59.38	452.81	87.71	11.5
7535	12.31	354.07	7513.83	23.55	452.05	64.82	452.67	87.02	13.58
7567	15.83	351.79	7544.86	31.27	451.08	72.41	452.16	86.03	11.13
7598	18.82	351	7574.45	40.39	449.69	81.37	451.5	84.87	9.67
7630	20.93	352.93	7604.54	51.17	448.18	91.96	451.09	83.49	6.9
7661	24.27	354.42	7633.16	63.01	446.88	103.63	451.3	81.97	10.93
7692	27.08	356.88	7661.1	76.39	445.88	116.87	452.37	80.28	9.69
7724	30.07	359.26	7689.2	91.69	445.38	132.06	454.72	78.37	10
7756	33.5	0.22	7716.39	108.54	445.31	148.83	458.34	76.3	10.83
7787	37.55	0.75	7741.62	126.55	445.46	166.78	463.09	74.14	13.1
7818	42.21	1.1	7765.4	146.42	445.79	186.59	469.22	71.82	15.05
7850	46.25	1.54	7788.33	168.73	446.3	208.86	477.13	69.29	12.66
7881	49.68	1.37	7809.08	191.74	446.89	231.83	486.29	66.78	11.07
7913	51.88	1.63	7829.31	216.52	447.54	256.56	497.16	64.18	6.9
7944	54.87	1.45	7847.8	241.39	448.21	281.39	509.07	61.69	9.66
7975	58.92	1.45	7864.73	267.34	448.86	307.29	522.45	59.22	13.06
8007	61.99	0.14	7880.51	295.18	449.24	335.04	537.54	56.69	10.23
8038	65.4	359.76	7894.25	322.96	449.22	362.71	553.26	54.29	11.05
8070	68.41	359.35	7906.8	352.39	448.99	392	570.76	51.87	9.48
8101	71.84	358.99	7917.33	381.54	448.57	420.98	588.88	49.62	11.12
8133	76.06	0.31	7926.18	412.28	448.38	451.58	609.12	47.4	13.77
8164	80.28	0.93	7932.53	442.62	448.71	481.82	630.28	45.39	13.75
8196	84.33	0.58	7936.82	474.32	449.13	513.42	653.22	43.44	12.7
8227	87.32	359.87	7939.07	505.23	449.25	544.22	676.08	41.64	9.91
8258	88.02	359.08	7940.34	536.21	448.96	575.04	699.35	39.94	3.4
8353	87.85	359.52	7943.76	631.14	447.81	669.46	773.86	35.36	0.5
8448	87.82	359.97	7947.35	726.07	447.38	763.96	852.83	31.64	0.47
8542	88.11	359.08	7950.69	820	446.6	857.43	933.73	28.57	1

8637	88.72	358.91	7953.31	914.95	444.94	951.83	1017.4	25.93	0.67
8731	89.43	359.08	7954.83	1008.92	443.29	1045.25	1102.01	23.72	0.78
8825	90.48	358.29	7954.9	1102.9	441.13	1138.64	1187.85	21.8	1.4
8920	89.78	359.7	7954.69	1197.88	439.47	1233.07	1275.95	20.15	1.66
9014	90.48	0.31	7954.48	1291.88	439.47	1326.67	1364.58	18.79	0.99
9108	90.04	359.96	7954.05	1385.88	439.7	1420.3	1453.96	17.6	0.6
9202	90.57	359.35	7953.55	1479.87	439.13	1513.85	1543.65	16.53	0.86
9297	91.19	0.66	7952.09	1574.86	439.14	1608.43	1634.94	15.58	1.53
9391	90.84	359.96	7950.42	1668.84	439.65	1702.07	1725.78	14.76	0.83
9486	89.87	359.61	7949.84	1763.84	439.29	1796.64	1817.72	13.99	1.09
9580	89.34	358.91	7950.48	1857.83	438.08	1890.12	1908.78	13.27	0.93
9675	89.43	359.17	7951.5	1952.81	436.48	1984.56	2001	12.6	0.29
9769	90.04	358.99	7951.94	2046.8	434.98	2078.01	2092.5	12	0.68
9864	89.6	358.64	7952.24	2141.77	433.01	2172.41	2185.11	11.43	0.59
9958	89.25	359.35	7953.18	2235.75	431.36	2265.85	2276.99	10.92	0.84
10052	90.57	0.31	7953.33	2329.75	431.08	2359.42	2369.3	10.48	1.74
10147	90.75	0.93	7952.23	2424.74	432.11	2454.11	2462.94	10.1	0.68
10242	88.64	0.05	7952.74	2519.73	432.92	2548.77	2556.65	9.75	2.41
10336	88.29	0.22	7955.26	2613.69	433.14	2642.36	2649.34	9.41	0.41
10430	88.81	1.1	7957.64	2707.66	434.23	2736.03	2742.25	9.11	1.09
10525	89.25	1.45	7959.24	2802.62	436.34	2830.79	2836.38	8.85	0.59
10619	89.08	0.66	7960.61	2896.59	438.07	2924.52	2929.53	8.6	0.86
10714	89.52	1.45	7961.77	2991.57	439.82	3019.26	3023.73	8.36	0.95
10807	90.31	0.93	7961.91	3084.55	441.75	3112.03	3116.02	8.15	1.02
10902	89.34	1.89	7962.2	3179.51	444.09	3206.81	3210.38	7.95	1.44
10996	89.52	2.25	7963.14	3273.45	447.48	3300.66	3303.89	7.78	0.43
11090	90.04	2.51	7963.5	3367.37	451.39	3394.54	3397.49	7.63	0.62
11184	90.84	1.45	7962.78	3461.31	454.64	3488.38	3491.04	7.48	1.41
11279	90.4	0.66	7961.75	3556.28	456.38	3583.12	3585.45	7.31	0.95
11374	91.19	0.93	7960.43	3651.26	457.7	3677.83	3679.84	7.15	0.88
11468	90.04	359.7	7959.42	3745.25	458.22	3771.47	3773.18	6.98	1.79
11563	90.22	0.66	7959.21	3840.25	458.52	3866.1	3867.53	6.81	1.03
11657	89.43	359.08	7959.49	3934.25	458.3	3959.68	3960.85	6.64	1.88
11751	89.87	359.26	7960.07	4028.23	456.94	4053.15	4054.07	6.47	0.51
11846	90.13	359.35	7960.07	4123.23	455.79	4147.64	4148.34	6.31	0.29
11940	90.57	358.99	7959.49	4217.22	454.43	4241.11	4241.63	6.15	0.6
12035	90.92	0.05	7958.26	4312.2	453.63	4335.62	4336	6.01	1.17
12129	90.57	359.35	7957.04	4406.19	453.14	4429.17	4429.43	5.87	0.83
12223	89.52	358.82	7956.96	4500.18	451.64	4522.63	4522.79	5.73	1.25
12318	89.6	358.47	7957.69	4595.15	449.39	4616.99	4617.07	5.59	0.38
12412	89.69	358.91	7958.27	4689.12	447.24	4710.38	4710.4	5.45	0.48
12506	90.31	359.43	7958.27	4783.11	445.88	4803.85	4803.85	5.33	0.86
12584	90.22	0.14	7957.91	4861.11	445.59	4881.49	4881.49	5.24	0.92
Projection to	TD	(	Below	14.7'	;	Left	6.4'	)	
12646	90.22	0.14	7957.67	4923.11	445.74	4943.24	4943.25	5.17	0