

PATHFINDER

Job Number: 101010177
 Company: Marbob
 Lease/Well: Showstopper19 Fed.# 5
 Location: New Mexico
 Rig Name: Patriot # 2
 RKB:
 G.L. or M.S.L.:

State/Country: New Mexico / USA
 Declination: 7.92
 Grid: -.17
 File name: D:\SHOW5.SVY
 Date/Time: 18-Apr-10 / 07:43
 Curve Name: Working Curve

Pathfinder

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 358.04
 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
Gyro Tie in									
6500.00	.88	225.53	6498.64	-58.63	4.92	-58.76	58.84	175.20	.00
6535.00	7.65	331.70	6533.54	-56.76	3.62	-56.85	56.88	176.35	22.69
6586.00	19.52	343.25	6583.03	-45.57	-.46	-45.53	45.58	180.58	23.76
6618.00	24.62	344.63	6612.68	-34.02	-3.77	-33.87	34.23	186.32	16.02
6648.00	28.49	345.25	6639.51	-21.07	-7.25	-20.81	22.28	198.98	12.93
6681.00	32.18	346.91	6667.98	-4.89	-11.24	-4.51	12.26	246.48	11.47
6713.00	35.44	348.76	6694.57	12.51	-14.98	13.02	19.52	309.86	10.68
6745.00	38.60	349.40	6720.12	31.43	-18.63	32.05	36.53	329.34	9.95
6776.00	42.21	348.86	6743.72	51.16	-22.42	51.89	55.85	336.33	11.70
6808.00	45.55	348.08	6766.78	72.88	-26.86	73.76	77.68	339.77	10.57
6840.00	48.54	349.47	6788.58	95.85	-31.41	96.87	100.87	341.86	9.87
6872.00	51.79	350.27	6809.08	120.04	-35.73	121.19	125.24	343.43	10.34
6904.00	55.31	350.40	6828.09	145.41	-40.05	146.70	150.83	344.60	11.00

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	
6935.00	58.56	351.19	6845.00	171.05	-44.20	172.47	176.67	345.51	10.70
6967.00	60.41	351.46	6861.25	198.31	-48.36	199.84	204.12	346.30	5.83
6999.00	62.70	351.94	6876.49	226.15	-52.42	227.81	232.14	346.95	7.28
7031.00	66.21	352.00	6890.29	254.73	-56.45	256.51	260.91	347.51	10.97
7063.00	70.26	351.61	6902.15	284.14	-60.68	286.05	290.55	347.94	12.71
7094.00	75.01	351.22	6911.40	313.39	-65.10	315.43	320.08	348.26	15.37
7127.00	78.61	349.39	6918.93	345.05	-70.51	347.26	352.18	348.45	12.17
7159.00	80.11	351.27	6924.84	376.05	-75.80	378.42	383.61	348.60	7.44
7192.00	81.78	353.56	6930.03	408.35	-80.10	410.85	416.13	348.90	8.52
7224.00	84.42	355.36	6933.87	439.97	-83.16	442.55	447.76	349.30	9.96
7256.00	88.02	356.31	6935.98	471.81	-85.48	474.45	479.49	349.73	11.63
7288.00	90.92	357.07	6936.28	503.75	-87.33	506.44	511.26	350.17	9.37
7351.00	90.84	357.73	6935.31	566.68	-90.18	569.43	573.81	350.96	1.06
7383.00	89.52	358.16	6935.21	598.65	-91.33	601.43	605.58	351.33	4.34
7447.00	89.78	357.90	6935.60	662.62	-93.53	665.43	669.18	351.97	.57
7542.00	88.55	357.16	6936.99	757.51	-97.62	760.41	763.78	352.66	1.51
7638.00	87.85	357.11	6940.00	853.35	-102.42	856.35	859.47	353.16	.73
7733.00	88.46	358.60	6943.06	948.23	-105.97	951.30	954.13	353.62	1.69
7797.00	89.34	359.61	6944.29	1012.21	-106.97	1015.27	1017.84	353.97	2.09
7829.00	88.81	359.60	6944.81	1044.20	-107.19	1047.26	1049.69	354.14	1.66
7892.00	89.69	359.81	6945.63	1107.19	-107.52	1110.22	1112.40	354.45	1.44
7955.00	90.57	359.82	6945.49	1170.19	-107.72	1173.19	1175.14	354.74	1.40
8018.00	89.34	359.08	6945.54	1233.19	-108.33	1236.17	1237.94	354.98	2.28
8082.00	90.66	359.60	6945.54	1297.18	-109.06	1300.15	1301.76	355.19	2.22
8133.00	90.75	358.60	6944.91	1348.17	-109.86	1351.14	1352.64	355.34	1.97
8200.00	90.48	357.88	6944.19	1415.14	-111.92	1418.14	1419.56	355.48	1.15
8263.00	90.84	357.58	6943.47	1478.08	-114.42	1481.13	1482.50	355.57	.74
8327.00	92.42	359.58	6941.64	1542.03	-116.00	1545.10	1546.39	355.70	3.98
8391.00	92.51	1.61	6938.89	1605.97	-115.34	1608.97	1610.10	355.89	3.17
8454.00	91.28	2.84	6936.81	1668.88	-112.89	1671.77	1672.70	356.13	2.76
8518.00	88.11	1.17	6937.15	1732.83	-110.66	1735.60	1736.36	356.35	5.60
8581.00	87.85	.54	6939.37	1795.78	-109.72	1798.49	1799.13	356.50	1.08
8645.00	88.46	.20	6941.43	1859.75	-109.30	1862.40	1862.96	356.64	1.09
8708.00	89.60	359.79	6942.50	1922.74	-109.31	1925.35	1925.84	356.75	1.92

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
8772.00	89.60	358.37	6942.94	1986.73	-110.34	1989.34	1989.79	356.82	2.22
8835.00	89.96	358.49	6943.19	2049.70	-112.06	2052.34	2052.76	356.87	.60
8899.00	90.66	359.25	6942.84	2113.69	-113.32	2116.33	2116.72	356.93	1.61
8962.00	90.31	359.70	6942.31	2176.68	-113.90	2179.31	2179.66	357.00	.90
9026.00	89.96	359.18	6942.16	2240.68	-114.53	2243.29	2243.61	357.07	.98
9121.00	90.66	.38	6941.64	2335.68	-114.89	2338.24	2338.50	357.18	1.46
9184.00	88.81	358.36	6941.93	2398.67	-115.58	2401.22	2401.45	357.24	4.35
9247.00	86.61	355.75	6944.45	2461.52	-118.82	2464.15	2464.39	357.24	5.42
9311.00	88.11	356.72	6947.40	2525.31	-123.01	2528.04	2528.31	357.21	2.79
9374.00	88.02	356.25	6949.53	2588.16	-126.87	2590.98	2591.27	357.19	.76
9438.00	89.08	356.24	6951.14	2652.00	-131.06	2654.93	2655.24	357.17	1.66
9501.00	89.87	356.09	6951.72	2714.86	-135.28	2717.90	2718.22	357.15	1.28
9565.00	90.13	357.53	6951.72	2778.76	-138.84	2781.88	2782.22	357.14	2.29
9629.00	90.13	358.20	6951.58	2842.71	-141.22	2845.88	2846.22	357.16	1.05
9691.00	90.66	357.19	6951.15	2904.66	-143.72	2907.87	2908.21	357.17	1.84
9754.00	90.75	358.79	6950.37	2967.61	-145.93	2970.87	2971.20	357.18	2.54
9818.00	91.10	358.99	6949.34	3031.59	-147.17	3034.85	3035.16	357.22	.63
9882.00	90.31	359.54	6948.55	3095.58	-147.99	3098.83	3099.12	357.26	1.50
9945.00	89.69	359.55	6948.55	3158.58	-148.49	3161.81	3162.07	357.31	.98
10009.00	89.43	358.85	6949.04	3222.57	-149.38	3225.79	3226.03	357.35	1.17
10072.00	89.34	358.20	6949.72	3285.55	-151.00	3288.79	3289.01	357.37	1.04
10136.00	89.69	359.64	6950.26	3349.53	-152.21	3352.78	3352.99	357.40	2.32
10198.00	90.40	1.11	6950.21	3411.53	-151.80	3414.72	3414.90	357.45	2.63
10262.00	91.19	2.23	6949.33	3475.49	-149.94	3478.59	3478.72	357.53	2.14
10326.00	91.01	1.54	6948.10	3539.44	-147.83	3542.43	3542.53	357.61	1.11
10389.00	90.22	.36	6947.42	3602.43	-146.79	3605.34	3605.42	357.67	2.25
10453.00	91.63	1.58	6946.39	3666.41	-145.71	3669.25	3669.30	357.72	2.91
10516.00	90.57	.20	6945.18	3729.39	-144.73	3732.16	3732.20	357.78	2.76
10579.00	90.13	359.54	6944.79	3792.39	-144.87	3795.12	3795.15	357.81	1.26
10643.00	90.75	358.90	6944.30	3856.38	-145.74	3859.11	3859.13	357.84	1.39
10707.00	89.87	359.21	6943.96	3920.37	-146.80	3923.10	3923.12	357.86	1.46
10770.00	89.34	359.30	6944.39	3983.36	-147.62	3986.08	3986.10	357.88	.85
10833.00	89.78	358.59	6944.87	4046.35	-148.78	4049.07	4049.08	357.89	1.33
10897.00	89.87	356.80	6945.07	4110.29	-151.35	4113.07	4113.08	357.89	2.80

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	
10960.00	90.13	356.85	6945.07	4173.20	-154.84	4176.05	4176.07	357.88	.42
11023.00	89.87	358.42	6945.07	4236.14	-157.44	4239.05	4239.07	357.87	2.53
11086.00	90.57	358.19	6944.83	4299.11	-159.30	4302.05	4302.06	357.88	1.17
11150.00	91.01	358.17	6943.95	4363.07	-161.34	4366.04	4366.06	357.88	.69
11212.00	91.10	.51	6942.80	4425.06	-162.05	4428.01	4428.02	357.90	3.78
11275.00	92.07	2.05	6941.06	4488.01	-160.64	4490.88	4490.89	357.95	2.89
11337.00	93.30	1.60	6938.16	4549.91	-158.67	4552.68	4552.68	358.00	2.11
Proj to TD									
11406.99	93.30	1.60	6934.13	4619.76	-156.72	4622.42	4622.42	358.06	.00

