



Job Number:	State/Country:
Company:	Declination: 8.24
Lease/Well:	Grid:
Location:	File name: C:\MARBOB.SVY
Rig Name:	Date/Time: 02-Apr-10 / 06.05
RKB:	Curve Name: Grave Digger
G.L. or M.S.L.:	

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 180.01
 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	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
Tie In									
2035 00	1 82	175 05	2034.26	-49.29	14.04	49.29	51.25	164 10	00
2163 00	7 12	183.36	2161.83	-59.24	13.75	59.24	60.82	166 93	4 16
2194 00	10 99	185 30	2192.43	-64.10	13.36	64.10	65.48	168 22	12 52
2225 00	15 04	182.64	2222 63	-71 07	12.91	71.06	72.23	169 71	13 20
2256 00	18.20	180 90	2252.33	-79 93	12 64	79.92	80.92	171.01	10 32
2287 00	20 93	180 29	2281 54	-90.31	12.54	90 30	91.17	172.09	8 83
2319 00	23.48	181 55	2311 16	-102.40	12.34	102.39	103 14	173 13	8 11
2350 00	25 59	181 03	2339.36	-115 27	12.05	115.26	115 89	174 03	6 84
2381 00	28 75	179 67	2366.94	-129.42	11 97	129.42	129.97	174 71	10 39
2412 00	32 45	178 67	2393.62	-145.19	12 21	145 19	145.71	175 19	12 05
2443 00	36 23	178 35	2419.21	-162.67	12.67	162.67	163 16	175 55	12 21
2474 00	38 78	179 45	2443.80	-181.54	13.02	181 54	182.01	175 90	8 50
2506 00	41 33	179 19	2468 29	-202 13	13 27	202.13	202 56	176 24	7 99
2537 00	43 97	180.42	2491 09	-223 13	13.34	223 13	223 53	176 58	8 93
2568 00	46 52	181 04	2512 92	-245.14	13.05	245 14	245.49	176 95	8 35

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	
2598.00	49.68	181.10	2532.95	-267.46	12.64	267.46	267.76	177.30	10.53
2629.00	53.90	180.45	2552.12	-291.81	12.31	291.81	292.07	177.58	13.71
2660.00	57.42	179.87	2569.60	-317.40	12.24	317.40	317.64	177.79	11.46
2691.00	61.82	178.98	2585.28	-344.14	12.51	344.14	344.37	177.92	14.41
2722.00	66.83	178.71	2598.71	-372.06	13.08	372.06	372.29	177.99	16.18
2754.00	71.23	178.23	2610.16	-401.93	13.88	401.92	402.17	178.02	13.82
2784.00	75.80	178.21	2618.67	-430.67	14.77	430.67	430.93	178.04	15.23
2816.00	78.88	177.46	2625.68	-461.87	15.95	461.87	462.14	178.02	9.89
2847.00	82.04	177.91	2630.82	-492.41	17.19	492.41	492.71	178.00	10.29
2876.00	85.82	180.21	2634.09	-523.22	17.69	523.22	523.52	178.06	14.25
2909.00	90.57	179.63	2635.07	-554.20	17.73	554.20	554.48	178.17	15.44
2941.00	92.95	179.01	2634.09	-586.18	18.11	586.18	586.46	178.23	7.69
3003.00	92.15	178.48	2631.33	-648.10	19.47	648.10	648.40	178.28	1.55
3065.00	90.31	178.57	2630.00	-710.07	21.06	710.06	710.38	178.30	2.97
3128.00	89.96	177.87	2629.85	-773.03	23.02	773.03	773.38	178.29	1.24
3190.00	90.31	178.57	2629.70	-835.00	24.95	835.00	835.38	178.29	1.26
3252.00	90.84	180.15	2629.08	-897.00	25.64	896.99	897.36	178.36	2.69
3314.00	90.92	180.33	2628.13	-958.99	25.38	958.98	959.32	178.48	3.2
3377.00	91.01	180.15	2627.07	-1021.98	25.12	1021.97	1022.29	178.59	3.2
3440.00	90.75	181.39	2626.10	-1084.96	24.27	1084.96	1085.23	178.72	2.01
3503.00	90.84	181.65	2625.23	-1147.94	22.60	1147.93	1148.16	178.87	4.4
3564.00	90.40	181.95	2624.57	-1208.90	20.68	1208.90	1209.08	179.02	8.7
3625.00	89.69	182.15	2624.52	-1269.86	18.50	1269.86	1270.00	179.17	1.21
3687.00	89.96	182.13	2624.71	-1331.82	16.19	1331.82	1331.92	179.30	4.4
3750.00	90.22	180.94	2624.61	-1394.79	14.50	1394.79	1394.87	179.40	1.93
3812.00	90.31	180.82	2624.32	-1456.79	13.55	1456.78	1456.85	179.47	2.4
3875.00	90.48	180.70	2623.89	-1519.78	12.71	1519.78	1519.83	179.52	3.3
3937.00	89.52	181.31	2623.89	-1581.77	11.62	1581.77	1581.81	179.58	1.83
3999.00	89.34	181.76	2624.50	-1643.74	9.96	1643.74	1643.77	179.65	7.8
4061.00	89.60	181.97	2625.08	-1705.71	7.94	1705.71	1705.73	179.73	5.4
4123.00	89.87	181.81	2625.36	-1767.67	5.90	1767.67	1767.68	179.81	5.1
4185.00	89.78	180.42	2625.55	-1829.66	4.69	1829.66	1829.67	179.85	2.25
4247.00	89.78	180.21	2625.79	-1891.66	4.35	1891.66	1891.66	179.87	3.4
4309.00	90.04	179.62	2625.89	-1953.66	4.44	1953.66	1953.66	179.87	1.04
4372.00	89.96	179.81	2625.89	-2016.66	4.76	2016.66	2016.66	179.86	3.3
4434.00	90.22	179.74	2625.79	-2078.66	5.00	2078.66	2078.66	179.86	4.3
4496.00	90.04	179.80	2625.65	-2140.66	5.25	2140.65	2140.66	179.86	3.1
4558.00	90.13	179.83	2625.56	-2202.66	5.45	2202.65	2202.66	179.86	1.5

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	
4621 00	90 04	179 94	2625.47	-2265 65	5 58	2265.65	2265 66	179 86	23
4683 00	90.13	179.77	2625.37	-2327.65	5.73	2327 65	2327 66	179.86	31
4745 00	90 04	180.02	2625 28	-2389.65	5.85	2389.65	2389 66	179.86	43
4807 00	90 31	180.02	2625.09	-2451.65	5.83	2451.65	2451 66	179.86	44
4871 00	90 22	180.13	2624.80	-2515.65	5.74	2515.65	2515 66	179 87	22
4933 00	89 96	180 46	2624.70	-2577.65	5.42	2577.65	2577 66	179.88	68
4996 00	90 22	181 07	2624.60	-2640.65	4.58	2640.65	2640.65	179.90	1 05
5060 00	90 31	181 11	2624.30	-2704.63	3.36	2704.63	2704 64	179.93	15
5122 00	90 22	181 25	2624.02	-2766.62	2.09	2766.62	2766.62	179 96	27
5184 00	88.55	181 11	2624.68	-2828 60	.81	2828.60	2828.60	179.98	2 70
5247 00	88.20	179 84	2626 47	-2891 57	.29	2891.57	2891 57	179.99	2 09
5310 00	88 72	179.35	2628.16	-2954.55	.73	2954.55	2954 55	179 99	1 13
5373 00	90 22	179 59	2628 75	-3017 54	1.32	3017.54	3017 54	179.98	2 41
5435 00	90 40	179 65	2628.41	-3079.54	1.73	3079.54	3079 54	179 97	31
5496 00	90 31	179.39	2628.02	-3142 53	2.26	3142.53	3142 54	179 96	44
5561 00	89.96	179 24	2627.87	-3205.53	3.01	3205 53	3205 53	179 95	60
5623 00	90 40	179.51	2627.68	-3267.53	3.69	3267.52	3267 53	179.94	83
5685 00	90 57	179.36	2627 15	-3329.52	4 30	3329.52	3329.52	179.93	37
5746 00	90.75	179 43	2626.43	-3392.51	4.96	3392.51	3392 52	179.92	31
5811 00	89 25	179.50	2626 43	-3455.51	5.55	3455.51	3455.51	179 91	2 38
5874 00	89 43	179.48	2627.15	-3518 50	6.11	3518.50	3518 51	179 90	29
5937 00	89.69	179 32	2627.64	-3581.50	6.77	3581 49	3581.50	179 89	48
5999 00	89 87	179.44	2627.87	-3643.49	7.44	3643.49	3643.50	179.88	35
6062 00	90 22	179.41	2627 82	-3706 49	8.07	3706.49	3706.50	179 88	56
6126 00	90 22	179.21	2627.58	-3770.48	8.84	3770.48	3770.49	179 87	31
6188 00	90 22	179.51	2627 34	-3832 48	9.54	3832.48	3832 49	179 86	48
6251 00	90 57	179.35	2626.91	-3895.47	10.16	3895.47	3895 49	179.85	61
6313 00	89 69	179.36	2626.76	-3957.47	10.86	3957.47	3957 48	179 84	1 42
6376 00	89 60	179 68	2627 16	-4020.47	11.39	4020 46	4020.48	179 84	53
6439 00	89 52	180.75	2627.64	-4083.46	11.15	4083.46	4083 48	179.84	1 70
6502 00	89 69	180.64	2628 07	-4146.46	10.39	4146.45	4146 47	179 86	32
6564 00	89 87	180 70	2628 31	-4208.45	9.66	4208.45	4208.46	179 87	31
6626 00	90 22	180 77	2628.26	-4270.45	8.87	4270.45	4270 46	179 88	58
6689 00	90 40	180 69	2627 92	-4333.44	8 07	4333.44	4333.45	179 89	31
6752 00	90.40	180 78	2627 48	-4396.43	7.26	4396.43	4396 44	179.91	14
6815 00	90 22	181 35	2627 14	-4459.42	6.09	4459.42	4459 43	179.92	95
6877 00	90 13	180 97	2626 95	-4521 41	4.83	4521.41	4521 41	179.94	63
PBHL									
6927 00	90.13	180.97	2626 84	-4571.40	3.98	4571.40	4571.40	179.95	00

Surface