



## **Appendix I**

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# **Eastman-Whipstock / Directional Survey Report**

BECHTEL FILE: 5724  
WELL: STATE 2-14  
LOCATION: MILAND, CA.  
DECL: 13 EAST  
SURVEY TYPE: MAG MULTI-SHOT  
SURVEY BY: EASTMAN WHIPSTOCK, INC.  
SURVEYOR: STEVE LYONS  
DRILLER: GENE YOCHUM

RECORD OF SURVEY

ANGLE AVERAGING METHOD



RECHTEL FILE: 5724  
 WELL: STATE 2-14  
 LOCATION: MILANO, CA.

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MEASURED DEPTH FEET	DRIFT ANGLE D N	DRIFT DIRECTION D M	COURSE LENGTH FEET	TRUE VERTICAL DEPTH FEET	RECTANGULAR COORDINATES FEET	CLOSURE DISTANCE FEET	CLOSURE DIRECTION D M	DOUBLE SEVERITY DG/100FT	
1032.	0 15	S 60	0 E	0.	1032.00	1.81 S	1.34 E	2.25 S 36 31 E	0.00
1064.	0 15	S 1	0 W	32.	1064.00	1.93 S	1.41 E	2.39 S 36 6 E	0.79
1095.	0 15	S 27	0 E	31.	1095.00	2.06 S	1.44 E	2.52 S 31 54 E	0.39
1188.	0 0	0	0	93.	1188.00	2.24 S	1.53 E	2.72 S 34 19 E	0.27
1282.	0 30	N 85	0 E	94.	1282.00	2.21 S	1.94 E	2.94 S 41 18 E	0.53
1375.	0 15	N 65	0 E	93.	1375.00	2.05 S	2.53 E	3.26 S 50 57 E	0.30
1468.	0 15	N 53	0 E	93.	1468.00	1.84 S	2.88 E	3.41 S 57 22 E	0.06
1562.	0 0	0	0	94.	1562.00	1.72 S	3.04 E	3.49 S 60 31 E	0.27
1655.	0 30	N 55	0 E	93.	1654.99	1.49 S	3.37 E	3.68 S 64 13 E	0.54
1748.	0 15	S 87	0 E	93.	1747.99	1.32 S	3.96 E	4.17 S 71 35 E	0.37
1842.	0 15	S 87	0 E	94.	1841.99	1.34 S	4.37 E	4.57 S 72 57 E	0.00
1935.	0 15	N 2	0 E	93.	1934.99	1.07 S	4.67 E	4.79 S 77 8 E	0.38
2028.	0 30	N 25	0 E	93.	2027.99	0.47 S	4.81 E	4.83 S 84 23 E	0.31
2122.	0 30	N 40	0 E	94.	2121.99	0.22 N	5.25 E	5.25 N 87 37 E	0.14
2215.	1 0	N 72	0 E	93.	2214.98	0.90 N	6.26 E	6.32 N 81 49 E	0.68
2308.	1 15	N 32	0 E	93.	2307.96	2.02 N	7.70 E	7.96 N 75 16 E	0.87
2402.	1 45	N 3	0 E	94.	2401.93	4.37 N	8.44 E	9.50 N 62 37 E	0.95
2495.	1 15	N 23	0 E	93.	2494.90	6.74 N	8.98 E	11.23 N 53 7 E	0.77
2588.	0 45	N 17	0 E	93.	2587.88	8.27 N	9.54 E	12.62 N 49 5 E	0.55
2682.	0 30	N 14	0 E	94.	2681.88	9.26 N	9.81 E	13.49 N 46 41 E	0.27
2775.	0 45	N 9	0 E	93.	2774.87	10.25 N	10.02 E	14.33 N 44 20 E	0.27
2868.	1 15	N 12	0 E	93.	2867.86	11.85 N	10.31 E	15.70 N 41 2 E	0.54
2962.	2 0	N 16	0 E	94.	2961.82	14.43 N	10.96 E	18.12 N 37 12 E	0.91
3055.	3 0	N 1	0 W	93.	3054.73	18.45 N	11.49 E	21.74 N 31 54 E	1.33
3148.	3 0	N 8	0 E	93.	3147.60	23.31 N	11.78 E	26.12 N 26 49 E	0.51
3242.	3 45	N 23	0 E	94.	3241.44	28.64 N	13.26 E	31.57 N 24 51 E	1.23
3335.	3 30	N 25	0 E	93.	3334.25	34.02 N	15.65 E	37.45 N 24 43 E	0.30
3428.	3 30	N 34	0 E	93.	3427.08	38.96 N	18.45 E	43.11 N 25 20 E	0.59
3488.	4 0	N 38	0 E	60.	3486.95	42.32 N	20.47 E	47.01 N 25 49 E	1.06
3501.	3 30	N 38	0 E	13.	3499.92	43.03 N	20.93 E	47.86 N 25 56 E	6.32



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MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH FEET	TRUE	RECTANGULAR		CLOSURE		DOGLEG SEVERITY IN/100FT
				VERTICAL DEPTH FEET	COORDINATES FEET		DISTANCE FEET	CORRECTION D M	
3579.	3 30	N 31 0 E	78.	3577.78	46.94 N	23.43 E	32.57	N 26 43 E	0.55
3610.	3 30	N 31 0 E	31.	3608.72	48.58 N	24.61 E	54.46	N 26 52 E	0.00
3703.	3 30	N 34 0 E	93.	3701.55	53.37 N	27.66 E	60.11	N 27 24 E	0.20
3796.	3 45	N 29 0 E	93.	3794.36	58.38 N	30.73 E	65.98	N 27 48 E	0.43
3889.	3 30	N 33 0 E	93.	3887.17	63.42 N	33.76 E	71.85	N 28 1 E	0.38
3982.	3 30	N 33 0 E	93.	3980.00	68.18 N	36.85 E	77.50	N 28 23 E	0.00
4075.	3 45	N 28 0 E	93.	4072.82	73.25 N	39.83 E	83.38	N 28 32 E	0.43
4168.	4 0	N 30 0 E	93.	4165.60	78.75 N	42.88 E	89.67	N 28 34 E	0.31
4261.	4 0	N 31 0 E	93.	4258.38	84.34 N	46.17 E	96.15	N 28 42 E	0.08
4354.	4 0	N 31 0 E	93.	4351.15	89.90 N	49.51 E	102.63	N 28 51 E	0.00
4447.	3 45	N 16 0 E	93.	4443.94	95.64 N	52.02 E	108.89	N 28 32 E	1.12
4540.	3 45	N 8 0 E	93.	4536.74	101.61 N	53.28 E	114.74	N 27 40 E	0.56
4633.	4 0	N 10 0 E	93.	4629.53	107.82 N	54.27 E	120.71	N 26 43 E	0.31
4726.	4 0	N 18 0 E	93.	4722.30	114.11 N	55.84 E	127.04	N 26 4 E	0.60
4819.	4 0	N 23 0 E	93.	4815.07	120.19 N	58.11 E	133.50	N 25 48 E	0.37
4912.	4 15	N 31 0 E	93.	4907.83	126.15 N	61.15 E	140.19	N 25 52 E	0.67
5005.	4 15	N 35 0 E	93.	5000.58	131.93 N	64.90 E	147.03	N 26 12 E	0.52
5098.	4 0	N 43 0 E	93.	5093.33	137.13 N	69.11 E	153.56	N 26 45 E	0.67
5191.	4 45	N 58 0 E	93.	5186.06	141.64 N	74.58 E	160.08	N 27 46 E	1.44
5284.	6 0	N 68 0 E	93.	5278.66	145.60 N	82.35 E	167.27	N 29 29 E	1.67
5377.	7 30	N 76 0 E	93.	5371.01	148.98 N	92.74 E	175.48	N 31 54 E	1.90
5470.	7 15	N 77 0 E	93.	5463.24	151.76 N	104.35 E	184.18	N 34 31 E	0.30
5563.	7 45	N 76 0 E	93.	5555.45	154.60 N	116.15 E	193.37	N 36 55 E	0.56
5656.	7 45	N 77 0 E	93.	5647.60	157.52 N	128.35 E	203.19	N 39 10 E	0.14
5749.	8 0	N 76 0 E	93.	5739.72	160.50 N	140.74 E	213.16	N 41 15 E	0.31
5842.	8 0	N 78 0 E	93.	5831.81	163.41 N	153.35 E	224.10	N 43 11 E	0.30
5935.	8 0	N 79 0 E	93.	5924.91	166.10 N	166.01 E	234.84	N 44 59 E	0.00
5966.	8 15	N 78 0 E	31.	5954.60	167.01 N	170.30 E	238.52	N 45 33 E	0.81
5979.	8 15	N 79 0 E	13.	5967.16	167.38 N	172.12 E	240.09	N 45 48 E	1.10

STATIONS BELOW ARE SINGLE SHOTS



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MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH FEET	TRUE VERTICAL DEPTH FEET	RECTANGULAR		CLOSURE		DOBLEG SEVERITY DG/100FT
					C O O R D I N A T E S	FEET	DISTANCE FEET	DIRECTION D M	
6086.	7 15	N 87 0 E	107.	6073.49	169.14 N	186.44 E	251.74	N 47 47 E	1.37
6121.	6 15	S 89 0 E	35.	6108.24	169.21 N	190.56 E	254.84	N 48 24 E	3.16
6153.	4 30	S 86 0 E	32.	6140.10	169.08 N	193.55 E	257.01	N 48 52 E	5.34
6187.	3 30	S 64 0 E	34.	6174.02	168.47 N	195.84 E	258.33	N 49 18 E	5.33
6218.	3 15	S 44 0 E	31.	6204.97	167.40 N	197.32 E	258.76	N 49 41 E	3.86
6250.	3 0	S 18 0 E	32.	6236.92	165.90 N	198.22 E	258.48	N 50 4 E	4.46
6324.	4 30	S 31 0 W	74.	6310.75	161.09 N	197.67 E	255.00	N 50 49 E	4.57
6387.	4 30	S 39 0 W	63.	6373.57	157.04 N	194.84 E	250.25	N 51 8 E	1.00
6466.	5 0	S 38 0 W	79.	6452.39	151.92 N	190.76 E	243.87	N 51 28 E	0.64
6513.	5 0	S 38 0 W	47.	6499.12	148.70 N	188.24 E	239.89	N 51 42 E	0.00
6577.	5 30	S 10 0 W	64.	6562.85	144.14 N	184.36 E	234.18	N 52 1 E	0.84
7196.	4 45	S 10 0 W	619.	7179.37	94.03 N	161.19 E	186.61	N 59 45 E	0.44
7341.	5 0	S 2 0 E	145.	7323.85	81.74 N	160.33 E	179.96	N 62 59 E	0.72
7414.	5 0	S 3 0 W	73.	7396.57	75.38 N	160.27 E	177.11	N 64 49 E	0.60
7478.	5 0	S 7 0 E	64.	7460.33	69.80 N	160.47 E	174.99	N 66 29 E	1.36
7549.	5 0	S 17 0 E	71.	7531.06	63.75 N	161.75 E	173.86	N 68 29 E	1.23
7609.	4 45	S 26 0 E	60.	7590.84	59.00 N	163.62 E	173.24	N 70 10 E	1.34
7654.	6 15	S 47 0 E	45.	7635.63	55.54 N	166.19 E	175.22	N 71 31 E	5.53
7754.	5 15	S 47 0 E	100.	7735.13	48.71 N	173.52 E	180.22	N 74 19 E	1.00
7785.	4 30	S 38 0 E	31.	7766.02	46.76 N	175.29 E	181.43	N 75 4 E	3.45
7820.	2 30	S 38 0 E	35.	7800.95	45.08 N	176.61 E	182.27	N 75 41 E	5.71
7849.	2 15	S 2 0 E	29.	7829.93	43.95 N	177.02 E	182.40	N 76 3 E	5.13
7880.	3 45	S 5 0 W	31.	7860.88	42.33 N	176.98 E	181.97	N 76 33 E	4.97
7932.	4 45	S 13 0 W	52.	7912.74	38.52 N	176.38 E	180.53	N 77 41 E	2.23
7987.	4 15	S 23 0 W	55.	7967.37	34.42 N	175.04 E	178.39	N 78 53 E	1.69
8028.	4 15	S 40 0 W	41.	8008.46	31.83 N	173.46 E	176.35	N 79 36 E	3.06
8055.	4 45	S 37 0 W	27.	8035.38	30.17 N	172.14 E	174.78	N 80 4 E	2.05
8086.	5 0	S 33 0 W	31.	8066.26	28.01 N	170.63 E	172.91	N 80 41 E	1.36
8190.	1 30	S 38 0 W	104.	8169.91	21.00 N	165.62 E	166.95	N 82 46 E	0.62
8248.	4 15	S 31 0 W	58.	8227.74	17.35 N	163.12 E	164.04	N 83 56 E	1.02



BECHTEL FILE: 5724  
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 LOCATION: MILAND, CA.

COMPUTATION PAGE NO. 4  
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MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH FEET	TRUE VERTICAL DEPTH FEET	RECTANGULAR COORDINATES FEET	CLOSURE DISTANCE FEET	CORRECTION D M	DOGLEG SEVERITY DEG/100FT
8311.	4 15	S 27 0 W	63.	8290.56	13.27 N 160.85 E	161.30	N 85 17 E	0.47
8342.	4 15	S 23 0 W	31.	8321.48	11.19 N 159.88 E	160.27	N 86 0 E	0.96
8388.	4 0	S 17 0 W	46.	8367.36	8.08 N 158.75 E	158.96	N 87 5 E	1.08
8450.	3 45	S 11 0 W	62.	8429.22	4.01 N 157.74 E	157.79	N 88 33 E	0.77
8532.	4 15	S 13 0 W	82.	8511.02	1.58 S 156.55 E	156.56	S 89 25 E	0.63
8660.	3 45	S 8 0 W	128.	8638.71	10.36 S 154.92 E	155.27	S 86 10 E	0.48
8693.	3 45	S 2 0 W	33.	8671.64	12.51 S 154.73 E	155.24	S 85 23 E	1.19
8786.	3 30	S 7 0 E	93.	8764.45	18.39 S 154.99 E	156.08	S 83 14 E	0.67
8819.	3 45	S 2 0 E	33.	8797.38	20.47 S 155.15 E	156.50	S 82 29 E	1.22
8881.	3 45	S 12 0 E	62.	8859.25	24.49 S 155.65 E	157.56	S 81 3 E	1.05
8954.	3 30	S 16 0 E	73.	8932.10	28.97 S 156.76 E	159.42	S 79 32 E	0.49
9002.	2 45	S 14 0 E	48.	8980.03	31.50 S 157.44 E	160.56	S 78 41 E	1.58
9198.	4 0	S 27 0 E	196.	9175.69	42.30 S 161.48 E	166.93	S 75 19 E	0.74
9400.	2 45	S 22 0 E	202.	9377.34	53.13 S 166.41 E	174.69	S 72 18 E	0.64
10564.	2 45	S 22 0 E	1164.	10540.00	104.91 S 187.34 E	214.71	S 60 45 E	0.00

STATION AT 10564 MD IS PROJECTED

FINAL CLOSURE - DIRECTION: S 60 DEGS 45 MINS E  
 DISTANCE: 214.71 FEET



DATA FILE: 5724

BECHTEL FILE: 5724  
WELL: STATE 2-14  
LOCATION: MILANO, CA.

EASTMAN WHIPSTOCK, INC.

### HORIZONTAL PROJECTION

SCALE 1 IN. = 50 FEET  
DEPTH INDICATOR: MD

