

EASTMAN CHRISTENSEN

RECORD OF SURVEY

FOR

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* OPERATOR : SUN EXPLORATION AND PRODUCTION COMPANY *
* WELL NAME : NEW MEXICO FED. 15 NO. 1 *
* LOCATION : LEA COUNTY, NEW MEXICO *
* JOB NUMBER : *
* RIG : WILLBROS RIG 11 *
* DECLINATION : 10.00 E *
* * * * *
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EC DISTRICT : WEST TEXAS BASE

SUN EXPLORATION AND PRODUCTION COMPANY
 NEW MEXICO FED. 15 NO. 1
 LEA COUNTY, NEW MEXICO

DECLINATION : 10.00 JOB NUMBER :
 DATE PRINTED : 07-OCT-88
 OUR REF. NO. : S01292.48U

PAGE NO. 2

MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	TRUE VERTICAL DEPTH	R E C T A N G U L A R C O O R D I N A T E S	DOGLEG SEVERITY
0.00	0 0	N 0 0 E	0.00	0.00	0.00 N 0.00 E	0.00
100.00	0 30	N 47 44 W	100.00	100.00	0.29 N 0.32 W	0.50
200.00	0 30	N 84 30 W	100.00	199.99	0.64 N 1.11 W	0.32
300.00	0 30	N 59 15 W	100.00	299.99	0.91 N 1.93 W	0.22
400.00	0 30	N 45 0 W	100.00	399.99	1.44 N 2.62 W	0.12
500.00	0 45	N 57 46 W	100.00	499.98	2.13 N 3.47 W	0.28
600.00	0 30	N 21 31 W	100.00	599.98	2.95 N 4.15 W	0.46
700.00	1 0	N 38 17 W	100.00	699.97	4.08 N 4.81 W	0.54
800.00	0 30	N 36 5 W	100.00	799.96	5.13 N 5.60 W	0.50
900.00	0 30	N 21 54 W	100.00	899.95	5.89 N 6.02 W	0.12
1000.00	0 45	N 56 45 W	100.00	999.95	6.72 N 6.70 W	0.44
1100.00	0 30	N 87 37 W	100.00	1099.94	7.05 N 7.73 W	0.41
1200.00	0 45	N 35 30 W	100.00	1199.94	7.55 N 8.66 W	0.59
1300.00	0 45	N 61 25 W	100.00	1299.93	8.41 N 9.63 W	0.34
1400.00	0 45	N 11 22 W	100.00	1399.92	9.43 N 10.38 W	0.63
1500.00	1 15	N 8 19 W	100.00	1499.90	11.15 N 10.68 W	0.50
1600.00	0 45	N 23 17 W	100.00	1599.89	12.83 N 11.15 W	0.56
1700.00	0 45	N 3 46 E	100.00	1699.88	14.11 N 11.37 W	0.35
1800.00	0 45	N 16 48 E	100.00	1799.87	15.39 N 11.14 W	0.17
1900.00	0 30	N 7 4 E	100.00	1899.86	16.46 N 10.91 W	0.27
2000.00	0 30	N 59 6 E	100.00	1999.86	17.17 N 10.45 W	0.44
2100.00	1 0	N 54 9 E	100.00	2099.85	17.89 N 9.36 W	0.50
2200.00	1 30	N 54 11 E	100.00	2199.83	19.16 N 7.59 W	0.50
2300.00	2 30	N 63 13 E	100.00	2299.77	20.97 N 4.61 W	1.05
2400.00	2 15	N 61 15 E	100.00	2399.68	22.91 N 0.94 W	0.26
2500.00	2 15	N 59 17 E	100.00	2499.60	24.85 N 2.46 E	0.08
2600.00	2 30	N 60 17 E	100.00	2599.52	26.94 N 6.05 E	0.25
2700.00	2 30	N 59 18 E	100.00	2699.42	29.13 N 9.81 E	0.04
2800.00	2 45	N 65 18 E	100.00	2799.32	31.26 N 13.87 E	0.37
2900.00	2 45	N 67 18 E	100.00	2899.20	33.19 N 18.26 E	0.10

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SUN EXPLORATION AND PRODUCTION COMPANY
 NEW MEXICO FED. 15 NO. 1
 LEA COUNTY, NEW MEXICO

DATE PRINTED : 07-OCT-88
 OUR REF. NO. : 501292.4SU
 DECLINATION : 10.00 JOB NUMBER :
 PAGE NO. 3

MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	TRUE VERTICAL DEPTH	R E C T A N G U L A R C O O R D I N A T E S	DOGLEG SEVERITY
3000.00	2 30	N 57 18 E	100.00	2999.10	35.31 N 22.31 E	0.52
3100.00	1 45	N 75 18 E	100.00	3099.03	36.80 N 25.69 E	1.00
3200.00	1 30	N 86 18 E	100.00	3198.99	37.25 N 28.49 E	0.40
3300.00	1 15	S 88 43 E	100.00	3298.96	37.30 N 30.88 E	0.28
3400.00	0 45	S 89 50 E	100.00	3398.94	37.28 N 32.63 E	0.50
3500.00	0 45	N 53 9 E	100.00	3498.93	37.68 N 33.85 E	0.48
3600.00	1 0	N 63 8 E	100.00	3598.92	38.49 N 35.14 E	0.29
3700.00	0 45	N 64 7 E	100.00	3698.91	39.17 N 36.51 E	0.25
3800.00	1 0	N 70 6 E	100.00	3798.90	39.76 N 37.92 E	0.27
3900.00	1 0	N 69 6 E	100.00	3898.88	40.37 N 39.55 E	0.02
4000.00	1 0	N 84 6 E	100.00	3998.87	40.77 N 41.24 E	0.26
4100.00	1 15	N 85 6 E	100.00	4098.85	40.96 N 43.20 E	0.25
4200.00	1 30	N 81 6 E	100.00	4198.82	41.24 N 45.58 E	0.27
4300.00	1 15	N 70 8 E	100.00	4298.79	41.84 N 47.90 E	0.36
4400.00	1 0	N 68 9 E	100.00	4398.77	42.54 N 49.74 E	0.25
4500.00	1 0	N 60 11 E	100.00	4498.76	43.30 N 51.31 E	0.14
4600.00	1 0	S 62 46 E	100.00	4598.74	43.34 N 52.98 E	0.96
4700.00	0 45	S 87 43 E	100.00	4698.73	42.95 N 54.44 E	0.45
4800.00	0 45	S 86 41 E	100.00	4798.72	42.89 N 55.75 E	0.01
4900.00	0 30	N 77 34 E	100.00	4898.71	42.97 N 56.84 E	0.30
5000.00	0 30	N 80 37 E	100.00	4998.71	43.14 N 57.69 E	0.03
5100.00	1 0	S 85 20 E	100.00	5098.70	43.19 N 59.00 E	0.53
5200.00	1 0	S 77 18 E	100.00	5198.69	42.93 N 60.72 E	0.14
5300.00	1 0	S 82 15 E	100.00	5298.67	42.62 N 62.44 E	0.09
5400.00	1 15	N 89 47 E	100.00	5398.65	42.49 N 64.40 E	0.29
5500.00	1 0	N 75 50 E	100.00	5498.63	42.73 N 66.34 E	0.37
5600.00	0 45	N 67 52 E	100.00	5598.62	43.21 N 67.79 E	0.28
5700.00	0 45	N 57 55 E	100.00	5698.61	43.81 N 68.96 E	0.13
5800.00	0 45	N 68 57 E	100.00	5798.60	44.39 N 70.12 E	0.14
5900.00	0 30	N 74 0 E	100.00	5898.60	44.74 N 71.16 E	0.26

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MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	TRUE VERTICAL DEPTH	R E C T A N G U L A R C O O R D I N A T E S	DOGLEG SEVERITY
6000.00	0 30	N 71 3 E	100.00	5998.59	45.00 N 71.99 E	0.03
6100.00	0 30	S 14 55 E	100.00	6098.59	44.63 N 72.68 E	0.73
6200.00	0 30	S 0 52 E	100.00	6198.59	43.77 N 72.80 E	0.12
6300.00	0 15	S 25 10 W	100.00	6298.58	43.13 N 72.66 E	0.30
6369.00	0 0	N 0 0 E	69.00	6367.58	43.00 N 72.60 E	0.36
6401.00	0 15	S 46 0 W	32.00	6399.58	42.95 N 72.55 E	0.78
6494.00	0 15	S 26 0 W	93.00	6492.58	42.62 N 72.31 E	0.09
6587.00	0 30	S 84 0 W	93.00	6585.58	42.29 N 71.83 E	0.46
6681.00	0 30	N 48 0 W	94.00	6679.58	42.54 N 71.07 E	0.43
6774.00	0 30	N 18 0 E	93.00	6772.57	43.28 N 70.88 E	0.59
6868.00	0 45	N 20 0 W	94.00	6866.57	44.29 N 70.66 E	0.50
6961.00	1 0	N 17 0 W	93.00	6959.56	45.63 N 70.41 E	0.27
7054.00	0 45	N 4 0 E	93.00	7052.55	47.03 N 70.25 E	0.43
7148.00	0 45	N 45 0 W	94.00	7146.54	48.15 N 69.83 E	0.66
7241.00	0 30	N 10 0 W	93.00	7239.53	49.04 N 69.37 E	0.48
7335.00	0 45	N 50 0 W	94.00	7333.53	49.91 N 68.87 E	0.52
7428.00	0 45	N 67 0 W	93.00	7426.52	50.54 N 67.83 E	0.24
7521.00	1 15	N 34 0 W	93.00	7519.51	51.56 N 66.60 E	0.80
7615.00	1 0	N 25 0 W	94.00	7613.49	53.17 N 65.69 E	0.32
7708.00	1 0	N 46 0 W	93.00	7706.47	54.48 N 64.75 E	0.39
7802.00	1 0	N 15 0 W	94.00	7800.46	55.88 N 63.93 E	0.57
7895.00	1 0	N 13 0 E	93.00	7893.44	57.48 N 63.90 E	0.52
7989.00	1 15	N 72 0 E	94.00	7987.43	58.79 N 65.09 E	1.20
8082.00	2 15	N 68 0 E	93.00	8080.38	59.76 N 67.76 E	1.08
8175.00	1 45	N 54 0 E	93.00	8173.33	61.33 N 70.59 E	0.75
8269.00	1 0	N 76 0 E	94.00	8267.30	62.27 N 72.62 E	0.96
8362.00	1 0	N 66 0 E	93.00	8360.28	62.80 N 74.16 E	0.19
8456.00	2 0	N 54 0 E	94.00	8454.25	64.03 N 76.28 E	1.11
8549.00	3 0	N 55 0 E	93.00	8547.16	66.39 N 79.59 E	1.08
8642.00	2 15	N 66 0 E	93.00	8640.06	68.48 N 83.29 E	0.97

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SUN EXPLORATION AND PRODUCTION COMPANY
NEW MEXICO FED. 15 NO. 1
LEA COUNTY, NEW MEXICO

DATE PRINTED : 08-OCT-88
OUR REF. NO. : 801292.4SU
DECLINATION : 10.00 JOB NUMBER :

PAGE NO. 5

MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	TRUE VERTICAL DEPTH	R E C T A N G U L A R C O O R D I N A T E S	DOGLEG SEVERITY
8736.00	2 30	N 57 0 E	94.00	8733.98	70.34 N 86.71 E	0.48
8829.00	2 45	N 66 0 E	93.00	8826.88	72.37 N 90.45 E	0.52
8923.00	2 30	N 73 0 E	94.00	8920.79	73.87 N 94.48 E	0.43
9016.00	2 15	N 64 0 E	93.00	9013.71	75.28 N 98.06 E	0.48
9109.00	2 0	N 68 0 E	93.00	9106.64	76.69 N 101.21 E	0.31
9203.00	1 45	N 81 0 E	94.00	9200.59	77.51 N 104.16 E	0.52
9296.00	2 0	N 83 0 E	93.00	9293.54	77.93 N 107.18 E	0.28
9390.00	2 0	N 74 0 E	94.00	9387.48	78.58 N 110.39 E	0.33
9483.00	2 0	N 44 0 E	93.00	9480.43	80.24 N 113.14 E	1.11
9576.00	2 0	N 34 0 E	93.00	9573.37	82.75 N 115.18 E	0.37
9670.00	2 45	N 38 0 E	94.00	9667.29	85.91 N 117.47 E	0.82
9763.00	3 15	N 37 0 E	93.00	9760.16	89.77 N 120.43 E	0.54
9857.00	3 0	N 46 0 E	94.00	9854.02	93.60 N 123.82 E	0.58
9950.00	3 30	N 43 0 E	93.00	9946.87	97.36 N 127.52 E	0.57
10044.00	3 0	N 36 0 E	94.00	10040.72	101.47 N 130.91 E	0.68
10137.00	3 15	N 47 0 E	93.00	10133.58	105.26 N 134.26 E	0.70
10230.00	3 0	N 48 0 E	93.00	10226.44	108.69 N 138.00 E	0.28
10324.00	2 45	N 45 0 E	94.00	10320.32	111.93 N 141.42 E	0.31
10417.00	2 0	N 26 0 E	93.00	10413.24	115.06 N 143.65 E	1.16
10511.00	2 0	N 15 0 E	94.00	10507.19	118.12 N 144.79 E	0.41
10604.00	2 0	N 0 0 E	93.00	10600.13	121.33 N 145.22 E	0.56
10697.00	1 30	N 4 0 W	93.00	10693.09	124.17 N 145.12 E	0.55
10729.00	1 45	N 5 0 E	92.00	10725.07	125.08 N 145.12 E	1.11
10760.00	2 0	N 12 0 E	91.00	10756.06	126.08 N 145.27 E	1.09
10791.00	3 0	N 15 0 E	91.00	10787.03	127.39 N 145.59 E	3.25
10822.00	3 15	N 25 0 E	91.00	10817.98	128.98 N 146.17 E	1.93
10853.00	3 45	N 24 0 E	91.00	10848.92	130.70 N 146.95 E	1.62
10884.00	4 0	N 20 0 E	91.00	10879.85	132.64 N 147.74 E	1.19
10915.00	4 30	N 33 0 E	91.00	10910.77	134.70 N 148.76 E	3.49
10947.00	4 30	N 25 0 E	92.00	10942.67	136.89 N 149.98 E	1.96

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SUN EXPLORATION AND PRODUCTION COMPANY
 NEW MEXICO FED. 15 NO. 1
 LEA COUNTY, NEW MEXICO

DATE PRINTED : 08-OCT-88
 OUR REF. NO. : S01292.4SU
 DECLINATION : 10.00 JOB NUMBER :

MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	TRUE VERTICAL DEPTH	R E C T A N G U L A R C O O R D I N A T E S	DOGLEG SEVERITY
10978.00	5 15	N 20 0 E	31.00	10973.56	139.32 N 150.98 E	2.78
11009.00	5 30	N 23 0 E	31.00	11004.42	142.02 N 152.05 E	1.21
11040.00	5 30	N 22 0 E	31.00	11035.28	144.77 N 153.18 E	0.31
11071.00	5 45	N 20 0 E	31.00	11066.13	147.61 N 154.27 E	1.02
11102.00	6 0	N 26 0 E	31.00	11096.96	150.53 N 155.51 E	2.14
11133.00	6 15	N 25 0 E	31.00	11127.79	153.51 N 156.94 E	0.88
11165.00	7 15	N 21 0 E	32.00	11159.56	156.97 N 158.41 E	3.45

CLOSURE - DISTANCE : 223.01
 DIRECTION : N 45 16 E

REPORT UNITS : Feet
 SURVEY CALCULATION METHOD : Radius of curvature

SURVEY RUN INFORMATION
 =====
 GYROSCOPIC MULTI-SHOT SURVEY 430-906
 SURVEYOR: TIM STEPHENS (0°-6300')
 MAGNETIC MULTI-SHOT SURVEY 430-906
 SURVEYOR: TIM STEPHENS (6300'-11,165')

