



**REPORT
of
SUB-SURFACE
DIRECTIONAL
SURVEY**

AMOCO PRODUCTION COMPANY
COMPANY

SOUTH HOBB CO-OP WELL NO.4
WELL NAME

LEA COUNTY, NEW MEXICO
LOCATION

JOB NUMBER
WT0883-S0312
WT0983-S0003

TYPE OF SURVEY
MAGNETIC MULTISHOT SURVEY
MAGNETIC MULTISHOT SURVEY

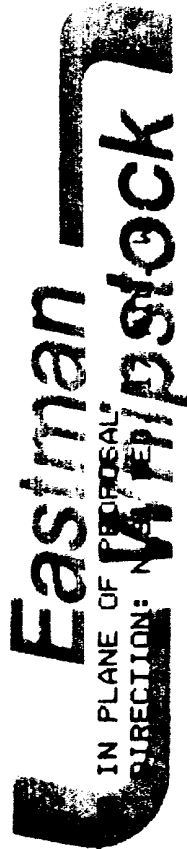
DATE
8/20/83
9/2/83

SURVEY BY
TIM STEPHENS

OFFICE
WEST TEXAS

AMOCO PRODUCTION COMPANY
SOUTH HOBBS CO-OP WELL NO. 4
LEA COUNTY, NEW MEXICO BDI-203

EASTMAN WHIPSTOCK INC.
MAGNETIC MULTISHOT SURVEY WT0883-S0312
SURVEYOR: TIM STEPHENS (0'-1499')
MAGNETIC MULTISHOT SURVEY WT0983-S0003
SURVEYOR: TIM STEPHENS (1499'-4348')



VERTICAL SECTION CALCULATION IN PLANE OF PROPOSED
DIRECTION: NORTH

RECORD OF SURVEY

RADIUS OF CURVATURE METHOD

AMOCO PRODUCTION COMPANY
SOUTH HOBBS CO-OP WELL NO. 4
LEA COUNTY, NEW MEXICO BD1-203

COMPUTATION PAGE NO. 1

TIME DATE
16:09:25 19-SEP-83

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D	COURSE LENGTH FEET	TRUE VERTICAL DEPTH FEET	VERTICAL SECTION FEET	R E C T A N G U L A R C O O R D I N A T E S FEET	DOGLEG SEVERITY DG/100FT
0.	0 0	0	0.	0.00	0.00	0.00	0.00
71.	0 30	S 16 E	71.	71.00	-0.30	0.30 S	0.09 E
102.	0 30	S 9 E	31.	102.00	-0.55	0.56 S	0.14 E
164.	0 45	S 57 W	62.	163.99	-0.92	1.15 S	0.12 W
226.	1 0	S 64 W	62.	225.99	-0.89	1.61 S	0.94 W
288.	1 15	S 72 W	62.	287.97	-0.69	2.07 S	2.07 W
350.	1 0	S 64 W	62.	349.96	-0.50	2.52 S	3.20 W
412.	0 45	S 70 W	62.	411.96	-0.36	2.89 S	4.07 W
475.	0 45	S 71 W	63.	474.95	-0.19	3.17 S	4.84 W
537.	0 45	S 76 W	62.	536.94	0.01	3.40 S	5.62 W
599.	1 0	S 76 W	62.	598.94	0.61	3.63 S	6.34 W
661.	0 45	S 88 W	62.	660.93	0.67	3.76 S	7.47 W
723.	0 45	N 80 W	62.	722.93	0.62	3.70 S	8.28 W
785.	0 45	N 90 W	62.	784.92	0.62	3.63 S	9.09 W
847.	0 45	S 47 W	62.	846.91	1.75	3.92 S	9.83 W
909.	0 30	S 51 W	62.	908.91	1.64	4.37 S	10.34 W
971.	0 15	S 65 W	62.	970.91	1.63	4.58 S	10.68 W
1033.	0 45	S 66 W	62.	1032.91	1.70	4.80 S	11.17 W
1095.	0 45	S 75 W	62.	1094.90	1.86	5.08 S	11.94 W
1157.	0 45	N 90 W	62.	1156.90	2.19	5.18 S	12.74 W
1219.	0 30	N 86 W	62.	1218.89	2.56	5.16 S	13.42 W
1281.	0 15	N 69 W	62.	1280.89	2.84	5.07 S	13.81 W
1343.	0 0	0	62.	1342.89	2.95	5.02 S	13.94 W
1405.	0 15	S 40 E	62.	1404.89	2.81	5.12 S	13.85 W
1467.	0 15	N 19 W	62.	1466.89	2.81	5.03 S	13.68 W
1499.	0 0	0	32.	1498.89	2.87	4.96 S	13.71 W
1554.	0 15	N 11 W	55.	1553.89	2.99	4.85 S	13.73 W
1585.	0 15	S 44 W	31.	1584.89	3.07	4.82 S	13.83 W
1646.	0 30	S 62 W	61.	1645.89	3.03	5.06 S	14.15 W
1708.	0 0	0	62.	1707.89	3.04	5.18 S	14.39 W

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D	COURSE LENGTH FEET	TRUE		VERTICAL SECTION FEET	R E C T A N G U L A R C O O R D I N A T E S		DOGLEG SEVERITY DG/100FT
				VERTICAL DEPTH FEET			FEET		
1769.	0 45	S 67 W	61.	1768.89		3.10	5.34 S	14.76 W	1.23
1831.	5 15	N 44 W	62.	1830.79		5.17	4.73 S	17.75 W	8.11
1892.	8 30	N 37 W	61.	1891.34		12.38	0.82 N	22.49 W	5.49
1953.	9 0	N 36 W	61.	1951.63		21.62	8.28 N	28.01 W	0.86
2015.	9 45	N 31 W	62.	2012.80		31.71	16.70 N	33.58 W	1.78
2076.	10 15	N 34 W	61.	2072.87		42.30	25.63 N	39.27 W	1.18
2137.	11 15	N 34 W	61.	2132.80		53.66	35.06 N	45.63 W	1.64
2199.	12 15	N 31 W	62.	2193.50		66.28	45.71 N	52.42 W	1.89
2260.	12 45	N 28 W	61.	2253.06		79.48	57.20 N	58.92 W	1.34
2322.	14 15	N 30 W	62.	2313.34		93.94	69.86 N	65.93 W	2.53
2383.	15 0	N 28 W	61.	2382.33		125.21	83.33 N	73.40 W	1.48
2444.	15 15	N 28 W	61.	2434.25		125.21	77.38 N	80.87 W	0.41
2506.	15 45	N 29 W	62.	2491.50		151.56	11.94 N	88.78 W	0.91
2567.	16 15	N 28 W	61.	2547.83		156.36	126.72 N	96.80 W	0.94
2629.	15 45	N 28 W	62.	2609.23		175.62	141.81 N	104.82 W	0.81
2690.	16 0	N 28 W	61.	2667.90		192.28	156.54 N	112.66 W	0.41
2751.	15 45	N 27 W	61.	2726.58		208.93	171.34 N	120.36 W	0.61
2813.	15 30	N 28 W	62.	2786.29		225.59	186.15 N	128.07 W	0.59
2874.	15 15	N 26 W	61.	2845.10		241.72	200.56 N	135.42 W	0.96
2936.	15 0	N 26 W	62.	2904.96		257.83	215.10 N	142.51 W	0.40
2997.	15 0	N 26 W	61.	2963.88		273.55	229.29 N	149.43 W	0.00
3058.	15 0	N 26 W	61.	3022.80		289.27	243.48 N	156.35 W	0.00
3120.	15 0	N 27 W	62.	3082.69		305.26	257.84 N	163.51 W	0.42
3181.	14 45	N 24 W	61.	3141.64		320.84	271.98 N	170.25 W	1.33
3242.	14 15	N 24 W	61.	3200.70		335.99	285.93 N	176.46 W	0.82
3304.	14 45	N 25 W	62.	3260.72		351.40	300.05 N	182.90 W	0.90
3365.	14 30	N 25 W	61.	3319.75		366.71	314.01 N	189.41 W	0.41
3427.	14 0	N 24 W	62.	3379.84		381.87	327.90 N	195.74 W	0.90
3488.	13 45	N 25 W	61.	3439.06		396.39	341.21 N	201.80 W	0.57
3549.	13 30	N 25 W	61.	3498.34		410.68	354.23 N	207.88 W	0.41

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D	COURSE LENGTH FEET	TRUE VERTICAL DEPTH FEET	VERTICAL SECTION FEET	R E C T A N G U L A R C O O R D I N A T E S FEET	DOGLEG SEVERITY DG/100FT
3611.	13 30	N 24 W	62.	3558.63	425.05	367.40 N 213.88 W	0.38
3672.	18 30	N 26 W	61.	3617.94	439.20	380.31 N 219.90 W	0.77
3734.	13 15	N 26 W	62.	3678.26	453.48	393.20 N 226.18 W	0.40
3795.	13 0	N 25 W	61.	3737.67	467.26	405.70 N 232.15 W	0.55
3856.	13 0	N 26 W	61.	3797.10	480.92	418.09 N 238.05 W	0.37
3918.	12 45	N 27 W	62.	3857.55	494.68	430.45 N 244.22 W	0.54
3979.	12 30	N 26 W	61.	3917.07	507.97	442.38 N 250.17 W	0.54
4041.	12 15	N 26 W	62.	3977.63	521.20	454.33 N 255.99 W	0.40
4102.	12 45	N 26 W	61.	4037.18	534.35	466.19 N 261.78 W	0.82
4163.	12 45	N 25 W	61.	4096.68	547.74	478.34 N 267.58 W	0.36
4225.	13 0	N 25 W	61.	4157.78	575.23	490.86 N 273.41 W	0.40
4286.	13 15	N 26 W	61.	4216.53	575.23	503.37 N 279.38 W	0.55
4348.	14 0	N 26 W	62.	4276.73	575.23	516.49 N 285.78 W	1.21

Eastman
Whipstock

FINAL CLOSURE - DIRECTION: N 28 DEGS 57 MINS W
DISTANCE: 590.28 FEET

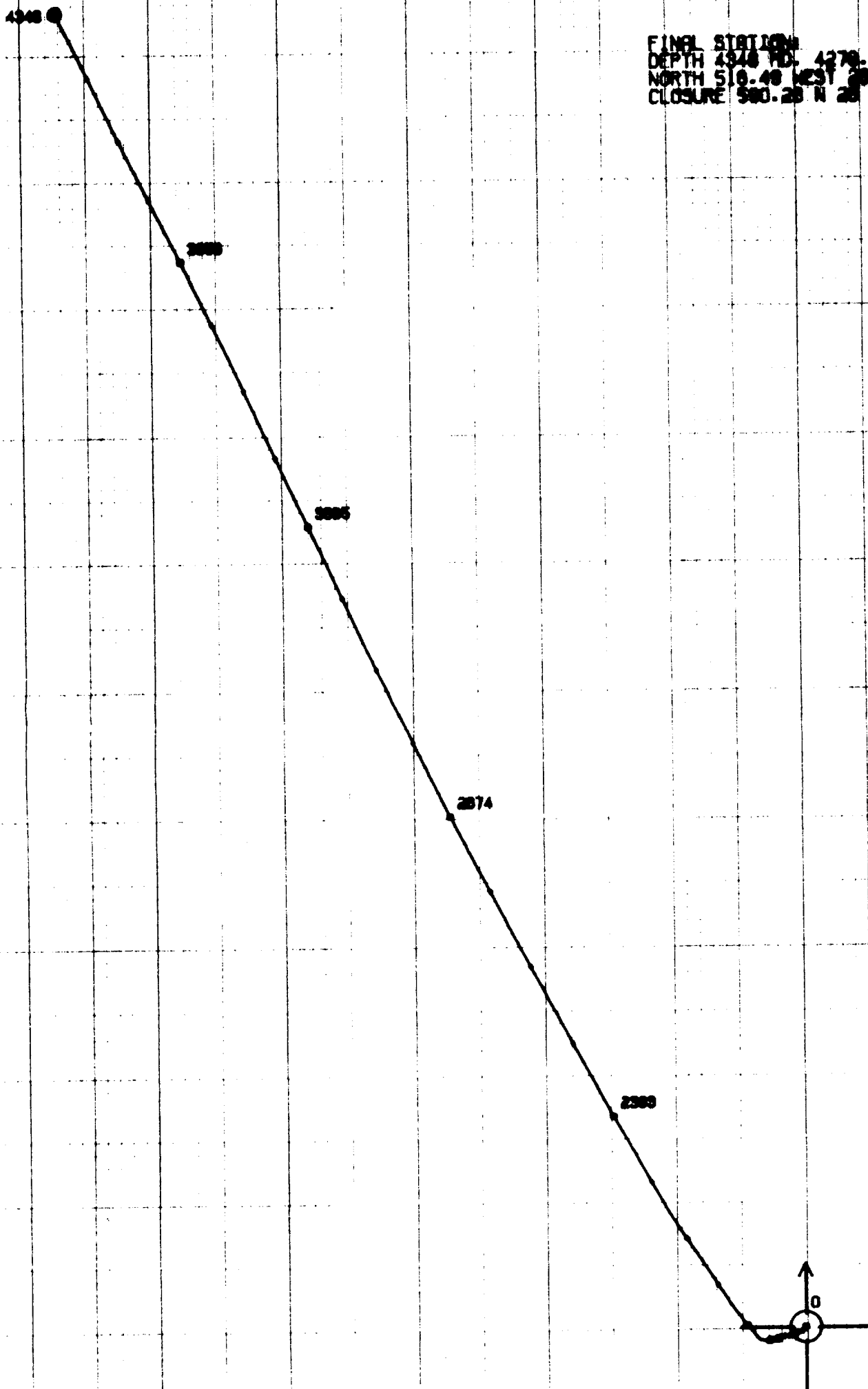
SWICE PRODUCTION COMPANY
SOUTH HOBBS CO-OP WELL NO. 4
LEA COUNTY, NEW MEXICO 801-203

EASTMAN WHIPSTOCK, INC.

HORIZONTAL PROJECTION

SCALE 1 IN. = 50 FEET
DEPTH INDICATOR NO.

FINAL STATION
DEPTH 4348 TD 4276.78 TWO
NORTH 516.48 WEST 285.77
CLOSURE 980.28 N 28 57 22 W





P. O. Box 5577 / Midland, Texas 79701 / (915) 563-0511
TWX 910-881-5066 / Cable: EASTCO

SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, TIM STEPHENS, in the employ of Eastman Whipstock, Inc., did on the days of 20-AUGUST, 1983 thru 21-AUGUST, 1983 conduct or supervise the taking of a MAGNETIC MULTISHOT survey by the method of magnetic orientation from a depth of 0 feet to 1499 feet, with recordings of inclination and direction being obtained at approximate intervals of 62 feet.

This survey was conducted at the request of AMOCO PRODUCTION COMPANY for their SOUTH HOBBS CO-OP WELL #4, LEA County, State of NEW MEXICO, in the _____ field.

The data for this survey and the calculations were obtained and performed by me according to standards and procedures as set forth by Eastman Whipstock, Inc. and is true and correct to the best of my knowledge.

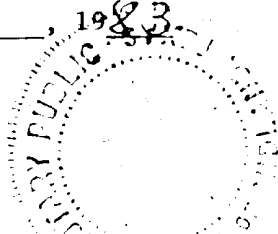
Tim Stephens
Directional Supervisor / Surveyor

The data for this survey has been examined by me and conforms to principles and procedures set forth by Eastman Whipstock, Inc.

[Signature]

Before me, the undersigned authority, on this day personally appeared TIM STEPHENS, known to me to be the person whose name is subscribed to this instrument, who after being by me duly sworn on oath, states that he has knowledge of all the facts stated above and that this instrument is a true statement of facts therein recited.

Subscribed and sworn to before me on this 12TH day of SEP, 1983



Jay L. Steinkamp
Notary Public in and for the County of
Midland, Texas
My commission expires 7/9/85



P. O. Box 5577 / Midland, Texas 79701 / (915) 563-0511
TWX 910-881-5066 / Cable: EASTCO

SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, Tim Stephens, in the employ of Eastman Whipstock, Inc., did on the days of September 2, 19 83 thru September 3, 19 83 conduct or supervise the taking of a Magnetic Multi Shot survey by the method of magnetic orientation from a depth of 1499 feet to 4348 feet, with recordings of inclination and direction being obtained at approximate intervals of 62 feet.

This survey was conducted at the request of Amoco Production Co. for their South Hobbs CO-OP Well #4 Lea County, State of New Mexico, in the _____ field.

The data for this survey and the calculations were obtained and performed by me according to standards and procedures as set forth by Eastman Whipstock, Inc. and is true and correct to the best of my knowledge.

Tim Stephens
Directional Supervisor / Surveyor

The data for this survey has been examined by me and conforms to principles and procedures set forth by Eastman Whipstock, Inc.

Ken Chapman

Before me, the undersigned authority, on this day personally appeared _____, known to me to be the person whose name is subscribed to this instrument, who after being by me duly sworn on oath, states that he has knowledge of all the facts stated above and that this instrument is a true statement of facts therein recited.

Subscribed and sworn to before me on this 12th day of SEPT., 19 83.



Jay L. Steinkamp
Notary Public in and for the County of
Midland, Texas
My commission expires 7/9/85