



**REPORT
of
SUB-SURFACE
DIRECTIONAL
SURVEY**

AMOCO PRODUCTION COMPANY
COMPANY

SOUTH HOBBS UNIT WELL NO. 149
WELL NAME

LEA COUNTY, NEW MEXICO
LOCATION

<u>JOB NUMBER</u>	<u>TYPE OF SURVEY</u>	<u>DATE</u>
WT1283-S0190	MAGNETIC MULTI-SPOT SURVEY	12/13/83
WT1283-S0204	MAGNETIC MULTI-SPOT SURVEY	12/17/83
MS-1363	MAGNETIC MULTI-SPOT SURVEY	12/20/83

SURVEY BY
GARY DESPAIN, ALAN HARBERT
EASTMAN WHIPSTOCK, D.I.G.

OFFICE
WEST TEXAS

AMOCO PRODUCTION COMPANY
SOUTH HOBBS UNOT WELL NO. 149
LEA COUNTY, NEW MEXICO BD1-38
DECEMBER 13, 1983

EASTMAN WHIPSTOCK, INC.	
MAGNETIC MULTI SHOT SURVEY	WT1283-S0190
SURVEYOR: GARY DESPAIN	(0'-1509')
MAGNETIC MULTI SHOT SURVEY	WT1283-S0204
SURVEYOR: GARY DESPAIN	(1509'-3235')
MAGNETIC MULTI-SHOT SURVEY	MS-1363
SURVEYOR: ALAN HARBERT	(3235'-4343')

THE LOW PART OF THIS WELL WAS SURVEYED BY D.I.G.

VERTICAL SECTION CALCULATED IN PLANE OF PROPOSAL
DIRECTION: N 69 DEG. 17 MIN. E
Eastman Whipstock

RECORD OF SURVEY

RADIUS OF CURVATURE METHOD

TIME DATE
12:40:23 10-FEB-84

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
85.	1 30	S 5 E	85.	84.99	-0.30	1.11 S	1.76
115.	1 45	S 7 E	30.	114.98	-0.52	1.95 S	0.85
176.	1 15	S 4 W	61.	175.96	-1.04	3.55 S	0.94
237.	1 0	S 37 W	61.	236.95	-1.82	4.65 S	1.12
298.	1 15	S 16 W	61.	297.93	-2.70	5.72 S	0.78
359.	1 15	S 13 W	61.	358.92	-3.46	7.01 S	0.11
420.	1 0	S 4 W	61.	419.91	-4.05	8.19 S	0.50
481.	0 45	S 1 E	61.	480.90	-4.40	9.12 S	0.43
542.	1 0	S 10 W	61.	541.89	-4.79	10.05 S	0.49
603.	0 45	S 7 W	61.	602.89	-5.25	10.97 S	0.42
664.	1 0	S 19 W	61.	663.88	-5.76	11.88 S	0.51
725.	1 0	S 33 W	61.	724.87	-6.54	12.83 S	0.40
786.	1 15	S 23 W	61.	785.86	-7.44	13.89 S	0.52
847.	1 0	S 27 W	61.	846.85	-8.29	14.97 S	0.43
908.	0 30	S 47 W	61.	907.84	-8.97	15.61 S	0.91
969.	1 0	S 63 W	61.	968.83	-9.74	16.06 S	0.88
1030.	0 45	S 72 W	61.	1029.83	-10.67	16.42 S	0.47
1091.	0 45	S 59 W	61.	1090.82	-11.46	16.75 S	0.28
1152.	0 30	S 30 W	61.	1151.82	-12.06	17.22 S	0.65
1213.	0 30	S 52 E	61.	1212.82	-12.14	17.70 S	1.08
1274.	0 30	N 63 W	61.	1273.81	-12.43	18.00 S	1.63
1335.	0 15	S 67 W	61.	1334.81	-12.79	17.99 S	0.64
1369.	0 15	S 77 E	34.	1368.81	-12.82	18.10 S	1.40
1457.	0 15	S 68 E	88.	1456.81	-12.51	18.21 S	0.04
1509.	0 30	S 59 E	52.	1508.81	-12.28	18.37 S	0.49
1605.	0 15	S 4 E	96.	1604.81	-12.17	18.88 S	0.43
1666.	0 15	S 8 E	61.	1665.81	-12.24	19.15 S	0.03
1727.	0 15	S 4 W	61.	1726.81	-12.32	19.41 S	0.09
1788.	0 30	S 14 E	61.	1787.81	-12.43	19.81 S	0.45

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	
1849.	0 30	S 25 E	61.	1848.80	-12.44	20.31 S	5.62 W	0.16
1910.	0 30	S 50 E	61.	1909.80	-12.29	20.73 S	5.30 W	0.35
1971.	0 15	S 40 E	61.	1970.80	-12.13	21.01 S	5.02 W	0.42
2032.	1 15	S 66 E	61.	2031.79	-11.70	21.49 S	4.38 W	1.69
2094.	5 15	N 90 E	62.	2093.68	-8.77	22.21 S	0.97 W	6.68
2155.	7 30	N 88 E	61.	2154.30	-2.39	22.10 S	5.80 E	3.71
2216.	8 45	N 86 E	61.	2214.69	5.82	21.64 S	14.41 E	2.10
2277.	10 15	N 82 E	61.	2274.85	15.56	20.59 S	24.42 E	2.69
2338.	11 45	N 80 E	61.	2334.73	26.95	18.77 S	35.91 E	2.54
2399.	13 15	N 78 E	61.	2394.28	39.96	16.25 S	48.87 E	2.56
2460.	14 30	N 77 E	61.	2453.50	54.44	13.09 S	63.15 E	2.09
2521.	15 30	N 77 E	61.	2512.42	70.09	9.53 S	78.54 E	1.64
2582.	16 15	N 76 E	61.	2571.09	86.64	5.64 S	94.76 E	1.31
2643.	17 15	N 76 E	61.	2637.50	101.16	1.39 S	111.82 E	1.64
2704.	18 0	N 74 E	61.	2687.64	122.48	3.39 N	129.66 E	1.58
2765.	18 15	N 74 E	61.	2745.61	141.39	8.62 N	147.90 E	0.41
2827.	18 30	N 74 E	62.	2804.45	160.87	14.01 N	166.69 E	0.40
2888.	17 0	N 76 E	61.	2862.54	179.37	18.82 N	184.65 E	2.65
2949.	15 0	N 77 E	61.	2921.18	196.05	22.75 N	201.00 E	3.31
3010.	13 15	N 78 E	61.	2980.33	210.78	25.97 N	215.53 E	2.90
3071.	11 45	N 78 E	61.	3039.88	223.83	28.72 N	228.44 E	2.46
3132.	9 45	N 80 E	61.	3099.81	235.05	30.89 N	239.61 E	3.33
3193.	8 30	N 81 E	61.	3160.04	244.53	32.48 N	249.15 E	2.07
3235.	8 0	N 78 E	42.	3201.60	250.46	33.58 N	255.08 E	1.57

3250 IS THE START OF D.I.G. SURVEY.

TIME DATE
12:40:23 10-FEB-84

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D	COURSE LENGTH FEET	TRUE		VERTICAL SECTION FEET	RECTANGULAR COORDINATES		DOGLEG SEVERITY DG/100FT
				VERTICAL DEPTH FEET					
3496.	8 0	N 47 E	61.	3460.01		285.28	55.35 N	284.07 E	0.47
3558.	8 0	N 51 E	62.	3521.41		293.38	61.01 N	290.58 E	0.90
3620.	7 30	N 54 E	62.	3582.84		301.38	66.09 N	297.22 E	1.04
3681.	7 0	N 50 E	61.	3643.35		308.73	70.83 N	303.28 E	1.16
3743.	7 0	N 51 E	62.	3704.89		315.88	75.64 N	309.11 E	0.20
3804.	7 15	N 47 E	61.	3765.42		322.98	80.60 N	314.82 E	0.91
3866.	7 15	N 47 E	62.	3826.92		330.22	85.94 N	320.54 E	0.00
3928.	7 15	N 49 E	62.	3888.43		337.51	91.17 N	326.36 E	0.41
3989.	7 45	N 50 E	61.	3948.91		345.00	96.34 N	332.41 E	0.85
4051.	7 45	N 50 E	62.	4010.34		352.89	101.72 N	338.82 E	0.00
4112.	7 30	N 54 E	61.	4070.80		360.62	106.70 N	345.19 E	0.96
4174.	8 0	N 53 E	62.	4132.23		368.66	111.67 N	351.91 E	0.84
4235.	8 15	N 53 E	61.	4192.62		374.94	116.86 N	358.80 E	0.41
4297.	8 30	N 49 E	62.	4253.96		385.51	122.54 N	365.81 E	1.02
4322.	8 15	N 49 E	25.	4278.69		388.92	124.93 N	368.56 E	1.00

4343 IS A PROJECTION BASED ON D.I.G. SURVEY.

4343. 8 15 N 49 E 21. 4299.48 391.75 126.91 N 370.84 E 0.00

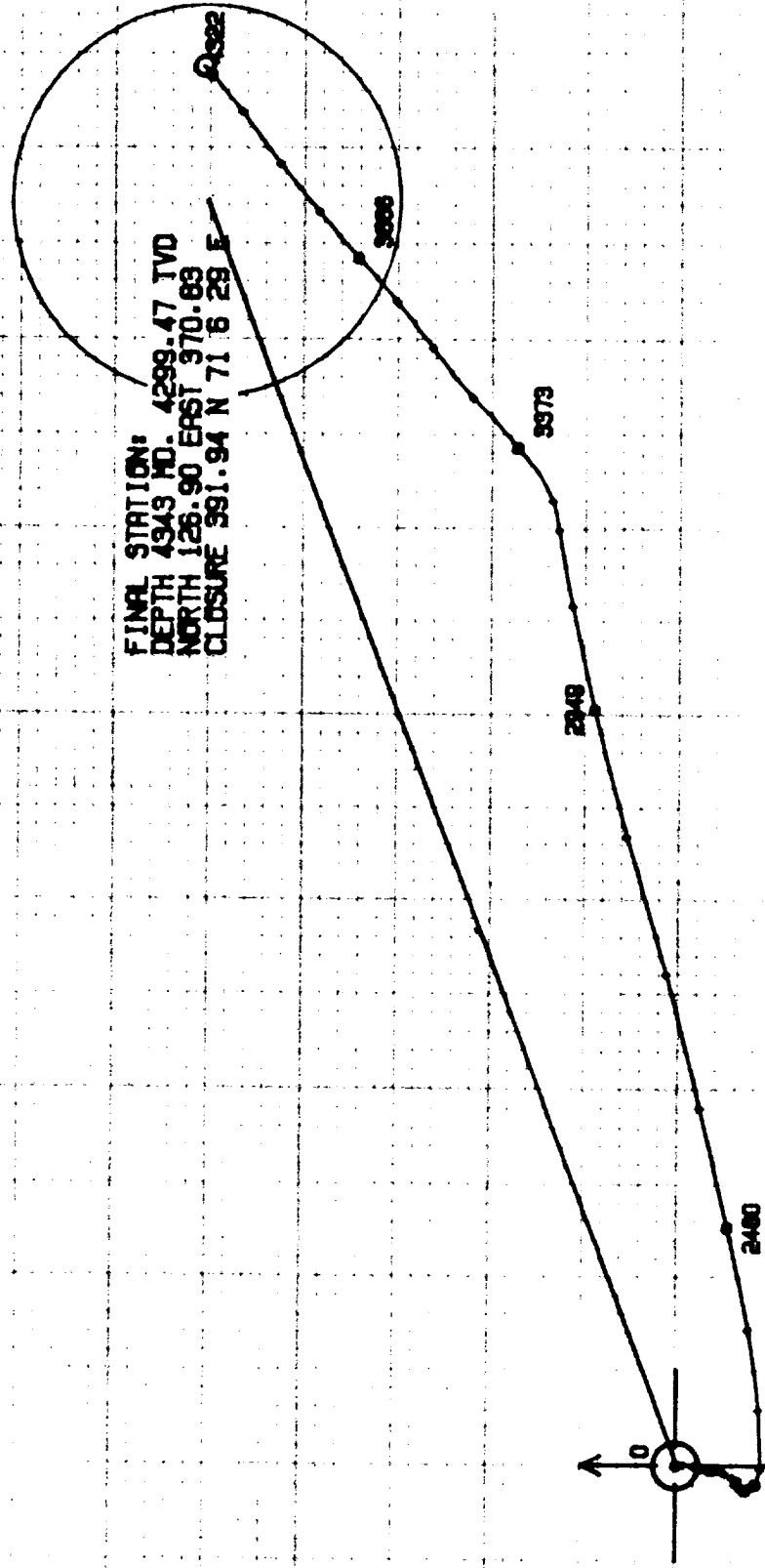
FINAL CLOSURE - DIRECTION: N 71 DEGS 6 MINS E
DISTANCE: 391.95 FEET

AMOCO PRODUCTION COMPANY
SOUTH HOBBS UNIT WELL NO. 149
LEA COUNTY, NEW MEXICO B01-38

EASTMAN WHIPSTOCK, INC.

HORIZONTAL PROJECTION

SCALE 1 IN. = 50 FEET
DEPTH INDICATOR: MD





P. O. Box 5577/Midland, Texas 79704/(915) 563-0511

SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, Gary DeSpain, in the employ of Eastman Whipstock, Inc., did on the days of December 13, 19 83 thru December 13, 19 83 conduct or supervise the taking of a Magnetic Multi Shot survey by the method of magnetic orientation from a depth of 0 feet to 1590 feet, with recordings of inclination and direction being obtained at approximate intervals of 61 feet.

This survey was conducted at the request of Amoco Production Company for their South Hobbs Unit Well No. 149 Lea County, State of New Mexico, in the field.

This data for this survey and the calculation 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.

Gary DeSpain
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.

Tim Stephens

Before me, the undersigned authority, on this day personally appeared Gary DeSpain, 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 14/7/85 day of FEB., 19 84

Robert L. Stank
Notary Public in and for the
County of Midland, Texas
My commission expires 7/19/85





P. O. Box 5577/Midland, Texas 79704/(915) 563-0511

SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, Gary DeSpain, in the employ of Eastman Whipstock, Inc., did on the days of December 17, 1983 thru December 17, 1983 conduct or supervise the taking of a Magnetic Multi Shot survey by the method of magnetic orientation from a depth of 1509 feet to 3235 feet, with recordings of inclination and direction being obtained at approximate intervals of 61 feet.

This survey was conducted at the request of Amoco Production Company for their South Hobbs Unit Well # 149, Lea County, State of New Mexico, in the field.

This data for this survey and the calculation 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.

Gary DeSpain
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.

Tim Stephens

Before me, the undersigned authority, on this day personally appeared Gary DeSpain, 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 11/78 day of FEB, 1984

Ray A. Steink
Notary Public in and for the
County of Midland, Texas
My commission expires 7/9/85





DIRECTIONAL
INVESTMENT
GUIDANCE, INC.

P. O. BOX 7238
MIDLAND, TEXAS 79708

SURVEY CERTIFICATION

STATE TEXAS

COUNTY OF MIDLAND

I, D. A. HARBERT, in the employ of D.I.G., Inc., did on the days of 12-20, 1983 through 12-20, 1983 conduct or supervise the taking of a MAGNETIC MULTISHOT survey by the method of magnetic orientation from a depth of 3235 feet to 4343 feet, with recordings of inclination being obtained at approximately intervals of 62 feet.

This survey was conducted at the request of AMOCO PRODUCTION COMPANY for their SHU NO. 149, LEA County, State of NEW MEXICO in the _____ field.

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

D. A. HARBERT

The data for this survey has been examined by me and conforms to the principles and procedures as set forth by D.I.G., Inc.

LARRY MASSEY