



**REPORT  
of  
SUB-SURFACE  
DIRECTIONAL  
SURVEY**

AMOCO PRODUCTION COMPANY  
COMPANY

SOUTH HOBBS UNIT WELL NO. 178  
WELL NAME

LEA COUNTY, NEW MEXICO BD2-146  
LOCATION

**JOB NUMBER**

WT1184-S0109  
WT1184-S0112  
MA-40133

**TYPE OF SURVEY**

MAGNETIC MULTI SHOT SURVEY  
MAGNETIC MULTI SHOT SURVEY  
MAGNETIC MULTI SHOT SURVEY

**DATE**

25-NOV-84  
28-NOV-84  
6-DEC-84

**SURVEY BY**  
GARY DeSPAIN  
STEVE COVINGTON  
TIM BURTON

**OFFICE**  
WEST TEXAS

RECEIVED

DEC 19 1984

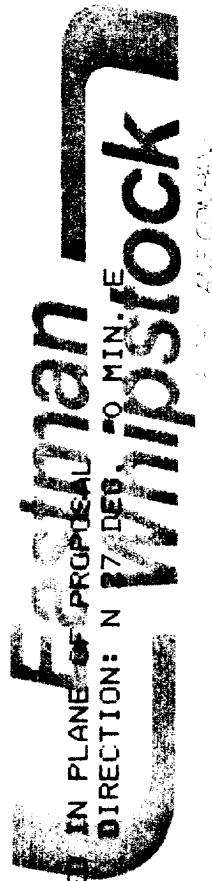
O.C.B.

MOBBS OFFICE

AMOCO PRODUCTION COMPANY  
SOUTH HOBBS UNIT WELL NO. 178  
LEA COUNTY, NEW MEXICO BD2-146  
NOVEMBER 24, 1984

EASTMAN WHIPSTOCK, INC.  
MAGNETIC MULTI SHOT SURVEY WT1184-S0109  
SURVEYOR: GARY DESPAIN (0-1468')  
MAGNETIC MULTI SHOT SURVEY WT1184-S0112  
SURVEYOR: STEVE COVINGTON (1468'-3159')

NL SPERRY-SUN INC.  
MAGNETIC MULTI SHOT SURVEY MA-40133  
SURVEYOR: TIM BURTON (3159'-4306')



VERTICAL SECTION CALCULATED IN PLANE OF PROPERLY

RECORD OF SURVEY

RADIUS OF CURVATURE METHOD

RECEIVED

DEC 19 1984

O.C.D.  
HOBBS OFFICE

TIME DATE  
11:58:27 11-DEC-84

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 R D I N A T E S		DOGLEG SEVERITY DG/100FT
				VERTICAL DEPTH FEET					
0.	0 0	0	0.	0.00		0.00	0.00	0.00	0.00
86.	0 30	S 88 E	86.	86.00		0.16	0.01 S	0.38 E	0.58
179.	0 45	N 57 E	93.	178.99		0.83	0.25 N	1.34 E	0.48
271.	0 45	N 58 E	92.	270.99		1.87	0.90 N	2.35 E	0.01
364.	0 30	N 71 E	93.	363.98		2.67	1.34 N	3.27 E	0.31
456.	0 30	N 17 E	92.	455.98		3.41	1.89 N	3.80 E	0.49
549.	0 30	N 15 E	93.	548.97		4.21	2.67 N	4.03 E	0.02
641.	0 15	N 29 E	92.	640.97		4.81	3.23 N	4.25 E	0.29
734.	1 0	N 45 W	93.	733.96		5.58	4.17 N	4.12 E	1.03
798.	0 15	N 22 W	64.	797.96		5.92	4.74 N	3.74 E	1.21
890.	0 30	N 57 E	93.	889.96		6.47	5.28 N	3.91 E	0.56
983.	0 15	N 36 E	92.	982.96		7.06	5.69 N	4.35 E	0.30
1075.	0 0	0	92.	1074.96		7.24	5.85 N	4.46 E	0.27
1168.	0 0	0	93.	1167.96		7.24	5.85 N	4.46 E	0.00
1260.	0 15	S 66 E	92.	1259.96		7.25	5.77 N	4.65 E	0.27
1353.	0 0	0	93.	1352.96		7.26	5.69 N	4.83 E	0.27
1445.	0 0	0	92.	1444.96		7.26	5.69 N	4.83 E	0.00
1468.	0 15	N 56 E	23.	1467.96		7.31	5.72 N	4.87 E	1.09
1524.	0 30	S 84 E	56.	1523.95		7.54	5.81 N	5.22 E	0.62
1587.	0 30	S 89 E	63.	1586.95		7.76	5.77 N	5.77 E	0.07
1679.	0 45	N 59 E	92.	1678.95		8.42	6.03 N	6.72 E	0.46
1770.	0 30	N 72 E	91.	1769.94		9.20	6.44 N	7.63 E	0.31
1862.	0 15	N 44 E	92.	1861.94		9.71	6.76 N	8.13 E	0.33
1954.	0 45	N 64 E	92.	1953.93		10.42	7.23 N	8.78 E	0.57
2045.	1 15	N 48 E	91.	2044.92		11.81	8.11 N	10.09 E	0.62
2137.	1 15	N 44 E	92.	2136.90		13.70	9.50 N	11.53 E	0.09
2229.	2 0	N 56 E	92.	2228.86		16.10	11.18 N	13.53 E	0.89
2320.	2 30	N 50 E	91.	2319.79		19.31	13.33 N	16.38 E	0.61
2412.	3 30	N 58 E	92.	2411.66		23.60	16.16 N	20.27 E	1.18
2504.	3 30	N 56 E	92.	2503.49		28.46	19.21 N	24.98 E	0.13

1984-12-19

DEC 19 1984

O.C.B.  
HOBBS OFFICE

BD2-146

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 R D I N A T E S		DOGLEG SEVERITY DG/100FT
				VERTICAL DEPTH FEET					
2596.	4 15	N 60 E	92.	2595.28		33.79	22.51 N	30.25 E	0.87
2687.	4 0	N 53 E	91.	2686.05		39.48	26.12 N	35.71 E	0.62
2779.	4 30	N 56 E	92.	2777.79		45.53	30.08 N	41.26 E	0.59
2871.	4 30	N 54 E	92.	2869.51		51.90	34.22 N	47.17 E	0.17
2962.	4 30	N 59 E	91.	2960.23		58.11	38.16 N	53.12 E	0.43
3054.	4 15	N 56 E	92.	3051.96		64.16	41.93 N	59.04 E	0.37
3117.	4 45	N 57 E	63.	3114.77		68.46	44.66 N	63.16 E	0.80
3159.	4 30	N 62 E	42.	3156.63		71.32	46.37 N	66.08 E	1.13
3237 FT. TO 4306 FT. SURVEYED BY SPERRY-SUN.									
3237.	5 30	N 19 E	78.	3234.33		77.78	51.42 N	70.39 E	4.84
3327.	5 30	N 12 E	90.	3323.92		88.22	59.73 N	72.70 E	0.75
3417.	5 0	N 15 E	90.	3413.54		97.23	67.74 N	74.62 E	0.63
3509.	5 0	N 12 E	92.	3505.19		102.03	75.53 N	76.49 E	0.28
3603.	4 30	N 11 E	94.	3598.87		109.53	83.16 N	78.04 E	0.54
3695.	4 45	N 15 E	92.	3690.57		116.72	90.39 N	79.71 E	0.44
3789.	4 30	N 15 E	94.	3784.26		124.14	97.71 N	81.67 E	0.27
3881.	4 15	N 12 E	92.	3875.99		130.96	104.53 N	83.31 E	0.37
3974.	4 15	N 14 E	93.	3968.74		137.65	111.25 N	84.86 E	0.16
4068.	4 0	N 10 E	94.	4062.49		144.18	117.86 N	86.27 E	0.41
4162.	4 30	N 10 E	94.	4156.23		150.84	124.72 N	87.48 E	0.53
4254.	4 45	N 10 E	92.	4247.93		157.93	132.02 N	88.76 E	0.27
4306.	4 45	N 10 E	52.	4299.76		162.05	136.27 N	89.51 E	0.00

FINAL CLOSURE - DIRECTION: N 33 DEGS 18 MINS E  
DISTANCE: 163.04 FEET

RECEIVED

DEC 19 1984

O.C.D.

HOBBS OFFICE



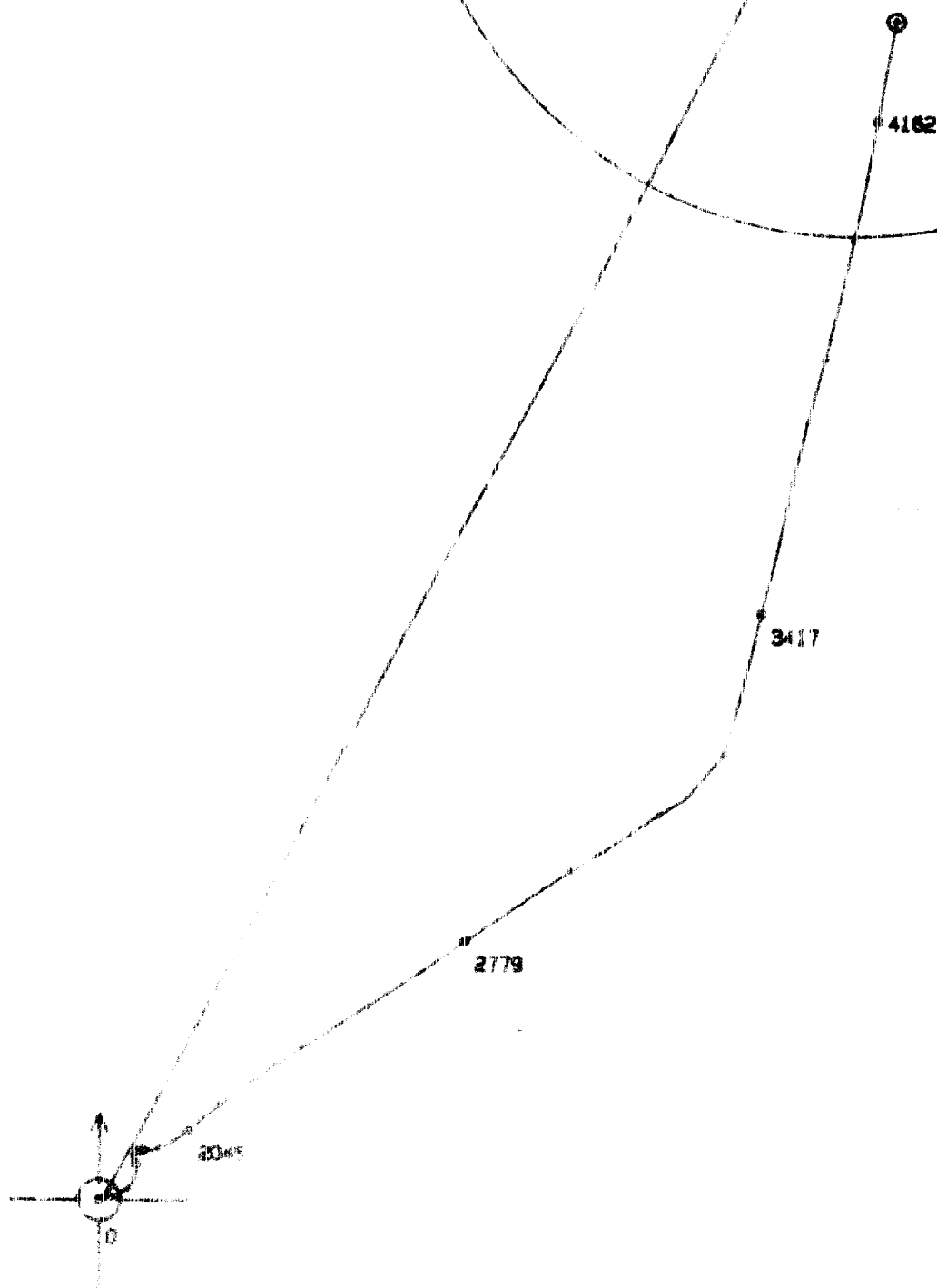
AMOCO PRODUCTION COMPANY  
SOUTH HOBBS UNIT WELL NO.  
LER COUNTY, NEW MEXICO

173  
B02-145

HORIZONTAL PROJECTION

SCALE 1 IN. = 20 FEET  
DEPTH INDICATOR: MD

EASTMAN WHIPSTOCK, INC.



FINAL STATION:  
DEPTH 4306 MD. 4299.75 TVD  
NORTH 136.26 EAST 89.51  
CLOSURE 163.03 N 33 18 3 E

RECEIVED

DEC 19 1984

O.C.O. OFFICE  
HOBBS OFFICE



P.O. Box 6341/Midland, Texas 79711-0341/(915) 563-0511

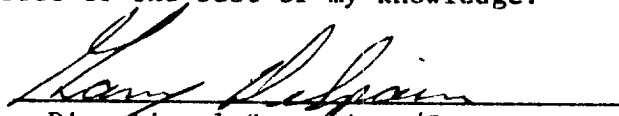
# SURVEY CERTIFICATION SHEET

STATE OF TEXAS  
COUNTY OF MIDLAND

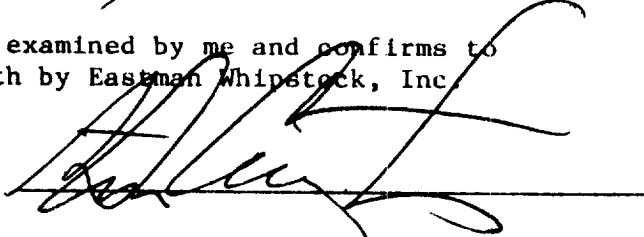
I, Gary DeSpain, in the employ of Eastman Whipstock, Inc., did on the days of November 24, 1984 thru November 25, 1984 conduct or supervise the taking of a Magnetic Multi Shot survey by the method of magnetic orientation from a depth of 0 feet to 1468 feet, with recordings of inclination and direction being obtained at approximate intervals of 93 feet.

This survey was conducted at the request of Amoco Production Company for their South Hobbs Unit Well No. 178, 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.


  
Directional Supervisor/Surveyor

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



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 information is a true statement of facts therein recited.

Subscribed and sworn to before me on this 11<sup>TH</sup> day of DEC., 1984.

  
Notary Public in and for the  
County of Midland, Texas



ROY L. STEINKE  
Notary Public, State of Texas  
My Commission Expires July 9, 1985

RECEIVED

DEC 19 1984

U.S. OFFICE  
HOBBS OFFICE



P.O. Box 6341/Midland, Texas 79711-0341/(915) 563-0511

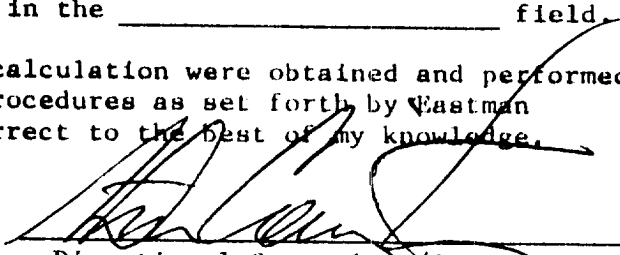
SURVEY CERTIFICATION SHEET

STATE OF TEXAS  
COUNTY OF MIDLAND

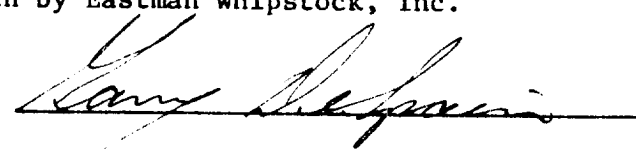
I, STEVE COVINGTON, in the employ of Eastman Whipstock, Inc., did on the days of NOVEMBER 28, 1984 thru NOVEMBER 28, 1984 conduct or supervise the taking of a MAGNETIC MULTI SHOT survey by the method of magnetic orientation from a depth of 1468 feet to 3159 feet, with recordings of inclination and direction being obtained at approximate intervals of 91.7 feet.

This survey was conducted at the request of AMOCO PRODUCTION CO. for their SOUTH HOBBS UNIT #178, LEA County, State of NEW MEXICO, in the \_\_\_\_\_ field.

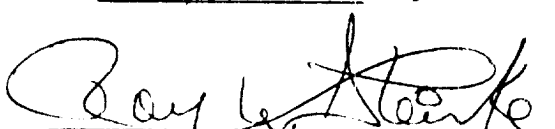
This data for this survey and the calculation were obtained and performed by me according to standards and procedures as set forth by Eastman Whipstock, Inc. and is true and correct to the best of my knowledge.

  
Directional Supervisor/Surveyor

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

  
Before me, the undersigned authority, on this day personally appeared STEVE COVINGTON, 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 information is a true statement of facts therein recited.

Subscribed and sworn to before me on this 11<sup>th</sup> day of DEC., 1984.

  
Notary Public in and for the  
County of Midland, Texas



ROY L. STEINKE  
Notary Public, State of Texas  
My Commission Expires July 8, 1985

HOBBS  
OCCUPANCE  
DEC 19 1984  
RECEIVED

STATE OF New Mexico  
COUNTY/PARISH OF Lea Co.

I/We, Tim Burton

James Ray

\_\_\_\_\_, in the employ of the Directional Surveying Department of  
Sperry-Sun Well Surveying Company, did on the 6 day of December 1984  
and the \_\_\_\_\_ day of \_\_\_\_\_ 19\_\_\_\_  
and the \_\_\_\_\_ day of \_\_\_\_\_ 19\_\_\_\_  
and the \_\_\_\_\_ day of \_\_\_\_\_ 19\_\_\_\_

respectively conduct or supervise the taking of a Multi-shot/Single Shot Directional survey by method indicated:

from a depth of 3159 feet to 4306 feet by Gyroscopic/Magnetic/Oriented Survey  
depth of \_\_\_\_\_ feet to \_\_\_\_\_ feet by Gyroscopic/Magnetic/Oriented Survey  
depth of \_\_\_\_\_ feet to \_\_\_\_\_ feet by Gyroscopic/Magnetic/Oriented Survey  
depth of \_\_\_\_\_ feet to \_\_\_\_\_ feet by Gyroscopic/Magnetic/Oriented Survey

with records of inclination and direction of inclination being taken at approximately every 92 feet.

This survey was conducted at the request of Amoco Production Co.

for their South Hobbs Unit Well No. 178

Magnetic Multi-shot Survey, Lea County/Parish,

State of New Mexico, in the South Hobbs Field.

I/We certify that this is a true and correct report of such survey and that it affords a true and correct representation of our findings as to the nature and conditions of the well at the time the survey was/surveys were made.

Tim Burton  
Tim Burton

STATE OF Texas  
COUNTY/PARISH OF Ector

Before me the undersigned authority/authorities, on this day personally appeared Tim Burton  
known to me to be the person/persons whose name is/names are subscribed to this instrument, who after being  
by me duly sworn on oath, states that he has/they have knowledge of all the facts stated above and that the same  
is a true and correct statement of the facts therein recited.

Subscribed and sworn to before me this the 11 day of December 19 84.

SYLVIA SIDES  
NOTARY PUBLIC  
STATE OF TEXAS  
COMMISSION EXPIRES 3-31-85

Sylvia Sides  
Notary Public in and for Ector Co., Texas

RECEIVED  
DEC 19 1984  
O.C.C.  
HOBBS OFFICE