

SUB-SURFACE  
DIRECTIONAL  
SURVEY  
REPORT

AMOCO PRODUCTION COMPANY

COMPANY

SHU NO. 132

WELL NAME

LEA COUNTY, NEW MEXICO

STATE AND COUNTY

CERTIFIED REPORT

CUSTOMER : AMOCO PRODUCTION COMPANY

WELL # : SHU NO. 132  
 LOCATION : LEA COUNTY, NEW MEXICO  
 DATE : 12/03/83, 12/08/83, (EW)12/13/83  
 JOB TYPE : MAG. MS, MAG. MS, (EW)MAG. MS  
 JOB # : MS-1343, MS-1346, (EW)S0188  
 SURVEYOR : A. HARBERT, R. RICE, (EW)T. ONEY  
 DEPTHS : 0'-1551', 1551'-3165', (EW)3165'-4319'  
 DECL. : 10 DEGREES EAST  
 LEVEL : 0'  
 WILE # : WT-FISS  
 METHOD : RADIUS OF CURVATURE  
 SECTION : 0

FINAL STATION DATA:

MEASURED	INCL.	HOLE	COURSE	RECTANGULAR	DOG-LEG
DEPTH	ANGLE	DIRECTION	LENGTH	C-O-S-U-R-E	DISTANCE
FEET	DEGS.	DEGS.	FEET	FEET	FEET
			N/S	E/W	DEGS.
					DG/100FT

THIS SURVEY IS CORRECT TO THE BEST OF MY KNOWLEDGE AND IS SUPPORTED BY ACTUAL FIELD DATA.

*Larry Massey*  
 DIG REPRESENTATIVE

THIS SURVEY IS CORRECT TO THE BEST OF MY KNOWLEDGE AND IS SUPPORTED BY ACTUAL FIELD DATA.

AMOCO PRODUCTION COMPANY

MEASURED INCL. ANGLE DEGS. HOLE DIRECTION DEGS. COURSE LENGTH FEET VERTICAL DEPTH FEET TRUE N/S FEET E/W FEET RECTANGULAR RECORDING N/S FEET E/W FEET CLOSURE DISTANCE FEET DOG-LEG SEVERITY DG/100FT

0.00	0.00	N	00.00	E	0.00	0.00	N	00.00	E	0.00	0.00
81.00	.25	N	80.00	W	81.00	81.00	N	.03	N	.17	W
111.00	.25	N	84.00	W	30.00	111.00	N	.05	N	.30	W
172.00	.25	N	60.00	W	61.00	172.00	N	.13	N	.55	W
233.00	.75	N	10.00	E	61.00	233.00	N	.58	N	.77	W
294.00	.50	N	25.00	W	61.00	293.99	N	1.23	N	.85	W
355.00	.50	N	24.00	W	61.00	354.99	N	1.72	N	1.07	W
416.00	.25	N	61.00	W	61.00	415.99	N	2.01	N	1.34	W
477.00	.75	N	71.00	W	61.00	476.99	N	2.22	N	1.82	W
538.00	.25	N	54.00	W	61.00	537.98	N	2.47	N	2.29	W
599.00	.25	N	83.00	W	61.00	598.98	N	2.56	N	2.54	W
660.00	.75	S	77.00	W	61.00	659.98	N	2.54	N	3.07	W
721.00	1.00	N	78.00	W	61.00	720.97	N	2.53	N	3.99	W
781.00	.75	N	70.00	W	60.00	780.97	N	2.78	N	4.87	W
842.00	.75	S	59.00	W	61.00	841.96	N	2.71	N	5.64	W
903.00	.50	S	60.00	W	61.00	902.96	N	2.37	N	6.21	W
964.00	.25	S	76.00	W	61.00	963.96	N	2.22	N	6.58	W
1025.00	.25	S	44.00	W	61.00	1024.96	N	2.09	N	6.81	W
1086.00	0.00	N	00.00	E	61.00	1085.96	N	1.99	N	6.90	W
1147.00	.25	S	80.00	W	61.00	1146.96	N	1.97	N	7.03	W
1208.00	.25	N	75.00	W	61.00	1207.95	N	1.98	N	7.30	W
1269.00	0.00	N	00.00	E	61.00	1268.95	N	2.02	N	7.43	W
1330.00	.50	N	76.00	W	61.00	1329.95	N	2.08	N	7.68	W
1391.00	.50	S	70.00	W	61.00	1390.95	N	2.05	N	8.21	W
1452.00	1.00	S	51.00	W	61.00	1451.95	N	1.66	N	8.90	W

MEASURED INCL. HOLE COURSE VERTICAL R E C T A N G U L A R C L O S U R E D O G - L E G  
 DEPTH ANGLE DIRECTION LENGTH FEET DEPTH DIRECTION DISTANCE DIRECTION SEVERITY  
 FEET DEGS. FEET DEGS. FEET DEGS. FEET DEGS. FEET DEGS. FEET DEGS. FEET DEGS. FEET DEGS. FEET DEGS. FEET DEGS. FEET DEGS.

MEASURED	INCL.	HOLE	COURSE	VERTICAL	R E C T A N G U L A R	C L O S U R E	D O G - L E G
DEPTH	ANGLE	DIRECTION	LENGTH	DEPTH	DIRECTION	DISTANCE	SEVERITY
FEET	DEGS.	DEGS.	FEET	FEET	N/S	FEET	DG/100FT
1513.00	.50	S 58.00 W	61.00	1512.94	1.20 N	9.55 W	9.62at N 82.84 W .83
1551.00	.75	S 68.00 W	38.00	1550.94	1.01 N	9.92 W	9.97at N 84.18 W .72

(0'-1551' RESULT OF DIG SURVEY MS-1343)  
 (1551'-3165' RESULT OF DIG SURVEY MS-1346)

1590.00	1.00	S 79.00 W	39.00	1589.93	.84 N	10.49 W	10.52at N 85.41 W .77
1651.00	.50	N 84.00 W	61.00	1650.93	.81 N	11.28 W	11.31at N 85.91 W .89
1713.00	1.00	S 80.00 W	62.00	1712.92	.78 N	12.09 W	12.12at N 86.31 W .87

1774.00	1.00	S 52.00 W	61.00	1773.91	.35 N	13.05 W	13.06at N 88.46 W .79
1836.00	1.00	S 68.00 W	62.00	1835.90	.19 S	13.99 W	13.99at S 89.22 W .45
1897.00	.75	S 56.00 W	61.00	1896.90	.63 S	14.81 W	14.82at S 87.57 W .51
1959.00	.75	S 57.00 W	62.00	1958.89	1.07 S	15.49 W	15.52at S 86.03 W .02
2020.00	1.00	S 60.00 W	61.00	2019.88	1.56 S	16.28 W	16.36at S 84.52 W .42

2082.00	.50	S 42.00 W	62.00	2081.88	2.07 S	16.91 W	17.03at S 83.02 W .88
2143.00	.75	S 21.00 W	61.00	2142.88	2.63 S	17.25 W	17.45at S 81.32 W .55
2205.00	.75	S 03.00 W	62.00	2204.87	3.42 S	17.42 W	17.76at S 78.88 W .38
2266.00	.50	S 38.00 E	61.00	2265.87	4.05 S	17.23 W	17.70at S 76.78 W .81
2328.00	1.00	N 44.00 E	62.00	2327.86	4.88 S	16.51 W	17.01at S 76.11 W 1.90

2389.00	1.00	N 27.00 E	61.00	2388.85	3.22 S	15.90 W	16.22at S 78.55 W .48
2451.00	4.00	N 05.00 E	62.00	2450.79	3.64 S	15.15 W	15.17at S 87.59 W 4.99
2512.00	6.00	N 04.00 W	61.00	2511.55	4.67 N	15.11 W	15.82at N 72.80 W 3.51
2574.00	7.00	N 02.00 W	62.00	2573.15	11.68 N	15.48 W	19.39at N 52.94 W 1.65
2635.00	8.00	N 01.00 E	61.00	2633.63	19.64 N	15.55 W	25.05at N 38.35 W 1.76

2697.00	8.50	N 02.00 E	62.00	2694.99	28.54 N	15.31 W	32.39at N 28.21 W .84
2758.00	9.75	N 00.00 E	61.00	2755.21	38.21 N	15.14 W	41.10at N 21.62 W 2.11
2820.00	10.00	N 01.00 E	62.00	2816.29	48.84 N	15.05 W	51.11at N 17.12 W .49
2881.00	10.50	N 02.00 E	61.00	2876.32	59.69 N	14.77 W	61.49at N 13.89 W .87
2943.00	11.00	N 00.00 E	62.00	2937.23	71.25 N	14.56 W	72.73at N 11.55 W 1.01

MEASURED INCL. HOLE COURSE VERTICAL RECTANGULAR CLOSURE DOG-LEG  
 DEPTH ANGLE DIRECTION LENGTH DEPTH CORDINATES DISTANCE DIRECTION SEVERITY  
 FEET DEGS. DEGS. FEET FEET N/S feet E/W FEET DEGS. DG/100FT

3004.00 12.00 N 03.00 E 61.00 2997.01 83.41 N 14.25 W 84.62at N 09.69 W 1.91  
 3066.00 13.00 N 03.00 E 62.00 3057.54 96.81 N 13.54 W 97.75at N 07.96 W 1.61  
 3127.00 13.00 N 06.00 E 61.00 3116.97 110.49 N 12.47 W 111.19at N 06.43 W 1.11  
 3165.00 13.75 N 05.00 E 38.00 3153.94 119.24 N 11.63 W 119.80at N 05.56 W 2.07

(1551'-3165' RESULT OF DIG SURVEY MS-1346)  
 (3165'-4319' RESULT OF EASTMAN WHIPSTOCK SURVEY S0188)

3224.00 13.50 N 05.00 E 59.00 3211.28 133.08 N 10.41 W 133.49at N 04.47 W .42

3287.00 13.75 N 05.00 E 63.00 3272.51 147.87 N 9.12 W 148.15at N 03.52 W .40  
 3349.00 14.00 N 05.00 E 62.00 3332.70 162.68 N 7.82 W 162.87at N 02.75 W .40  
 3411.00 14.25 N 04.00 E 62.00 3392.83 177.76 N 6.64 W 177.89at N 02.13 W .56  
 3474.00 14.50 N 05.00 E 63.00 3453.85 193.36 N 5.41 W 193.43at N 01.60 W .56  
 3536.00 14.50 N 00.00 E 62.00 3513.88 208.86 N 4.73 W 208.91at N 01.29 W 2.02

3598.00 13.00 N 15.00 W 62.00 3574.10 223.43 N 6.65 W 223.53at N 01.70 W 6.22  
 3661.00 12.75 N 16.00 W 63.00 3635.52 236.95 N 10.40 W 237.18at N 02.51 W .53  
 3723.00 13.00 N 15.00 W 62.00 3695.96 250.27 N 14.09 W 250.66at N 03.22 W .54  
 3785.00 13.00 N 15.00 W 62.00 3756.37 263.74 N 17.70 W 264.33at N 03.84 W 0.00  
 3848.00 13.00 N 16.00 W 63.00 3817.75 277.40 N 21.49 W 278.23at N 04.43 W .36

3910.00 13.25 N 15.00 W 62.00 3878.13 290.96 N 25.25 W 292.06at N 04.96 W .54  
 3972.00 13.25 N 15.00 W 62.00 3938.48 304.69 N 28.93 W 306.06at N 05.42 W 0.00  
 4035.00 13.50 N 15.00 W 63.00 3999.77 318.76 N 32.70 W 320.44at N 05.85 W .40  
 4097.00 14.25 N 15.00 W 62.00 4059.96 333.13 N 36.55 W 335.13at N 06.26 W 1.21  
 4159.00 14.75 N 14.00 W 62.00 4119.99 348.15 N 40.44 W 350.50at N 06.62 W .90

4222.00 15.50 N 14.00 W 63.00 4180.81 364.10 N 44.42 W 366.80at N 06.95 W 1.19  
 4284.00 15.75 N 14.00 W 62.00 4240.52 380.31 N 48.46 W 383.38at N 07.26 W .40

(3165'-4319' RESULT OF EASTMAN WHIPSTOCK SURVEY S0188)  
 4319.00 16.00 N 14.00 W 35.00 4274.18 389.60 N 50.77 W 392.89at N 07.42 W .71

CLOSURE DISTANCE = 392.89 FEET.

# AMOCO PRODUCTION COMPANY

WELL # :  
SHU NO. 132

LOCATION :  
LEA COUNTY, NEW MEXICO

DATE :  
12/03/89, 12/08/89, (EW)12/13/89

JOB TYPE :  
MAG. MS. MAG. MS. (EW)MAG. MS

JOB # :  
MS-1349, MS-1348, (EW)S0188

SURVEYOR :  
A. HARBERT, R. RICE, (EW)T. ONEY

DEPTHS :  
0°-1551', 1551'-3185', (EW)3185'-4310'

DECL. :  
10 DEGREES EAST

ELEV. :  
0'

FILE # :  
WT-F155

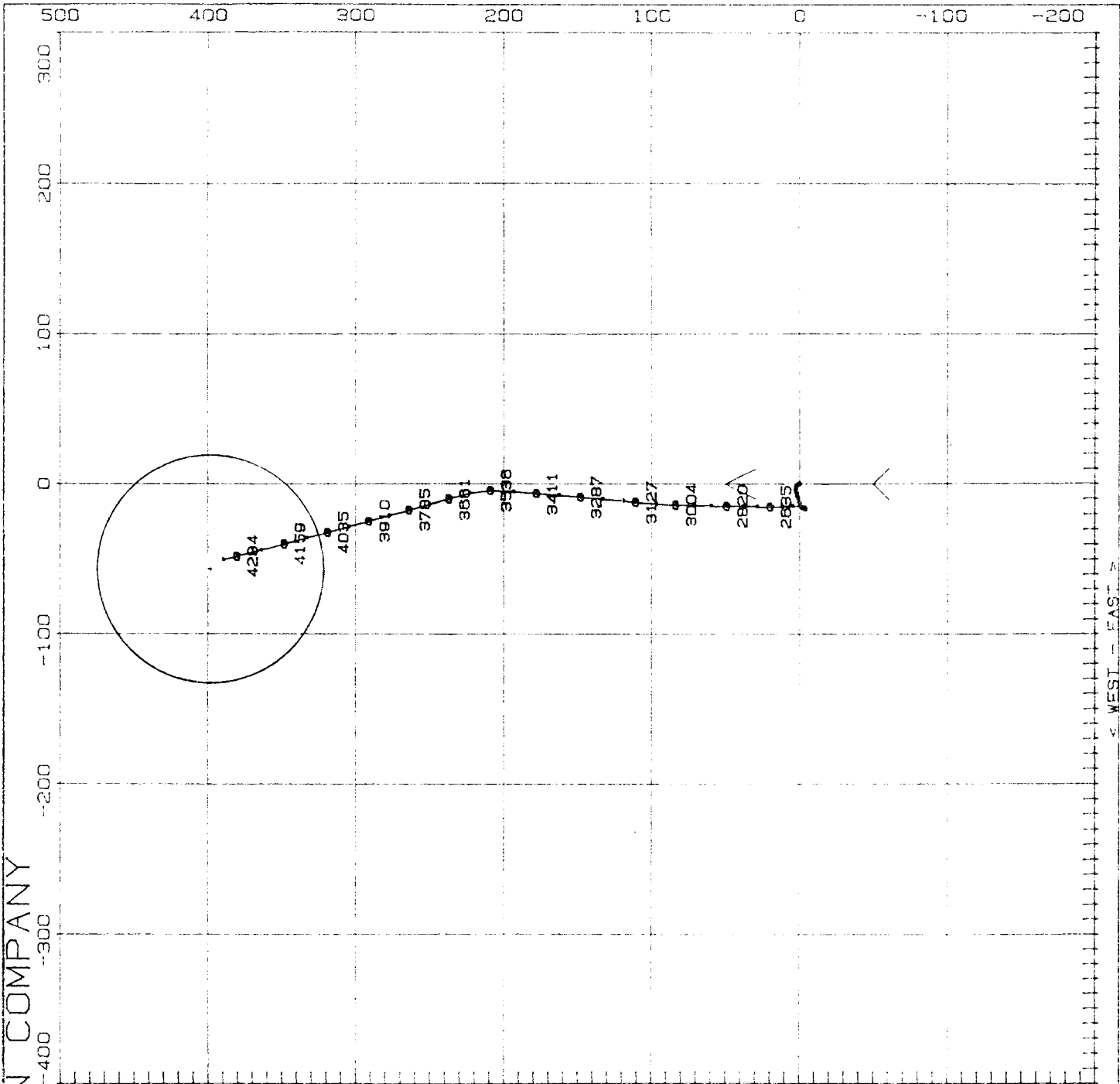
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FINAL STATION DATA:

MD. 4319.00  
TVD. 4274.18  
N/S 389.60  
E/W -50.77

CLOSURE DISTANCE  
392.89 FEET  
CLOSURE DIRECTION  
N 7.42 W

1 IN. = 100 FT.



^ NORTH - SOUTH ^

WEST EAST



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 12-3, 1983 through 12-3, 1983 conduct or supervise the taking of a MAGNETIC MULTISHOT survey by the method of magnetic orientation from a depth of 0 feet to 1551 feet, with recordings of inclination being obtained at approximately intervals of 61 feet.

This survey was conducted at the request of AMOCO PRODUCTION COMPANY for their SHU #132, LEA County, State of NEW MEXICO in the SOUTH HOBBS 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.

[Signature]
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.

[Signature]
LARRY MASSEY

## SURVEY CERTIFICATION

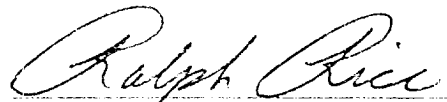
STATE TEXAS

COUNTY OF MIDLAND

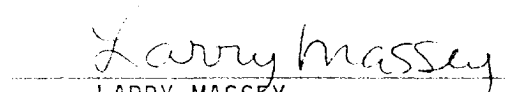
I, RALPH RICE, in the employ of D.I.G., Inc., did on the days of 12-8, 1983 through 12-8, 1983 conduct or supervise the taking of a MAGNETIC MULTISHOT survey by the method of magnetic orientation from a depth of 1551 feet to 3165 feet, with recordings of inclination being obtained at approximately intervals of 61 feet.

This survey was conducted at the request of AMOCO PRODUCTION COMPANY for their SHU #132, LEA County, State of NEW MEXICO in the SOUTH HOBBS 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.

  
\_\_\_\_\_  
RALPH RICE

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





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

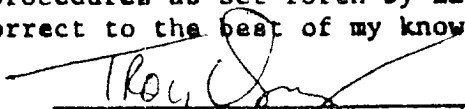
SURVEY CERTIFICATION SHEET

STATE OF TEXAS  
COUNTY OF MIDLAND

I, Troy Oney, in the employ of Eastman Whipstock, Inc., did on the days of 12-12, 19 83 thru 12-13, 19 83 conduct or supervise the taking of a Magnetic Multi Shot survey by the method of magnetic orientation from a depth of 3165 feet to 4319 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 Unit Well No. 132 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 conforms to principles and procedures set forth by Eastman Whipstock, Inc.

  
\_\_\_\_\_

Before me, the undersigned authority, on this day personally appeared Troy Oney, 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 19<sup>TH</sup> day of DEC, 1983

  
\_\_\_\_\_  
Notary Public in and for the  
County of Midland, Texas  
My commission expires 7/19/85

