

SUB-SURFACE
DIRECTIONAL
SURVEY
REPORT

AMOCO PRODUCTION COMPANY

COMPANY

SHU #136

WELL NAME

LEA COUNTY, NEW MEXICO

STATE AND COUNTY

CERTIFIED REPORT

DIG REPRESENTATIVE

MEASURED	INCL.	HOLE	COURSE	VERTICAL	VERTICAL	RECTANGULAR	C L O S U R E	DISTANCE	DIRECTION	SEVERITY
DEPTH	ANGLE	DIRECTION	LENGTH	DEPTH	FEET	SECTION	FEET	FEET	DEGS.	DE/100FT
FEET	DEGS.	DEGS.	FEET	FEET	FEET	FEET	FEET	FEET	DEGS.	DE/100FT
0.00	0.00	N 00.00 E	0.00	0.00	0.00	0.00	0.00	0.00	N 00.00 E	0.00
76.00	.75	S 08.00 W	76.00	76.00	.32	.49 S	.50	at S 08.00 W		.99
138.00	1.00	S 04.00 E	62.00	137.99	1.00	1.44 S	1.10	at S 04.06 W		.50
200.00	1.00	S 20.00 E	62.00	199.98	1.93	2.42 S	1.12	at S 02.80 E		.45
262.00	1.00	S 01.00 W	62.00	261.97	2.84	3.55 S	.30	at S 04.81 E		.59
324.00	.50	S 00.00 E	62.00	323.97	3.44	4.36 S	.29	at S 03.83 E		.81
386.00	1.00	S 05.00 E	62.00	385.96	4.07	5.18 S	.33	at S 03.62 E		.81
448.00	1.00	S 08.00 E	63.00	448.95	4.94	6.27 S	.45	at S 04.12 E		.88
511.00	.50	S 20.00 W	62.00	510.95	5.50	7.07 S	.37	at S 02.90 E		.98
573.00	.75	S 19.00 W	62.00	572.94	5.82	7.70 S	.14	at S 01.06 E		.40
635.00	.50	S 12.00 W	62.00	634.94	6.18	8.36 S	.04	at S 00.26 W		.42
697.00	.50	S 30.00 E	62.00	696.94	6.63	8.88 S	.04	at S 00.28 E		.58
759.00	.50	S 70.00 E	62.00	758.93	7.15	9.22 S	.45	at S 02.80 E		.55
821.00	.25	S 34.00 E	62.00	820.93	7.55	9.46 S	.77	at S 04.62 E		.54
883.00	.25	S 07.00 W	62.00	882.93	7.78	9.72 S	.83	at S 04.86 E		.20
945.00	.50	S 15.00 W	62.00	944.93	8.02	10.12 S	.25	at S 04.23 E		.41
1007.00	.50	S 05.00 W	62.00	1006.93	8.36	10.65 S	.66	at S 03.52 E		.14
1069.00	.50	S 82.00 W	62.00	1068.93	8.39	11.01 S	.31	at S 01.60 E		1.02
1132.00	.50	N 67.00 W	63.00	1131.92	7.97	10.94 S	.23	at S 01.20 W		.41
1194.00	0.00	N 00.00 E	62.00	1193.92	7.73	10.83 S	.40	at S 02.53 W		.81
1255.00	.25	S 15.00 E	61.00	1254.92	7.85	10.96 S	.44	at S 02.32 W		.41
1317.00	.25	S 02.00 W	62.00	1316.92	8.07	11.23 S	.41	at S 02.11 W		.12
1380.00	.25	S 07.00 E	63.00	1379.92	8.28	11.50 S	.40	at S 02.00 W		.06
1442.00	.50	S 02.00 E	62.00	1441.92	8.60	11.91 S	.37	at S 01.77 W		.41
1473.00	.25	S 02.00 E	31.00	1472.92	8.76	12.11 S	.36	at S 01.71 W		.81

(06-1473' RESULT OF DIG SURVEY MS-1306)
 (1473'-3184' RESULT OF DIG SURVEY MS-1311)

MEASURED INCL. HOLE VERTICAL SECTION # COORDINATES # DISTANCE DIRECTION # DOG-LEG
 DEPTH # ANGLE # DEGS. # FEET # N/S. # FEET # DEGS. # DG/100FI
 TRUE

3091.00	1.00	N 14.00 E	63.00	3090.47	-2.36	9.30 N	6.80 E	11.52at N 36.18 E	.42
3184.00	1.25	N 62.00 E	93.00	3183.45	-2.67	10.70 N	7.89 E	13.29at N 36.42 E	1.01
(1473'-3184' RESULT OF DIG SURVEY MS-1311)									
(3184'-4285' RESULT OF EASTMAN WHIPSTOCK SURVEY S0148)									
3213.00	2.75	S 55.00 E	29.00	3212.43	-1.98	10.64 N	8.85 E	13.84at N 39.76 E	8.45
3275.00	4.50	S 33.00 E	62.00	3274.31	1.91	7.83 N	11.56 E	13.96at N 55.87 E	3.56
3337.00	5.00	S 31.00 E	62.00	3336.09	6.97	3.40 N	14.20 E	14.70at N 76.30 E	.85
3399.00	5.00	S 35.00 E	62.00	3397.86	12.30	1.05 S	17.22 E	17.25at S 86.51 E	56
3461.00	5.50	S 43.00 E	62.00	3459.60	17.96	5.46 S	20.79 E	21.49at S 75.29 E	1.43
3524.00	6.00	S 43.00 E	63.00	3522.28	24.27	10.07 S	25.09 E	27.04at S 68.13 E	.79
3586.00	6.00	S 67.00 E	62.00	3583.94	30.54	13.76 S	30.36 E	33.34at S 65.61 E	4.02
3648.00	7.75	S 36.00 E	62.00	3645.49	37.77	18.33 S	36.10 E	40.49at S 63.08 E	6.51
3710.00	10.50	S 42.00 E	62.00	3706.70	47.59	25.96 S	42.29 E	49.62at S 58.45 E	4.69
3772.00	11.50	S 31.00 E	62.00	3767.56	59.34	35.46 S	49.31 E	60.74at S 54.28 E	3.74
3835.00	12.00	S 27.00 E	63.00	3829.24	71.94	46.60 S	55.53 E	72.54at S 49.95 E	1.52
3897.00	13.50	S 25.00 E	62.00	3889.71	85.00	58.97 S	61.53 E	85.23at S 46.21 E	2.52
3959.00	13.75	S 26.00 E	62.00	3949.97	99.00	72.16 S	67.82 E	99.02at S 43.22 E	.55
4021.00	13.00	S 25.00 E	62.00	4010.28	112.75	85.10 S	73.99 E	112.77at S 41.00 E	1.27
4083.00	13.25	S 25.00 E	62.00	4070.67	126.22	92.06 S	79.94 E	126.36at S 39.24 E	.40
4146.00	13.25	S 25.00 E	63.00	4131.99	140.02	110.95 S	86.04 E	140.40at S 37.79 E	0.00
4208.00	13.25	S 25.00 E	62.00	4192.34	153.62	123.83 S	92.05 E	154.29at S 36.62 E	0.00
(1473'-3184' RESULT OF EASTMAN WHIPSTOCK SURVEY S0148)									
4265.00	13.50	S 26.00 E	77.00	4267.25	170.69	139.90 S	99.72 E	171.80at S 35.47 E	.44

CLOSURE DISTANCE = 171.80 FEET.
 CLOSURE DIRECTION = S 35.48 E

AMOCO PRODUCTION COMPANY

WELL # :
SHU WELL NO. 196

LOCATION :
LEA COUNTY, NEW MEXICO

DATE :
11/09/89, 11/12/89, (EWD) 11/19/89

JOB TYPE :
MMS, MMS, (EWD) MMS

JOB # :
MS-1908, MS-1911, (EWD) S0148

SURVEYOR :
A. HARBERT, A. HARBERT, (EWD) G. DESPAIN

DEPTHS :
0'-1473', 1473'-3184', (EWD) 3184'-4285'

DECL. :
10 DEGREES EAST

ELEV. :
0'

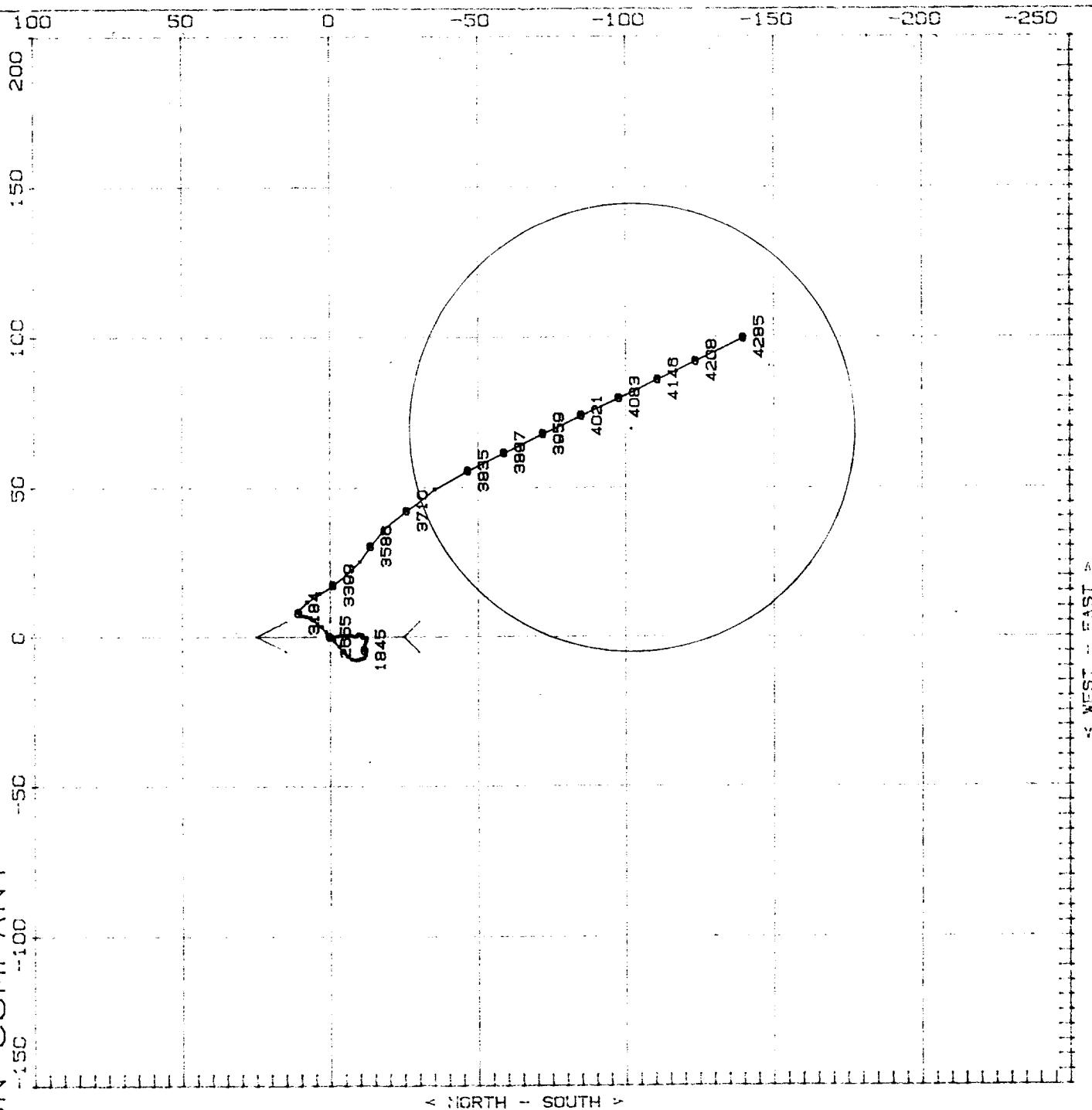
FILE # :
WT-E16CS FROM WT-E11S.D701

FINAL STATION DATA:

MD. 4285.00
TVD. 4267.25
N/S -139.90
E/W 99.72

CLOSURE DISTANCE
171.80 FEET
CLOSURE DIRECTION
S 35.47° E

1 IN. = 50 FT.





SURVEY CERTIFICATION

STATE TEXAS

COUNTY OF MIDLAND

I, D. A. HARBERT, in the employ of D.I.G., Inc., did on the days of 11-9, 1983 through 11-9, 1983 conduct or supervise the taking of a MAGNETIC MULTISHOT survey by the method of magnetic orientation from a depth of 0 feet to 1473 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 #136, 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.

A handwritten signature in cursive script, appearing to read "D. A. Harbert", written over a horizontal line.

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.

A handwritten signature in cursive script, appearing to read "Larry Massey", written over a horizontal line.

LARRY MASSEY



SURVEY CERTIFICATION

STATE TEXAS

COUNTY OF MIDLAND

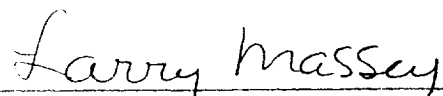
I, D. A. HARBERT, in the employ of D.I.G., Inc., did on the days of 11-12, 1983 through 11-12, 1983 conduct or supervise the taking of a MAGNETIC MULTISHOT survey by the method of magnetic orientation from a depth of 1473 feet to 3184 feet, with recordings of inclination being obtained at approximately intervals of 62 feet.

This survey was conducted at the request of AMOCO PRODUCTION COMPANY for their SHU #136, 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.


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



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 November 18, 1983 thru November 19, 1983 conduct or supervise the taking of a Magnetic Multi Shot survey by the method of magnetic orientation from a depth of 3184' feet to 4285' 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 #136, 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 21ST day of Nov., 1983

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

