

*SUB-SURFACE
DIRECTIONAL
SURVEY
REPORT*

AMOCO PRODUCTION COMPANY

SHU WELL ^{COMPANY} NO. 181

LEA COUNTY, ^{WELL NAME} NEW MEXICO

STATE AND COUNTY

CERTIFIED REPORT

CUSTOMER : AMOCO PRODUCTION CO.

WELL # : SHU WELL NO.181

LOCATION : LEA COUNTY, NEW MEXICO

DATE : 10-14-84, 10-20-84, 10-26-84

JOB TYPE : MMS, MMS, MMS

JOB # : MS-1475, MS-1479, MA-40096

SURVEYOR : A.HARBERT, A.HARBERT, NL-SPERRY

DEPTHS : 0'-1458', 1458'-3321', 3321'-4315'

DECL. : 10 DEGREES EAST

ELEV. : 0'

FILE # : WT-M155

METHOD : RADIUS OF CURVATURE

SECTION : S10.44W

FINAL STATION DATA:

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

Larry Massey
DIG REPRESENTATIVE

MEASURED	INCL.	HOLE	COURSE	VERTICAL	TRUE	RECTANGULAR	CLOSURE	DOG-LEG
DEPTH	ANGLE	DIRECTION	LENGTH	DEPTH		COORDINATES	DISTANCE	SEVERITY
FEET	DEGS.	DEGS.	FEET	FEET		N/S	feet	DEGS.
4315.00	10.50	S 24.00 W	46.00	4301.90	193.00	187.86 S	45.53 W	193.30 at S 13.62 W

MEASURED INCL. HOLE COURSE VERTICAL SECTION N/S FEET E/W DEGS. DISTANCE DIRECTION SEVERITY DOG-LEG

MEASURED	INCL.	HOLE	COURSE	VERTICAL	SECTION	N/S	FEET	E/W	DEGS.	DISTANCE	DIRECTION	SEVERITY	DOG-LEG
DEPTH	ANGLE	DIRECTION	LENGTH	DEPTH	FEET	FEET	FEET	FEET	DEGS.	FEET	DEGS.	FEET	FEET
0.00	0.00	N 00.00 E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N 00.00 E	0.00	0.00
75.00	.10	N 09.00 W	75.00	75.00	-.06	.06	.01	.07	.13	.07	N 09.00 W	.13	.13
136.00	.20	N 56.00 W	61.00	136.00	-.18	.20	.09	.22	.25	.22	N 25.58 W	.25	.25
196.00	.10	N 30.00 W	60.00	196.00	-.27	.31	.20	.37	.20	.37	N 32.85 W	.20	.20
256.00	0.00	N 00.00 E	60.00	256.00	-.31	.35	.23	.42	.17	.42	N 32.49 W	.17	.17
316.00	0.00	N 00.00 E	60.00	316.00	-.31	.35	.23	.42	0.00	.42	N 32.49 W	0.00	0.00
376.00	.10	S 10.00 W	60.00	376.00	-.26	.30	.24	.38	.17	.38	N 37.78 W	.17	.17
437.00	.40	S 32.00 E	61.00	437.00	-.01	.05	.19	.19	.55	.19	N 75.54 W	.55	.55
497.00	.30	S 06.00 E	60.00	497.00	.30	.30	.07	.30	.31	.30	S 12.79 W	.31	.31
557.00	.10	S 37.00 E	60.00	557.00	.48	.49	.01	.49	.37	.49	S 01.01 E	.37	.37
619.00	.20	S 27.00 E	62.00	619.00	.60	.63	.09	.63	.17	.63	S 08.59 E	.17	.17
681.00	.30	S 25.00 W	62.00	681.00	.85	.89	.10	.89	.38	.89	S 06.37 E	.38	.38
743.00	.60	S 31.00 W	62.00	742.99	1.32	1.32	.13	1.32	.49	1.32	S 05.61 W	.49	.49
806.00	.40	S 02.00 W	63.00	805.99	1.86	1.84	.28	1.86	.50	1.86	S 08.77 W	.50	.50
868.00	.30	S 22.00 W	62.00	867.99	2.24	2.21	.36	2.24	.25	2.24	S 09.32 W	.25	.25
930.00	.40	S 18.00 E	62.00	929.99	2.60	2.58	.38	2.60	.41	2.60	S 08.28 W	.41	.41
961.00	.50	S 05.00 W	31.00	960.99	2.83	2.82	.35	2.83	.66	2.84	S 07.03 W	.66	.66
1023.00	.80	S 06.00 W	62.00	1022.98	3.54	3.52	.42	3.54	.48	3.54	S 06.73 W	.48	.48
1085.00	.70	S 12.00 W	62.00	1084.98	4.35	4.32	.54	4.35	.29	4.35	S 07.15 W	.29	.29
1147.00	.50	S 20.00 W	62.00	1146.98	4.99	4.94	.72	4.99	.35	5.00	S 08.29 W	.35	.35
1209.00	.30	S 35.00 W	62.00	1208.97	5.40	5.33	.92	5.40	.36	5.40	S 09.80 W	.36	.36
1272.00	.40	S 75.00 W	63.00	1271.97	5.67	5.54	1.23	5.67	.41	5.68	S 12.50 W	.41	.41
1334.00	.20	S 36.00 W	62.00	1333.97	5.90	5.72	1.49	5.90	.44	5.91	S 14.60 W	.44	.44
1396.00	.20	S 54.00 W	62.00	1395.97	6.08	5.87	1.64	6.08	.10	6.10	S 15.63 W	.10	.10
1458.00	.30	S 39.00 W	62.00	1457.97	6.29	6.06	1.84	6.29	.19	6.33	S 16.88 W	.19	.19

MEASURED INCL. HOLE COURSE VERTICAL SECTION N/S feet E/W DEGS. DISTANCE DIRECTION DOG-LEG SEVERITY

MEASURED	INCL.	HOLE	COURSE	VERTICAL	SECTION	N/S	feet	E/W	DEGS.	DISTANCE	DIRECTION	DOG-LEG	SEVERITY
DEPTH	ANGLE	DIRECTION	LENGTH	DEPTH	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET
FEET	DEGS.	DEGS.	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET
1541.00	.20	S 86.00 W	83.00	1540.97	6.51	6.22	S	2.15	W	6.58at	S 19.07 W	.26	
1603.00	.60	S 53.00 W	62.00	1602.97	6.73	6.37	S	2.55	W	6.86at	S 21.82 W	.72	
1666.00	.30	S 74.00 W	63.00	1665.97	7.03	6.59	S	2.99	W	7.24at	S 24.41 W	.54	
1728.00	.50	S 57.00 W	62.00	1727.97	7.27	6.77	S	3.38	W	7.57at	S 26.55 W	.37	
1790.00	.70	S 66.00 W	62.00	1789.96	7.68	7.08	S	3.95	W	8.11at	S 29.18 W	.36	
1852.00	.50	S 54.00 W	62.00	1851.96	8.10	7.40	S	4.52	W	8.67at	S 31.37 W	.38	
1914.00	.20	S 60.00 W	62.00	1913.96	8.36	7.61	S	4.83	W	9.02at	S 32.41 W	.49	
1976.00	.20	S 77.00 W	62.00	1975.96	8.47	7.69	S	5.03	W	9.19at	S 33.20 W	.10	
2038.00	.20	N 27.00 W	62.00	2037.96	8.42	7.60	S	5.22	W	9.22at	S 34.44 W	.40	
2100.00	.10	S 45.00 E	62.00	2099.96	8.34	7.54	S	5.12	W	9.11at	S 34.20 W	.48	
2163.00	.40	N 51.00 E	63.00	2162.96	8.31	7.55	S	4.87	W	8.99at	S 32.83 W	.64	
2225.00	.40	N 57.00 E	62.00	2224.95	8.00	7.30	S	4.52	W	8.59at	S 31.79 W	.07	
2287.00	1.00	N 64.00 E	62.00	2286.95	7.51	6.92	S	3.86	W	7.93at	S 29.16 W	.98	
2349.00	1.20	N 80.00 E	62.00	2348.94	6.94	6.56	S	2.74	W	7.11at	S 22.65 W	.59	
2411.00	1.50	N 73.00 E	62.00	2410.92	6.35	6.22	S	1.32	W	6.35at	S 11.96 W	.55	
2473.00	1.10	S 74.00 E	62.00	2472.90	6.09	6.20	S	.07	E	6.21at	S 00.64 E	1.34	
2535.00	3.00	S 47.00 E	62.00	2534.86	6.81	7.29	S	1.98	E	7.55at	S 15.22 E	3.36	
2598.00	3.20	S 38.00 E	63.00	2597.77	8.86	9.80	S	4.28	E	10.69at	S 23.61 E	.83	
2660.00	3.10	S 11.00 E	62.00	2659.68	11.62	12.67	S	5.68	E	14.07at	S 23.82 E	2.38	
2722.00	3.60	S 02.00 E	62.00	2721.57	15.09	16.46	S	6.09	E	17.55at	S 20.30 E	1.17	
2784.00	3.80	S 02.00 E	62.00	2783.44	18.99	20.46	S	6.23	E	21.39at	S 16.93 E	.32	
2846.00	4.00	S 01.00 E	62.00	2845.30	23.12	24.68	S	6.34	E	25.48at	S 14.41 E	.34	
2908.00	3.90	S 03.00 E	62.00	2907.15	27.29	28.95	S	6.49	E	29.66at	S 12.63 E	.27	
2970.00	4.00	S 01.00 E	62.00	2969.00	31.46	33.21	S	6.64	E	33.87at	S 11.30 E	.27	
3032.00	3.90	S 02.00 E	62.00	3030.86	35.64	37.40	S	6.75	E	38.09at	S 10.21 E	.20	

MEASURED INCL. HOLE VERTICAL RECTANGULAR C L O S U R E DOG-LEG
DEPTH ANGLE DIRECTION LENGTH DEPTH SECTION COORDINATES DISTANCE DIRECTION SEVERITY
FEET DEGS. FEET FEET N/S feet E/W FEET DEGS. DG/100FT

3095.00 3.90 S 00.00 E 63.00 3093.71 39.84 41.77 S 6.83 E 42.32at S 09.28 E .22

3157.00 3.90 S 00.00 E 62.00 3155.57 43.99 45.98 S 6.83 E 46.49at S 08.44 E 0.00

3219.00 3.80 S 01.00 E 62.00 3217.43 48.07 50.15 S 6.86 E 50.61at S 07.79 E .19

3281.00 3.80 S 01.00 E 62.00 3279.29 52.10 54.26 S 6.93 E 54.70at S 07.28 E 0.00

3321.00 3.70 S 01.00 E 40.00 3319.20 54.66 56.87 S 6.98 E 57.30at S 06.99 E .25

3343.00 4.00 S 01.00 E 22.00 3341.15 56.11 58.35 S 7.01 E 58.77at S 06.84 E 1.36

3404.00 4.25 S 16.00 W 61.00 3402.00 60.48 62.60 S 6.44 E 63.01at S 05.86 E 2.04

3466.00 5.00 S 20.00 W 62.00 3463.79 65.43 67.44 S 4.89 E 67.61at S 04.14 E 1.32

3527.00 5.00 S 10.00 W 61.00 3524.56 70.73 72.56 S 3.52 E 72.65at S 02.77 E 1.43

3588.00 5.00 S 05.00 W 61.00 3585.33 76.03 77.83 S 2.82 E 77.89at S 02.07 E .71

3650.00 5.00 S 14.00 W 62.00 3647.09 81.43 83.16 S 1.93 E 83.18at S 01.33 E 1.26

3712.00 8.00 S 30.00 W 62.00 3708.69 88.28 89.64 S .69 W 89.65at S 00.44 W 5.61

3773.00 9.50 S 26.00 W 61.00 3768.98 97.13 97.84 S 5.04 W 97.97at S 02.95 W 2.65

3835.00 10.00 S 25.00 W 62.00 3830.08 107.27 107.31 S 9.56 W 107.74at S 05.09 W .85

3896.00 11.00 S 24.00 W 63.00 3892.02 118.41 117.76 S 14.33 W 118.63at S 06.93 W 1.61

3959.00 10.75 S 24.00 W 61.00 3951.93 129.59 128.27 S 19.01 W 129.67at S 08.42 W .41

4021.00 10.75 S 24.00 W 62.00 4012.84 140.84 138.84 S 23.71 W 140.85at S 09.69 W 0.00

4084.00 10.50 S 23.00 W 63.00 4074.76 152.15 149.49 S 28.34 W 152.15at S 10.73 W .49

4146.00 10.45 S 24.00 W 62.00 4135.73 163.13 159.83 S 32.84 W 163.16at S 11.68 W .30

4208.00 10.50 S 25.00 W 62.00 4196.69 174.07 170.08 S 37.51 W 174.17at S 12.43 W .30

4269.00 10.50 S 24.00 W 61.00 4256.67 184.85 180.20 S 42.12 W 185.06at S 13.15 W .30

4315.00 10.50 S 24.00 W 46.00 4301.90 193.00 187.86 S 45.53 W 193.30at S 13.62 W 0.00

CLOSURE DISTANCE = 193.30 FEET.
CLOSURE DIRECTION = S 13.62 W

SURVEY CERTIFICATION

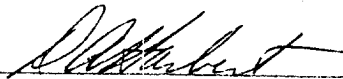
STATE TEXAS

COUNTY OF MIDLAND

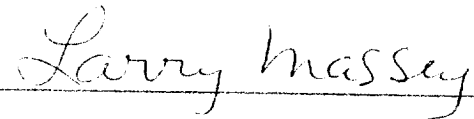
I, D.A. Harbert, in the employ of D.I.G., Inc., did on the days of October 14, 1984 through October 14, 1984 conduct or supervise the taking of a Magnetic Multishot survey by the method of magnetic orientation from a depth of 0' feet to 1458' feet, with recordings of inclination being obtained at approximately intervals of 62' feet.

This survey was conducted at the request of Amoco Production Company for their South Hobbs Unit No. 181, 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.



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.





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 October 20, 1984 through October 20, 1984 conduct or supervise the taking of a Magnetic Multishot survey by the method of magnetic orientation from a depth of 1458' feet to 3321' 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 South Hobbs Unit No. 181, 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

STATE OF New Mexico
COUNTY/PARISH OF Lea

I/We, Tim Burton

Tom Galley

_____, in the employ of the Directional Surveying Department of
Sperry-Sun Well Surveying Company, did on the 20 day of October 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 in-
dicated:

from a depth of 3321 feet to 4315 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 93 feet.

This survey was conducted at the request of Amoco Production Company

for their South Hobbs Unit Well No. 181

Magnetic Multishot Survey, Lea County/Parish,

State of New Mexico, in the South Hobbs Unit Field.

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

Thomas P. Galley

STATE OF Texas
COUNTY/PARISH OF Midland

Before me the undersigned authority/authorities, on this day personally appeared _____
_____, Thomas P. Galley,
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 13th day of November 1984.



NINA J. JONES
Notary Public, State of Texas
My Commission Expires Nov. 30, 1984

Nina J. Jones
Notary Public in and for Midland County, TX

AMOCO PRODUCTION CO.

WELL #
SHU WELL NO. 181

LOCATION
LEA COUNTY, NEW MEXICO

DATE
10-14-84, 10-20-84, 10-26-84

JOB TYPE
MMS, NMS, MMS

JOB #
MS-1475, MS-1476, MA-40096

SURVEYOR
A. HARBERT, A. HARBERT, NL-SPERRY

DEPTHS
0'-1458', 1458'-3321', 3321'-4315'

DECL.
10 DEGREES EAST

ELEV.
0'

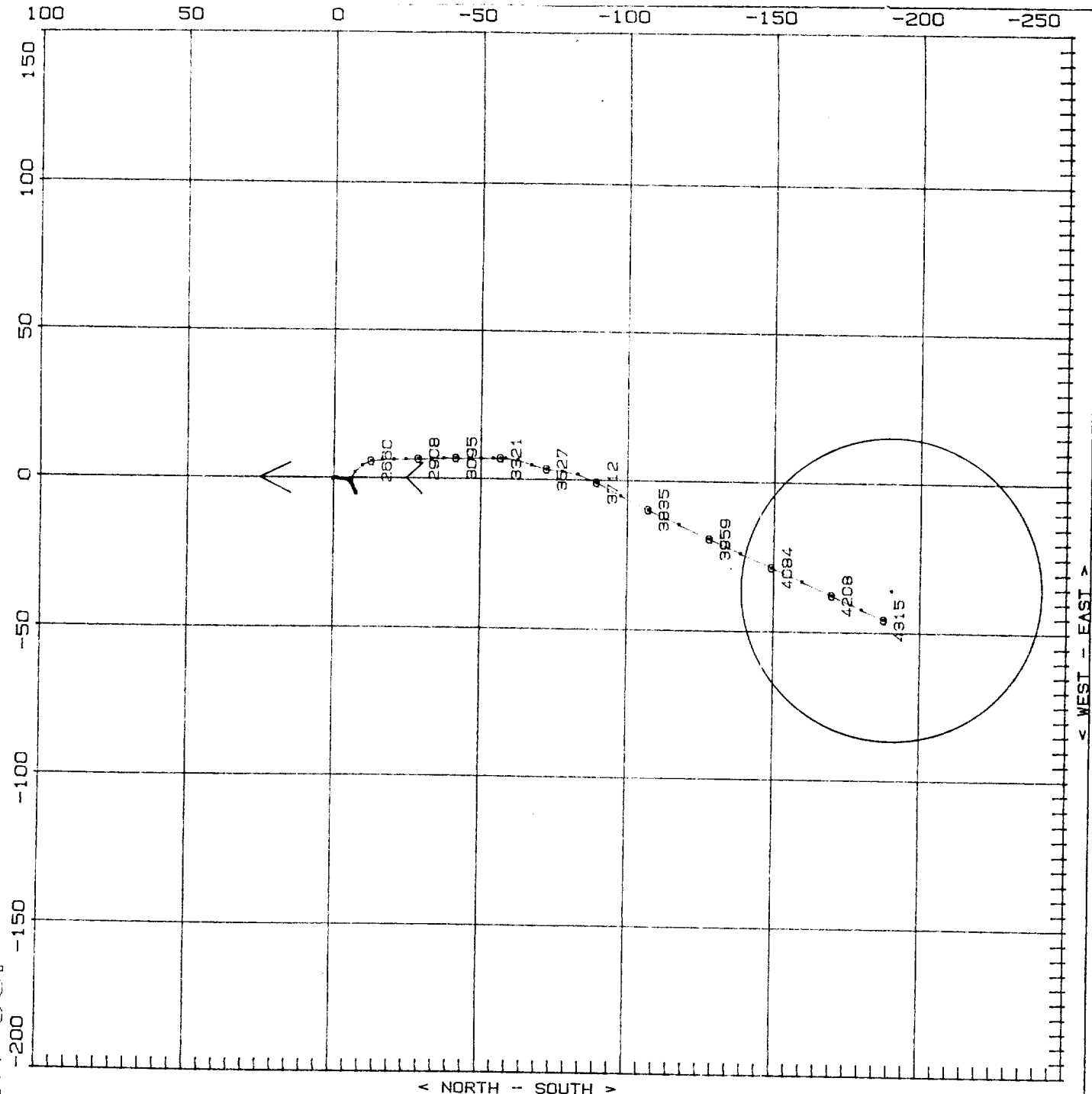
FILE #
WT-M155

FINAL STATION DATA:

MD. 4315.00
TVD. 4301.90
N/S -187.86
E/W -45.53

CLOSURE DISTANCE
193.30 FEET
CLOSURE DIRECTION
S 13.62 W

1 IN. = 50 FT.



RECEIVED
NOV 19 1984
HARRIS COUNTY