

SUB-SURFACE
DIRECTIONAL
SURVEY
REPORT

AMOCO PRODUCTION COMPANY

COMPANY

SHU COOP NO. 3

4-19-38

WELL NAME

LEA COUNTY, NEW MEXICO

STATE AND COUNTY

CUSTOMER : AMOCO PRODUCTION COMPANY

WELL # : SHU COOP NO. 3

LOCATION : LEA COUNTY, NEW MEXICO

DATE : 9-07-83, (EW) 9-30-83

WELL TYPE : MAG. MULTISHOT, MAG. MULTISHOT

WELL # : MS-1261, (EW) S0048

DRILLER : A. HERBERT, (EW) G. DESPAIN

DEPTH : 43'-1465', (EW) 1465'-4469'

INCL. : 10 DEGREES EAST

DEV. : 0'

WELL # : WT-C115

METHOD : RADIUS OF CURVATURE

LOCATION : N49.07W

NAL STATION DATA

MEASURED	INCL.	HOLE	COURSE	VERTICAL	TRUE	VERTICAL	RECTANGULAR	CLOSURE	DOG-LEG
DEPTH	ANGLE	DIRECTION	LENGTH	DEPTH	SECTION	SECTION	COORDINATES	DISTANCE	DIRECTION
FEET	DEGS.	DEGS.	FEET	FEET	FEET	FEET	N/S	FEET	FEET
4469.00	24.25	N 16.00 W	93.00	4263.99	954.91	613.07	N	732.30	W
								955.05	N 50.06 W
									.27

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

Larry Massey
 DIG REPRESENTATIVE

MEASURED INCL. ANGLE DEGS.	HOLE DIRECTION DEGS.	COURSE LENGTH FEET	VERTICAL DEPTH FEET	TRUL	VERTICAL SECTION FEET	N/S	FEET	E/W	DISTANCE	DIRECTION	DUG-LEG SEVERITY
43.00	0.00	0.00	43.00	0.00	0.00	0.00	0.00	0.00	0.00	N 00.00 E	0.00
110.00	.25	67.00	110.00	.14	.14	.05	.14	.14	.15	N 70.00 W	.37
172.00	.25	62.00	172.00	.13	.13	.11	.27	.27	.29	S 32.00 E	.76
233.00	.75	61.00	233.00	-.31	-.31	.61	.12	.12	.63	S 01.00 E	.90
357.00	0.00	124.00	356.99	-.86	-.86	1.43	.10	.10	1.43	N 00.00 E	.60
418.00	.75	61.00	417.99	-1.26	-1.26	1.69	.19	.19	1.70	S 40.00 E	1.23
480.00	.50	62.00	479.99	-1.66	-1.66	1.63	.79	.79	1.81	N 35.00 E	1.52
541.00	.25	61.00	540.99	-1.77	-1.77	1.41	1.11	1.11	1.80	N 75.00 E	.57
603.00	.25	62.00	602.99	-1.73	-1.73	1.21	1.25	1.25	1.74	N 10.00 W	.55
664.00	.25	61.00	663.99	-1.48	-1.48	1.02	1.00	1.00	1.48	N 76.00 W	.45
726.00	.50	62.00	725.98	-1.13	-1.13	.71	.89	.89	1.14	N 14.00 E	.90
788.00	.50	62.00	787.98	-1.03	-1.03	.24	1.15	1.15	1.18	N 45.00 E	.43
849.00	.75	61.00	848.98	-.96	-.96	.30	1.53	1.53	1.56	N 25.00 E	.54
972.00	.50	123.00	971.97	-1.07	-1.07	1.22	2.47	2.47	2.75	N 66.00 E	.40
1034.00	.50	62.00	1033.97	-1.46	-1.46	1.22	2.99	2.99	3.23	N 65.00 E	.67
1095.00	.50	62.00	1095.97	-2.00	-2.00	.92	3.44	3.44	3.57	S 47.00 E	.22
1157.00	.50	61.00	1156.96	-2.51	-2.51	.49	3.74	3.74	3.77	S 20.00 E	.41
1219.00	.50	62.00	1218.96	-2.94	-2.94	.04	3.85	3.85	3.85	S 03.00 E	.24
1280.00	.25	61.00	1279.96	-3.14	-3.14	.43	3.78	3.78	3.81	S 22.00 W	.48
1403.00	.25	123.00	1402.96	-2.81	-2.81	.33	3.43	3.43	3.45	N 10.00 E	.40
1465.00	.25	62.00	1464.96	-2.67	-2.67	.06	3.48	3.48	3.48	N 10.00 E	0.00
1586.00	.50	121.00	1585.96	-1.99	-1.99	.59	3.14	3.14	3.20	N 65.00 W	.41
1648.00	.50	62.00	1647.95	-1.46	-1.46	.85	2.67	2.67	2.80	N 57.00 W	.11
1710.00	2.75	62.00	1709.92	.23	.23	1.61	1.09	1.09	1.94	N 72.00 W	3.66
1772.00	5.75	62.00	1771.75	4.49	4.49	3.10	3.26	3.26	4.50	N 70.00 W	4.84

(1465' MD AND PRECEDING RESULT OF D.I.G. SURVEY MS-1261)
 (1465' MD AND FOLLOWING RESULT OF EASTMAN WHIPSTOCK SURVEY S00040)

MEASURED DEPTH	INCL. ANGLE	HOLE DIRECTION	COURSE LENGTH	TRUE VERTICAL DEPTH	VERTICAL SECTION	N/S	feet	E/W	FEET	DISTS.	DIRECTION	C L O U S U R E	DOG-LEG SEVERITY
FEET	DEGS.	DEGS.	FEET	FEET	FEET	FEET	FEET	FEET	FEET	FEET	DEGS.	FEET	DEG/100FT
1634.00	8.25	N 70.00 W	62.00	1833.28	11.55	5.69	N	19.36	W	11.81	N 61.23 W		4.03
1896.00	9.50	N 69.00 W	62.00	1894.54	20.51	9.03	N	19.32	W	21.32	N 64.93 W		2.03
1958.00	10.75	N 67.00 W	62.00	1955.57	30.82	13.12	N	29.42	W	32.21	N 65.97 W		2.09
2020.00	12.00	N 66.00 W	62.00	2016.35	42.49	17.99	N	40.63	W	44.44	N 66.11 W		2.04
2092.00	13.50	N 65.00 W	62.00	2075.82	55.61	23.67	N	53.89	W	58.12	N 65.97 W		2.45
2144.00	15.00	N 65.00 W	62.00	2136.91	70.79	30.12	N	66.92	W	73.38	N 65.76 W		2.42
2206.00	16.50	N 64.00 W	62.00	2196.58	86.51	37.36	N	82.11	W	90.21	N 65.53 W		2.46
2268.00	18.75	N 65.00 W	62.00	2255.75	104.36	45.33	N	98.82	W	108.72	N 65.35 W		2.86
2330.00	20.00	N 65.00 W	62.00	2314.32	123.89	53.92	N	117.23	W	129.03	N 65.30 W		2.82
2392.00	21.00	N 65.00 W	62.00	2372.40	144.77	63.09	N	136.90	W	150.74	N 65.25 W		1.61
2454.00	23.00	N 65.00 W	62.00	2429.88	167.10	72.91	N	157.95	W	173.97	N 65.22 W		3.23
2516.00	24.50	N 64.00 W	62.00	2486.63	191.17	83.66	N	180.49	W	198.93	N 65.13 W		2.50
2578.00	25.75	N 65.00 W	62.00	2542.76	216.54	94.99	N	204.25	W	225.26	N 65.05 W		2.13
2640.00	26.50	N 65.00 W	62.00	2598.43	242.80	106.53	N	228.99	W	252.56	N 65.05 W		1.21
2702.00	26.25	N 64.00 W	62.00	2653.97	269.35	118.39	N	253.85	W	280.10	N 64.99 W		.82
2764.00	27.00	N 63.00 W	62.00	2709.48	296.25	130.70	N	278.72	W	307.87	N 64.82 W		1.47
2826.00	26.50	N 62.00 W	62.00	2764.76	323.40	143.67	N	303.47	W	335.76	N 64.66 W		1.09
2888.00	26.50	N 62.00 W	62.00	2820.25	350.36	156.66	N	327.89	W	363.40	N 64.46 W		0.00
2950.00	26.50	N 61.00 W	62.00	2875.73	377.37	169.86	N	352.21	W	391.02	N 64.25 W		.72
3012.00	26.00	N 61.00 W	62.00	2931.34	404.20	183.15	N	376.19	W	418.41	N 64.04 W		.81
3074.00	26.00	N 61.00 W	62.00	2987.06	430.80	196.33	N	399.96	W	445.55	N 63.85 W		0.00
3136.00	26.00	N 61.00 W	62.00	3042.79	457.39	209.50	N	423.73	W	472.70	N 63.69 W		0.00
3198.00	26.00	N 61.00 W	62.00	3098.52	483.98	222.68	N	447.50	W	499.05	N 63.54 W		0.00
3260.00	25.75	N 60.00 W	62.00	3154.30	510.50	236.00	N	471.85	W	526.87	N 63.38 W		.81
3322.00	25.25	N 61.00 W	62.00	3210.26	536.66	249.15	N	494.28	W	553.53	N 63.24 W		1.06

MEASURED	INCL.	HOLE	COURSE	VERTICAL	VERTICAL	TRUI	N/S	FEET	E/W	FEET	DIRECTION	DEGS.	DOGS-LEGS
DEPTH	ANGLE	DIRECTION	LENGTH	DEPTH	SLOCTION	FEET							SILVERITY
FEET	DEGS.	DEGS.	FEET	FEET	FEET	FEET							DOGS-LEGS
3384.00	25.00	N 61.00 W	62.00	3266.99	562.42	261.91	N	517.31	W	579.83	N 63.14 W		40
3446.00	25.00	N 56.00 W	62.00	3322.50	588.26	275.60	N	539.64	W	605.94	N 62.94 W		3.41
3508.00	25.75	N 50.00 W	62.00	3378.60	614.75	291.58	N	560.85	W	632.12	N 62.53 W		4.32
3570.00	24.00	N 42.00 W	62.00	3434.85	640.77	309.68	N	579.60	W	657.14	N 61.88 W		6.11
3632.00	24.00	N 41.00 W	62.00	3491.49	665.77	320.57	N	596.31	W	688.63	N 61.14 W		6.66
3694.00	23.75	N 41.00 W	62.00	3548.29	690.37	347.32	N	612.61	W	704.21	N 60.44 W		1.21
3756.00	23.00	N 40.00 W	62.00	3605.31	714.45	365.83	N	628.42	W	727.15	N 59.79 W		7.75
3818.00	23.50	N 40.00 W	62.00	3662.49	738.12	394.20	N	643.83	W	749.75	N 59.17 W		8.01
3880.00	22.00	N 39.00 W	62.00	3719.87	761.27	402.31	N	658.76	W	771.90	N 58.58 W		1.01
3942.00	22.00	N 37.00 W	62.00	3777.35	784.07	420.62	N	673.06	W	793.68	N 57.99 W		1.21
4004.00	21.25	N 22.00 W	62.00	3834.99	805.53	440.45	N	684.28	W	813.70	N 57.23 W		8.97
4066.00	21.25	N 15.00 W	62.00	3892.78	824.87	461.74	N	691.41	W	831.41	N 56.26 W		4.09
4128.00	22.75	N 15.00 W	62.00	3950.26	844.11	484.18	N	697.42	W	849.01	N 55.23 W		2.42
4190.00	22.00	N 15.00 W	62.00	4007.59	863.66	506.97	N	703.53	W	867.16	N 54.22 W		1.21
4252.00	22.25	N 15.00 W	62.00	4065.03	883.80	529.53	N	709.57	W	885.38	N 53.26 W		4.40
4314.00	23.00	N 15.00 W	62.00	4122.23	902.76	552.57	N	715.74	W	904.22	N 52.33 W		1.21
4376.00	24.00	N 15.00 W	62.00	4179.11	923.24	576.45	N	722.14	W	924.00	N 51.40 W		1.61
4438.00	24.25	N 16.00 W	93.00	4263.99	954.91	613.07	N	732.30	W	955.05	N 50.06 W		5.52

CLOSURE DISTANCE = 955.05 FEET.
CLOSURE DIRECTION = N 50.06 W

(1465'-4469' HD RESULTS OF EASTMAN WHIPSTOCK SURVEY 80043)

AMOCO PRODUCTION COMPANY

WELL # :
 SHU COOP NO. 3
 LOCATION :
 LEA COUNTY, NEW MEXICO
 DATE :
 8-07-89, (EW) 8-90-89
 JOB TYPE :
 MAG. MULTISHOT, MAG. MULTISHOT
 JOB # :
 MS-1281, (EW) S0048
 SURVEYOR :
 A. HARBERT, (EW) C. DESPAIN

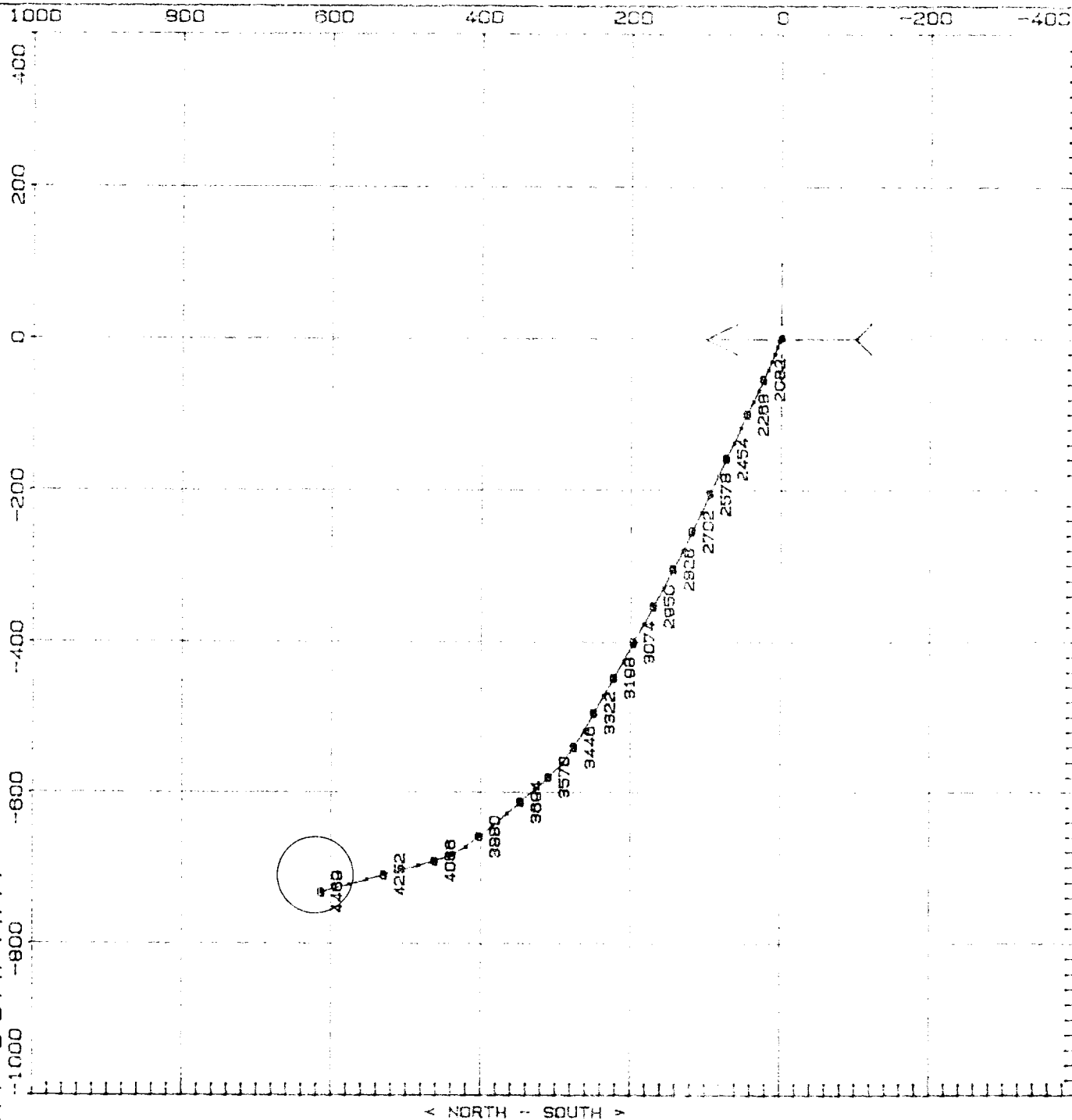
DEPTHS :
 43'-1485', (EW) 1485'-4489'
 DECL. :
 10 DEGREES EAST
 ELEV. :
 0'
 FILE # :
 WT-C11S

FINAL STATION DATA:

MD. 4489.00
 TVD. 4263.99
 N/S 613.07
 E/W -732.30

CLOSURE DISTANCE
 955.05 FEET
 CLOSURE DIRECTION
 N 50.08 W

1 IN. = 200 FT.





SURVEY CERTIFICATION

STATE TEXASCOUNTY OF MIDLAND

I, D. A. HARBERT, in the employ of D.I.G., Inc., did on the days of 9-7, 19 83 through 9-7, 1983 conduct or supervise the taking of a MAGNETIC MULTISHOT survey by the method of magnetic orientation from a depth of 43 feet to 1465 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 COOP #3, LEA County, State of NEW MEXICO in the SOUTH HOBBS UNIT 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



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 September 30, 19 83 thru September 30, 19 83 conduct or supervise the taking of a Magnetic Multi Shot survey by the method of magnetic orientation from a depth of 1465 feet to 4469 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 Coop. #3, 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 De Spain, 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 3RD day of OCT., 19 83

Ray G. Steink
Notary Public in and for the
County of Midland, Texas
My commission expires 7/19/85

