



**REPORT
of
SUB-SURFACE
DIRECTIONAL
SURVEY**

ATLANTIC RICHFIELD COMPANY
COMPANY

EMPIRE ABO WELL NO. J 213
WELL NAME

EDDY COUNTY, NEW MEXICO
LOCATION

JOB NUMBER

WT-480 G-1633

TYPE OF SURVEY

Gyroscopic Multiple Shot

DATE

4-10-80

SURVEY BY
Larry Massey

OFFICE
West Texas

ARCO OIL AND GAS
EMPIRE ABO WELL NO. J213
EDDY COUNTY, NEW MEXICO

EASTMAN WHIPSTOCK INC.
GYROSCOPIC MULTIPLE SHOT SURVEY 0 -6200'

LARRY MASSEY SURVEYOR

RECORD OF SURVEY

RADIUS OF CURVATURE METHOD

ARCO OIL AND GAS

EMPIRE ABO WELL NO. J213

EDDY COUNTY, NEW MEXICO

COMPUTATION PAGE NO.

TIME DATE

00:17:14 00--00

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D	TRUE VERTICAL DEPTH FEET	R E C T A N G U L A R C O O R D I N A T E S FEET	DOG LEG SEVERITY DG/100FT
0.	0 0	0	0.00	0.00	0.00
100.	0 15	S 69 E	100.00	0.20 E	0.25
200.	0 15	N 72 E	200.00	0.63 E	0.17
300.	0 15	S 88 E	300.00	1.06 E	0.09
400.	0 0	0	400.00	1.28 E	0.25
500.	0 0	0	500.00	1.28 E	0.00
600.	0 15	N 83 W	600.00	1.06 E	0.25
700.	0 15	N 7 W	700.00	0.78 E	0.31
800.	0 30	N 21 W	799.99	0.62 E	0.26
900.	0 30	N 7 W	899.99	0.41 E	0.12
1000.	0 30	N 27 W	999.99	0.15 E	0.17
1100.	0 30	N 13 W	1099.98	0.14 W	0.12
1200.	0 45	N 27 W	1199.98	0.52 W	0.29
1300.	0 30	N 29 W	1299.97	1.03 W	0.25
1400.	0 45	N 27 W	1399.96	1.54 W	0.25
1500.	0 45	N 21 W	1499.96	2.07 W	0.03
1600.	0 45	N 15 W	1599.95	2.48 W	0.08
1700.	0 45	N 7 W	1699.94	2.73 W	0.10
1800.	1 0	N 14 W	1799.93	3.00 W	0.27
1900.	0 45	N 11 W	1899.92	3.33 W	0.25
2000.	0 45	N 7 W	1999.91	3.54 W	0.05
2100.	0 45	N 6 W	2099.90	3.69 W	0.01
2200.	0 45	N 9 E	2199.89	3.65 W	0.20
2300.	0 45	N 6 E	2299.88	3.48 W	0.04
2400.	0 45	N 19 E	2399.87	3.20 W	0.17
2500.	0 45	N 31 E	2499.86	2.65 W	0.16
2600.	0 30	N 50 E	2599.86	1.94 W	0.32
2700.	0 30	N 49 E	2699.85	1.28 W	0.01
2800.	0 30	N 45 E	2799.85	0.64 W	0.03
2900.	0 15	N 69 E	2899.85	0.10 W	0.29

TIME DATE
00:17:14 00--00

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D	TRUE VERTICAL DEPTH FEET	R E C T A N G U L A R C O O R D I N A T E S FEET	DOG LEG SEVERITY DG/100FT
3000.	0 15	N 18 E	2999.85	23.37 N	0.22
3100.	0 15	N 8 W	3099.85	23.80 N	0.11
3200.	0 15	N 16 W	3199.85	24.22 N	0.03
3300.	0 15	N 4 W	3299.84	24.65 N	0.05
3400.	0 15	N 5 E	3399.84	25.09 N	0.04
3500.	0 15	N 45 E	3499.84	25.48 N	0.17
3600.	0 30	N 11 W	3599.84	26.08 N	0.42
3700.	0 15	N 9 W	3699.84	26.72 N	0.25
3800.	0 0	0	3799.84	26.94 N	0.25
3900.	0 15	N 51 E	3899.84	27.07 N	0.25
4000.	0 15	N 47 E	3999.84	27.36 N	0.02
4100.	0 30	N 83 E	4099.83	27.63 N	0.33
4200.	0 30	S 73 E	4199.83	27.56 N	0.21
4300.	0 30	S 59 E	4299.83	27.20 N	0.12
4400.	0 30	S 82 E	4399.82	26.91 N	0.20
4500.	0 30	N 86 E	4499.82	26.83 N	0.10
4600.	0 30	N 59 E	4599.81	27.14 N	0.23
4700.	0 30	N 65 E	4699.81	27.55 N	0.05
4800.	0 45	N 62 E	4799.80	28.04 N	0.25
4900.	1 0	N 78 E	4899.79	28.56 N	0.35
5000.	1 15	N 52 E	4999.77	29.38 N	0.56
5100.	1 30	N 33 E	5099.74	31.14 N	0.52
5200.	1 30	N 28 E	5199.71	33.40 N	0.13
5300.	1 30	N 19 E	5299.68	35.80 N	0.24
5400.	1 30	N 18 E	5399.64	38.28 N	0.03
5500.	1 30	N 24 E	5499.61	40.72 N	0.16
5600.	1 15	N 42 E	5599.58	42.73 N	0.50
5700.	1 15	N 44 E	5699.56	44.32 N	0.04
5800.	0 45	N 28 E	5799.54	45.73 N	0.57
5900.	0 45	N 27 E	5899.53	46.89 N	0.01

ARCO OIL AND GAS
EMPIRE ABO WELL NO. J213
EDDY COUNTY, NEW MEXICO

COMPUTATION PAGE NO.
TIME DATE
00:17:14 00--00

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D	TRUE VERTICAL DEPTH FEET	R E C T A N G U L A R C O O R D I N A T E S FEET	D O G L E G S E V E R I T Y D G / 1 0 0 F T
6000.	0 45	N 28 E	5999.52	48.05 N 21.25 E	0.01
6100.	1 0	N 36 E	6099.51	49.34 N 22.06 E	0.28
6200.	1 15	N 6 E	6199.49	51.16 N 22.76 E	0.63

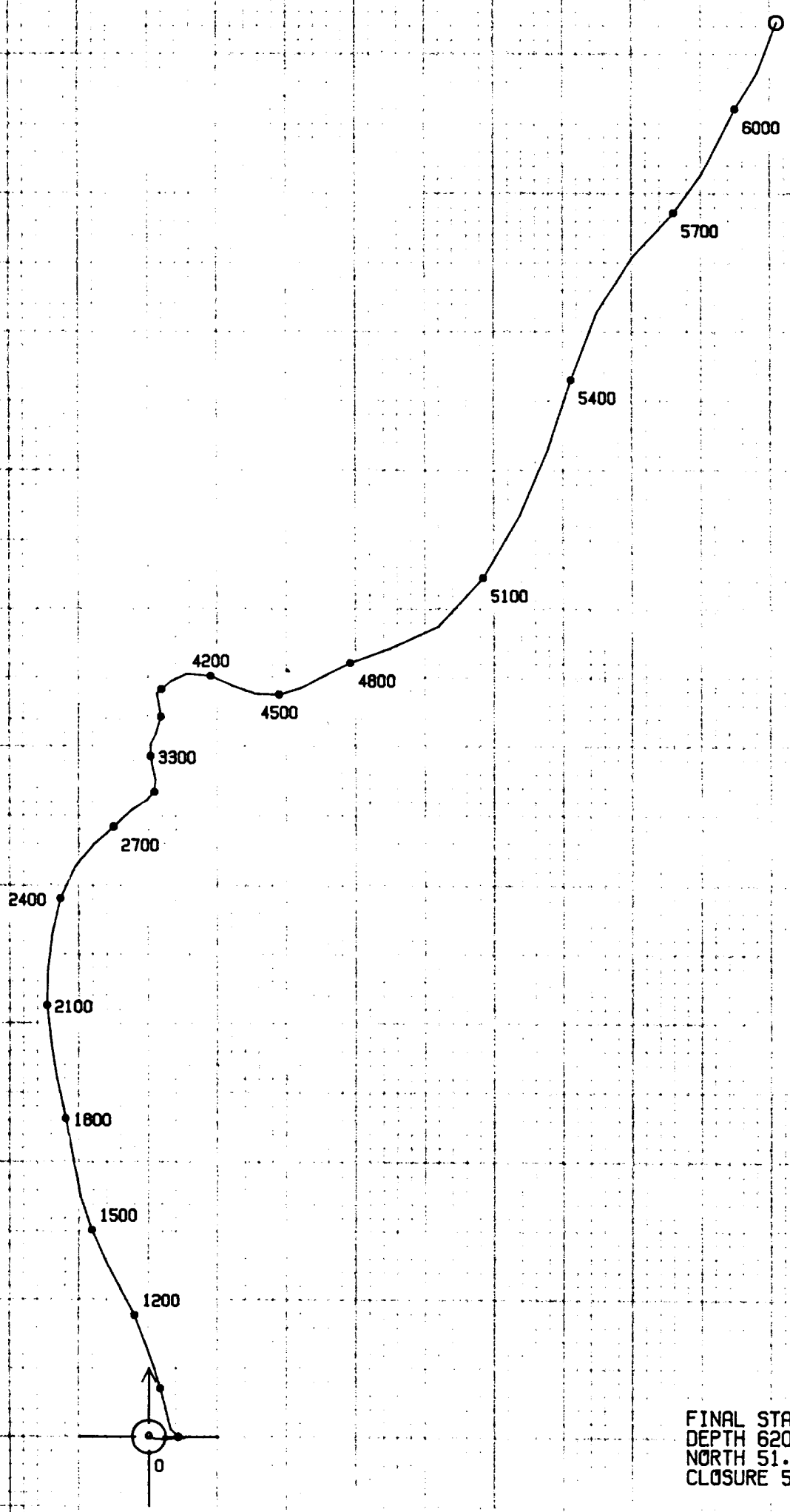
FINAL CLOSURE - DIRECTION: N 23 DEGS 58 MINS 55 SECS E
DISTANCE: 55.99 FEET

ARCO OIL AND GAS
EMPIRE ABO WELL NO. J213
EDDY COUNTY, NEW MEXICO

EASTMAN WHIPSTOCK, INC.

HORIZONTAL PROJECTION

SCALE 1 IN. = 5 FEET
DEPTH INDICATOR: MD



FINAL STATION:
DEPTH 6200 MD. 6199.49 TVD
NORTH 51.15 EAST 22.75
CLOSURE 55.98 N 23 58 55 E



P. O. Box 5577/Midland, Texas 79701/(915) 563-0511
TWX 910-881-5066/Cable: EASTCO

SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, Larry Massey, in the employ of Eastman Whipstock, Inc., did on the days of April 10, 19 80 thru April 10, 19 80 conduct or supervise the taking of a Gyroscopic Multi Shot survey by the method of magnetic orientation from a depth of 0 feet to 6200 feet, with recordings of inclination and direction being obtained at approximate intervals of 100 feet.

This survey was conducted at the request of ARCO Oil and Gas for their Empire Abo Well No. J213, Eddy County, State of New Mexico, in the _____ field.

The data for this survey and the calculations 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.

Larry Massey
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.

Mike Jagg

Before me, the undersigned authority, on this day personally appeared Larry Massey, 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 22nd day of April, 19 80.

Anna M. Smith
Notary Public in and for the County of
Midland, Texas
My commission expires 5-24-80