



**REPORT
of
SUB-SURFACE
DIRECTIONAL
SURVEY**

EXXON COMPANY, U.S.A.
COMPANY

HARRISON WELL NO. SW 9
WELL NAME

LEA COUNTY, NEW MEXICO
LOCATION

JOB NUMBER

WT-1079 G-0297
WT-1079 S-0298
WT-1279 G-0821
WT-1279 S-0820

TYPE OF SURVEY

Gyroscopic Multishot
Magnetic Multishot
Gyroscopic Multishot
Magnetic Multishot

DATE

10-28-79
10-28-79
12-16-79
12-16-79

SURVEY BY
Mike Teaff
Larry Massey

OFFICE
West Texas

EXXON COMPANY, U.S.A.
HARRISON WELL NO. SW 9
LEA COUNTY, NEW MEXICO

EASTMAN WHIPSTOCK, INC.
GYROSCOPIC MULTI SHOT SURVEY
MAGNETIC MULTI SHOT SURVEY
SURVEYOR: MIKE TEAFF
GYROSCOPIC MULTI SHOT SURVEY
SURVEYOR: LARRY MASSEY
MAGNETIC MULTI SHOT SURVEY
SURVEYOR: LARRY MASSEY

WT-1079 G-0297
WT-1079 S-0298

RECORD OF SURVEY

RADIUS OF CURVATURE METHOD

| 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 DEG/100FT |
|---------------------------|-----------------------|-------------------------|-----------------------------------|--|----------------------------------|
| 0. | 0 0 | 0 | 0.00 | 0.00 | 0.0 |
| 100. | 0 15 | N 7 W | 100.00 | 0.22 N | 0.2 |
| 200. | 0 15 | N 13 E | 200.00 | 0.65 N | 0.1 |
| 300. | 0 15 | N 42 E | 300.00 | 1.03 N | 0.1 |
| 400. | 0 15 | S 60 E | 400.00 | 1.10 N | 0.3 |
| 500. | 0 15 | S 31 W | 500.00 | 0.72 N | 0.4 |
| 600. | 0 15 | S 85 W | 599.99 | 0.49 N | 0.2 |
| 700. | 0 0 | 0 | 699.99 | 0.47 N | 0.2 |
| 800. | 0 30 | S 20 W | 799.99 | 0.06 N | 0.5 |
| 900. | 0 30 | N 88 W | 899.99 | 0.39 S | 0.6 |
| 1000. | 0 0 | 0 | 999.99 | 0.38 S | 0.5 |
| 1100. | 0 15 | S 33 W | 1099.99 | 0.56 S | 0.2 |
| 1200. | 0 15 | N 27 E | 1199.99 | 0.42 S | 0.5 |
| 1300. | 0 30 | N 76 E | 1299.98 | 0.02 S | 0.4 |
| 1350. | 0 30 | N 81 E | 1349.98 | 0.07 N | 0.1 |
| 1410. | 1 0 | N 76 E | 1409.98 | 0.22 N | 0.8 |
| 1503. | 1 0 | N 56 E | 1502.96 | 0.88 N | 0.4 |
| 1597. | 1 0 | N 79 E | 1596.95 | 1.50 N | 0.4 |
| 1691. | 1 15 | N 59 E | 1690.93 | 2.16 N | 0.5 |
| 1784. | 1 15 | N 48 E | 1783.91 | 3.37 N | 0.3 |
| 1878. | 1 0 | N 74 E | 1877.89 | 4.25 N | 0.6 |
| 1971. | 1 0 | N 56 E | 1970.87 | 4.94 N | 0.3 |
| 2065. | 1 0 | N 42 E | 2064.86 | 6.01 N | 0.3 |
| 2159. | 1 15 | N 52 E | 2158.84 | 7.27 N | 0.3 |
| 2252. | 1 15 | N 77 E | 2251.82 | 8.14 N | 0.6 |
| 2346. | 1 0 | N 84 E | 2345.80 | 8.44 N | 0.3 |
| 2439. | 1 15 | N 84 E | 2438.78 | 8.63 N | 0.3 |
| 2533. | 1 15 | N 86 E | 2532.76 | 8.81 N | 0.0 |
| 2627. | 1 15 | N 69 E | 2626.74 | 9.25 N | 0.4 |
| 2720. | 1 45 | N 74 E | 2719.71 | 10.02 N | 0.6 |

| 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 DEG/100FT |
|---------------------------|-----------------------|-------------------------|-----------------------------------|--|----------------------------------|
| 2814. | 2 15 | N 61 E | 2813.65 | 11.28 N 26.99 E | 0.7 |
| 2908. | 2 15 | N 67 E | 2907.57 | 12.90 N 30.30 E | 0.3 |
| 3001. | 2 0 | N 80 E | 3000.51 | 13.87 N 33.60 E | 0.6 |
| 3095. | 2 0 | N 86 E | 3094.45 | 14.27 N 36.85 E | 0.2 |
| 3188. | 2 0 | N 87 E | 3187.40 | 14.47 N 40.09 E | 0.0 |
| 3282. | 1 45 | N 89 E | 3281.34 | 14.58 N 43.17 E | 0.3 |
| 3300. | 1 45 | N 77 E | 3299.34 | 14.64 N 43.71 E | 2.0 |
| 3400. | 1 15 | N 70 E | 3399.30 | 15.39 N 46.22 E | 0.5 |
| 3500. | 2 30 | N 55 W | 3499.25 | 18.02 N 46.56 E | 3.4 |
| 3600. | 2 45 | N 68 W | 3599.14 | 20.21 N 42.55 E | 0.6 |
| 3700. | 1 30 | N 66 W | 3699.07 | 21.65 N 39.13 E | 1.3 |
| 3800. | 1 0 | N 69 W | 3799.05 | 22.49 N 37.12 E | 0.5 |
| 3900. | 0 45 | S 83 W | 3899.03 | 22.67 N 35.62 E | 0.5 |
| 4000. | 0 30 | S 76 W | 3999.03 | 22.47 N 34.55 E | 0.3 |
| 4100. | 0 30 | S 84 W | 4099.02 | 22.32 N 33.69 E | 0.1 |
| 4162. | 1 0 | S 83 W | 4161.02 | 22.23 N 32.88 E | 0.8 |
| 4255. | 1 0 | S 62 W | 4254.00 | 21.75 N 31.34 E | 0.4 |
| 4348. | 1 0 | S 59 W | 4346.99 | 20.95 N 29.93 E | 0.1 |
| 4441. | 1 0 | S 53 W | 4439.97 | 20.04 N 28.59 E | 0.1 |
| 4534. | 1 0 | S 80 W | 4532.96 | 19.40 N 27.11 E | 0.5 |
| 4627. | 2 0 | S 46 W | 4625.92 | 18.31 N 24.97 E | 1.4 |
| 4720. | 2 0 | S 60 W | 4718.87 | 16.36 N 22.39 E | 0.5 |
| 4813. | 2 30 | S 52 W | 4811.79 | 14.32 N 19.36 E | 0.6 |
| 4906. | 3 45 | S 50 W | 4904.65 | 11.13 N 15.42 E | 1.3 |
| 4999. | 4 0 | S 57 W | 4997.44 | 7.39 N 10.38 E | 0.6 |
| 5092. | 4 30 | S 51 W | 5090.18 | 3.34 N 4.80 E | 0.7 |
| 5186. | 4 30 | S 53 W | 5183.89 | 1.20 S 1.01 W | 0.2 |
| 5278. | 4 45 | S 52 W | 5275.59 | 5.71 S 6.90 W | 0.3 |
| 5371. | 4 30 | S 53 W | 5368.29 | 10.28 S 12.84 W | 0.3 |
| 5464. | 4 45 | S 50 W | 5460.99 | 14.95 S 18.71 W | 0.4 |

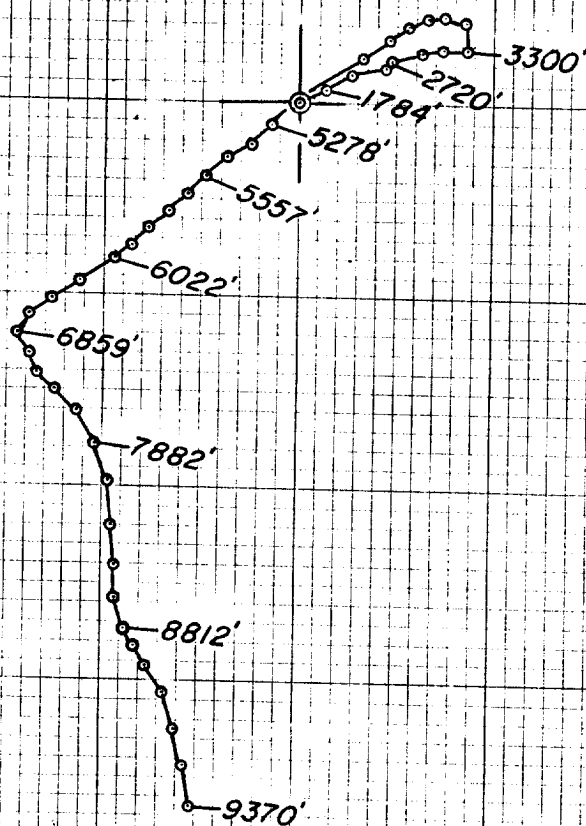
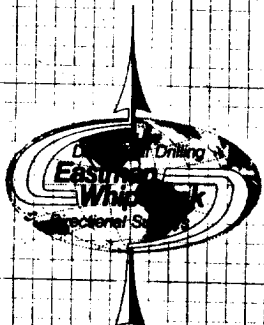
| MEASURED DEPTH FEET | DRIFT ANGLE D M | DRIFT DIRECTION D | TRUE VERTICAL DEPTH FEET | R E C T A N G U L A R C O O R D I N A T E S FEET | DOG LEG SEVERITY DEG/100FT |
|---------------------------|-----------------------|-------------------------|-----------------------------------|--|----------------------------------|
| 5557. | 4 15 | S 44 W | 5553.70 | 19.92 S 24.05 W | 0.7 |
| 5650. | 3 45 | S 50 W | 5646.47 | 24.34 S 28.79 W | 0.7 |
| 5743. | 4 0 | S 51 W | 5739.26 | 28.34 S 33.64 W | 0.3 |
| 5836. | 4 0 | S 44 W | 5832.03 | 32.72 S 38.42 W | 0.5 |
| 5929. | 3 30 | S 53 W | 5924.83 | 36.74 S 42.97 W | 0.8 |
| 6022. | 3 30 | S 52 W | 6017.66 | 40.20 S 47.47 W | 0.1 |
| 6115. | 3 0 | S 54 W | 6110.51 | 43.37 S 51.68 W | 0.6 |
| 6208. | 3 0 | S 56 W | 6203.38 | 46.17 S 55.67 W | 0.1 |
| 6301. | 3 0 | S 56 W | 6296.25 | 48.89 S 59.70 W | 0.0 |
| 6394. | 2 45 | S 60 W | 6389.13 | 51.36 S 63.66 W | 0.3 |
| 6487. | 2 15 | S 61 W | 6482.04 | 53.35 S 67.19 W | 0.5 |
| 6580. | 1 45 | S 52 W | 6574.99 | 55.14 S 69.89 W | 0.6 |
| 6673. | 1 15 | S 31 W | 6667.95 | 56.96 S 71.49 W | 0.8 |
| 6766. | 1 15 | S 16 W | 6760.93 | 58.81 S 72.30 W | 0.4 |
| 6859. | 1 0 | S 11 E | 6853.91 | 60.62 S 72.38 W | 0.6 |
| 6952. | 1 15 | S 24 E | 6946.89 | 62.36 S 71.83 W | 0.4 |
| 7045. | 1 15 | S 37 E | 7039.87 | 64.10 S 70.80 W | 0.3 |
| 7138. | 1 30 | S 31 E | 7132.84 | 65.95 S 69.55 W | 0.3 |
| 7231. | 1 15 | S 22 E | 7225.82 | 67.95 S 68.56 W | 0.4 |
| 7324. | 2 0 | S 34 E | 7318.78 | 70.27 S 67.32 W | 0.9 |
| 7417. | 2 0 | S 44 E | 7411.72 | 72.79 S 65.28 W | 0.4 |
| 7510. | 2 15 | S 53 E | 7504.66 | 75.07 S 62.70 W | 0.4 |
| 7603. | 2 15 | S 51 E | 7597.58 | 77.32 S 59.83 W | 0.1 |
| 7696. | 3 0 | S 33 E | 7690.49 | 80.47 S 56.99 W | 1.2 |
| 7789. | 3 0 | S 32 E | 7783.36 | 84.58 S 54.37 W | 0.1 |
| 7882. | 3 0 | S 25 E | 7876.23 | 88.85 S 52.05 W | 0.4 |
| 7975. | 3 30 | S 23 E | 7969.08 | 93.67 S 49.91 W | 0.6 |
| 8068. | 3 30 | S 10 E | 8061.91 | 99.10 S 48.30 W | 0.9 |
| 8161. | 3 45 | S 5 E | 8154.72 | 104.93 S 47.53 W | 0.4 |
| 8254. | 3 15 | S 1 E | 8247.54 | 110.60 S 47.23 W | 0.6 |

| 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 DEG/100FT |
|---------------------------|-----------------------|-------------------------|-----------------------------------|--|----------------------------------|
| 8347. | 3 0 | S 4 E | 8340.41 | 115.66 S 47.01 W | 0.3 |
| 8440. | 3 0 | S 1 W | 8433.28 | 120.53 S 46.88 W | 0.3 |
| 8533. | 2 45 | S 4 E | 8526.16 | 125.19 S 46.76 W | 0.4 |
| 8626. | 2 30 | S 6 E | 8619.06 | 129.43 S 46.39 W | 0.3 |
| 8719. | 2 15 | S 10 E | 8711.98 | 133.24 S 45.86 W | 0.3 |
| 8812. | 2 30 | S 37 E | 8804.90 | 136.74 S 44.33 W | 1.2 |
| 8905. | 3 30 | S 30 E | 8897.77 | 140.80 S 41.65 W | 1.1 |
| 8998. | 4 30 | S 27 E | 8990.54 | 146.50 S 38.55 W | 1.1 |
| 9091. | 5 45 | S 27 E | 9083.17 | 153.90 S 34.78 W | 1.3 |
| 9184. | 6 15 | S 19 E | 9175.66 | 162.84 S 30.99 W | 1.0 |
| 9277. | 6 45 | S 12 E | 9268.06 | 172.98 S 28.17 W | 1.0 |
| 9370. | 6 45 | S 10 E | 9360.41 | 183.71 S 26.09 W | 0.3 |

FINAL CLOSURE - DIRECTION: S 8 DEGS 4 MINS 56 SECS W
 DISTANCE: 185.56 FEET

EXXON COMPANY, U.S.A.
HARRISON WELL NO. SW 9
LEA COUNTY, NEW MEXICO

SCALE: 1" = 50'



CLOSURE:
S 8° 5' W 185.56' FROM
SURFACE LOCATION
SOUTH 183.71' WEST 26.09'
9370' MD 9360.41' TVD

46 0700

10 X 10 TO THE INCH • 7 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.



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, Mike Teaff, in the employ of Eastman Whipstock, Inc., did on the days of October 28, 19 79 thru October 28, 19 79 conduct or supervise the taking of a Gyroscopic Multi Shot survey by the method of magnetic orientation from a depth of 0 feet to 1350 feet, with recordings of inclination and direction being obtained at approximate intervals of 100 feet.

This survey was conducted at the request of Exxon Company, U.S.A. for their Harrison Well No. SW 9, Lea 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.

Mike Teaff
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.

Larry Massey

Before me, the undersigned authority, on this day personally appeared Mike Teaff, 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 18th day of January, 19 80.

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



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SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, Mike Teaff, in the employ of Eastman Whipstock, Inc., did on the days of October 28, 19 79 thru October 28, 19 79 conduct or supervise the taking of a Magnetic Multi Shot survey by the method of magnetic orientation from a depth of 1350 feet to 3282 feet, with recordings of inclination and direction being obtained at approximate intervals of 94 feet.

This survey was conducted at the request of Exxon Company, U.S.A. for their Harrison Well No SW 9, Lea 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.

Mike Teaff
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.

Larry Massey

Before me, the undersigned authority, on this day personally appeared Mike Teaff, 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 18th day of January, 19 80.

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



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SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, Larry Massey, in the employ of Eastman Whipstock, Inc., did on the days of December 16, 19 79 thru December 16, 19 79 conduct or supervise the taking of a Gyroscopic Multi Shot survey by the method of magnetic orientation from a depth of 3282 feet to 4100 feet, with recordings of inclination and direction being obtained at approximate intervals of 100 feet.

This survey was conducted at the request of Exxon Company, U.S.A. for their Harrison Well No. SW 9, Lea 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.

Nike 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 18th day of January, 19 80.

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



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SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, Larry Massey, in the employ of Eastman Whipstock, Inc., did on the days of December 16, 19 79 thru December 16, 19 79 conduct or supervise the taking of a Magnetic Multi Shot survey by the method of magnetic orientation from a depth of 4100 feet to 9370 feet, with recordings of inclination and direction being obtained at approximate intervals of 93 feet.

This survey was conducted at the request of Exxon Company, U.S.A. for their Harrison Well No. SW 9, Lea 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 Dagg

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 18th day of January, 19 80.

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