

# sperry-sun



RECEIVED

JUL 12 1978

O. C. C.  
ARTESIA, OFFICE

J. A. Fouché  
President

LEASE: Empire Abo Unit  
WELL : No. K-192  
FIELD: Empire Abo

June 16, 1978

Atlantic Richfield Company  
Post Office Box 1710  
Hobbs, New Mexico 88240

Gentlemen:

The enclosed film and folders contains the results of our Magnetic Multishot survey job no. MS-6079, Empire Abo Unit lease, well no. K-192, Empire Abo field, in Eddy County, New Mexico on June 14, 1978. This survey was from 1100 feet to a depth of 5486 feet.

One of these folders contains the original of the computation sheets and field data sheets.

It has been a pleasure to perform this survey for you.

Very truly yours,

SPERRY-SUN, INC.

Wavey Martin  
District Manager

WM/jp  
enclosures

ATLANTIC RICHFIELD COMPANY  
EMPIRE ABO WELL NO. K-192  
EMPIRE ABO UNIT FIELD  
EDDY COUNTY, NEW MEXICO  
MAGNETIC MULTISHOT

DATE OF SURVEY JUNE 14, 1978  
VERTICAL SECTION DIRECTION

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CLOSURE

MS-6079

SPERRY-SUN, INC.

| MEASURED<br>DEPTH | TRUE<br>VERTICAL<br>DEPTH | SUB<br>SEA<br>TVD | RECORD OF SURVEY                 |                            |                            | DOG-LEG<br>SEV<br>DEG/100 | TOTAL                      |                          | VERTICAL<br>SECTION |
|-------------------|---------------------------|-------------------|----------------------------------|----------------------------|----------------------------|---------------------------|----------------------------|--------------------------|---------------------|
|                   |                           |                   | COURSE<br>INCLINATION<br>DEG MIN | COURSE<br>DIRECTION<br>DEG | COURSE<br>DIRECTION<br>DEG |                           | RECTANGULAR<br>NORTH/SOUTH | COORDINATES<br>EAST/WEST |                     |
| 995               | 995.00                    | 995.00            | ASSUME VERTICAL TO 995 FT.       |                            |                            |                           | 0. N                       | 0. E                     | 0.                  |
| 1100              | 1100.00                   | 1100.00           | 0 45                             | N                          | 24 W                       | 0.71                      | 0.63 N                     | 0.28 W                   | 0.61                |
| 1200              | 1199.99                   | 1199.99           | 0 30                             | N                          | 29 W                       | 0.26                      | 1.61 N                     | 0.76 W                   | 1.57                |
| 1300              | 1299.99                   | 1299.99           | 0 45                             | N                          | 12 E                       | 0.50                      | 2.63 N                     | 0.83 W                   | 2.59                |
| 1400              | 1399.97                   | 1399.97           | 1 15                             | N                          | 4 W                        | 0.57                      | 4.36 N                     | 0.77 W                   | 4.32                |
| 1500              | 1499.95                   | 1499.95           | 1 15                             | N                          | 12 E                       | 0.35                      | 6.51 N                     | 0.62 W                   | 6.48                |
| 1600              | 1599.91                   | 1599.91           | 1 45                             | N                          | 1 W                        | 0.60                      | 9.11 N                     | 0.42 W                   | 9.08                |
| 1700              | 1699.87                   | 1699.87           | 1 45                             | N                          | 22 W                       | 0.64                      | 12.05 N                    | 1.02 W                   | 11.99               |
| 1800              | 1799.82                   | 1799.82           | 1 45                             | N                          | 13 W                       | 0.27                      | 14.95 N                    | 1.94 W                   | 14.85               |
| 1900              | 1899.77                   | 1899.77           | 2 0                              | N                          | 1 E                        | 0.52                      | 18.18 N                    | 2.25 W                   | 18.06               |
| 2000              | 1999.71                   | 1999.71           | 1 45                             | N                          | 2 E                        | 0.25                      | 21.46 N                    | 2.17 W                   | 21.34               |
| 2100              | 2099.67                   | 2099.67           | 1 30                             | N                          | 15 W                       | 0.54                      | 24.25 N                    | 2.45 W                   | 24.11               |
| 2200              | 2199.63                   | 2199.63           | 1 45                             | N                          | 0 E                        | 0.49                      | 27.04 N                    | 2.79 W                   | 26.98               |
| 2300              | 2299.59                   | 2299.59           | 1 45                             | N                          | 21 W                       | 0.64                      | 29.99 N                    | 3.34 W                   | 29.81               |
| 2400              | 2399.55                   | 2399.55           | 1 30                             | N                          | 16 W                       | 0.29                      | 32.67 N                    | 4.24 W                   | 32.45               |
| 2500              | 2499.51                   | 2499.51           | 1 30                             | N                          | 3 W                        | 0.34                      | 35.24 N                    | 4.67 W                   | 34.99               |
| 2600              | 2599.48                   | 2599.48           | 1 15                             | N                          | 4 W                        | 0.25                      | 37.63 N                    | 4.82 W                   | 37.38               |
| 2700              | 2699.46                   | 2699.46           | 1 15                             | N                          | 14 W                       | 0.22                      | 39.78 N                    | 5.16 W                   | 39.51               |
| 2800              | 2799.43                   | 2799.43           | 1 45                             | N                          | 12 W                       | 0.50                      | 42.33 N                    | 5.74 W                   | 42.03               |
| 2900              | 2899.39                   | 2899.39           | 1 30                             | N                          | 16 W                       | 0.27                      | 45.08 N                    | 6.42 W                   | 44.75               |
| 3000              | 2999.35                   | 2999.35           | 1 45                             | N                          | 4 W                        | 0.42                      | 47.86 N                    | 6.89 W                   | 47.51               |
| 3100              | 3099.31                   | 3099.31           | 1 30                             | N                          | 13 W                       | 0.36                      | 50.66 N                    | 7.29 W                   | 50.28               |
| 3200              | 3199.27                   | 3199.27           | 1 30                             | N                          | 11 W                       | 0.05                      | 53.22 N                    | 7.83 W                   | 52.82               |
| 3300              | 3299.24                   | 3299.24           | 1 30                             | N                          | 6 W                        | 0.13                      | 55.81 N                    | 8.22 W                   | 55.38               |
| 3400              | 3399.20                   | 3399.20           | 1 45                             | N                          | 15 W                       | 0.36                      | 58.59 N                    | 8.75 W                   | 58.13               |
| 3500              | 3499.16                   | 3499.16           | 1 15                             | N                          | 8 W                        | 0.53                      | 61.14 N                    | 9.30 W                   | 60.66               |
| 3600              | 3599.13                   | 3599.13           | 1 45                             | N                          | 2 E                        | 0.56                      | 63.75 N                    | 9.39 W                   | 63.26               |
| 3700              | 3699.09                   | 3699.09           | 1 15                             | N                          | 0 E                        | 0.50                      | 66.36 N                    | 9.34 W                   | 65.88               |
| 3800              | 3799.07                   | 3799.07           | 1 30                             | N                          | 14 W                       | 0.42                      | 68.72 N                    | 9.66 W                   | 68.22               |
| 3900              | 3899.03                   | 3899.03           | 1 30                             | N                          | 2 E                        | 0.42                      | 71.30 N                    | 9.63 W                   | 70.76               |

ATLANTIC RICHFIELD COMPANY  
EMPIRE ABO WELL NO. K-192  
EMPIRE ABO UNIT FIELD  
EDDY COUNTY, NEW MEXICO  
MAGNETIC MULTISHOT

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14, 1978  
CLOSURE  
MS-6079

DATE OF SURVEY JUNE  
VERTICAL SECTION DIRECTION

SPERRY-SUN, INC.

RECORD OF SURVEY

| MEASURED<br>DEPTH | TRUE<br>VERTICAL<br>DEPTH | SUB<br>SEA<br>TVD | COURSE<br>INCLINATION<br>DEG MIN | COURSE<br>DIRECTION<br>DEG | DOG-LEG<br>SEV<br>DEG/100 | RECTANGULAR<br>NORTH/SOUTH | TOTAL<br>COORDINATES<br>EAST/WEST | VERTICAL<br>SECTION |
|-------------------|---------------------------|-------------------|----------------------------------|----------------------------|---------------------------|----------------------------|-----------------------------------|---------------------|
| 4000              | 3999.01                   | 3999.01           | 1 0                              | N 14 E                     | 0.56                      | 73.46 N                    | 9.67 W                            | 72.95               |
| 4100              | 4098.99                   | 4098.99           | 1 0                              | N 2 W                      | 0.28                      | 75.18 N                    | 9.49 W                            | 74.67               |
| 4200              | 4198.98                   | 4198.98           | 0 45                             | N 16 E                     | 0.37                      | 76.68 N                    | 9.34 W                            | 76.18               |
| 4300              | 4298.97                   | 4298.97           | 1 0                              | N 29 E                     | 0.32                      | 78.07 N                    | 8.74 W                            | 77.60               |
| 4400              | 4398.95                   | 4398.95           | 1 0                              | N 26 E                     | 0.05                      | 79.62 N                    | 7.93 W                            | 79.18               |
| 4500              | 4498.92                   | 4498.92           | 1 45                             | N 15 E                     | 0.79                      | 81.88 N                    | 7.15 W                            | 81.47               |
| 4600              | 4598.88                   | 4598.88           | 1 30                             | N 28 E                     | 0.44                      | 84.51 N                    | 6.15 W                            | 84.14               |
| 4700              | 4698.84                   | 4698.84           | 2 0                              | N 19 E                     | 0.57                      | 87.31 N                    | 4.96 W                            | 87.00               |
| 4800              | 4798.77                   | 4798.77           | 2 15                             | N 15 E                     | 0.29                      | 90.86 N                    | 3.89 W                            | 90.59               |
| 4900              | 4898.70                   | 4898.70           | 2 0                              | N 18 E                     | 0.27                      | 94.41 N                    | 2.84 W                            | 94.19               |
| 5000              | 4998.62                   | 4998.62           | 2 30                             | N 14 E                     | 0.52                      | 98.19 N                    | 1.77 W                            | 98.01               |
| 5100              | 5098.55                   | 5098.55           | 2 0                              | N 27 E                     | 0.71                      | 101.86 N                   | 0.45 W                            | 101.74              |
| 5200              | 5198.46                   | 5198.46           | 2 45                             | N 23 E                     | 0.77                      | 105.62 N                   | 1.28 E                            | 105.57              |
| 5300              | 5298.33                   | 5298.33           | 3 0                              | N 14 E                     | 0.52                      | 110.37 N                   | 2.85 E                            | 110.39              |
| 5400              | 5398.20                   | 5398.20           | 3 0                              | N 15 E                     | 0.05                      | 115.44 N                   | 4.16 E                            | 115.51              |
| 5486              | 5484.07                   | 5484.07           | 3 15                             | N 16 E                     | 0.30                      | 119.96 N                   | 5.41 E                            | 120.08              |

\*\*\* THE CALCULATIONS ARE BASED ON THE MINIMUM RADIUS OF CURVATURE METHOD \*\*\*

HORIZONTAL DISPLACEMENT = 120.08 FEET AT NORTH 2 DEG. 35 MIN. EAST (TRUE)