

# ***BE*C*FIELD***

**DRILLING SERVICES**

March 28, 1994

Mr. Jim Johnson  
Petroleum Development  
P.O. Box 2366-183  
Roswell, New Mexico 88201

38-005-20814

RE: WATTAM FEDERAL WELL NO. 6  
CHAVES COUNTY, NEW MEXICO  
DIRECTIONAL DRILLING REPORT

Unit A  
Sec. 7, T-8s, R-36

Dear Mr. Johnson:

Enclosed is a report of the final surveys and well plots of the directional drilling operations for the above referenced well. This operation employed BecField Drilling Services from March 20, 1994 through March 23, 1994 to drill a medium radius curve and horizontal section in the Abo Formation.

Should additional information be required, a BecField representative will be available to discuss this operation in detail at your convenience.

Sincerely,



David B. Gaudin  
District Drilling Engineer

DBG/ams

enclosures

BHL per PK 189W & 2449/E B-7-8s-36



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## BECFIELD SURVEY CALCULATION PROGRAM

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OPERATOR: PETROLEUM DEVELOPMENT  
 WELL: WATTAM FED #6  
 LOCATION: CHAVES COUNTY, NEW MEXICO

START: 03/20/94  
 FINISH: 03/23/94  
 BECFIELD DIR.COORDINATOR  
 RONNIE KEENE  
 BUTCH KEENE  
 9.4 deg applied = True.

SURVEY NO. 0 IS A TIE-IN FROM GYRO  
 TAKEN BY SCIENTIFIC SURVEY CO.

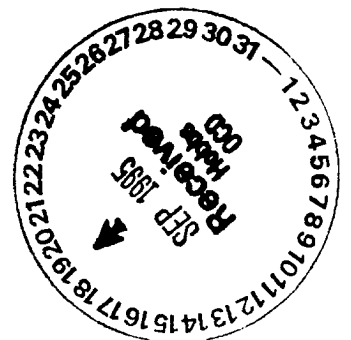
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MINIMUM CURVATURE CALCULATIONS(SPE-3362)

PROPOSED DIR.

>  
284.4

| SUR<br>NUM | MD   | INC  | TRUE<br>AZM | TVD    | N-S   | E-W     | SECT   | DLS/<br>100 |
|------------|------|------|-------------|--------|-------|---------|--------|-------------|
| 0          | 3500 | 0.2  | 290.4       | 3499.8 | 24.1  | 20.1    | -13.5  | 0.0         |
| 1          | 3515 | 1.4  | 275.2       | 3514.8 | 24.1  | 19.9    | -13.3  | 8.1         |
| 2          | 3548 | 10.0 | 272.6       | 3547.6 | 24.3  | 16.6    | -10.1  | 26.1        |
| 3          | 3578 | 18.5 | 279.6       | 3576.7 | 25.2  | 9.3     | -2.8   | 28.9        |
| 4          | 3611 | 27.5 | 279.5       | 3607.0 | 27.3  | -3.4    | 10.1   | 27.3        |
| 5          | 3643 | 36.8 | 279.7       | 3634.1 | 30.2  | -20.2   | 27.0   | 29.1        |
| 6          | 3676 | 46.2 | 280.9       | 3658.8 | 34.1  | -41.6   | 48.8   | 28.6        |
| 7          | 3710 | 55.0 | 286.5       | 3680.3 | 40.4  | -67.1   | 75.0   | 28.8        |
| 8          | 3742 | 62.8 | 288.4       | 3696.8 | 48.6  | -93.2   | 102.4  | 24.9        |
| 9          | 3773 | 71.2 | 284.4       | 3708.9 | 56.6  | -120.6  | 130.9  | 29.6        |
| 10         | 3806 | 80.6 | 282.4       | 3717.0 | 64.0  | -151.7  | 162.8  | 29.1        |
| 11         | 3838 | 88.8 | 287.1       | 3719.9 | 72.2  | -182.4  | 194.7  | 29.5        |
| 12         | 3869 | 88.7 | 286.3       | 3720.6 | 81.1  | -212.1  | 225.6  | 2.6         |
| 13         | 3933 | 90.4 | 286.5       | 3721.1 | 99.1  | -273.5  | 289.6  | 2.7         |
| 14         | 3998 | 90.1 | 286.2       | 3720.8 | 117.4 | -335.9  | 354.5  | 0.7         |
| 15         | 4029 | 90.0 | 285.5       | 3720.8 | 125.9 | -365.7  | 385.5  | 2.3         |
| 16         | 4093 | 90.6 | 284.6       | 3720.5 | 142.5 | -427.5  | 449.5  | 1.7         |
| 17         | 4125 | 90.3 | 284.2       | 3720.2 | 150.5 | -458.5  | 481.5  | 1.6         |
| 18         | 4157 | 90.8 | 283.8       | 3719.9 | 158.2 | -489.6  | 513.5  | 2.0         |
| 19         | 4189 | 92.1 | 284.1       | 3719.1 | 165.9 | -520.6  | 545.5  | 4.2         |
| 20         | 4221 | 91.2 | 283.8       | 3718.2 | 173.6 | -551.6  | 577.5  | 3.0         |
| 21         | 4253 | 91.2 | 283.6       | 3717.5 | 181.2 | -582.7  | 609.5  | 0.6         |
| 22         | 4285 | 91.2 | 282.8       | 3716.8 | 188.5 | -613.9  | 641.5  | 2.5         |
| 23         | 4317 | 91.1 | 282.4       | 3716.2 | 195.5 | -645.1  | 673.5  | 1.3         |
| 24         | 4349 | 90.6 | 282.6       | 3715.7 | 202.4 | -676.3  | 705.4  | 1.7         |
| 25         | 4383 | 90.4 | 282.5       | 3715.4 | 209.8 | -709.5  | 739.4  | 0.7         |
| 26         | 4446 | 90.5 | 282.9       | 3714.9 | 223.7 | -771.0  | 802.4  | 0.7         |
| 27         | 4476 | 90.0 | 282.5       | 3714.8 | 230.3 | -800.2  | 832.4  | 2.1         |
| 28         | 4541 | 90.5 | 282.1       | 3714.5 | 244.1 | -863.8  | 897.3  | 1.0         |
| 29         | 4602 | 90.0 | 285.2       | 3714.2 | 258.5 | -923.0  | 958.3  | 5.1         |
| 30         | 4635 | 90.2 | 285.6       | 3714.2 | 267.3 | -954.8  | 991.3  | 1.4         |
| 31         | 4667 | 90.1 | 285.5       | 3714.1 | 275.8 | -985.7  | 1023.3 | 0.4         |
| 32         | 4730 | 90.5 | 285.7       | 3713.8 | 292.8 | -1046.3 | 1086.3 | 0.7         |
| 33         | 4795 | 90.2 | 284.5       | 3713.4 | 309.7 | -1109.1 | 1151.3 | 1.9         |
| 34         | 4828 | 89.9 | 284.2       | 3713.3 | 317.9 | -1141.1 | 1184.3 | 1.3         |
| 35         | 4861 | 89.7 | 284.1       | 3713.5 | 326.0 | -1173.1 | 1217.3 | 0.7         |
| 36         | 4925 | 91.2 | 284.9       | 3713.0 | 342.0 | -1235.0 | 1281.3 | 2.7         |
| 37         | 4957 | 90.9 | 284.9       | 3712.4 | 350.2 | -1265.9 | 1313.3 | 0.9         |



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|------------|------|------|-------------|--------|-------|---------|--------|-------------|
| 38         | 5049 | 89.7 | 284.4       | 3711.9 | 373.5 | -1355.0 | 1405.3 | 1.4         |
| 39         | 5081 | 89.4 | 284.6       | 3712.1 | 381.5 | -1385.9 | 1437.3 | 1.1         |
| 40         | 5145 | 89.5 | 284.7       | 3712.8 | 397.7 | -1447.8 | 1501.3 | 0.2         |
| 41         | 5176 | 89.6 | 284.8       | 3713.0 | 405.6 | -1477.8 | 1532.3 | 0.5         |
| 42         | 5239 | 90.1 | 284.2       | 3713.2 | 421.3 | -1538.8 | 1595.3 | 1.2         |
| 43         | 5272 | 90.5 | 283.9       | 3713.0 | 429.3 | -1570.8 | 1628.3 | 1.5         |
| 44         | 5336 | 91.2 | 284.3       | 3712.0 | 444.9 | -1632.9 | 1692.2 | 1.3         |
| 45         | 5371 | 91.2 | 284.3       | 3711.3 | 453.6 | -1666.8 | 1727.2 | 0.0         |

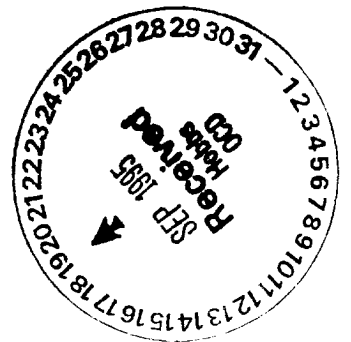
Survey No.s' 1 thru 44 BecField Steering Tool System.

Survey No. 45 is a Projection to Bit Depth.

Bottom Hole Location from Surface Location:

Horizontal Displacement = 1,727 Feet

Displacement Bearing = North 74.78 West (TRUE)



# BECHFIELD

## DRILLING SERVICES

PETROLEUM DEVELOPMENT  
VATTEM FEDERAL NO. 6  
CHAVES COUNTY, NEW MEXICO

WFOSS (No. 1) 972-1700  
Houston, TX 77063 Fax (713) 928-4700

P.O. Box 8346-1823 WFO, CNO 622-6-676  
Houston, TX 77063 Fax CNO 622-1270

Date: 3/16/94

Drawn By: DBG

### HORIZONTAL PROJECTION

The following information  
is for drilling a horizontal  
well from the surface to the  
target location.



Target Location: 347° E

Horizontal Projection  
New Surface Location  
Horizontal Distance: 1000 Feet  
Vertical Distance: 100 Feet  
Total Distance: 1010 Feet

Horizontal Projection  
New Surface Location  
Horizontal Distance: 1000 Feet  
Vertical Distance: 100 Feet  
Total Distance: 1010 Feet

