

4/57  
File

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL 590

|                                                                                                                           |  |                                 |  |                                      |  |                                       |  |
|---------------------------------------------------------------------------------------------------------------------------|--|---------------------------------|--|--------------------------------------|--|---------------------------------------|--|
| Type Test<br><input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special |  |                                 |  | Test Date<br>1-3-90                  |  |                                       |  |
| Company<br>Great Western Drilling Company                                                                                 |  |                                 |  | Connection<br>No                     |  | O.C.D.                                |  |
| Well<br>Pecos Slope Abo                                                                                                   |  |                                 |  | Formation<br>Abo                     |  | Unit                                  |  |
| Completion Date<br>10-25-89                                                                                               |  | Total Depth<br>4050             |  | Plug Back TD<br>3,989'               |  | Elevation<br>GL 3,879'                |  |
| Farm or Lease Name<br>Quail Federal                                                                                       |  | Well No.<br>5                   |  | Perforations:<br>From 3,707' To 3981 |  |                                       |  |
| Tub. Size<br>2 3/8                                                                                                        |  | Set At<br>3,949'                |  | Perforations:<br>From open To end    |  | Unit Sec. Twp. Rge.<br>J 22 6S 25E    |  |
| Type Well - Single - Brdenhead - G.G. or G.O. Multiple<br>Single                                                          |  |                                 |  | Packer Set At<br>none                |  | County<br>Chaves                      |  |
| Producing Thru<br>Tbg.                                                                                                    |  | Reservoir Temp. °F<br>97 # 3767 |  | Mean Annual Temp. °F<br>60           |  | Baro. Press. - P <sub>a</sub><br>13.2 |  |
| State<br>NM                                                                                                               |  | Prover<br>2"                    |  | Meter Run                            |  | Taps                                  |  |
| L<br>** 3767                                                                                                              |  | H<br>3767                       |  | G <sub>g</sub><br>.667               |  | % CO <sub>2</sub><br>0                |  |
| % N <sub>2</sub><br>4.75                                                                                                  |  | % H <sub>2</sub> S<br>--        |  |                                      |  |                                       |  |

| FLOW DATA |                  |   |              |                 |                      | TUBING DATA |                 | CASING DATA |                 | Duration of Flow |           |
|-----------|------------------|---|--------------|-----------------|----------------------|-------------|-----------------|-------------|-----------------|------------------|-----------|
| NO.       | Prover Line Size | x | Orifice Size | Press. p.s.i.g. | Diff. h <sub>w</sub> | Temp. °F    | Press. p.s.i.g. | Temp. °F    | Press. p.s.i.g. | Temp. °F         |           |
| SI        |                  |   |              |                 |                      |             | 855             |             | 850             |                  | 72 hrs.   |
| 1.        | 2                | x | 1/8          | 765             |                      | 50          | 765             |             | 840             |                  | 45 min.   |
| 2.        | 2                | x | 3/16         | 674             |                      | 58          | 674             |             | 790             |                  | 1 hr.     |
| 3.        | 2                | x | 1/4          | 600             |                      | 58          | 600             |             | 710             |                  | 1 hr.     |
| 4.        | 2                | x | 5/16         | 485             |                      | 58          | 485             |             | 540             |                  | 1 1/2 hr. |
| 5.        |                  |   |              |                 |                      |             |                 |             |                 |                  |           |

| RATE OF FLOW CALCULATIONS |                       |                  |                         |                       |                               |                                         |                      |
|---------------------------|-----------------------|------------------|-------------------------|-----------------------|-------------------------------|-----------------------------------------|----------------------|
| NO.                       | Coefficient (24 Hour) | $\sqrt{h_w P_m}$ | Pressure P <sub>m</sub> | Flow Temp. Factor Ft. | Gravity Factor F <sub>g</sub> | Super Compress. Factor, F <sub>pv</sub> | Rate of Flow Q, Mcfd |
| 1                         | .2648                 |                  | 778.2                   | 1.010                 | 1.224                         | 1.096                                   | 279                  |
| 2                         | .6082                 |                  | 687.2                   | 1.002                 | 1.224                         | 1.071                                   | 549                  |
| 3                         | 1.087                 |                  | 613.2                   | 1.002                 | 1.224                         | 1.063                                   | 869                  |
| 4                         | 1.672                 |                  | 498.2                   | 1.002                 | 1.224                         | 1.051                                   | 1,074                |
| 5.                        |                       |                  |                         |                       |                               |                                         |                      |

| NO. | P <sub>t</sub> | Temp. °R | T <sub>r</sub> | Z    | Gas Liquid Hydrocarbon Ratio          | Dry Gas  | Mcft/bbl. |
|-----|----------------|----------|----------------|------|---------------------------------------|----------|-----------|
| 1.  | 1.17           | 510      | 1.38           | .833 | A.P.I. Gravity of Liquid Hydrocarbons | Dry      | Deq.      |
| 2.  | 1.03           | 518      | 1.41           | .871 | Specific Gravity Separator Gas        | .667     | XXXXXXX   |
| 3.  | .92            | 518      | 1.41           | .885 | Specific Gravity Flowing Gas          | XXXXX    |           |
| 4.  | .75            | 518      | 1.41           | .905 | Critical Pressure * 663               | P.S.I.A. | P.S.I.A.  |
| 5.  |                |          |                |      | Critical Temperature * 367            | R        | R         |

\*\*\*

| NO. | P <sub>t</sub> <sup>2</sup> | P <sub>w</sub> | P <sub>w</sub> <sup>2</sup> | P <sub>t</sub> <sup>2</sup> - P <sub>w</sub> <sup>2</sup> |
|-----|-----------------------------|----------------|-----------------------------|-----------------------------------------------------------|
| 1   | ***                         | 841.0          | 707.3                       | 37.8                                                      |
| 2   | ***                         | 780.3          | 608.9                       | 136.2                                                     |
| 3   | ***                         | 699.9          | 489.9                       | 255.2                                                     |
| 4   | ***                         | 543.6          | 395.5                       | 449.6                                                     |
| 5   |                             |                |                             |                                                           |

(1)  $\frac{P_c^2}{P_t^2 - P_w^2} = 1.657$

(2)  $\left[ \frac{P_t^2}{P_t^2 - P_w^2} \right]^n = 1.314$

Post ID-2  
8-3-90  
comp + BK

AOF = Q  $\left[ \frac{P_t^2}{P_t^2 - P_w^2} \right]^n = 1.411$

|                    |       |               |                  |      |          |      |
|--------------------|-------|---------------|------------------|------|----------|------|
| Absolute Open Flow | 1,411 | Mcfd @ 13.025 | Angle of Slope ° | 61.6 | Slope, n | .541 |
|--------------------|-------|---------------|------------------|------|----------|------|

Remarks: \* = corrected to 4.75% N<sub>2</sub>. No fluid produced  
 \*\* = BHP instrument set @ this depth  
 \*\*\* = P<sub>c</sub> & P<sub>w</sub> were obtained with Amerada RPG-3 instrument & cal. to surface

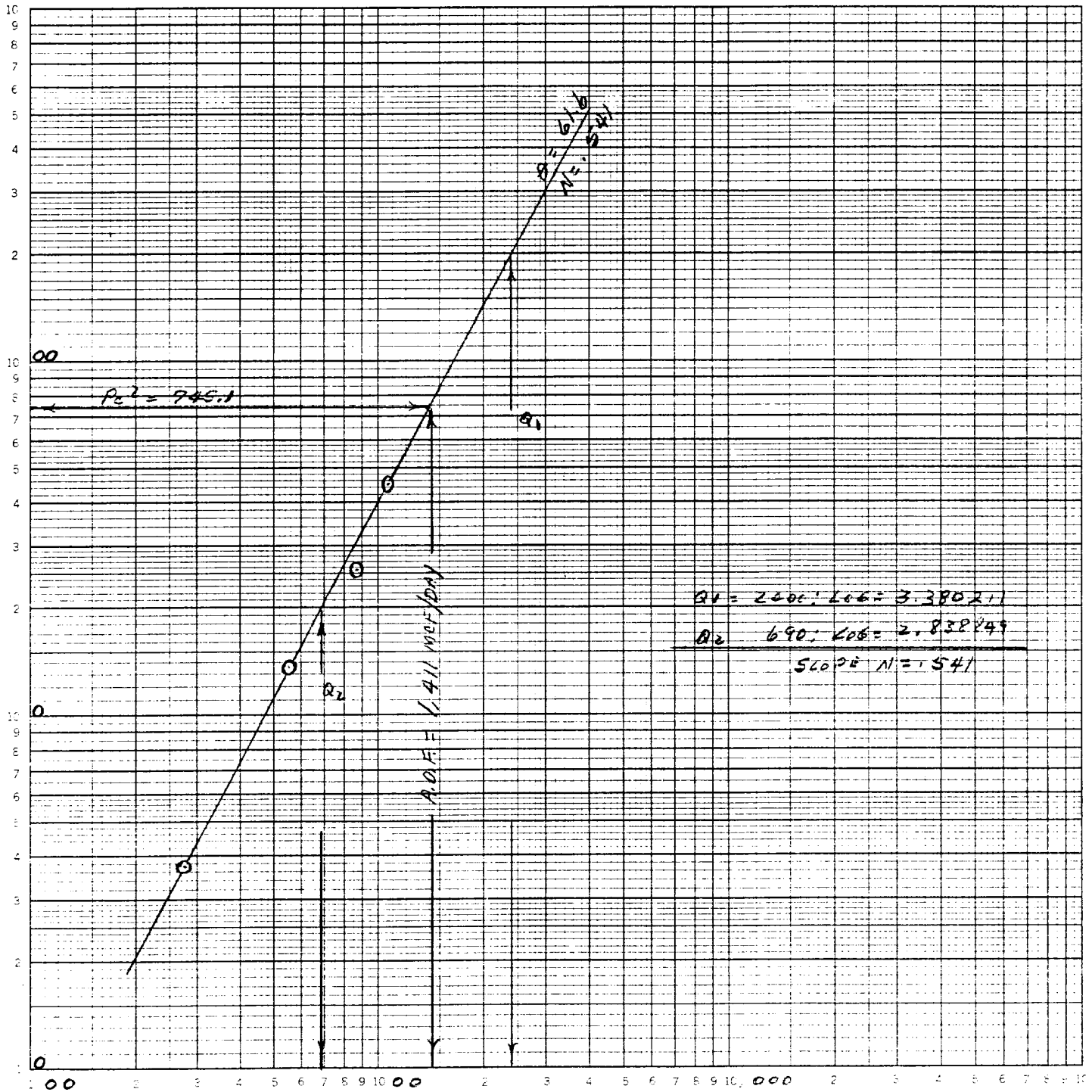
|                      |                                        |                       |                    |
|----------------------|----------------------------------------|-----------------------|--------------------|
| Approved By Division | Conducted By:<br>John West Engineering | Calculated By:<br>JPM | Checked By:<br>JPM |
|----------------------|----------------------------------------|-----------------------|--------------------|

REAT WESTERN DRILLING CO.  
Quail Fed. No. 5

J - 22 - 6S - 25E  
Chaves Co., NM  
1-3-90

PCZ - PwZ (lbsnds.)  
46 7400

LOGARITHMIC 3 X 3 CYCLES  
KIEHL & ESSER CO. MADE IN U.S.A.



Q - MCF/DAY

STATIC SHUT-IN (BHP)

WORK SHEET FOR CALCULATION OF WELLHEAD PRESSURES ( $P_c$  or  $P_w$ )

Form C-122F  
Adopted 8-1-65

FROM KNOWN BOTTOM HOLE PRESSURE ( $P_1$  or  $P_2$ )

COMPANY Great Western Drilling Co. Double Feed. WELL NO. 5 DATE 1-340  
LOCATION: Unit J Section 22 Township 6. S Range 25 E  
3767 H 3767 LMI 1000 G .667 % CO<sub>2</sub> 0 % N<sub>2</sub> 4.75 % H<sub>2</sub>S —

\* F BHP INSTEAD, SEE GO GAS DEPTH GH 2516.59 P<sub>GR</sub> 1.443 T<sub>GR</sub> 267  
TABLE IX B. 2

| LINE |                                                                                        | 1     | 2            | 3       | 4 | 5 | 6 | 7 | 8 |
|------|----------------------------------------------------------------------------------------|-------|--------------|---------|---|---|---|---|---|
| 1    | $T_w(W.H. \cdot R)$                                                                    | 534   | 534          |         |   |   |   |   |   |
| 2    | $T_g(B.H. \cdot R)$                                                                    | 557   | 557          |         |   |   |   |   |   |
| 3    | $T = \left( \frac{T_w + T_g}{2} \right)$                                               | 545.5 | 545.5        |         |   |   |   |   |   |
| 4    | Z (Est.)                                                                               | .847  | .853         |         |   |   |   |   |   |
| 5    | TZ                                                                                     | 462.0 | 465.3        |         |   |   |   |   |   |
| 6    | GH/TZ                                                                                  | 5.464 | 5.339        |         |   |   |   |   |   |
| 7    | $e^s$ (Table XIV)                                                                      | 1.266 | 1.214        |         |   |   |   |   |   |
| 8    | $P_1$ or $P_g$                                                                         | 955.2 | 555.2        |         |   |   |   |   |   |
| 9    | $P_1^2$ or $P_g^2$                                                                     | 912.4 | 912.4        |         |   |   |   |   |   |
| 10   | $P_c^2 = P_1^2 / e^s$ or $P_w^2 = P_g^2 / e^s$                                         | 714.0 | 745.1        |         |   |   |   |   |   |
| 11   | $P_c$ or $P_w$                                                                         | 845.6 | <u>863.2</u> | $= P_c$ |   |   |   |   |   |
| 12   | $P_c \cdot \left( \frac{P_w + P_g}{2} \right)$ or $\left( \frac{P_c + P_g}{2} \right)$ | 908.9 | 908.2        |         |   |   |   |   |   |
| 13   | $P_r = (P/P_{cr})$                                                                     | 1.39  | 1.37         |         |   |   |   |   |   |
| 14   | $T_r = (T/T_{cr})$                                                                     | 1.49  | 1.48         |         |   |   |   |   |   |
| 15   | Z (Table XI)                                                                           | .853  | .853         |         |   |   |   |   |   |

Form C-132F  
Adopted 9-1-65

# WORK SHEET FOR CALCULATION OF WELLHEAD PRESSURES ( $P_{wf}$ or $P_w$ ) FROM KNOWN BOTTOM HOLE PRESSURE ( $P_b$ or $P_s$ )

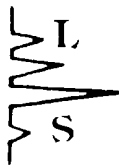
COMPANY Great Western Drilling Lease WELL NO. 5 DATE 1-3-90

LOCATION: Unit 22 Section 22 Township 4-S Range 25-E

L 2967 H 2967 L/H 1.000 G 1.667 % CO<sub>2</sub> 0 % N<sub>2</sub> 4.75 % H<sub>2</sub>S —

GH 2512.02 P<sub>cr</sub> 663 T<sub>cr</sub> 367

| LINE | 1                                                                                      | 2     | 3     | 4     | 5     | 6     | 7     | 8     |
|------|----------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| 1    | $T_w(W.H. \cdot R)$                                                                    | 532   | 534   | 534   | 534   | 534   | 534   | 534   |
| 2    | $T_g(B.H. \cdot R)$                                                                    | 557   | 557   | 557   | 557   | 557   | 557   | 557   |
| 3    | $T = \frac{T_w + T_g}{2}$                                                              | 545.5 | 545.5 | 545.5 | 545.5 | 545.5 | 545.5 | 545.5 |
| 4    | Z (Est.)                                                                               | .850  | .857  | .859  | .866  | .873  | .879  | .899  |
| 5    | TZ                                                                                     | 463.6 | 467.4 | 468.5 | 472.4 | 476.2 | 479.4 | 490.4 |
| 6    | GH/TZ                                                                                  | 5.418 | 5.374 | 5.362 | 5.318 | 5.276 | 5.240 | 5.123 |
| 7    | $e^s$ (Table XIV)                                                                      | 1.225 | 1.223 | 1.222 | 1.220 | 1.218 | 1.217 | 1.211 |
| 8    | $P_{cr}$ or $P_g$                                                                      | 930.2 | 930.2 | 862.2 | 862.2 | 772.2 | 772.2 | 598.2 |
| 9    | $P_b^2$ or $P_s^2$                                                                     | 865.3 | 865.3 | 743.4 | 743.4 | 596.3 | 596.3 | 357.8 |
| 10   | $P_c^2 = P_{cr}^2/e^s$ or $P_w^2 = P_g^2/e^s$                                          | 706.1 | 707.3 | 607.9 | 608.8 | 474.1 | 474.1 | 271.5 |
| 11   | $P_{cr}$ or $P_w$                                                                      | 840.2 | 841.0 | 778.7 | 778.7 | 688.4 | 688.4 | 520.8 |
| 12   | $P_c \cdot \left( \frac{P_w + P_s}{2} \right)$ or $\left( \frac{P_c + P_j}{2} \right)$ | 885.2 | 885.6 | 820.9 | 821.2 | 731.8 | 736.0 | 576.8 |
| 13   | $P_r = (P/P_{cr})$                                                                     | 1.33  | 1.33  | 1.33  | 1.33  | 1.33  | 1.33  | 1.33  |
| 14   | $T_r = (T/T_{cr})$                                                                     | 1.48  | 1.48  | 1.48  | 1.48  | 1.48  | 1.48  | 1.48  |
| 15   | Z (Table XI)                                                                           | 1.857 | .857  | .866  | .866  | .879  | .879  | .904  |



# LABORATORY SERVICES

1331 Tasker Drive  
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: John West Engineering Company  
Attention: Mr. Buz Thomason  
412 N. Dal Paso  
Hobbs, New Mexico 88240

SAMPLE  
IDENTIFICATION: Quail Fed. #5  
COMPANY: Great Western  
LEASE:  
PLANT:

SAMPLE DATA: DATE SAMPLED: 1/03/90 GAS (X) LIQUID ( )  
ANALYSIS DATE: 1/04/90 SAMPLED BY: J. West Eng.  
PRESSURE — PSIG ANALYSIS BY: Rolland Perry  
SAMPLE TEMP. °F:  
ATMOS. TEMP. °F:

REMARKS:

## COMPONENT ANALYSIS

| COMPONENT        |                    | MOL<br>PERCENT | GPM          | LIQ. VOL.<br>PERCENT |
|------------------|--------------------|----------------|--------------|----------------------|
| Hydrogen Sulfide | (H <sub>2</sub> S) | ---            |              |                      |
| Nitrogen         | (N <sub>2</sub> )  | 4.75           |              |                      |
| Carbon Dioxide   | (CO <sub>2</sub> ) | -0-            |              |                      |
| Methane          | (C <sub>1</sub> )  | 86.26          |              |                      |
| Ethane           | (C <sub>2</sub> )  | 4.48           | 1.143        |                      |
| Propane          | (C <sub>3</sub> )  | 1.74           | 0.479        |                      |
| I-Butane         | (C <sub>4</sub> )  | 0.31           | 0.101        |                      |
| N-Butane         | (NC <sub>4</sub> ) | 0.65           | 0.205        |                      |
| I-Pentane        | (IC <sub>5</sub> ) | 0.30           | 0.110        |                      |
| N-Pentane        | (NC <sub>5</sub> ) | 0.27           | 0.098        |                      |
| Hexane           | (C <sub>6</sub> )  | 1.24           | 0.572        |                      |
| Heptanes Plus    | (C <sub>7</sub> +) |                |              |                      |
|                  |                    | <u>100.00</u>  | <u>2.708</u> |                      |

BTU/CU. FT.—DRY 1109  
AT 14.650 WET 1087

SPECIFIC GRAVITY—CALCULATED 0.667  
MEASURED

VAPOR PRESSURE (ABSOLUTE)—CALCULATED

26# GASOLINE— 0.851

CU. FT./GAL. —

TEST DATE: JANUARY 3, 1990

TEST DEPTH: 3,767 FEET

ELEMENT NO.: 54429

RANGE: 0-2050 PSI

CLOCK NO.: 27521

RANGE: 0-24 HOUR

GREAT WESTERN DRILLING COMPANY

Quail Federal No. 5

B H P to use for calculating A O F Test

DATE  
1-3-90

TIME  
8:25 AM  
9:00 AM

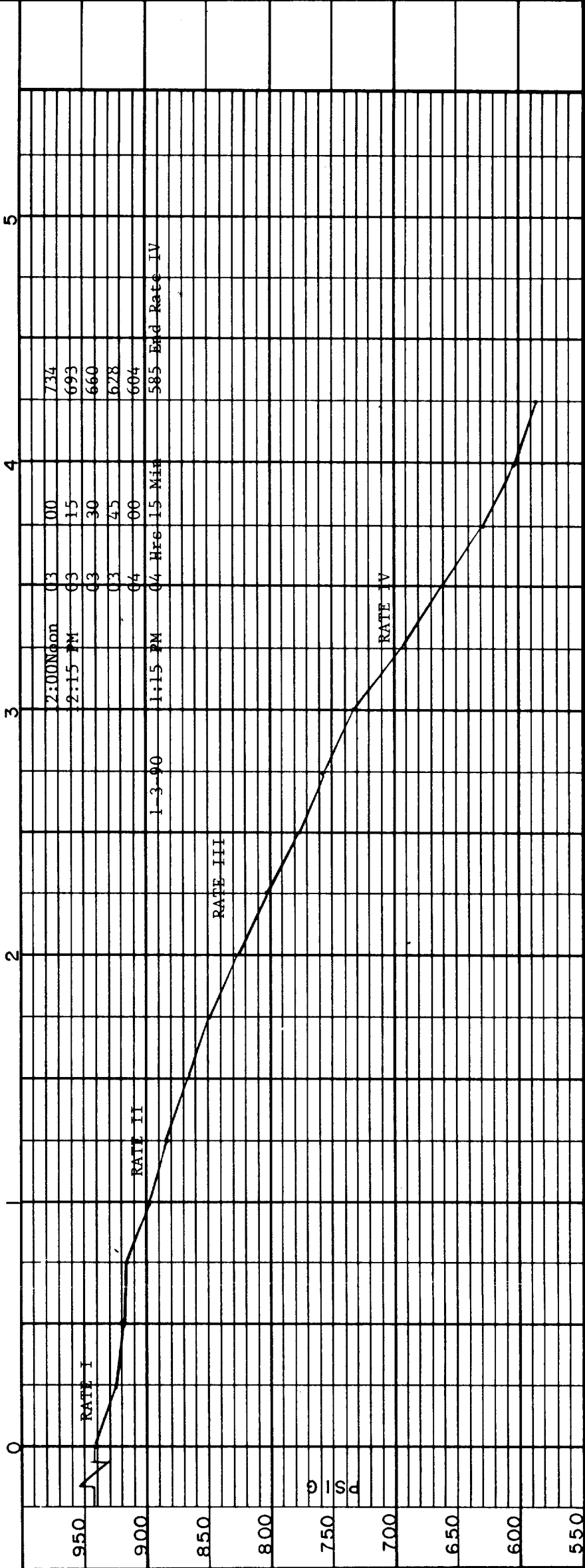
CUM HRS/MIN  
00 Hrs 00 Min  
00 15  
00 30  
00 45

PSIG @ 3,767 FEET  
942 Gauge reached 3,767 Feet  
942 Open choke, begin test  
925  
920  
917 End Rate I

899  
882  
866  
849 End Rate II  
  
10:45 AM  
  
01 00  
01 15  
01 30  
01 45

829  
802  
777  
759 End Rate III  
  
11:45 AM  
  
02 00  
02 15  
02 30  
02 45

TIME-IN HOURS

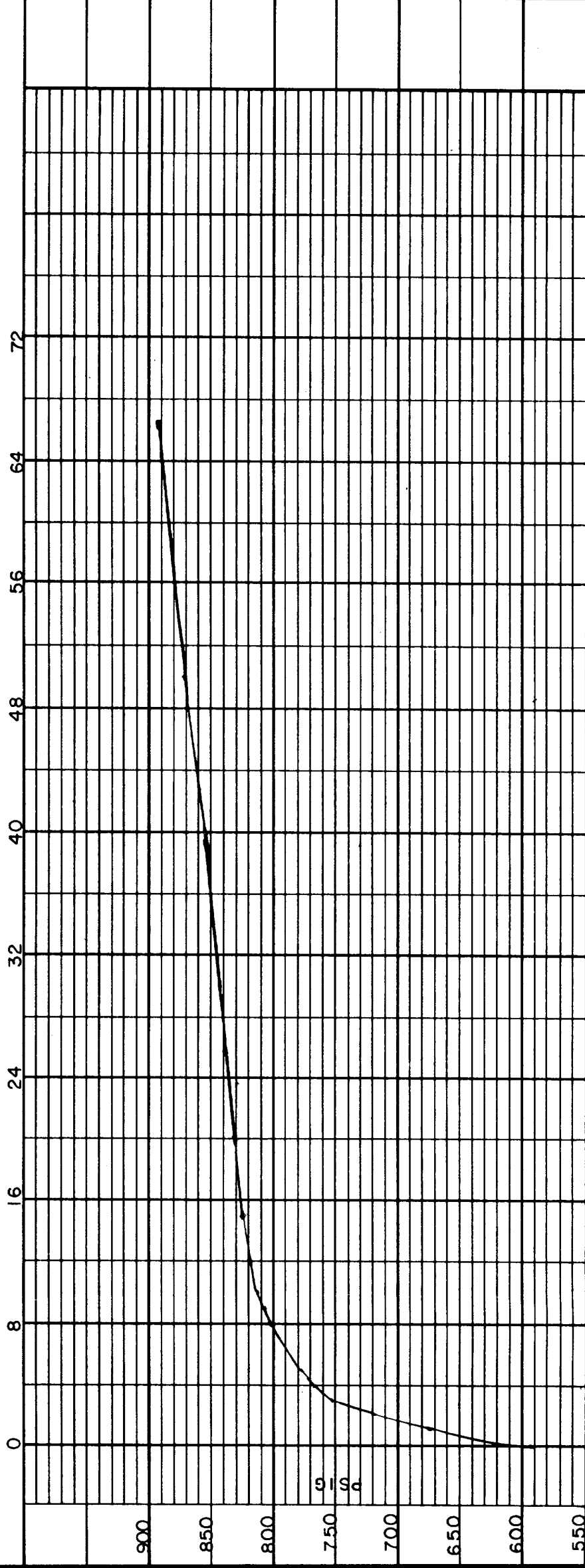


TEST DATE: JANUARY 3 to 6, 1990  
TEST DEPTH: 3,767 FEET  
ELEMENT NO.: 54429  
RANGE: 0-2050 PSI  
CLOCK NO.: 20439  
RANGE: 0-72 HOUR

GREAT WESTERN DRILLING COMPANY  
Quail Federal No. 5  
Bottom Hole Pressure Build-up Curve

NOTE: SEE TABULATION OF PRESSURE AND TIME ON ATTACHED SHEET.

TIME-IN HOURS



GREAT WESTERN DRILLING COMPANY  
 QUAIL FEDERAL NO. 5  
 BOTTOM HOLE PRESSURE BUILD-UP TEST  
 TABULATION OF TIMES AND PRESSURES

TEST CONDUCTED BY:  
 JOHN WEST ENGINEERING COMPANY

TEST DATE: January 3 - 6, 1990  
 TEST DEPTH: 3767 Feet  
 ELEMENT NO.: 54429, (0 - 2050 PSI)  
 OPERATOR: B. Thomason

| <u>DATE</u> | <u>TIME</u> | <u>CUM. HRS./MIN.</u> |         | <u>PSIG @ 3767 FEET</u>  |
|-------------|-------------|-----------------------|---------|--------------------------|
| 1-3-90      | 2:00 PM     | 00 Hrs.               | 00 Min. | 591, gauge reached 3767' |
|             |             | 00                    | 15      | 619                      |
|             |             | 00                    | 30      | 645                      |
|             |             | 00                    | 45      | 661                      |
|             | 3:00 PM     | 01                    | 00      | 674                      |
|             |             | 01                    | 30      | 703                      |
|             | 4:00 PM     | 02                    | 00      | 720                      |
|             |             | 02                    | 30      | 739                      |
|             | 5:00 PM     | 03                    | 00      | 752                      |
|             |             | 03                    | 30      | 762                      |
|             | 6:00 PM     | 04                    | 00      | 769                      |
|             | 7:00 PM     | 05                    | 00      | 779                      |
|             | 8:00 PM     | 06                    | 00      | 789                      |
|             | 9:00 PM     | 07                    | 00      | 797                      |
|             | 10:00 PM    | 08                    | 00      | 804                      |
| 1-3-90      | 11:00 PM    | 09                    | 00      | 809                      |
| 1-4-90      | 12:00 AM    | 10                    | 00      | 813                      |
|             | 2:00 AM     | 12                    | 00      | 820                      |
|             | 5:00 AM     | 15                    | 00      | 827                      |
|             | 10:00 AM    | 20                    | 00      | 832                      |
| 1-4-90      | 8:00 PM     | 30                    | 00      | 843                      |
| 1-5-90      | 6:00 AM     | 40                    | 00      | 855                      |
| 1-5-90      | 4:00 PM     | 50                    | 00      | 872                      |
| 1-6-90      | 8:30 AM     | 66                    | 30      | 892, gauge out, end test |



UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
Artesia, NM 88210  
MAR -5 '90

Form approved.  
Budget Bureau No. 1004-0137  
Expires August 31, 1985

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

|                                                                                                                                                                                                                                                                  |  |                                                                                                                                                                                                                                                                       |  |                                                                               |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------|--|
| 1a. TYPE OF WELL:<br>OIL WELL <input type="checkbox"/> GAS WELL <input checked="" type="checkbox"/> DRY <input type="checkbox"/>                                                                                                                                 |  | 1b. TYPE OF COMPLETION:<br>NEW WELL <input checked="" type="checkbox"/> WORK OVER <input type="checkbox"/> DEEP-EN <input type="checkbox"/> PLUG BACK <input type="checkbox"/> DEEP REVR. <input type="checkbox"/> Other _____                                        |  | 5. LEASE DESIGNATION AND SERIAL NO.<br>NM-15862                               |  |
| 2. NAME OF OPERATOR<br>Great Western Drilling Company                                                                                                                                                                                                            |  | 3. ADDRESS OF OPERATOR<br>P.O. Box 1659, Midland, TX 79702                                                                                                                                                                                                            |  | 6. IF INDIAN, ALLOTTEE OR TRIBE NAME<br>-----                                 |  |
| 4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*<br>At surface 1,980' FNL, 1,830' FEL of Sec. 22 (SW $\frac{1}{4}$ , NE $\frac{1}{4}$ ) (Unit G)<br>At top prod. interval reported below same<br>At total depth same |  | 14. PERMIT NO.<br>API #30-005-62711                                                                                                                                                                                                                                   |  | 7. UNIT AGREEMENT NAME<br>-----                                               |  |
| 15. DATE SPUDDED<br>7-20-89                                                                                                                                                                                                                                      |  | 16. DATE T.D. REACHED<br>7-31-89                                                                                                                                                                                                                                      |  | 8. FARM OR LEASE NAME<br>Quail Federal                                        |  |
| 17. DATE COMPL. (Ready to prod.)<br>01-04-90                                                                                                                                                                                                                     |  | 18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*<br>3,879' GR (3,899' KB*)                                                                                                                                                                                                     |  | 9. WELL NO.<br>5                                                              |  |
| 19. ELEV. CASINGHEAD<br>3,878'                                                                                                                                                                                                                                   |  | 20. TOTAL DEPTH, MD & TVD<br>4,050'                                                                                                                                                                                                                                   |  | 10. FIELD AND POOL, OR WILDCAT<br>Pecos Slope Abo                             |  |
| 21. PLUG BACK T.D., MD & TVD<br>3,989'                                                                                                                                                                                                                           |  | 22. IF MULTIPLE COMPL. HOW MANY*<br>-----                                                                                                                                                                                                                             |  | 11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA<br>Sec. 22, T-6-S, R-25-E   |  |
| 23. INTERVALS DRILLED BY<br>10-4,050'                                                                                                                                                                                                                            |  | 24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*<br>Top 3,707', Bottom 3,981', Abo                                                                                                                                                       |  | 12. COUNTY OR PARISH<br>Chaves                                                |  |
| 25. WAS DIRECTIONAL SURVEY MADE<br>No                                                                                                                                                                                                                            |  | 26. TYPE ELECTRIC AND OTHER LOGS RUN<br>Litho-Density, Comp. Neutron-GR, Dual Laterolog & MSFL & Caliper                                                                                                                                                              |  | 13. STATE<br>New Mexico                                                       |  |
| 27. WAS WELL CORED<br>No                                                                                                                                                                                                                                         |  | 28. CASING RECORD (Report all strings set in well)                                                                                                                                                                                                                    |  |                                                                               |  |
| 29. LINER RECORD                                                                                                                                                                                                                                                 |  | 30. TUBING RECORD                                                                                                                                                                                                                                                     |  |                                                                               |  |
| 31. PERFORATION RECORD (Interval, size and number)<br>Perfs: 3,707'-12, 3,715'-20, 3,736'-44, 3,747'-50, 3,756'-58, 3,762'-64, 3,767'-74, 3,797'-3,800', 3,802'-04, 3,873'-78, 3,880'-84, 3,937'-43, 3,951'-59, 3,972'-81, total 69' - 69 holes                  |  | 32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.<br>DEPTH INTERVAL (MD)<br>3,707'-3,981'<br>AMOUNT AND KIND OF MATERIAL USED<br>4,000 gals. 7 $\frac{1}{2}$ % HCL acid & frac w/ 2,027 Bbls. Cross-Link gel + 123,000 lbs. 20-40 mesh Sd. & 102,000 lbs. 12-20 mesh Sd. |  |                                                                               |  |
| 33. DATE FIRST PRODUCTION<br>01-03-90                                                                                                                                                                                                                            |  | 34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)<br>Pending A.O.F. 1,411 MCFD                                                                                                                                                                               |  | 35. LIST OF ATTACHMENTS<br>2 Sets of Logs & Deviation Survey & Potential Test |  |
| 36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records                                                                                                                                |  | 37. SIGNED <u>W. H. Myers</u> TITLE <u>Ass't. to Gen. Supt.</u> DATE <u>1-23-90</u>                                                                                                                                                                                   |  |                                                                               |  |

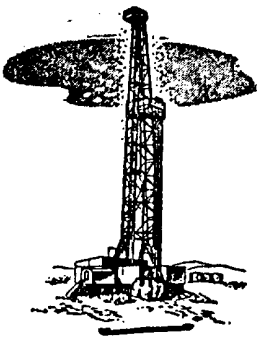
\*(See Instructions and Spaces for Additional Data on Reverse Side)

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):

38. GEOLOGIC MARKERS

| FORMATION            | TOP    | BOTTOM | DESCRIPTION, CONTENTS, ETC.                               | NAME         | TOP         |                  |
|----------------------|--------|--------|-----------------------------------------------------------|--------------|-------------|------------------|
|                      |        |        |                                                           |              | MEAS. DEPTH | TRUE VERT. DEPTH |
| Red beds             | 0      | 568'   | Lost all returns @ 793'                                   | T-San Andres | 780'        | (+3109)          |
| Red beds             | 568'   | 793'   |                                                           | T-Glorieta   | 1,585'      | (+2304)          |
| Red beds             | 793'   | 928'   |                                                           | T-Tubb       | 3,008'      | (+881)           |
| Anhydrite            | 928'   | 1,060' |                                                           | T-Abo        | 3,660'      | (+229)           |
| Anhy., sh., Red beds | 1,060' | 1,404' | Lost all returns @ 1,361'                                 |              |             |                  |
| Anhy. & Lime         | 1,404' | 1,890' | Drig. to 1,850' w/o returns-lost 8,100 bbls. last 24 hrs. |              |             |                  |
| Anhy., & Dolo.       | 1,890' | 1,915' | Set 7-5/8" Csg. @ 1,890, top cmt. 1,540'                  |              |             |                  |
| Anhy., Salt, Dolo.   | 1,915' | 2,700' |                                                           |              |             |                  |
| Anhy. & Salt         | 2,700' | 3,314' |                                                           |              |             |                  |
| Shale & Sand         | 3,314' | 4,050' |                                                           |              |             |                  |



Telephone (505) 748-2205

**L & M DRILLING, INC. — Oil Well Drilling Contractors**

P. O. BOX ~~892~~ / ARTESIA, NEW MEXICO 88210  
470

August 8, 1989

Great Western Drilling Company  
PO Box 1659  
Midland, TX 79702

Re: Quail Federal #5  
1980' FNL & 1830' FEL  
Sec. 22, T6S, R25E  
Chaves County, New Mexico

Gentlemen:

The following is a Deviation Survey for the above captioned well.

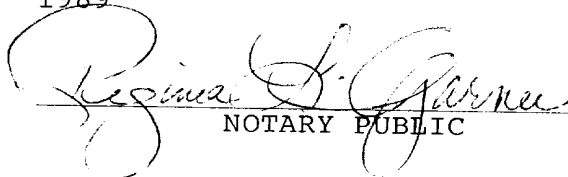
| DEPTH | DEVIATION |
|-------|-----------|
| 509'  | 1/2°      |
| 928'  | 2 1/2°    |
| 1514' | 1 1/2°    |
| 1890' | 2°        |
| 2017' | 1 3/4°    |
| 2513' | 1 3/4°    |
| 3007' | 1 1/4°    |
| 3498' | 1 3/4°    |
| 4050' | 2 1/4°    |

Very truly yours,

  
B. N. Muncy Jr.  
President

STATE OF NEW MEXICO           §  
COUNTY OF EDDY               §

The foregoing was acknowledged before me this 8th day of August, 1989

  
NOTARY PUBLIC

