RECEIVED
JUN 21 1982
O. C. D.
ARTESIA, OFFICE

SF file
C-122 file

NEW MEXICO OIL CONSERVATION COMMSSION

# MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-65

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Type Test: [X] Initial [ ] Annual [ ] Special | | | | | Test Date: 11-7-81 | | |
| Company: STEVENS OPERATING COMPANY | | | | Connection: TO ATMOSPHERE | | | |
| Pool: ~~WILDCAT~~ Pecos Slope-Abo | | | | Formation: ABO | | Unit | |
| Completion Date: 11-5-81 | | Total Depth: 4381 | | Plug Back TD | Elevation: 3677.7 Gl. | Farm or Lease Name: Sun Federal | |
| Csg. Size: 4½ | Wt.: 10.5# | d: 4.052 | Set At: 4381 | Perforations: From 4108 To 4127 | | Well No.: 2 | |
| Tbg. Size: 2 3/8 | Wt.: 4.7# | d: 1.995 | Set At: 4036 | Perforations: From OPENENDED To | | Unit: P Sec.: 29 Twp.: 7S Rge.: 26E | |
| Type Well – Single – Bradenhead – G.G. or G.O. Multiple: SINGLE | | | | Packer Set At: None | | County: Chaves | |
| Producing Thru: Tubing | Reservoir Temp. °F: 91° @ 4118 | | Mean Annual Temp. °F: 60° | Baro. Press. – $P_a$: 13.2 | | State: New Mexico | |
| L: 4118 | H: 4118 | Gg: .6531 | % $CO_2$: | % $N_2$: 6.012 | % $H_2S$: | Prover: 2" | Meter Run: | Taps: |

| FLOW DATA | | | | | | TUBING DATA | | CASING DATA | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Prover Line Size | X Orifice Size | Press. p.s.i.g. | Diff. $h_w$ | Temp. °F | Press. p.s.i.g. | Temp. °F | Press. p.s.i.g. | Temp. °F | Duration of Flow |
| SI | | | | | | 835 | | 835 | | 24 Hrs. |
| 1. | 2" | x 7/32" | 640 | | 37 | 793 | 54 | 793 | | 1 Hr. |
| 2. | 2" | x 1/4" | 740 | | 46 | 740 | 59 | 740 | | 1 Hr. |
| 3. | 2" | x 1/2" | 235 | | 28 | 659 | 67 | 700 | | 1 Hr. |
| 4. | 2" | x 1/2" | 395 | | 47 | 417 | 71 | 560 | | 45 Min. |
| 5. | | | | | | | | | | |

## RATE OF FLOW CALCULATIONS

| NO. | Coefficient (24 Hour) | $\sqrt{h_w P_m}$ | Pressure $P_m$ | Flow Temp. Factor Ft. | Gravity Factor Fg | Super Compress. Factor, Fpv | Rate of Flow Q, Mcfd |
|---|---|---|---|---|---|---|---|
| 1 | .8393 | | 653.2 | 1.023 | 1.237 | 1.071 | 743 |
| 2. | 1.087 | | 753.2 | 1.014 | 1.237 | 1.078 | 1107 |
| 3. | 4.279 | | 248.2 | 1.032 | 1.237 | 1.028 | 1394 |
| 4. | 4.279 | | 408.2 | 1.013 | 1.237 | 1.040 | 2276 |
| 5. | | | | | | | |

| NO. | $P_r$ | Temp. °R | $T_r$ | Z |
|---|---|---|---|---|
| 1. | .991 | 497 | 1.39 | .872 |
| 2. | 1.14 | 506 | 1.41 | .861 |
| 3. | .377 | 488 | 1.36 | .947 |
| 4. | .619 | 507 | 1.42 | .924 |
| 5. | | | | |

Gas Liquid Hydrocarbon Ratio: TSTM Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons: Deg.
Specific Gravity Separator Gas: XXXXXXXXX
Specific Gravity Flowing Fluid: XXXXX
Critical Pressure: 659 P.S.I.A. P.S.I.A.
Critical Temperature: 358 R R

$P_c$ *848.2 $P_c^2$ 719.4

| NO | $P_t^2$ | $P_w$ | $P_w^2$ | $P_c^2 - P_w^2$ |
|---|---|---|---|---|
| 1 | | 806.2 | 649.9 | 69.5 |
| 2 | | 753.2 | 567.3 | 152.1 |
| 3 | | 713.2 | 509. | 210.4 |
| 4 | | 573.2 | 329 | 390.4 |
| 5 | | | | |

(1) $\frac{P_c^2}{P_c^2 - P_w^2}$ = 1.84273 (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n$ = 1.48578

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n$ = 3,381

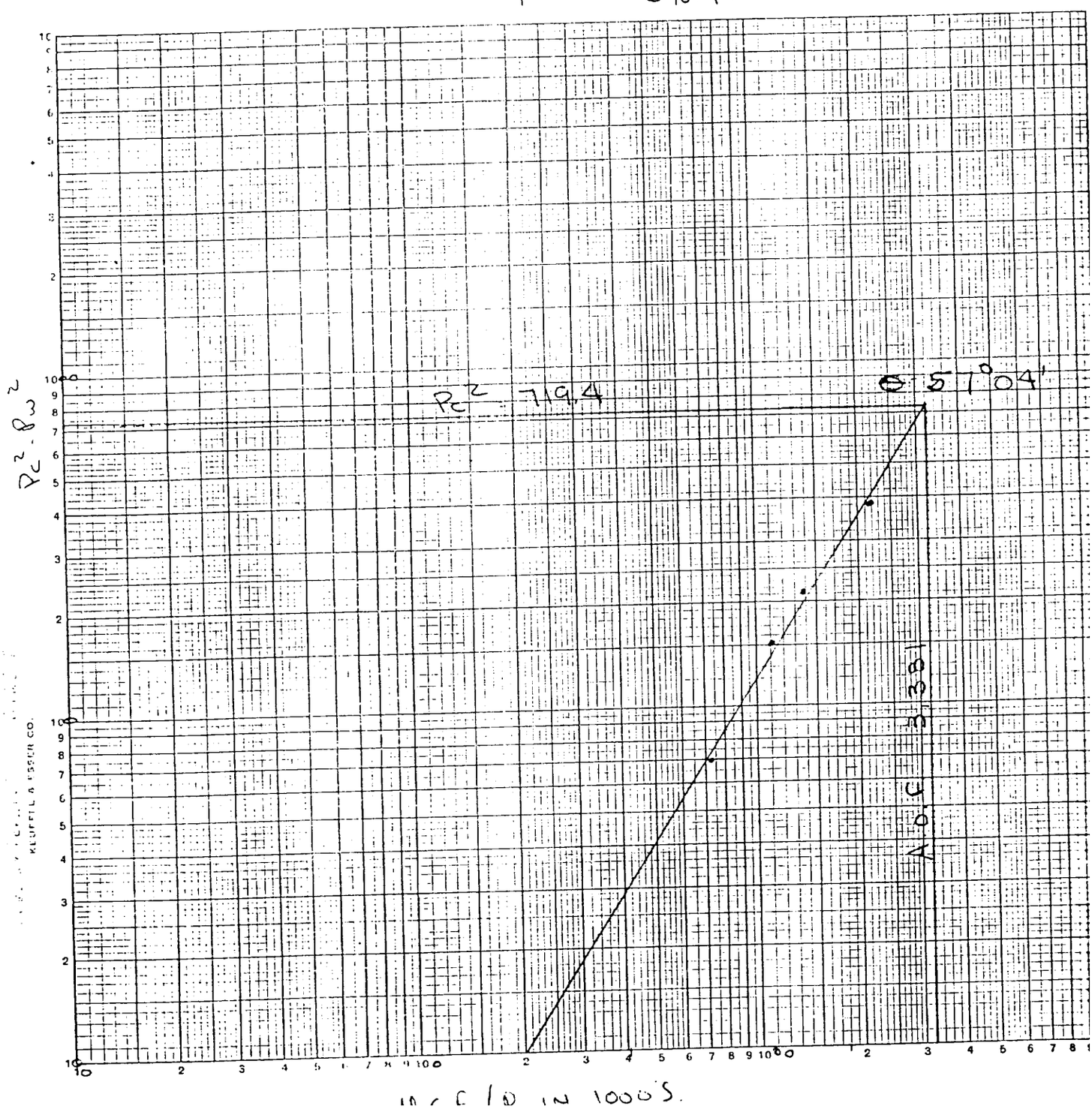
Absolute Open Flow: 3,381 Mcfd @ 15.025 | Angle of Slope θ: 57° 04' | Slope, n: .64775

Remarks: * Calculated from known Bottom Hole Pressures.

| Approved By Commission: | Conducted By: | Calculated By: | Checked By: |
|---|---|---|---|
| | W.S. | M.K. | M.K. |

STEVENS OPERATING COMPANY SUN FEDERAL NO. 2 NOVEMBER 7, 1981

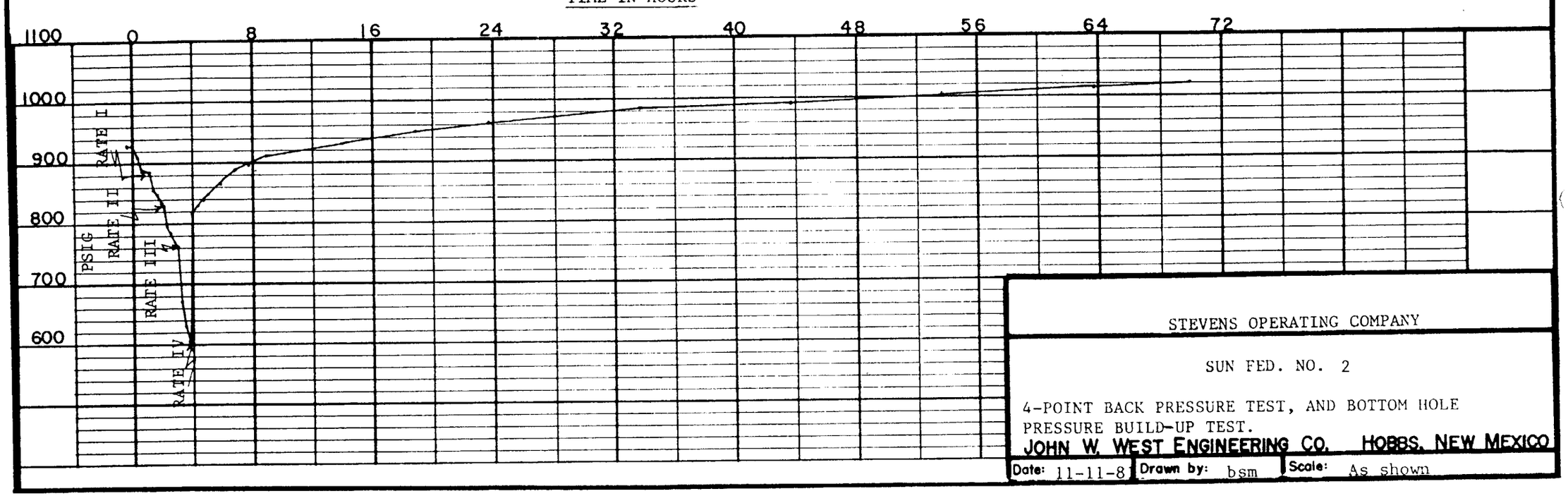
$2,276\left(\frac{719.4}{390.4}\right)^{.64775} = 3,381$



TEST DATE: NOVEMBER 7-10, 1981
TEST DEPTH: 4118 FEET

ELEMENT NO: 17772
RANGE: 0-3850 psi
CLOCK NO: 6532
RANGE: 0-72 Hour

NOTE: See tabulation of Times and Pressures on attached sheet.




STEVENS OPERATING COMPANY

SUN FED. NO. 2

4-POINT BACK PRESSURE TEST, AND BOTTOM HOLE PRESSURE BUILD-UP TEST.

JOHN W. WEST ENGINEERING CO. HOBBS, NEW MEXICO

Date: 11-11-81 Drawn by: bsm Scale: As shown

STEVENS OPERATING COMPANY
SUN FEDERAL NO. 2
4-POINT BACK PRESSURE TEST AND,
BOTTOM HOLE PRESSURE BUILD-UP TEST
TABULATION OF TIMES AND PRESSURES.

TEST CONDUCTED BY:
JOHN WEST ENGINEERING COMPANY

TEST DATE: NOVEMBER 7-10, 1981
TEST DEPTH: 4118 FEET
ELEMENT NO: 17772 (0-3850 psi)
OPERATOR: W.S.

| DATE | TIME | CUM HRS. / MIN. | | PSIG @ 4118 FEET |
|---|---|---|---|---|
| 10-7-81 | 10:00 A.M. | | | 927 Gauge reached 4118 Feet |
| | 10:15 A.M. | 00 Hrs. | 00 Min. | 927 Begin Test |
| | 10:30 A.M. | 00 | 15 | 913 |
| | 10:45 A.M. | 00 | 30 | 892 |
| | 11:00 A.M. | 00 | 45 | 886 |
| | 11:15 A.M. | 01 | 00 | 886 End Rate I |
| | 11:30 A.M. | 01 | 15 | 857 |
| | 11:45 A.M. | 01 | 30 | 847 |
| | 12:00 Noon | 01 | 45 | 838 |
| | 12:15 P.M. | 02 | 00 | 834 End Rate II |
| | 12:30 P.M. | 02 | 15 | 799 |
| | 12:45 P.M. | 02 | 30 | 782 |
| | 1:00 P.M. | 02 | 45 | 770 |
| | 1:15 P.M. | 03 | 00 | 761 End Rate III |
| | 1:30 P.M. | 03 | 15 | 666 |
| | 1:45 P.M. | 03 | 30 | 635 |
| | 2:00 P.M. | 03 | 45 | 606 End Rate IV |
| | 2:00 P.M. | 00 Hrs | 00 Min. | 606 Shut-In, Begin Build-UP |
| | 2:15 P.M. | 00 | 15 | 809 |
| | 2:30 P.M. | 00 | 30 | 826 |
| | 2:45 P.M. | 00 | 45 | 840 |
| | 3:00 P.M. | 01 | 00 | 846 |
| | 3:30 P.M. | 01 | 30 | 865 |
| | 4:00 P.M. | 02 | 00 | 869 |
| | 5:00 P.M. | 03 | 00 | 888 |
| | 6:00 P.M. | 04 | 00 | 898 |
| 10-7-81 | 7:00 P.M. | 05 | 00 | 907 |
| 10-8-81 | 12:00 A.M. | 10 | 00 | 934 |
| | 5:00 A.M. | 15 | 00 | 952 |
| | 10:00 A.M. | 20 | 00 | 961 |
| 10-8-81 | 3:00 P.M. | 25 | 00 | 977 |
| 10-9-81 | 8:00 A.M. | 30 | 00 | 983 |
| 10-9-81 | 6:00 A.M. | 40 | 00 | 994 |
| 10-9-81 | 4:00 P.M. | 50 | 00 | 1002 |
| 10-10-81 | 7:00 A.M. | 60 | 00 | 1016 |
| 10-10-81 | 8:15 A.M. | 66 | 15 | 1021 Chart ran down, End Test. |

NEW-TEX LAB
P. O. BOX 1161
HOBBS, N.M. 88240

No. 5990
Run No.
Date of Run 11-9-81
Date Secured 11-7-81

# CERTIFICATE OF ANALYSIS

A Sample of Stevens Oil Co. Sun Fed #2
Secured from John West Engineering
At 412 N. Dal Paso Secured by
Hobbs, NM 88240 Time Date
Sampling conditions Press
Temp.
Station No.

## FRACTIONAL ANALYSIS

### Percentage Composition

| | MOL % | LIQ. % | G.P.M. |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| Carbon Dioxide | Nil | | |
| Air | | | |
| Nitrogen | 6.012 | | |
| Oxygen | | | |
| Hydrogen sulfide | | | |
| Hydrogen | | | |
| Methane | 85.723 | | |
| Ethane | 4.672 | | 1.246 |
| Propane | 1.767 | | .485 |
| Butanes | | | |
| Iso-Butane | .289 | | .094 |
| N-Butane | .588 | | .185 |
| Pentanes | | | |
| Iso-Pentane | .176 | | .064 |
| N-Pentane | .191 | | .069 |
| Hexanes | .164 | | .067 |
| Heptanes | .418 | | .192 |
| Octanes | | | |
| TOTAL | 100.000 | | 2.402 |

Calc. Sp. Gr.— 0.6531
Calc. A.P.I.—
Calc. Vapor Press.— PSIA
Sp. Gr.
Mol. Wt. 18.95

### LIQUID CONTENT (GAL./MCF)

| | |
|---|---|
| Propane Calc. G.P.M. | .485 |
| Butanes Calc. G.P.M. | .279 |
| Pentanes Plus. G.P.M. | .392 |
| Ethane Calc. G.P.M. | 1.246 |
| *RVP Gasoline G.P.M. | |

B.T.U./Cu. Ft. @ 14.696 P.S.I.A.

| | |
|---|---|
| Dry Basis | 1067 |
| Wet Basis | 1048 |

Sulfur Analysis by Titration Gr./100 Cu. Ft.

| | |
|---|---|
| Hydrogen Sulfide | |
| Mercaptans | |
| Sulfides | |
| Residual Sulfur | |
| Total Sulfur | |

Run by R.H. Hamilton Checked by Deane Simpson Approved by Deane Simpson

Additional Data and Remarks