Exhibit 5

WELL COMPLETION DATA SHEET

Midwest Oil Corporation #4 South Empire Deep Unit

South Empire Deep Unit (Wolfcamp) Field

Eddy County, New Mexico

1. Location: 1980' FNL and 2230' FEL Section 32, T-17-S, R-29-E
2. Elevation: 3598 KB
3. TD: 10,950' PBTD: 8560'
4. Top Wolfcamp: 7567 (-3969)
5. Top Pay: 8449 (-4851)
6. Completion Date: 3-13-74
7. Perforated Interval: 8449 to 8522 w/21 shots (OA)
8. Treatment: A/3,000 gals. (15%)
9. IP 303 BOPD + 414 MCFG

   10/64" ch

   1510 FTP

   Pkr. FCP

   1380 GOR

   46.5 Gravity API
10. Net Pay: 31'
11. Average Porosity: 4%
12. Average Permeability: 43 md
13. Average Water Saturation: 30%
14. Reservoir Temperature: 155°
15. Initial Reservoir Pressure: 3730#

80 acre allow
310 BOPD
58
368

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Appl EXHIBIT NO. 5
CASE NO. 5219

EXIBIT ______

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
________ EXHIBIT NO. 6
CASE NO. 5219

# PRESSURE DATA ANALYSIS

# MIDWEST OIL COMPANY

# SOUTH EMPIRE DEEP UNIT #4


By

E. R. Brownscombe

SONICS INTERNATIONAL, INC.
Dallas, Texas

# PRESSURE DATA ANALYSIS

Midwest Oil Company

South Empire Deep Unit #4

## SUMMARY

Breaks in the build up and drawdown curves suggest that there is a fault or other barrier about 400 - 600 feet from the well. The rate of pressure fall off toward the end of the drawdown test suggests that there are more than 250 productive acres. Permeability is about 40 m.d., the initial reservoir pressure, 3720 psig at 8485. There is improved permeability near the well, but at high rates of flow there is an indication of local blockage by solution gas.

## DISCUSSION

### Introduction

Two buildup curves and a drawdown curve were analyzed. The pressures and production history are given in Table I.

Reservoir characteristics are given in Table II.

Table III summarizes the rates of flow (bbls/day) and length (hours) corresponding to the cleanup production, the first buildup, the pressure drawdown and the second buildup. The first period is assumed to flow at the 387 B/D (average of last nine days) for the whole period, the time being that required for the actual production during the period. This simplifies the analysis and gives essentially the same result as would be obtained if the exact production history were used for the first period.

Frick refers to the "Petroleum Production Handbook" edited by T. C. Frick;
M & R refers to Mathews & Russell "Pressure Buildup and Flow Tests in Wells"

EVIDENCE OF A BARRIER

The break in the drawdown curve (Fig. III) indicates the presence of a barrier near the well. The drawdown had been planned for 50 hours, but failure of surface equipment terminated it at 24 hours. The rise of the last two points on the drawdown curve above the trend is not explainable on the basis of reservoir characteristics - it undoubtedly reflects changes in operating conditions - they have been disregarded in the analysis. If we had a small reservoir so that the later points represented the "semi-steady state" regime, they would also fall below the early trend. However, in this case the later points would plot as a straight line on a linear plot, and would have a strong downward curvature on this plot. Further, the time at which this break occurs is much shorter than corresponds to the size of the reservoir on the basis of an assumed semi-steady state for the late points. This confirms the barrier interpretation.

The presence of a barrier should also be reflected in the build up curves. Unfortunately, the second build up curve is too short to confirm the break, and the first build up curve shows an erratic behavior beginning at about 25 hours. The pressure beginning at this time remained constant for the next 48 hours and then rapidly rose 35 psi. Such behavior is not reasonable reservoir performance, even with two pays open to the well. It seems likely that this was a reflection of further surface equipment problems. For example, a leak at the surface might cause the liquid level to rise with a constant bottom hole pressure. This would cause the well compressibility to decrease markedly, causing the bottom hole pressure to rise rapidly to the ambient reservoir pressure when the leak stopped.

On the basis of this hypothesis, the first build up curve becomes consistent with the drawdown curve. Further the P* of 3730 for this interpretation (dashed line, Fig. 1) is also closer to the initial drill stem test of 3779 (datum level?) than extrapolation of the first part of the curve which gives P* = 3678.

The break in this curve is at 14 hours instead of 7 hours as in the drawdown, but in view of the uncertainties of interpretation, this is considered a reasonable agreement.

As indicated above, the second build up (Fig. II) is of too short duration to reflect the barrier. At 20 hours there is a hint the curve may be on the rise, but another 24 hours at least would be required to establish a slope for the later part of the curve.

The distance to the barrier is estimated in Table IX. The drawdown indicates about 450 feet; the build up 600 feet. This is a reasonable check for this type of analysis.

RESERVOIR PERMEABILITY

The two buildups and the drawdown showed 41, 38 and 50 m.d., averaging 43.

RESERVOIR PRESSURE

Using the dashed line Fig. I to get the best value of P* and assuming 320 productive acres, the average reservoir pressure (initial reservoir pressure) is estimated as 3720.(Table VI). If the reservoir is larger, the pressure will be closer to P* (3730 psig).

## WELL DAMAGE

The first build up showed S = -4.4, the drawdown S = +4.1 and the second buildup S = +~~0.5~~. 3.6.

The negative value of the first test suggests that the acidizing caused fractures around the well, leading to an improved permeability near the well. The drawdown was run at a higher rate than the initial cleanup, and probably lead to evolution of solution gas around the well, causing local blockage and a positive value for S. This is consistent with a rise in gas oil ratio from 1820 (Table II) for the cleanup period at 387 B/D to (637 + 656)/685 = 1887 at 685 B/D. Continued production at the higher rate should result in the GOR falling back to 1820 as equilibrium gas saturation around the well is established. The second buildup should check the drawdown value of S. Perhaps S = (4.1 + ~~.5~~ 3.6)/2 = ~~2.3~~ 3.8 would be a better value for 685 B/D.

PRODUCTIVE ACREAGE

If the drawdown had been run long enough to establish a straight line section for pressure vs. time, this would have permitted the most reliable estimate of reserves using the "semi-steady state" analysis. A 50 hour test was planned but was cut short by surface equipment problems. It would also be possible to estimate the reserves from a "late transient" analysis if the latter part of the drawdown had reached this stage. However, the straight line in Fig. III for the later points indicates that we are still in the transient period - the late transient should show a pressure fall off from the trend. Therefore the late transient calculation, Fig. V, giving 108 acres is undoubtedly much too low. Figure VI indicates a gradual curvature of P vs. time which is expected before the "semi-steady state" period is reached. If we use a tangent to the later points with a semi-steady state analysis, we should get a figure which is below the actual reserves. This analysis gives a minimum of 250 acres (Fig. VI).

TABLE 1

Midwest Oil Company
South Empire Deep Unit No. 4

Production and Pressure History

| Date | Time (New Mexico) | Barrels | High Pressure (MCF/D) | Low Pressure* (MCF/D) | Mid Perforation Pressure 8485 Ft. (psig) | Elapsed Time Pressure Tests (Hours) |
|---|---|---|---|---|---|---|
| 3-7-74 | | (120) | (311) | (321) | | |
| 3-8-74 | | ( 93) | (241) | (249) | | |
| 3-9-74 | | 0 | 0 | 0 | | |
| 3-10-74 | | 0 | 0 | 0 | | |
| 3-11-74 | | (162) | (421) | (435) | | |
| 3-12-74 | | 215 | 414 | (428) | | |
| 3-13-74 | | 285 | 346 | (358) | | |
| 3-14-74 | | 255 | 308 | (318) | | |
| 3-15-74 | | 132 | 300 | (310) | | |
| 3-16-74 | | 110 | 226 | (234) | | |
| 3-17-74 | | 175 | 143 | (148) | | |
| 3-18-74 | | 382 | 226 | (234) | | |
| 3-19-74 | | 360 | 226 | (233) | | |
| 3-20-74 | | 387 | 226 | (234) | | |
| 3-21-74 | | 390 | 226 | (233) | | |
| 3-22-74 | | 388 | 226 | (234) | | |
| 3-23-74 | | 383 | 226 | (233) | | |
| 3-24-74 | | 395 | 226 | (234) | | |
| 3-25-74 | | 386 | 226 | (233) | | |
| 3-26-74 | | 380 | 226 | (234) | | |
| 3-27-74 | | 389 | 226 | (233) | | |
| 3-28-74 | 08:30 | 390 | 226 | (234) | | |
| | 11:30 | | | | 3573 | -1. |
| | 12:00 | | | | 3572 | -.5 |
| well closed | 12:30 | 70 | ( 63 MCF) | ( 65 MCF) | 3573 | 0. |
| | 12:36 | | | | 3607 | .1 |
| | 12:42 | | | | 3618 | .2 |
| | 12:48 | | | | 3619 | .3 |
| | 12:54 | | | | 3620 | .4 |
| | 13:00 | | | | 3625 | .5 |
| | 13:12 | | | | 3626 | .7 |
| | 13:30 | | | | 3628 | 1.0 |
| | 14:00 | | | | 3630 | 1.5 |

*Estimated from High Pressure gas and ratio of Low Pressure gas to High Pressure gas during drawdown flow test.

TABLE I (Continued)

Midwest Oil Company
South Empire Deep Unit No. 4

Production and Pressure History

| Date | Time (New Mexico) | Barrels | High Pressure (MCF/D) | Low Pressure* (MCF/D) | Mid Perforation Pressure 8485 Ft. (psig) | Elapsed Time Pressure Tests (Hours) |
|---|---|---|---|---|---|---|
| 3-28-74 | 14:30 | | | | 3631 | 2.0 |
| | 15:00 | | | | 3633 | 2.5 |
| | 15:30 | | | | 3635 | 3.0 |
| | 16:30 | | | | 3636 | 4.0 |
| | 17:30 | | | | 3639 | 5.0 |
| | 19:30 | | | | 3642 | 7.0 |
| | 22:30 | | | | 3644 | 10.0 |
| 3-29-74 | 03:30 | | | | 3648 | 15.0 |
| | 08:30 | | | | 3653 | 20.0 |
| | 13:30 | | | | 3655 | 25.0 |
| | 18:30 | | | | 3655 | 30.0 |
| 3-30-74 | 04:30 | | | | 3655 | 40.0 |
| | 14:30 | | | | 3655 | 50.0 |
| 3-31-74 | 00:30 | | | | 3656 | 60.0 |
| | 10:30 | | | | 3657 | 70.0 |
| 4-1-74 | 14:15 | | | | 3690 | 97.75 |
| well opened | 15:00 | | | | 3691 | 98.5 |
| | 15:00 | | | | 3518 | -.25 |
| | 15:18 | | | | 3552 | .05 |
| | 15:24 | | | | 3517 | .15 |
| | 15:30 | | | | 3494 | .25 |
| | 15:42 | | | | 3411 | .45 |
| | 16:00 | | 520 | 633 | 3402 | .75 |
| | 17:00 | | 533 | 646 | 3389 | 1.75 |
| | 18:00 | | 494 | 565 | 3384 | 2.75 |
| | 19:00 | | 571 | 659 | 3382 | 3.75 |
| | 20:00 | | 593 | 646 | 3380 | 4.75 |
| | 21:00 | | 646 | 672 | 3375 | 5.75 |
| | 22:00 | | 646 | 682 | 3373 | 6.75 |
| | 23:00 | | 672 | 691 | 3370 | 7.75 |
| | 24:00 | | 646 | 691 | 3366 | 8.75 |
| 4-2-74 | 01:00 | | 646 | 691 | 3361 | 9.75 |
| | 02:00 | | 672 | 672 | 3359 | 10.75 |

*Estimated from High Pressure gas and ratio of Low Pressure gas to High Pressure gas during drawdown flow test.

TABLE 1 (Continued)

Midwest Oil Company
South Empire Deep Unit No. 4

Production and Pressure History

| Date | Time (New Mexico) | Barrels | High Pressure (MCF/D) | Los Pressure* (MCF/D) | Mid Perforation Pressure 8485 Ft. (psig) | Elapsed Tim Pressure Test (Hours) |
|---|---|---|---|---|---|---|
| 4-2-74 | 03:00 | | 721 | 691 | 3361 | 11.75 |
| | 04:00 | | 793 | 706 | 3357 | 12.75 |
| | 05:00 | | 746 | 721 | 3352 | 13.75 |
| | 06:00 | | 721 | 721 | 3350 | 14.75 |
| | 07:00 | 433 | 746 | 682 | 3349 | 15.75 |
| | 08:00 | 35 | 646 | 672 | 3347 | 16.75 |
| | 09:00 | 25 | 691 | 672 | 3345 | 17.75 |
| | 10:00 | 27 | 672 | 672 | 3343 | 18.75 |
| | 11:00 | 22 | 646 | 672 | 3342 | 19.75 |
| | 12:00 | - | (573)** | 593 | 3340 | 20.75 |
| | 13:00 | 36 | (625)** | 646 | 3339 | 21.75 |
| | 14:00 | 22 | (490)** | 506 | 3338 | 22.75 |
| | 15:00 | 22 | (519)** | 536 | 3356 | 23.75 |
| well closed | 15:00 | 63 | - | - | 3356 | 0. |
| | 15:06 | | | | 3519 | .1 |
| | 15:12 | | | | 3571 | .2 |
| | 15:18 | | | | 3583 | .3 |
| | 15:24 | | | | 3594 | .4 |
| | 15:30 | | | | 3599 | .5 |
| | 15:42 | | | | 3608 | .7 |
| | 16:00 | | | | 3618 | 1.0 |
| | 16:30 | | | | 3622 | 1.5 |
| | 17:00 | | | | 3626 | 2.0 |
| | 17:30 | | | | 3629 | 2.5 |
| | 18:00 | | | | 3631 | 3.0 |
| | 18:30 | | | | 3633 | 3.5 |
| | 19:00 | | | | 3636 | 4.0 |
| | 20:00 | | | | 3640 | 5.0 |
| | 21:00 | | | | 3643 | 6.0 |
| | 22:00 | | | | 3645 | 7.0 |
| 4-3-74 | 01:00 | | | | 3649 | 10.0 |
| | 06:00 | | | | 3654 | 15.0 |
| bomb out | 10:00 | | | | 3659 | 19.0 |

*Estimated from High Pressure gas and rato of Low Pressure gas to High Pressure gas during drawdown flow test.

**Leak developed in High Pressure system, volume estimated from Low Pressure data.

## TABLE II

### Reservoir Characteristics

Depth: 8485 Feet

Temperature: 155°F

Pay Thickness: 22 Feet Upper, 9 Feet Lower = 31 Feet

Porosity: (.045 x 22 + .031 x 9) /31 = .0409

Oil Gravity: 46.5°API

GOR: (Table I, 3/07 to 3/28) = (5259 + (5435))/5847 = 1820

Formation Volume Factor: (Frick 5-29) = 1.9

Viscosity of Reservoir Oil:

| | | |
|---|---|---|
| Frick 19-39 | 46.5°API @ 155°F = 1.1 cp. | |
| Frick 19-40 | 1.1 cp @ 1800 GOR | .23 cp. |

Compressibility (Frick p. 37-1)

| | | |
|---|---|---|
| Rock | $8. \times 10^{-6}$ | |
| Oil (70% pore saturation) | $.7 \times 25 \times 10^{-6}$ | $= 17.5 \times 10^{-6}$ |
| Connate Water | $.3 \times 3 \times 10^{-6}$ | $= .9 \times 10^{-6}$ |
| Overall | | $2.6 \times 10^{-5}$/psi |

(.7 is assumed oil saturation; .3, connate water)

## TABLE III

### Rates and Times

| From Hours | To Hours | Rate | Bbls/Day |
|---|---|---|---|
| 0 | 362.6 | 387 | Well Clean Up |
| 362.6 | 461.4* | 0 | First Build Up Test |
| 461.4 | 485.1 | 685 | Drawdown Test |
| 485.1 | 504.1 | 0 | Second Build Up Test |

*15 minutes was added to build up time from flow time to account for adjustments in establishing rates during first half hour.

Length of first period was that necessary to produce total oil as rate of last 9 days, since later production has most effect on build up.

Oil Produced = 5847 barrels, average rate last 9 days = 387 barrels/day

$$5847/387 \times 24 = 362.6$$

TABLE IV

First Build Up Test
t = 362.6

| $\Delta t$ | $\frac{t + \Delta t}{\Delta t}$ | PSIG | |
|---|---|---|---|
| 0 | - | 3573 | Flowing Pressure |
| .1 | 3627 | 3607 | |
| .2 | 1814 | 3618 | |
| .3 | 1210 | 3619 | |
| .4 | 907.5 | 3620 | |
| .5 | 762.2 | 3625 | |
| .7 | 519.0 | 3626 | |
| 1.0 | 363.6 | 3628 | |
| 1.5 | 242.7 | 3630 | |
| 2.0 | 182.3 | 3631 | |
| 2.5 | 146.0 | 3633 | |
| 3. | 121.9 | 3635 | |
| 4. | 91.7 | 3636 | |
| 5. | 73.52 | 3639 | |
| 7. | 52.80 | 3642 | |
| 10. | 37.26 | 3644 | |
| 15. | 25.17 | 3648 | |
| 20. | 19.13 | 3653 | |
| 25. | 15.50 | 3655 | |
| 30. | 13.09 | 3655 | |
| 40. | 10.07 | 3655 | |
| 50. | 8.25 | 3655 | |
| 60. | 7.04 | 3656 | |
| 70. | 6.18 | 3657 | |
| 97.75 | 4.71 | 3690 | |
| 98.5 | 4.68 | 3691 | |

TABLE V

Second Build Up Test

Flow rates in Table III will be matched if we take following flows for times given.

$\Delta t$ is the time of the second shut in

| From | To | Rate |
|---|---|---|
| 0 | 485.1 +$\Delta t$ | 387 |
| 362.6 | 485.1 +$\Delta t$ | - 387 |
| 461.4 | 485.1 +$\Delta t$ | 685 |
| 485.1 | 485.1 +$\Delta t$ | - 685 |

At time 485.1 +$\Delta t$ the summation of all four of these production periods will give:

$$Pwf = Pi - 162.6 \times \frac{.23 \times 1.9}{kh} \left[ 387 \log \frac{485.1 + \Delta t}{485.1 - 362.6 + \Delta t} + 685 \log \frac{485.1 - 461.4 + \Delta t}{485.1 - 485.1 + \Delta t} \right]$$

$$= Pi - 71.05/kh \left[ 387 \log \frac{485.1 + \Delta t}{122.5 + \Delta t} + 685 \log \frac{23.7 + \Delta t}{\Delta t} \right]$$

This shows how the build up is affected not only by the drawdown test, but also by the earlier production which will also have an appreciable effect.

$$\Sigma = 387 \log \frac{485.1 + \Delta t}{122.5 + \Delta t} + 685 \log \frac{23.7 + \Delta t}{\Delta t}$$

See M & R Eq. 6.5 to 6.7

TABLE V (Continued)

| Δt | Σ | Mid Perforation Pressure (psig) |
|---|---|---|
| 0 | - | 3338 |
| .1 | 1859 | 3519 |
| .2 | 1654 | 3571 |
| .3 | 1535 | 3583 |
| .4 | 1450 | 3594 |
| .5 | 1385 | 3599 |
| .7 | 1287 | 3608 |
| 1.0 | 1184 | 3618 |
| 1.5 | 1069 | 3622 |
| 2.0 | 989 | 3626 |
| 2.5 | 928 | 3629 |
| 3.0 | 879 | 3631 |
| 3.5 | 838 | 3633 |
| 4.0 | 803 | 3636 |
| 5.0 | 746 | 3640 |
| 6.0 | 701 | 3643 |
| 7.0 | 664 | 3645 |
| 10.0 | 583 | 3649 |
| 15.0 | 499 | 3654 |
| 19.0 | 454 | 3659 |

## TABLE VI

### Average Reservoir Pressure

If the reservoir were infinite, the average pressure would be P*. Let us assume the reservoir has 320 acres and calculate the average pressure $\overline{P}$ from the dashed line extrapolation of the first build up curve. In view of the evidence that we are near the side of the reservoir, we will use M & R Fig. 4.6 curve II to estimate average pressure.

$$A = 320 \times 43560 = 13.94 \times 10^6 \text{ sq. ft.}$$

| | | | | | |
|---|---|---|---|---|---|
| k | = | 41.3 m.d. | t | = | 362.6 hrs. |
| h | = | 31 feet | q | = | 387 B/D |
| $\phi$ | = | .0409 | u | = | .23 cp |
| C | = | $2.6 \times 10^{-5}$/psi | B | = | 1.9 Reservoir Barrels/Stk Barrels |
| P* | = | 3730 | | | |

From M & R, Fig. 4.6, the dimensionless time (abscissa) is:

$$\frac{.000264 \times 41.3 \times 362.6}{.0409 \times .23 \times 2.6 \times 10^{-5} \times 13.94 \times 10^6} = 1.1596$$

The corresponding dimensionless pressure (ordinate, curve II) is:

$$1.1 = \frac{P^* - \overline{P}}{70.6 \times 387 \times .23 \times 1.9/41.3/31}$$

$$P^* - \overline{P} = 10$$

$$\overline{P} = 3730 - 10 = 3720$$

TABLE VII

Drawdown Test

| From | To | Rate of Flow |
|---|---|---|
| 0 | $461.4 + \Delta t$ | 387 |
| 362.6 | $461.4 + \Delta t$ | -387 |
| 461.4 | $461.4 + \Delta t$ | 685 |

$$Pwf = Pi - 162.6 \frac{.23 \times 1.9}{kh} \left[ 387 \log_{10} \frac{461.4 + \Delta t}{98.8 + \Delta t} + 685 \log_{10} \Delta t \right]$$

$$\Sigma = 387 \log_{10} \frac{461.4 + \Delta t}{98.8 + \Delta t} + 685 \log_{10} \Delta t$$

| $\Delta t$ | $\Sigma$ | P | |
|---|---|---|---|
| 0 | - | 3667 | (see Table VI) |
| .05 | -632 | 3552 | |
| .15 | -305 | 3517 | |
| .25 | -154 | 3494 | |
| .45 | .21 | 3411 | |
| .75 | 172 | 3402 | |
| 1.75 | 423 | 3389 | |
| 2.75 | 556 | 3384 | |
| 3.75 | 647 | 3382 | |
| 4.75 | 716 | 3380 | |
| 5.75 | 772 | 3375 | |
| 6.75 | 818 | 3373 | |
| 7.75 | 858 | 3370 | |
| 8.75 | 893 | 3366 | |
| 9.75 | 924 | 3361 | |
| 10.75 | 952 | 3359 | |
| 11.75 | 977 | 3361 | |
| 12.75 | 1000 | 3357 | |
| 13.75 | 1022 | 3352 | |
| 14.75 | 1041 | 3350 | |
| 15.75 | 1060 | 3349 | |
| 16.75 | 1077 | 3347 | |
| 17.75 | 1093 | 3345 | |
| 18.75 | 1108 | 3343 | |
| 19.75 | 1123 | 3342 | |
| 20.75 | 1137 | 3340 | |
| 21.75 | 1149 | 3339 | |
| 22.75 | 1162 | 3338 | |
| 23.75 | 1174 | 3356 | |

TABLE VIII

Drawdown Test Late Transient Analysis

| Hours | PSIG @ 8485 | $\Delta P$ 3330 | $\Delta P$ 3325 | $\Delta P$ 3320 | $\Delta P$ 3310 | $\Delta P$ 3300 | $\Delta P$ 3275 |
|---|---|---|---|---|---|---|---|
| 6.75 | 3373 | 43 | 48 | 53 | 63 | 73 | 98 |
| 7.75 | 3370 | 40 | 45 | 50 | 60 | 70 | 95 |
| 8.75 | 3366 | 36 | 41 | 46 | 56 | 66 | 91 |
| 9.75 | 3361 | 31 | 36 | 41 | 51 | 61 | 86 |
| 10.75 | 3359 | 29 | 34 | 39 | 49 | 59 | 84 |
| 11.75 | 3361 | 31 | 36 | 41 | 51 | 61 | 86 |
| 12.75 | 3357 | 27 | 32 | 37 | 47 | 57 | 82 |
| 13.75 | 3352 | 22 | 27 | 32 | 42 | 52 | 77 |
| 14.75 | 3350 | 20 | 25 | 30 | 40 | 50 | 75 |
| 15.75 | 3349 | 19 | 24 | 29 | 39 | 49 | 74 |
| 16.75 | 3347 | 17 | 22 | 27 | 37 | 47 | 72 |
| 17.75 | 3345 | 15 | 20 | 25 | 35 | 45 | 70 |
| 18.75 | 3343 | 13 | 18 | 23 | 33 | 43 | 68 |
| 19.75 | 3342 | 12 | 17 | 22 | 32 | 42 | 67 |
| 20.75 | 3340 | 10 | 15 | 20 | 30 | 40 | 65 |
| 21.75 | 3339 | 9 | 14 | 19 | 29 | 39 | 64 |
| 22.75 | 3338 | 8 | 13 | 18 | 28 | 38 | 63 |
| 23.75 | 3356 | - | - | - | - | - | - |

TABLE IX

Distance to Barrier (M & R 10.6, 10.7)

From Drawdown Test (Figure III)

$t_x = 7.0$ hours

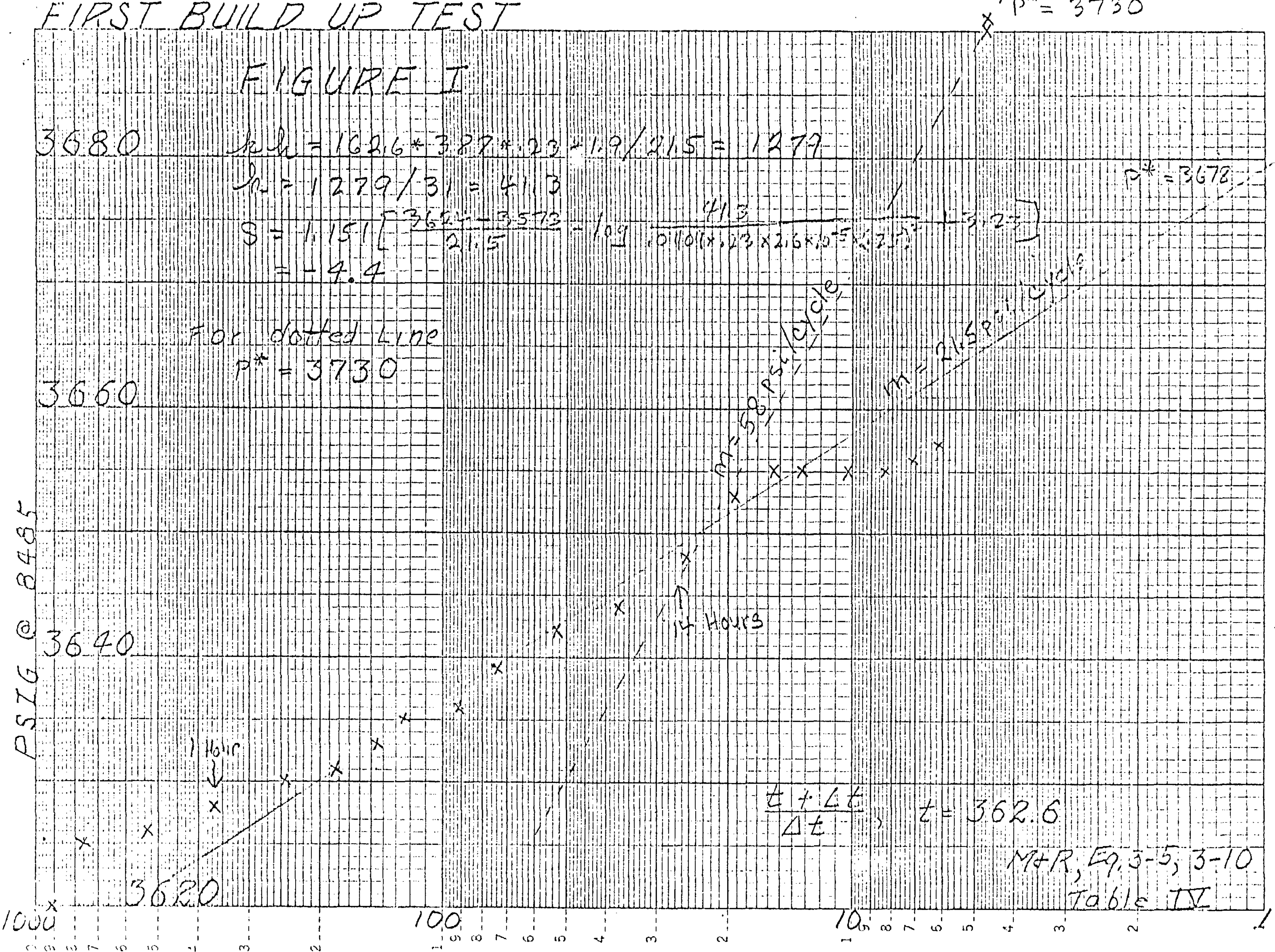
$$d = \sqrt{\frac{.000264 \times 50 \times 7.0}{1.78 \times .0409 \times .23 \times 2.6 \times 10^{-5}}} = 461$$

From first Build Up Test (Figure I)

$t_x = 14$ hours

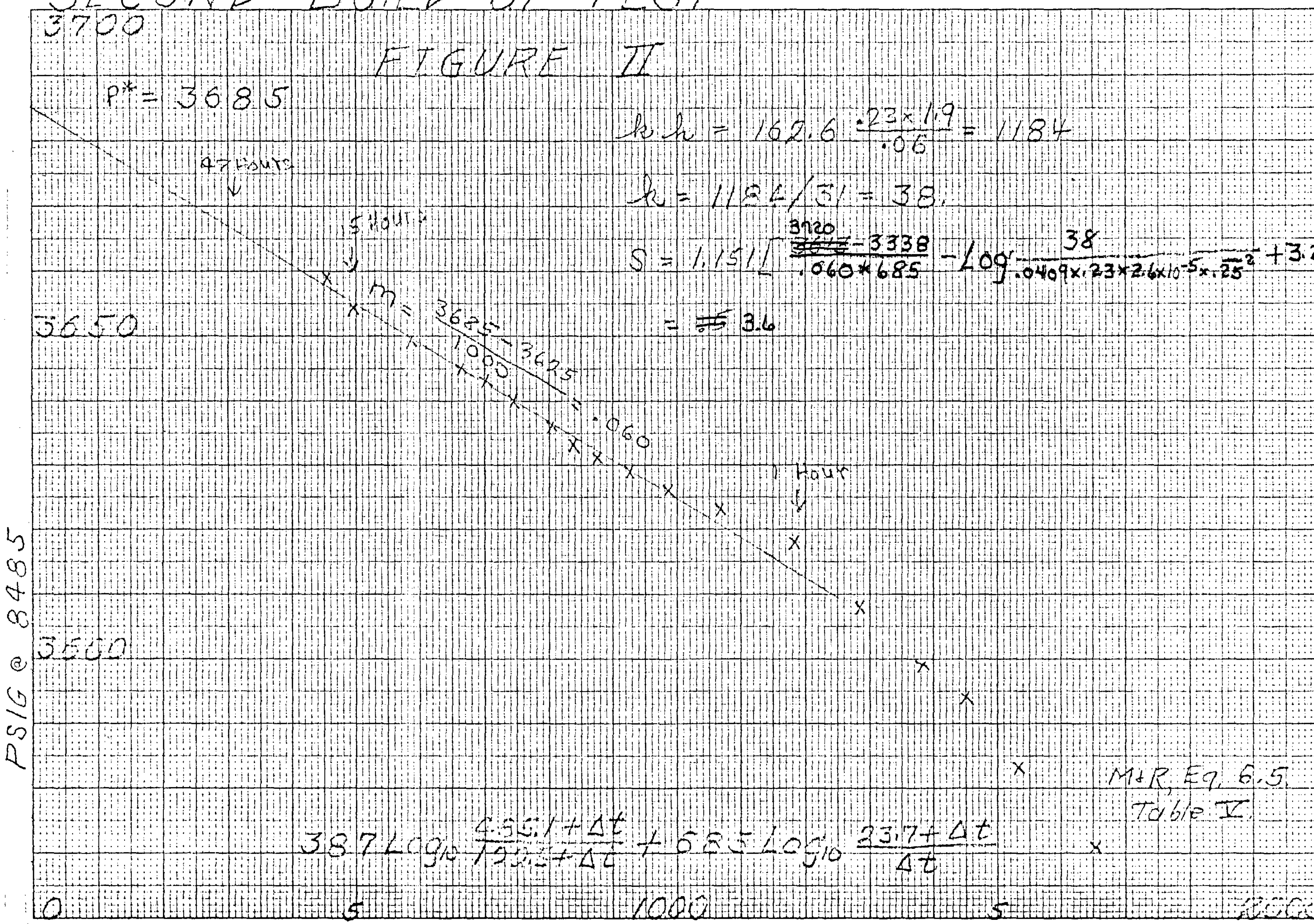
$$d = \sqrt{\frac{.000264 \times 41.3 \times 14}{1.78 \times .0409 \times .23 \times 2.6 \times 10^{-5}}} = 592$$

# FIRST BUILD UP TEST



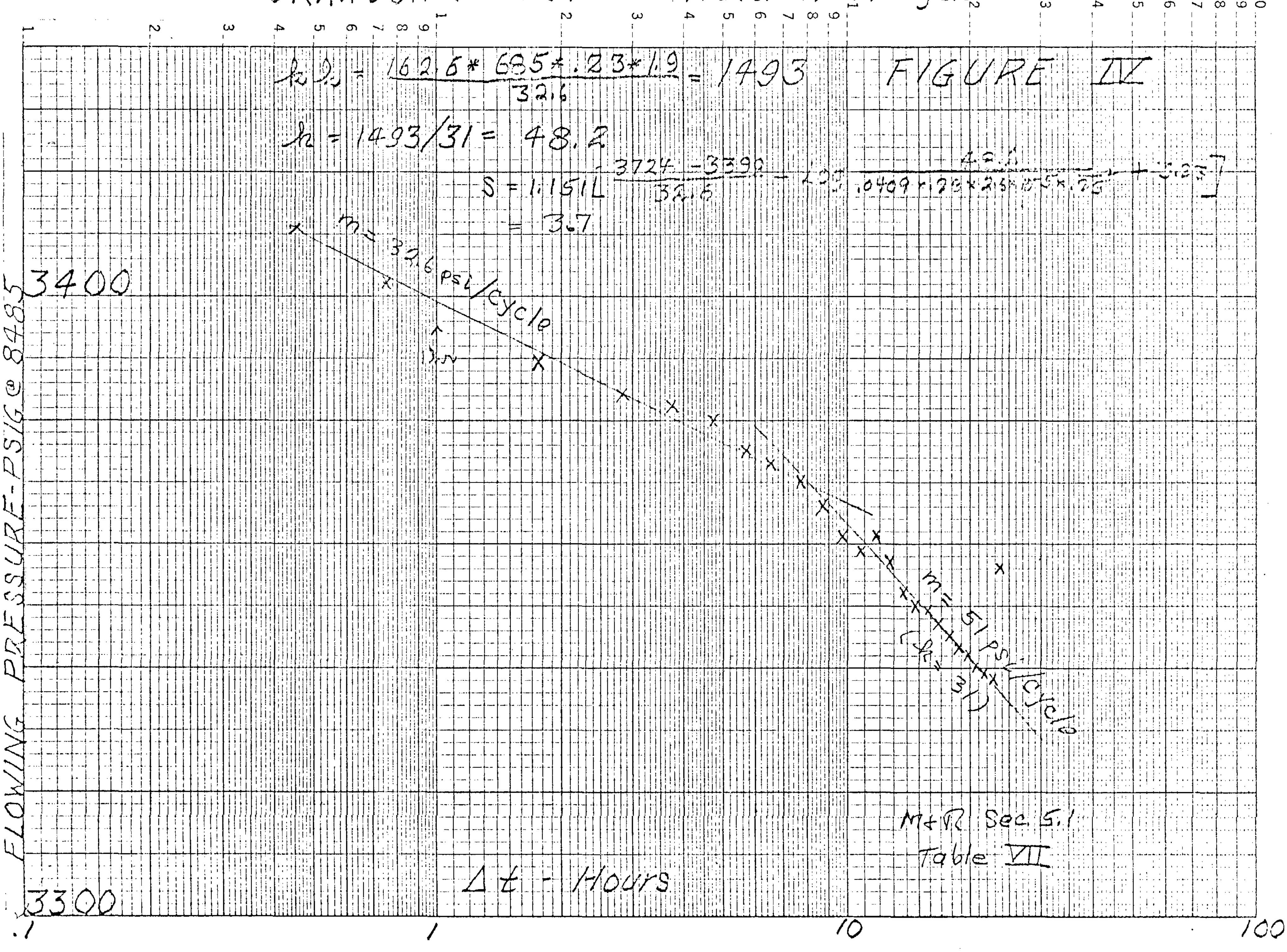
K+E 10 X 10 TO ½ INCH 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A. 46 1320

# SECOND BUILD UP TEST



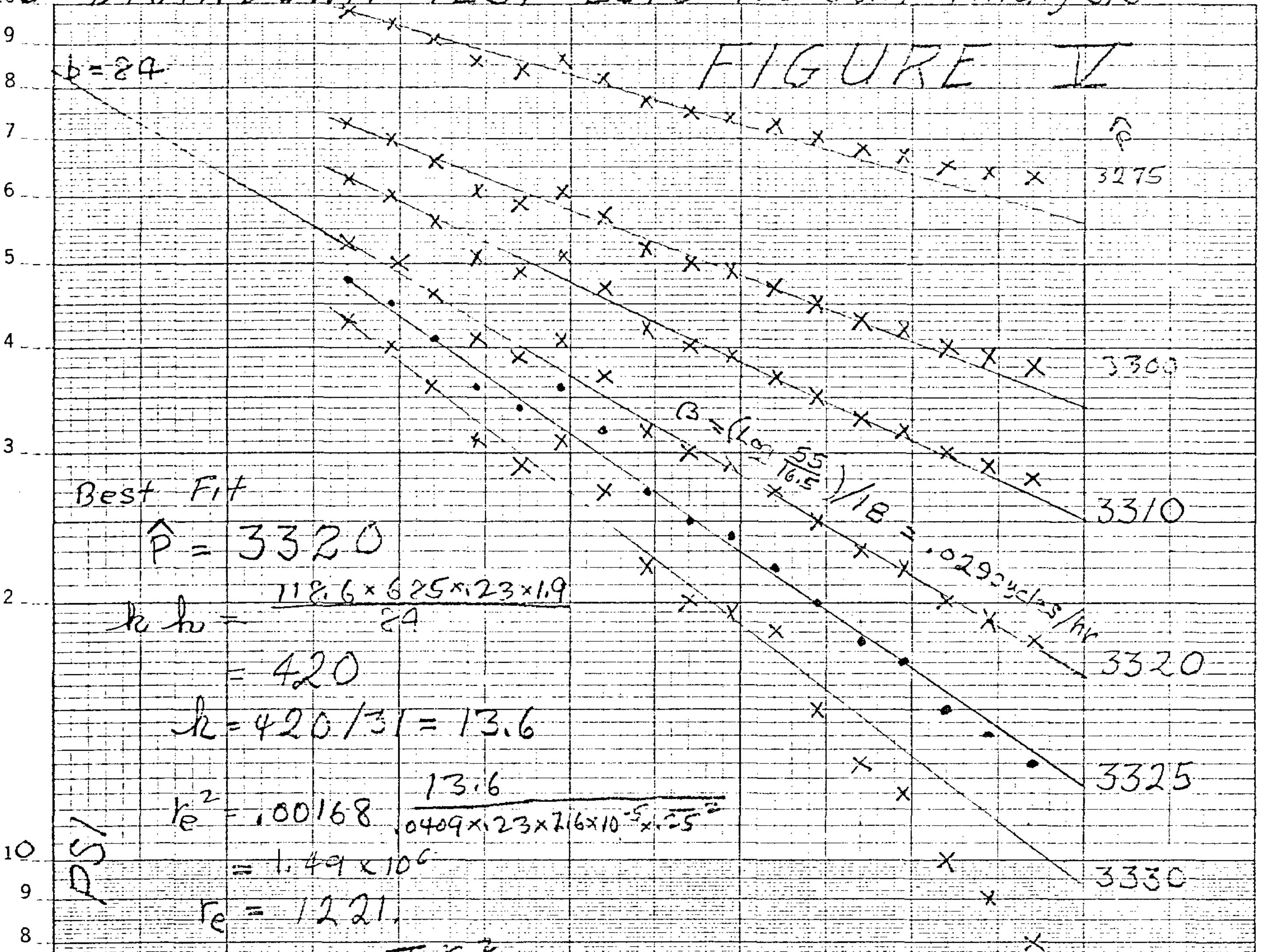

FLOWING PRESSURE, PSIG @ 8485
DRAWDOWN TEST - Pressure Analysis
FIGURE III
3300
3350
3400
3450
3500
0
500
1000
M+T Eq 5.5
Table VII
Early period:
= 1545
1545/31 = 50.
= 4.1
Late Period:
= 652
= 21.
m = .046
m = .109

DRAWDOWN TEST - Transient Analysis



# DRAWDOWN TEST - Late Transient Analysis

## FIGURE V




Best Fit

$\hat{P} = 3320$

$kh = \frac{118.6 \times 625 \times .23 \times 1.9}{84}$

$= 420$

$k = 420/31 = 13.6$

$r_e^2 = .00168 \cdot \frac{13.6}{.0409 \times .23 \times 7.6 \times 10^{-5} \times .25^2}$

$= 1.49 \times 10^6$

$r_e = 1221$

$\text{Acres} = \frac{\pi r_e^2}{43560} = 102$

$S = .84 \left[ \frac{3724 - 3320}{84} - \ln \frac{1221}{.25} + .75 \right]$

$= -2.9$

M & R Sec. 5.2

Table VIII

DRAWDOWN TEST - Semi-Steady State Analysis

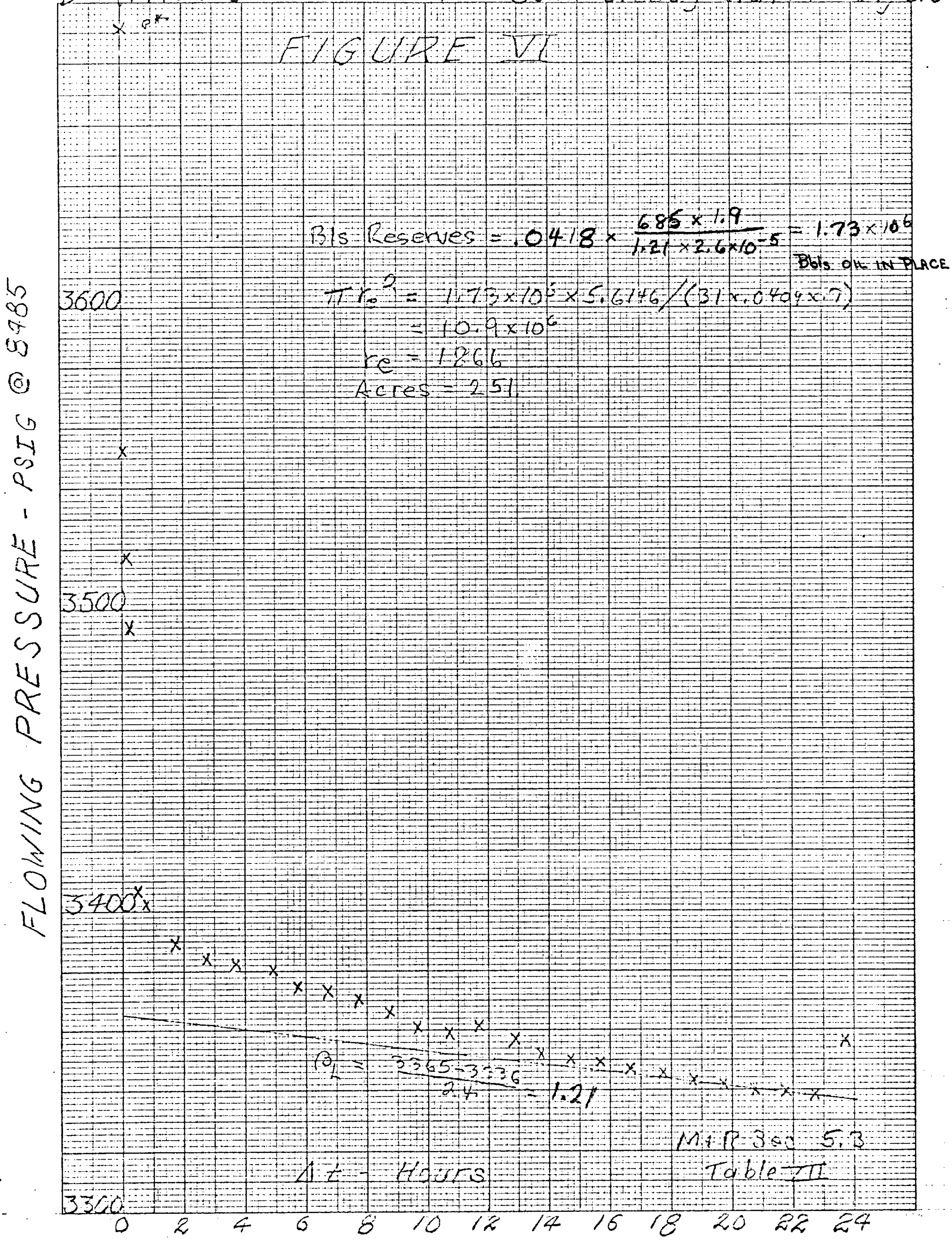


Exhibit ____________

ECONOMICS OF DRILLING, COMPLETION AND OPERATING COSTS
South Empire Deep Unit (Wolfcamp)
Eddy Co., New Mexico

| | | |
|---|---|---|
| 1. | Drilling & Completion Costs | $295,000/well |
| 2. | Oil Price | $11.10/Bbl. |
| 3. | Gas Price | $.23/mcf |
| 4. | GOR | 1820 cf/Bbl. |
| 5. | Taxes (Severence, Ad Valorum, etc.) | 6.5% |
| 6. | Revenue Interest | 87.5% ~~(min.)~~ max |
| 7. | Operating Cost/Bbl. | $.05/Bbl. (min.) |
| 8. | Revenue/Bbl. | $9.38 |
| 9. | Barrels Oil to Payout | 31,450 |
| 10. | Profit to Investment Ratio | |

$$\frac{\text{Revenue/Bbl.} \times \text{Reserves} \times \text{Risk}}{\text{Well Cost}}$$

For 80 Ac. = 3.29

For 40 Ac. = 1.64

reserves est @ 138,000 bbls per ~~40~~ 80 acres

assume 75% risk factor

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 7
CASE NO. 5217