PROPOSED AMENDMENT TO STATEWIDE RULES

104 B & 104 C

## RULE 104 B III

Amend current rule to read as follows:

Rule 104 B III Union, Harding and Quay Counties

(a) Wildcat $CO_2$ Gas Wells

In Union, Harding, and Quay Counties, a Wildcat well which is projected as a $CO_2$ well to the Tubb formation or older shall be located on a designated drilling tract consisting of 640 surface contiguous acres, more or less, substantially in the form of a square, being a legal subdivision of the U.S. Public Land Surveys being a governmental section, and shall be located not closer than 1650 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary.

(b) Wildcat Wells Other Than $CO_2$ Gas Wells

In Union, Harding and Quay Counties any Wildcat well, other than a $CO_2$ gas well shall be located on a tract consisting of approximately 40 surface contiguous acres substantially in the form of a square which is a legal subdivision of the U.S. Public Land Surveys, or on a governmental quarter - quarter section or lot and shall be located not closer than 330 feet to any boundary of such tract.

Re-designate current Rule 104 B III as Rule 104 B IV and add Union, Harding, and Quay Counties to the excepted counties. No other changes to this rule.

## RULE 104 C II (c)

Amend current rule to read as follows:

Rule 104 C II (c) Union, Harding, and Quay Counties

Unless otherwise provided in special pool rules, each development $CO_2$ well for a defined pool in the Tubb formation or older shall be located on a designated drilling tract consisting of 640 surface contiguous acres, more or less, substantially in a form of a square, being a legal subdivision of the U.S. Public Land Surveys being a governmental section, and shall be located not closer than 1650 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary.

## RULE 104 C II (d)

New Rule to read as follows:

Rule 104 C II (d) Union, Harding, and Quay Counties

Unless otherwise provided in special pool rules, each development well for a defined gas pool, other than a $CO_2$ gas pool, shall be located on a designated drilling tract consisting of 160 surface contiguous acres, more or less, substantially in the form of a square which is a quarter section, being a legal subdivision of the U.S. Public Land Surveys, and shall be located not closer than 660 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary nor closer than 1320 feet to the nearest well drilling to or capable of producing from the same pool.

Re-designate current Rule 104 C II (c) as Rule 104 C II (e) and add Union, Harding, and Quay Counties to the excepted counties. No other changes to this rule.

NMOCD Copy

CASE NO. 6823 (3/11/80)

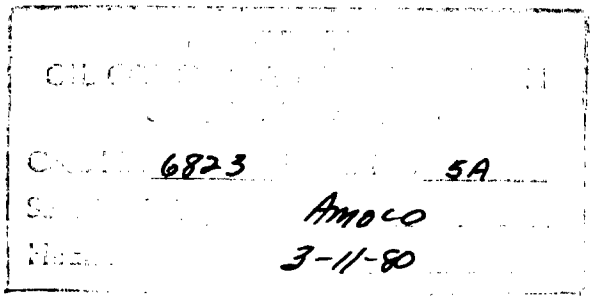
EXHIBITS 1, 5-10 A

State FD 1974 Interference Test Data
Bravo Dome Area

| Production | | Pressure Observation | |
|---|---|---|---|
| Days Prod. | Avg. Rate mcfpd | No. of Days Since Start of Test | Change in Bottom Hole Pressure, psi State FD. No. 2 |
| 0-7 | 1,450 | 0 | 0 |
| 7-14 | 965 | | |
| 14-21 | 904 | | |
| 21-28 | 1,139 | | |
| 28-35 | 1,413 | | |
| 35-42 | 1,034 | | |
| 42-49 | 833 | | |
| 49-56 | 850 | | |
| 56-63 | 821 | | |
| 63-70 | 645 | | |
| 70-77 | 698 | 72 | -1.5 |
| 77-84 | 711 | 79 | -1.6 |

* Rates are questionable due to scale build-up on well tester orifice plate.

LJS/cw
449/H3



1974 and 1979 Theoretical
Calculation of Bravo Dome Area Interference Test Results
(Based on a homogeneous and infinite system)

Basic Equation

$$\Delta P_{\text{obs well}} = \frac{70.6Q\mu B}{Kh} \; -E_i \left( - \frac{\emptyset h \mu c r^2}{.0252 Kh t} \right)$$

where Q = flow rate, mcfpd
$\mu$ = viscosity, cp
B = ReservoirVolume Factor, Bbl/mcf
Kh = permeability, md-ft.
$\emptyset$h = porosity feet, fraction
c = Compressibility, $psi^{-1}$
r = distance to observation well, ft.
t = time, days

State FI Test

Values used for theoretical curve

$\mu$ = .0161
B = 6.3
Kh = 3089 - 1974 test
= 3862 - 1979 test
$\emptyset$h = 25
c = $201 \times 10^{-5}$
r = 660

Theoretical calculation results

| Producing Time-Days | Calculated Pressure Change, psi 1974 Test | 1979 Test |
|---|---|---|
| 3 | -.36 | -.32 |
| 7 | -1.47 | -1.12 |
| 14 | -2.94 | -2.91 |
| 21 | -3.97 | -3.99 |
| 45 | | -6.22 |

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449/H3

Heimann Test

Values used for theoretical curve same as State FI except

Kh = 2,226 for both 1974 and 1979 test

Theoretical calculation results

| Producing Time-Days | Calculated Pressure Change, psi 1974 Test | 1979 Test |
|---|---|---|
| 3 | -.19 | -.11 |
| 7 | -1.27 | -.75 |
| 14 | -2.95 | -1.55 |
| 28 | -5.33 | -3.19 |
| 63 | -8.68 | -5.26 |
| 111 | -10.47 | |
| 158 | | -6.06 |

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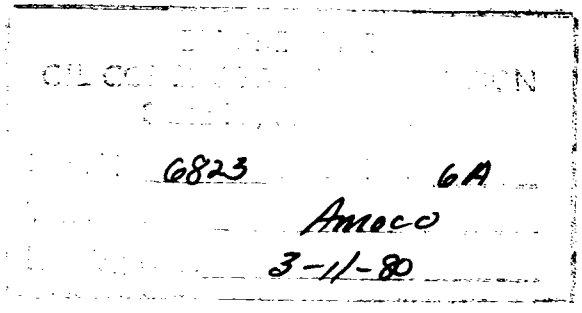
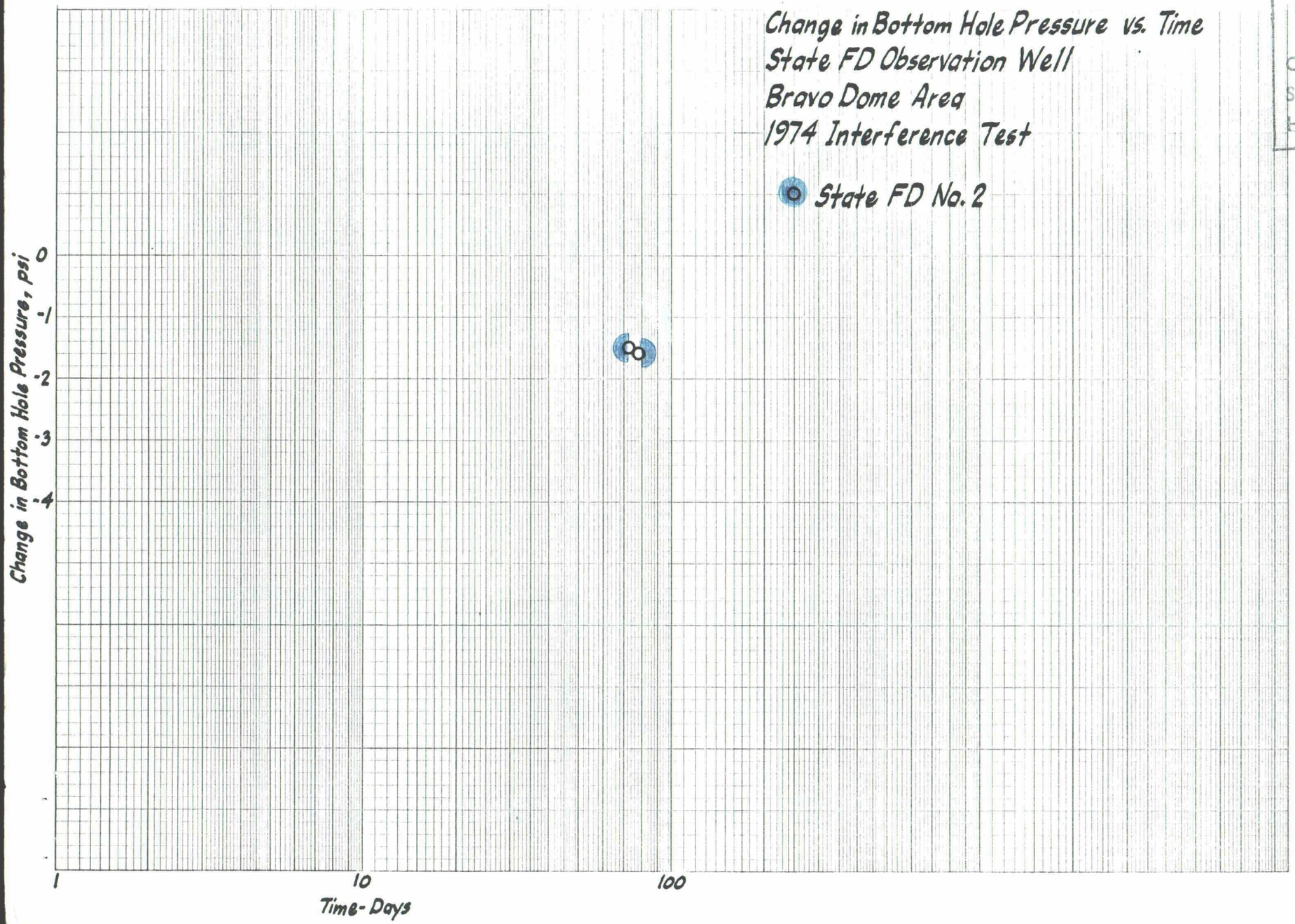
449/H4

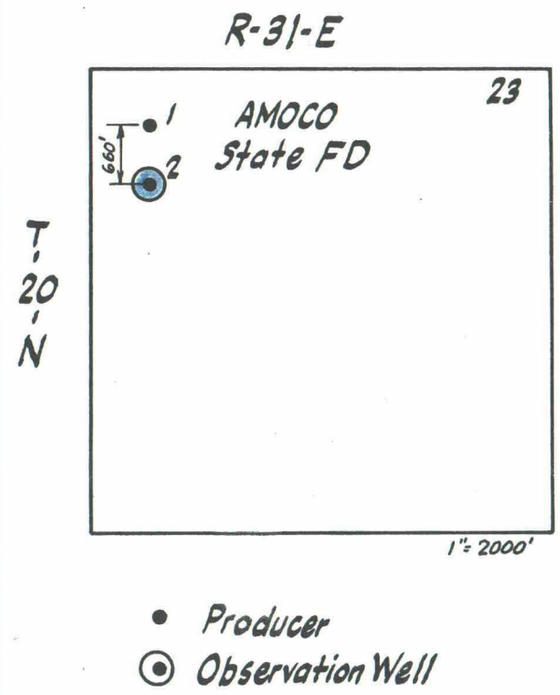


BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 6823 Exhibit No. 5
Submitted by Amoco
Hearing Date 3-11-80

## Change in Bottom Hole Pressure vs. Time
## State FD Observation Well
## Bravo Dome Area
## 1974 Interference Test

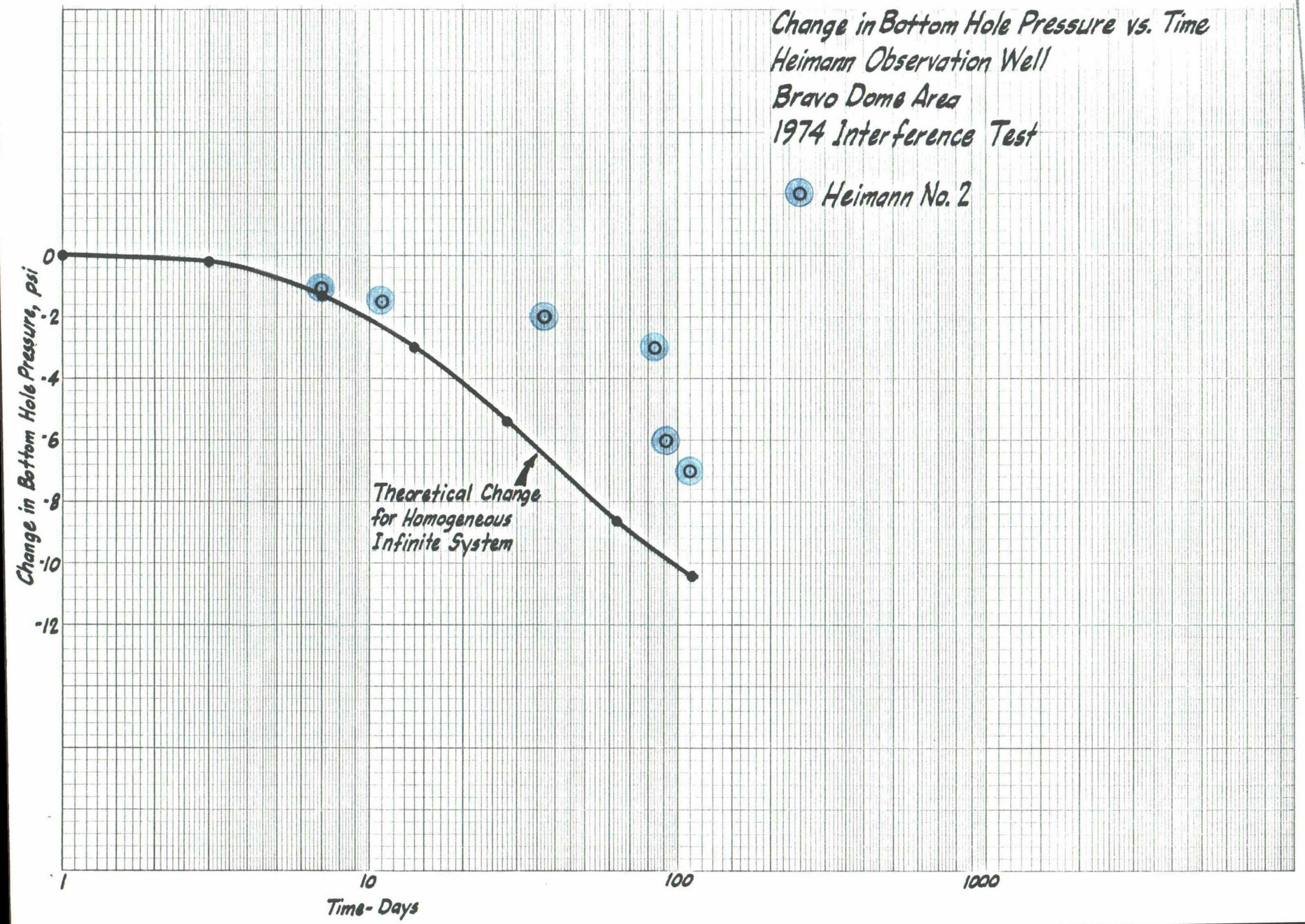
State FD No. 2

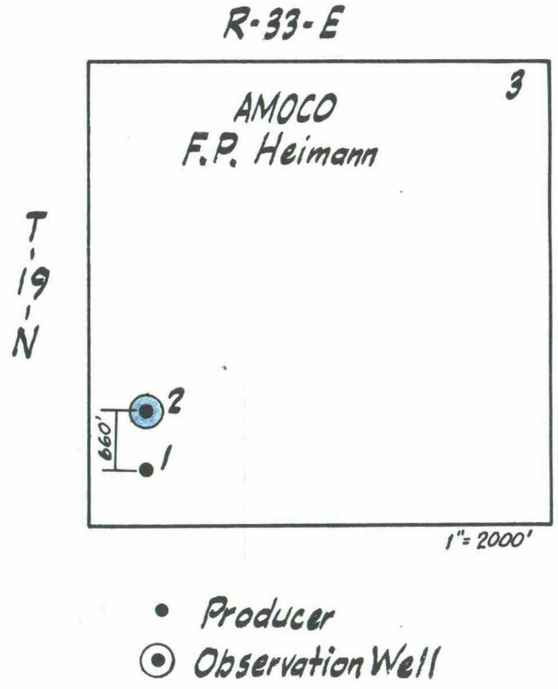



- Producer
- Observation Well

# Change in Bottom Hole Pressure vs. Time
## Heimann Observation Well
## Bravo Dome Area
## 1974 Interference Test

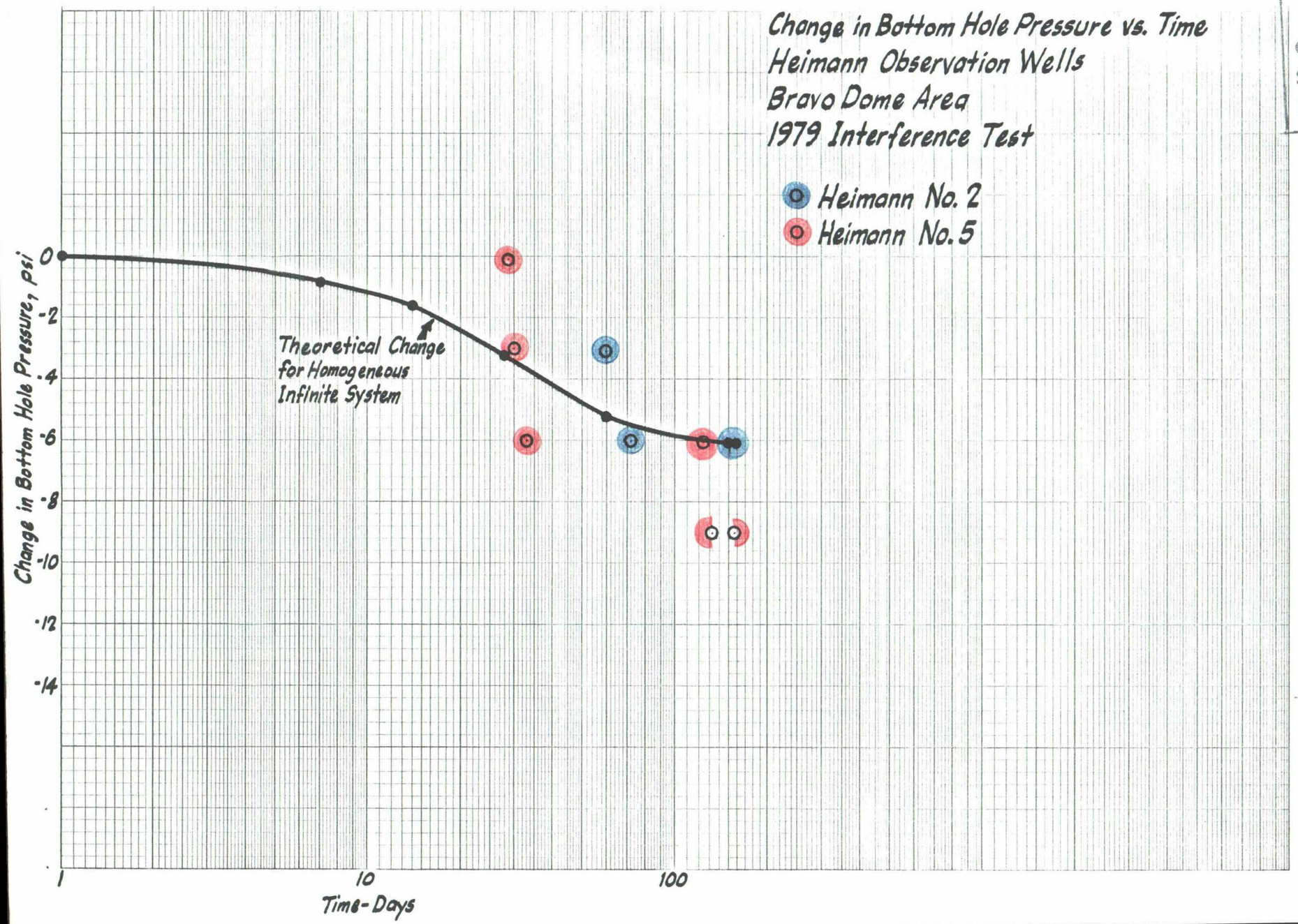


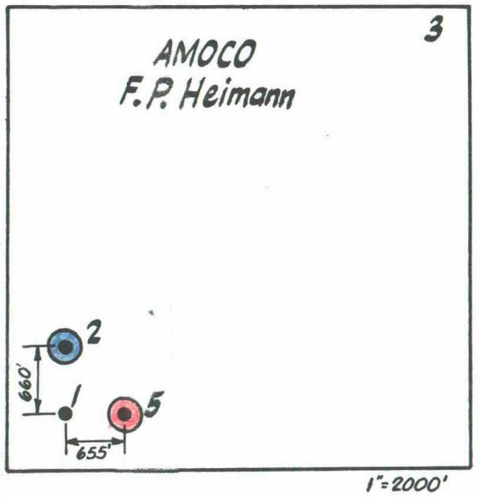

- Producer
- Observation Well

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 6823 Exhibit No. 8
Submitted by Amoco
Hearing Date 3-11-80

# Change in Bottom Hole Pressure vs. Time
## Heimann Observation Wells
## Bravo Dome Area
## 1979 Interference Test



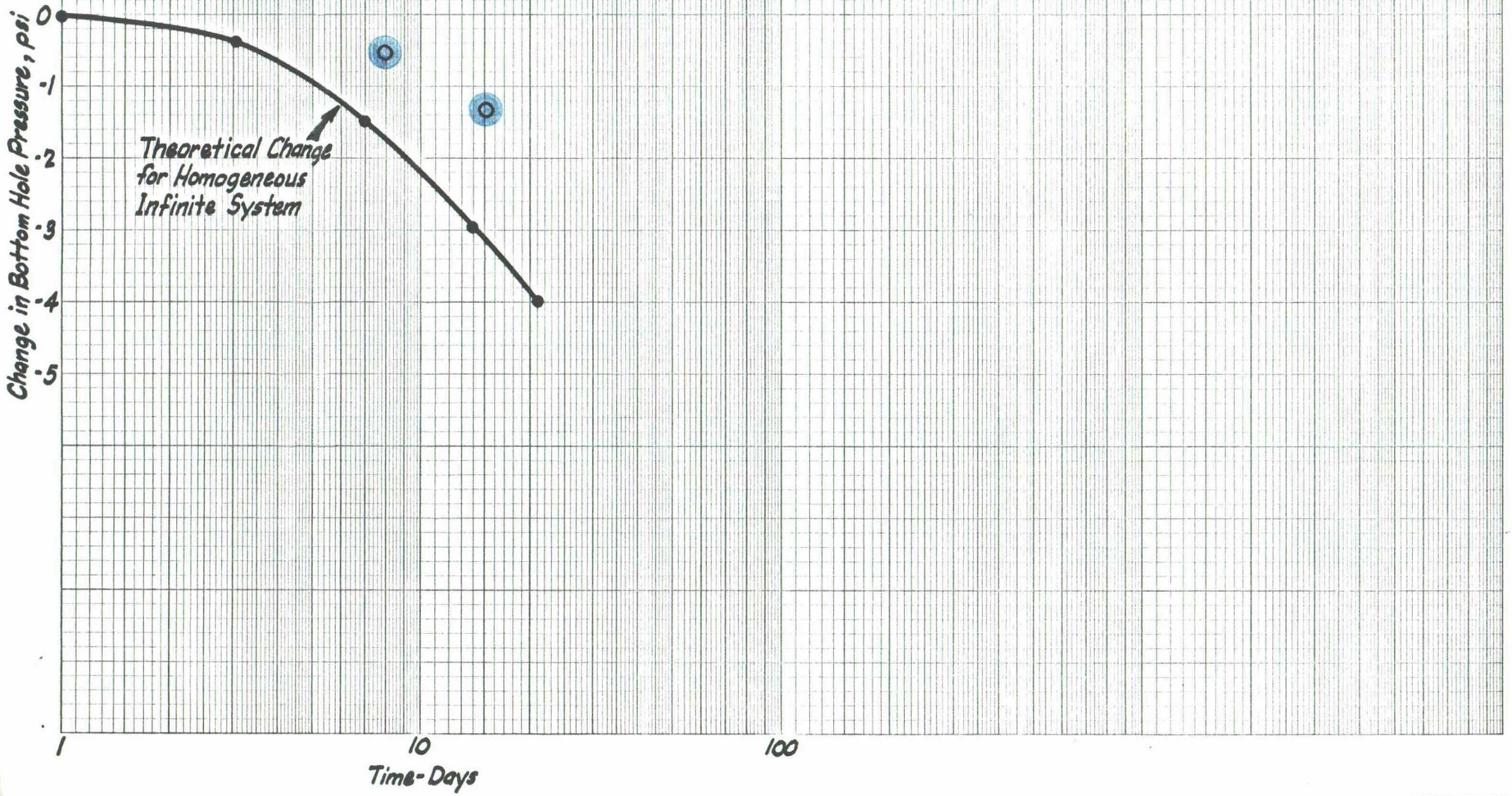

R-33-E

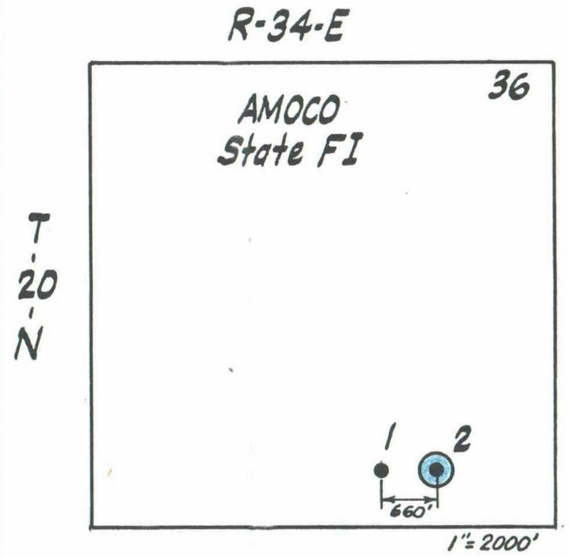



- Producer
- Observation Well

# Change in Bottom Hole Pressure vs. Time
## State FI Observation Well
## Bravo Dome Area
## 1974 Interference Test

FI No. 2

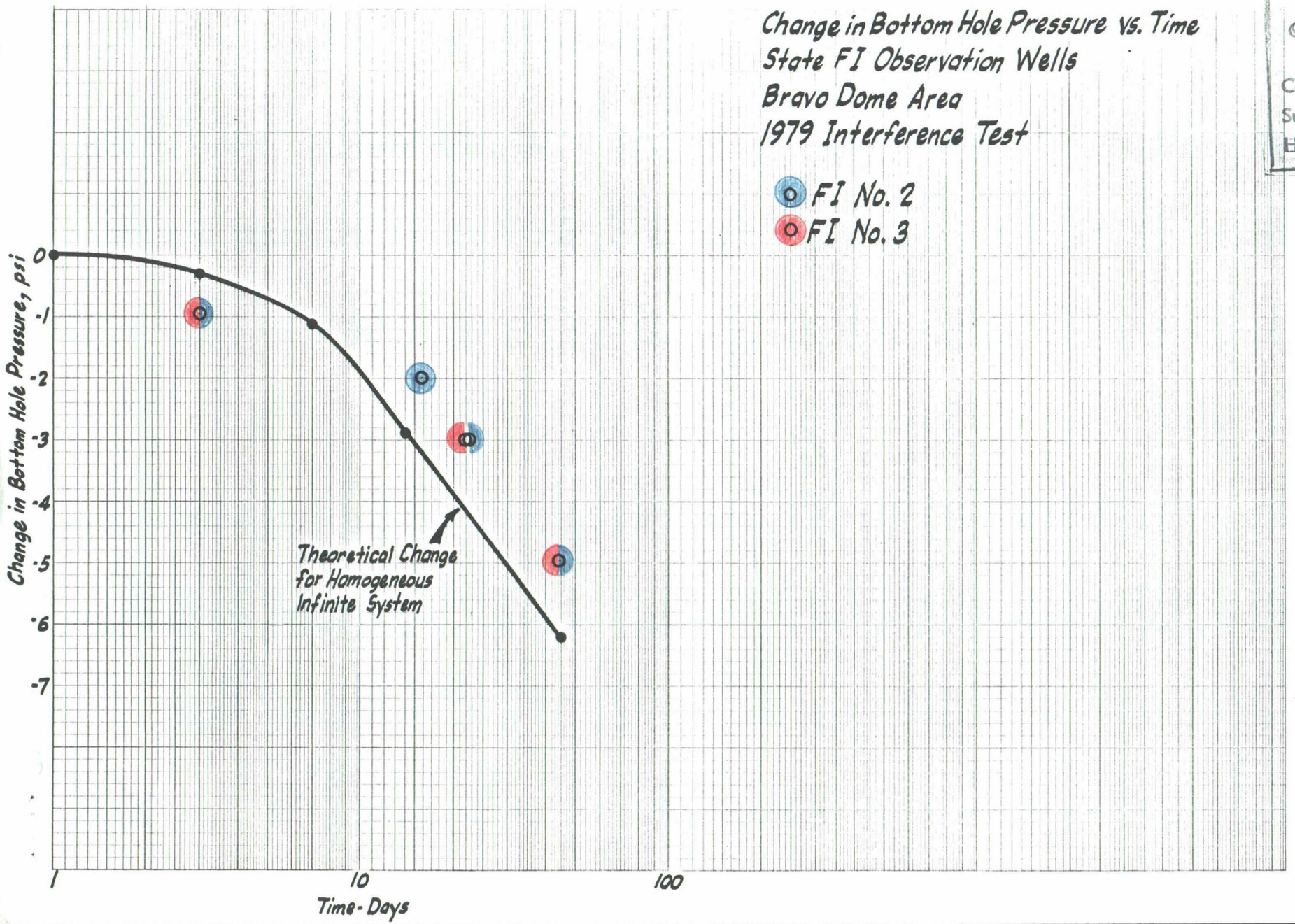


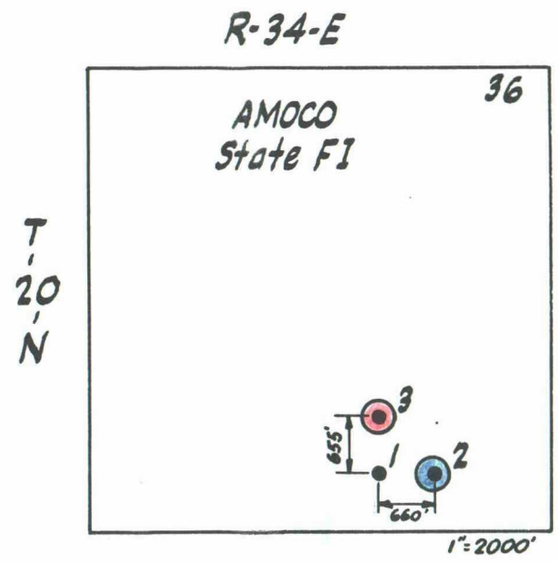




- Producer
- Observation Well

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 6823 Exhibit No. 10
Submitted by Amoco
Hearing Date 3-11-80

# Change in Bottom Hole Pressure vs. Time
## State FI Observation Wells
## Bravo Dome Area
## 1979 Interference Test




- Producer
- Observation Well

State FI 1974 Interference Test Data
Bravo Dome Area

| Production | | Pressure Observation | |
|---|---|---|---|
| Days Prod. | Avg. Rate mcfpd | No. of Days Since Start of Test | Change in Bottom Hole Pressure, psi State FI. No. 2 |
| 0-7 | 1,559 | 0 | 0 |
| 7-14 | 1,453 | 8 | -.5 |
| 14-21 | 1,488 | 15 | -1.3 |

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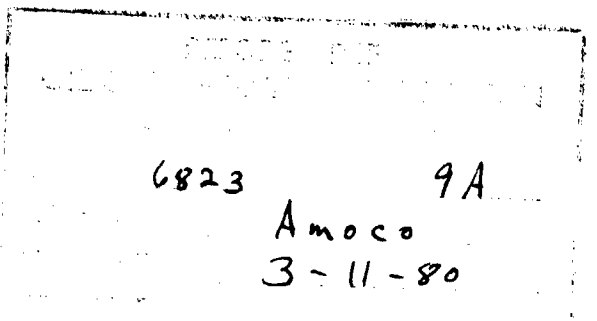
449/H



# Heimann 1979 Interference Test Data
## Bravo Dome Area

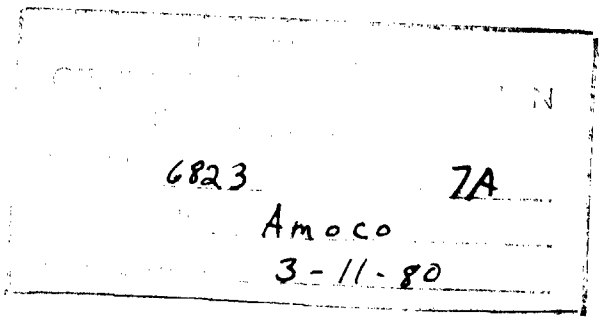
| Production | | Pressure Observation | | |
|---|---|---|---|---|
| | | | Change in Bottom Hole Pressure, psi | |
| Days Prod. | Avg. Rate mcfpd | No. of Days Since Start of Test | Heimann No. 2 | Heimman No. 5 |
| 0-7 | 896 | 0 | 0 | 0 |
| 7-14 | 657 | | | |
| 14-21 | 977 | | | |
| 21-28 | 1,028 | | | |
| 28-35 | 950 | 29 | 0 | 0 |
| | | 30 | 0 | -3.0 |
| | | 33 | 0 | -6.0 |
| 35-42 | 938 | | | |
| 42-49 | 950 | | | |
| 49-56 | 871 | | | |
| 56-63 | 852 | 60 | -3.0 | -6.0 |
| 63-70 | 856 | | | |
| 70-77 | 765 | 72 | -6.0 | -6.0 |
| 77-84 | 723 | | | |
| 84-91 | 588 | | | |
| 91-98 | 702 | | | |
| 98-105 | 722 | | | |
| 105-112 | 744 | | | |
| 112-119 | 759 | | | |
| 119-126 | 638 | | | |
| 126-133 | 637 | 127 | | -6.0 |
| 133-140 | 679 | 134 | -6.0 | -9.0 |
| 140-147 | 722 | | | |
| 147-154 | 597 | | | |
| 154-158 | 210 | 156 | -6.0 | -9.0 |

LJS/cw
449/H5

Heimann 1974 Interference Test Data
Bravo Dome Area

| Production | | Pressure Observation | |
|---|---|---|---|
| Days Prod. | Avg. Rate mcfpd | No. of Days Since Start of Test | Change in Bottom Hole Pressure, psi Heimann No. 2 |
| 0-7 | 1,494 | 0 | 0 |
| | | 7 | -1.0 |
| 7-14 | 1,519 | 11 | -1.5 |
| 14-21 | 1,519 | | |
| 21-28 | 1,504 | | |
| 28-35 | 1,472 | | |
| 35-42 | 1,410 | 37 | -2.0 |
| 42-49 | 1,460 | | |
| 49-56 | 1,519 | | |
| 56-63 | 1,448 | | |
| 63-70 | 1,451 | | |
| 70-77 | 1,399 | | |
| 77-84 | 1,395 | | |
| 84-91 | 1,453 | 85 | -3.0 |
| 91-98 | 1,410 | 94 | -6.1 |
| 98-105 | 1,333 | | |
| 105-111 | 1,279 | 111 | -7.0 |

LJS/cw
447/H4



State FI 1979 Interference Test Data
Bravo Dome Area

| Production | | Pressure Observation | | |
|---|---|---|---|---|
| | | No. of Days | Change in Bottom Hole Pressure, psi | |
| Days Prod. | Avg. Rate mcfpd | Since Start of Test | State FI. No. 2 | State FI No. 3 |
| 0-7 | 1,449 | 0 | 0 | 0 |
| 7-14 | 1,699 | 3 | -1.0 | -1.0 |
| 14-45 | 1,688 | 16 | -2.0 | -1.0 |
| | | 22 | -2.0 | -3.0 |
| | | 23 | -3.0 | -3.0 |
| | | 40 | -5.0 | -5.0 |
| | | 45 | -5.0 | -5.0 |

LJS/cw
449/H2