Dockets Nos. 26-77 and 27-77 are tentatively set for hearing on August 17 and 31, 1977. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 3, 1977

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Daniel S. Nutter, Examiner, or Richard L. Stamets, Alternate Examiner:

CASE 4962: (Reopened) (Continued from July 6, 1977 Examiner Hearing)

In the matter of Case 4962 being reopened pursuant to the provisions of Order No. R-4538 which order established temporary special pool rules for the Peterson-Pennsylvanian Associated Pool, Roosevelt County, New Mexico. All interested parties may appear and show cause why said temporary special pool rules should not be rescinded.

CASE 5974: (Continued from July 6, 1977 Examiner Hearing)

Application of Maddox Energy Corporation for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pennsylvanian formation underlying the E/2 of Section 9, Township 18 South, Range 26 East, Atoka-Pennsylvanian Pool, Eddy County, New Mexico, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 5981: (Continued from July 6, 1977 Examiner Hearing)

Application of W. A. Moncrief, Jr., for pool creation and special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of an oil pool for Upper-Pennsylvanian production for his State Well No. 1 located in Unit E of Section 26, Township 16 South, Range 33 East, Lea County, New Mexico, and the promulgation of special rules therefor, including a provision for 80-acre spacing.

CASE 6001: Application of Mesa Petroleum Co. for an exception to Order No. R-5459, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an exception to the provisions of Order No. R-5459 to exclude its Primo Well No. 1-A located in Unit D of Section 6, Township 31 North, Range 10 West, San Juan County, New Mexico, from the vertical limits of the Blanco-Mesaverde Pool as defined by said order.

CASE 6002: Application of New Mexico Salt Water Disposal Company, Inc., for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Bough formation in its Read & Stevens Skelly State Well No. 1 located in Unit H of Section 10, Township 10 South, Range 33 East, Lea County, New Mexico.

CASE 6003: Application of Aztec Oil & Gas Company for an unorthodox gas well location, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Arizona Jicarilla B Well No. 8 to be located in the NW/4 of Section 9, Township 26 North, Range 5 West, Blanco Mesaverde Pool, Rio Arriba County, New Mexico, this being the first Mesaverde well on its proration unit, the W/2 of said Section 9.

CASE 6004: Application of El Paso Natural Gas Company for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of South Blanco-Pictured Cliffs and Blanco Mesaverde production in the wellbore of its San Juan 28-7 Unit Well No. 76 located in Unit A of Section 22, Township 28 North, Range 7 West, Rio Arriba County, New Mexico.

CASE 6005: Application of J. M. Huber Corporation for a non-standard unit or compulsory pooling. Eddy County, New Mexico. Applicant, in the above-styled cause, proposes to drill its Parr Well No. 1 to the Delaware formation at a point 990 feet from the South and East lines of Section 15, Township 23 South, Range 26 East, Eddy County, New Mexico, and, for said well, seeks approval for a 39-acre non-standard oil proration unit comprising all of the SE/4 SE/4 of said Section, except that tract of land owned by Mr. Monk Lofton and described as being one acre, more or less, lying immediately North of the South line of said Section 15 and immediately East of the Eastern boundary of the right of way of U. S. Highways Nos. 62 and 180; in the alternative, applicant seeks an order pooling all mineral interests in the Delaware formation underlying the SE/4 SE/4 of said Section 15 to form a standard 40-acre unit to be dedicated to the aforesaid well. If said well is classified as a gas well, applicant seeks approval for a 159-acre non-standard gas

proration unit comprising all of the SE/4 of said Section 15 except the above-described one-acre tract, or in the alternative, an order pooling all mineral interests in the Delaware formation underlying the SE/4 of said Section 15 to form a standard 160-acre unit to be dedicated to the aforesaid well. If either of the above-described pooling orders is entered, also to be considered will be the cost of drilling and completing the unit well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6006: In the matter of the application of the Oil Conservation Commission of New Mexico upon its own motion for the creation, contraction, and extension of certain pools in Chaves, Eddy, Lea, and Roosevelt Counties, New Mexico.

(a) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Delaware production and designated as the Brynes Tank-Middle Delaware Gas Pool. The discovery well is the Hanagan Petroleum Corporation Newman Well No. 1 located in Unit O of Section 7, Township 23 South, Range 26 East, NMPM. Said pool would comprise:

TOWNSHIP 23 SOUTH, RANGE 26 EAST, NMPM
Section 7: SE/4

(b) CREATE a new pool in Chaves County, New Mexico, classified as an oil pool for San Andres production and designated as the Calumet-San Andres Pool. The discovery well is the Elk Oil Company Dexter State Well No. 1 located in Unit D of Section 36, Township 12 South, Range 26 East, NMPM. Said pool would comprise:

TOWNSHIP 12 SOUTH, RANGE 26 EAST, NMPM
Section 36: NW/4

(c) CREATE a new pool in Chaves County, New Mexico, classified as a gas pool for Morrow production and designated as the Carson-Morrow Gas Pool. The discovery well is Maralo, Inc. Chavelea-Carson Well No. 1 located in Unit F of Section 10, Township 9 South, Range 31 East, NMPM. Said pool would comprise:

TOWNSHIP 9 SOUTH, RANGE 31 EAST, NMPM
Section 10: N/2

(d) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Cisco production and designated as the South Kemnitz-Cisco Pool. The discovery well is the W. A. Moncrief, Jr., State Well No. 1 located in Unit E of Section 26, Township 16 South, Range 33 East, NMPM. Said pool would comprise:

TOWNSHIP 16 SOUTH, RANGE 33 EAST, NMPM
Section 26: W/2
Section 27: S/2

(e) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Wolfcamp production and designated as the South Paduca-Wolfcamp Gas Pool. The discovery well is the Texaco Inc. Cotton Draw Unit Well No. 68 located in Unit F of Section 12, Township 25 South, Range 31 East, NMPM. Said pool would comprise;

TOWNSHIP 25 SOUTH, RANGE 31 EAST, NMPM
Section 12: W/2

(f) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Queen production and designated as the Reeves-Queen Pool. The discovery well is the Honeysuckle Exploration Corporation State 22 Well No. 1 located in Unit P of Section 22, Township 18 South, Range 35 East, NMPM. Said pool would comprise:

TOWNSHIP 18 SOUTH, RANGE 35 EAST, NMPM
Section 22: SE/4

(g) CREATE a new pool in Roosevelt County, New Mexico, classified as an oil pool for San Andres production and designated as the Tomahawk-San Andres Pool. The discovery well is the Sundance Oil Company Cone "31" Federal Well No. 1 located in Unit A of Section 31, Township 7 South, Range 32 East, NMPM. Said pool would comprise:

TOWNSHIP 7 SOUTH, RANGE 32 EAST, NMPM
Section 31: NE/4

ECONOMIC PARAMETERS FOR DRILLING
PETERSON PENNSYLVANIAN ASSOCIATED POOL

COST TO DRILL AND COMPLETE	$300,000
COST OF PUMPING EQUIPMENT	$ 25,000
OPERATING COSTS (24 MONTHS @ $1000/MONTH)	$ 24,000
TOTAL COST TO DRILL AND OPERATE	$349,000

RESERVOIR PARAMETERS (Pore Volume Estimates)

Average Øh	0.304
Average Water Saturation	31.5%
Average Recovery	50%
RVF	1.866

$$\text{Oil Recovery/Acre} = \frac{.304 \times (1-.315) \times 7758 \times .50}{1.866}$$

$$= 433$$

$$\text{Solution Gas Recovery/Ac} = 433 \times 1510 \times 1.8$$

$$= 1176$$

$$\text{Value/Acre Drained} = 433\,(11.65)(.875)(.92) + 1176(1.75)(.875)(.92)$$

$$= \$4061 + 1656$$

$$= \$5717$$

Acreage Drained to Get ROI = 0

$$\frac{\$349,000}{\$5,717} = 61 \text{ Acres}$$

If Adjusted by Ratio of Pore Volume to Material Balance Oil in Place Numbers (1.14) 54 Acres

BEFORE THE OIL CONSERVATION COMMISSION
Amoco EXHIBIT NO. 27
CASE NO. 4962 Reopened
Submitted by Rice
Hearing Date 8/3/77

Calculation of Drainage Radius From June 1977 Bottom Hole Pressure Build-up Test

Peterson C No. 1
Peterson Field, Main Cisco Pay
Roosevelt, New Mexico

The last measured point on the June 1977 pressure build-up test was at 604.5 hours. The pressure value at this time appears to still be on the straight line portion of the build-up curve. Therefore this time can be used to estimate a minimum drainage radius.

Two methods will be used. The first will be from SPE Monograph No. 1, Page 116, and the second one is from an article by Hurst Haynie, and Walker on Page 62 in the August 1962 Petroleum Engineer.

The basic equation is as follows:

$$r_{inv} = \sqrt{C \left(\frac{K}{\mu}\right)_t \frac{t}{\emptyset C_t}}$$

Where C - .00105 for the first method and .00184 for the second

$\left(\frac{K}{\mu}\right)_t$ - total mobility md/cp from the build-up data = 34.83

t - time in hours - 604.5

$\emptyset$ - porosity, fraction = 0.0589

C_t - total compressibility = 250×10^{-6}

First Method

$$r_{inv} = \sqrt{\frac{.00105 \times 34.83 \times 604.5}{.0589 \times 250 \times 10^{-6}}} = 1225'$$

$$Acres_{inv} = \frac{\pi r^2}{43560} = \frac{\pi \overline{1225}^2}{43560} = 108$$

Second Method

$$r_{inv} = \sqrt{\frac{.00184 \times 34.83 \times 604.5}{.0589 \times 250 \times 10^{-6}}} = 1622'$$

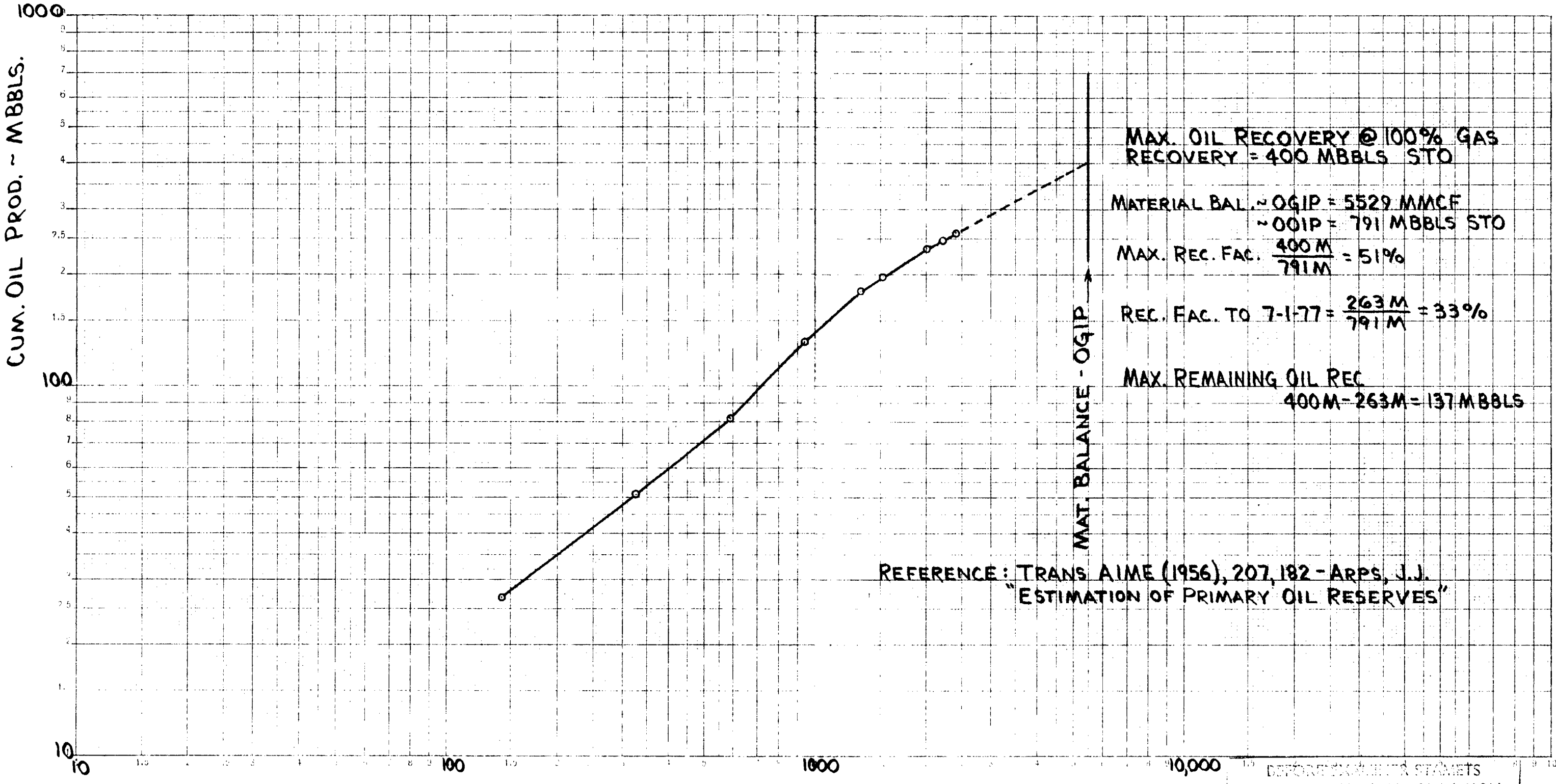
$$Acres_{inv} = \frac{\pi^2}{43560} = \frac{\pi \overline{1622}^2}{43560} = 190$$

Conclusion: Minimum Area - 108 acres
Maximum Area = 190 acres
Average of Two Calculations = 149 acres

LJS/js
4/0692

EXHIBITS AND STATEMENTS
OIL CONSERVATION COMMISSION
Amoco EXHIBIT NO. 26
CASE NO. 4962 (REOPENED)
Submitted by RICE
Hearing Date 8-3-77

PETERSON FIELD
ROOSEVELT CO., NEW MEXICO
CISCO MAIN PAY
PERFORMANCE HISTORY

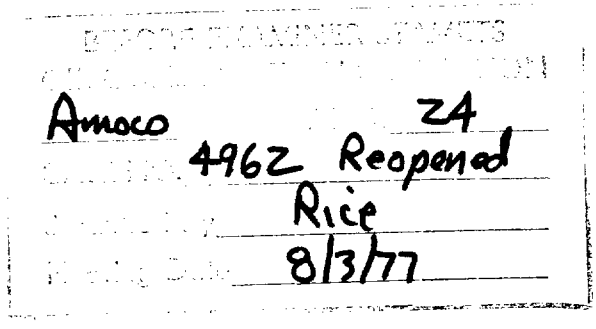


DEFENDANT'S EXHIBITS
OIL CONSERVATION COMMISSION
Amoco Exhibit No. 25
Case No. 4962 (Re-opened)
Submitted by: RICE
Hearing Date 8-3-77

Peterson Field
Cisco Main Reservoir
Roosevelt County, New Mexico

Comparison of OIP Hydrocarbons

	Pore Volume	Oil Material Balance	Gas Material Balance
Cap Gas-MMCF	3809	4335	5007
Soln Gas-MMCF	1043	1194	
Oil-M Bbls	695	791	
Total Gas-MMCF	4852	5529	5007
Deviation from Pore Volume - Gas	1.00	1.14	1.03
- Oil	1.00	1.14	



Peterson Field
Cisco Main Reservoir
Roosevelt County, Texas

Material Balance Assuming
Volumetrically Controlled Gas Reservoir

$$Vo = Vp\left[\frac{Po/Zo}{Po/Zo - P/Z}\right]$$

Date	Res. Press. PSIA	Z	Cum. Gas Prod.-MCF*	Vo calc. MMCF
Original	2723	0.779	0	
4-1-76	2692	0.777	35695	4038
2-5-77	1906	0.782	1564054	5167
3-5-77	1696	0.793	1772787	4567
6-25-77	1515	0.807	2446998	5286
OGIP =	Avg. last 3 points		=	5007 MMCF

* Includes gas equivalent to condensate - full well stream.

Peterson Field
Cisco Main Reservoir
Roosevelt County, New Mexico

Material Balance Assuming
Volumetrically Controlled Oil Reservoir

Date	Res. Press psia	Z	B= RVF	S= Soln GOR	Cum. Prod. Oil M Bbls	Cum. Prod. Gas MMCF*	N OOIP M Bbls
Original	2723	0.779	1.866	1510	0	0	
4-1-76	2692	0.777	1.858	1490	13	35	717
2-5-77	1906	0.782	1.688	1140	199	1538	835
3-5-77	1696	0.793	1.640	1050	201	1727	718
6-25-77	1515	0.807	1.598	970	263	2394	822

Avg Last 3 points = 791

Tf = 140°F
Pb = 15.025 psia
Tb = 60°F

M = 2.59433

$$N = \frac{[Bt + (Rn - So)\alpha]\, n}{(Bt - Bo) + MBo\, \frac{[\alpha - \alpha o]}{[\alpha o]}}$$

$$\alpha = \frac{(15.025)(Tf)(Z)(1)}{(520)(5.6146)(P)}$$

$$Bt = B + (So - 5)\alpha$$

Gas Cap = (2.59433)(791 M)(1.866)(5.6146)
= 21.5 MMCF @ Res. Conditions

$$\frac{(2723)(21.5\ MM)}{(0.779)(600)} = \frac{(15.025)(V)}{(1)(520)}$$

OGIP = V = 4335 MMCF @ S.C.
Soln gas = (1.51)(791) = 1194 MMCF @ S.C.
Total OGIP = 5529 MMCF @ S.L.

*Includes gas equivalent to condensate-full well stream

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
Amoco Exhibit No. 22
Case No. 4962 (Reopened)
Submitted by: RICE
Hearing Date: 8-3-77

PETERSON FIELD
CISCO MAIN PAY
RESERVOIR PERFORMANCE HISTORY
ROOSEVELT COUNTY, NEW MEXICO

RESERVOIR PRESSURE - PSIG @ -3310

2800 2700 2600 2500 2400 2300 2200 2100 2000 1900 1800 1700 1600 1500 1400 1300 1200 1100 1000 900 800

8-25-71

12-30-72

Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.

Year of 1976 Year of 1977

1. PETERSON "A" No. 1
2. PETERSON "C" No. 1
3. RADCLIFF No. 1
4. SWEARINGEN "D" No. 1

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION
Amoco EXHIBIT NO. 21
CASE NO. 4962 Reopened
Submitted by Rice
Hearing Date 8/3/77

Peterson C No. 1
June 1977 BHP Buildup
Peterson Field
Main Cisco Pay
Roosevelt County, New Mexico
t = 19008 hours

Shut in Time	$(t + \Delta t)/\Delta t$	BHP @ -3289
	Line parted after bomb was first placed in well. Reliable data starts at 77 hours.	
77		1083
80	239	1086
100	191	1099
130	147	1123
150	128	1134
190	101	1164
245	79	1176
311.25	62	1191
400	49	1210
431.25	45	1215
500	39	1228
540	36	1235
604.5	32	1241
748.5	26	1250

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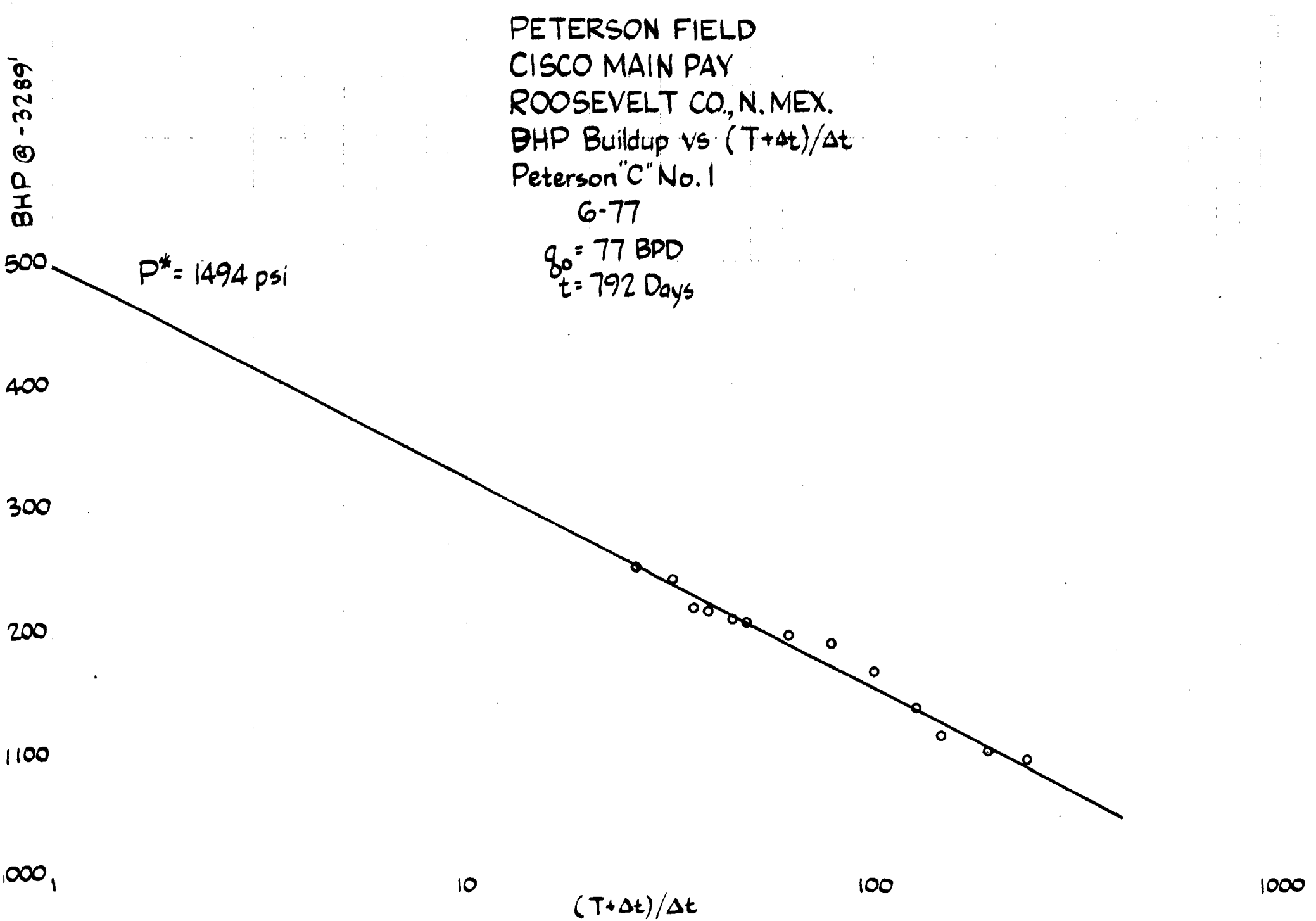
PETERSON FIELD
CISCO MAIN PAY
ROOSEVELT CO., N. MEX.
BHP Buildup vs (T+Δt)/Δt
Peterson "C" No. 1
6-77
q_o = 77 BPD
t = 792 Days
P* = 1494 psi
BHP @ -3289'
500
400
300
200
1100
1000
1
10
100
1000
(T+Δt)/Δt

Swearingen D No. 1
March 1977 BHP Buildup
Peterson Field
Main Cisco Pay
Roosevelt County, New Mexico
t = 3672 hours

Shut in Time	$(t + \Delta t)/\Delta t$	BHP @ - 3224
22	168	1600
25	148	1602
30	123	1607
40	93	1612
50	74	1616
60	62	1619
70	53	1621
80	47	1623
90	42	1626
94	40	1628

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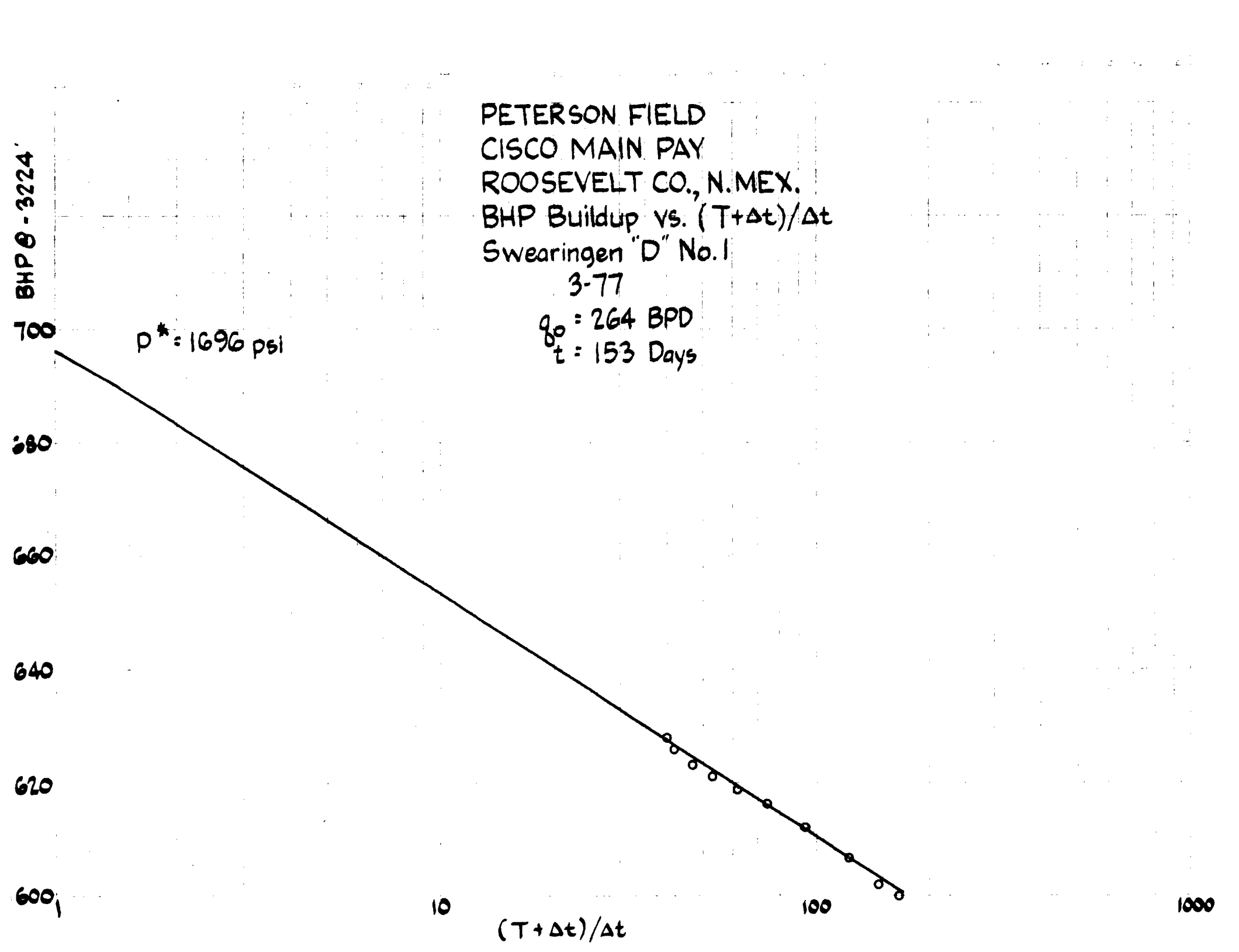
PETERSON FIELD
CISCO MAIN PAY
ROOSEVELT CO., N.MEX.
BHP Buildup vs. (T+Δt)/Δt
Swearingen "D" No.1
3-77
q_o = 264 BPD
t = 153 Days
p* = 1696 psi
BHP @ -3224'
700
680
660
640
620
600
1
10
100
1000
(T+Δt)/Δt

Peterson A Gas Comm No. 1
March 1977 BHP Buildup
Peterson Field
Main Cisco Pay
Roosevelt County, New Mexico
t = 5352 hours

Shut in Time	$(t + \Delta t)/\Delta t$	BHP @ -3131
21	256	1523
25	215	1525
30	179	1525
40	135	1528
50	108	1531
60	90	1534
70	77	1537
80	68	1540
90	60	1542
95	57	1542

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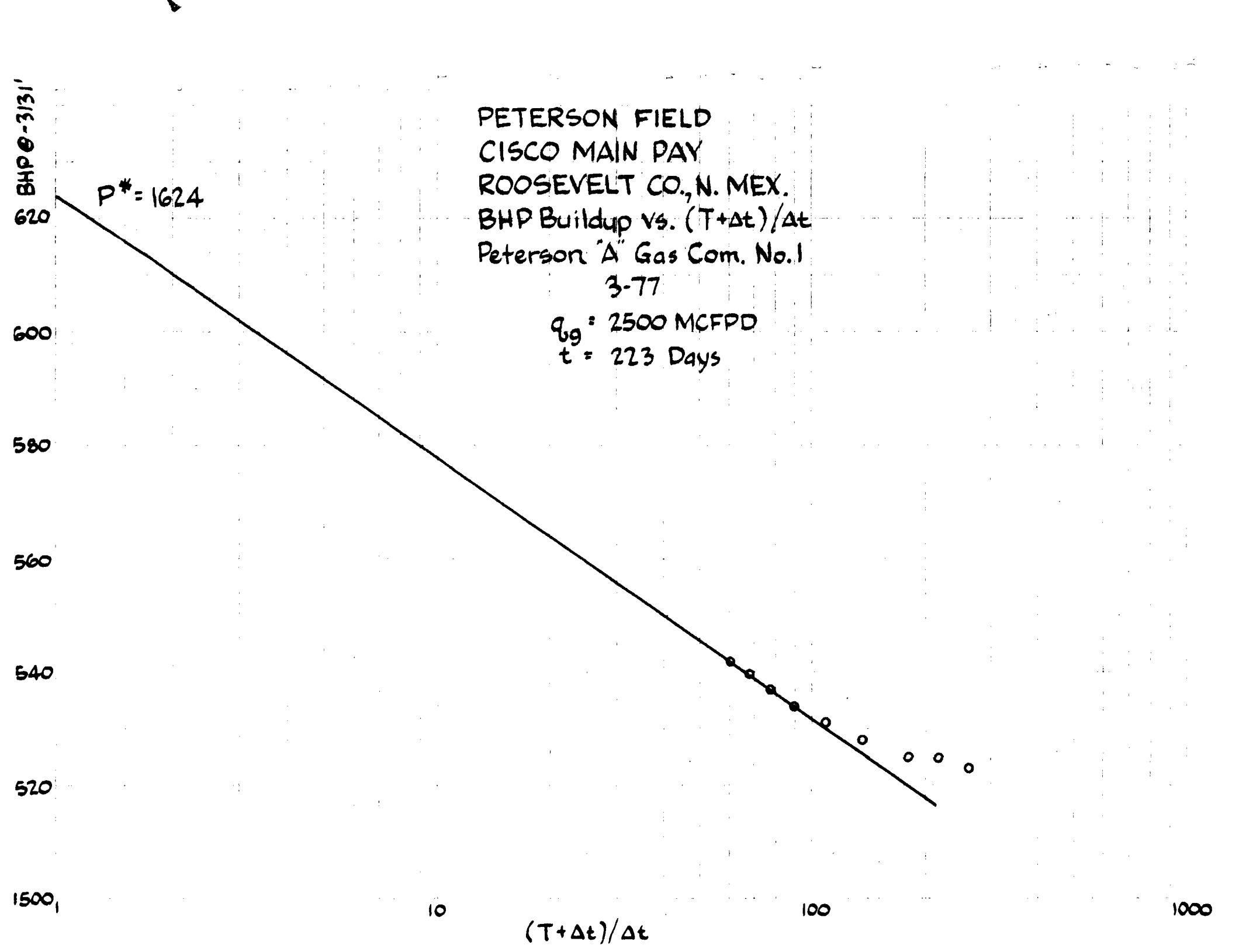
1/06


PETERSON FIELD
CISCO MAIN PAY
ROOSEVELT CO., N. MEX.
BHP Buildup vs. (T+Δt)/Δt
Peterson "A" Gas Com. No.1
3-77
q_g = 2500 MCFPD
t = 223 Days
P* = 1624
BHP @ -3131'
620
600
580
560
540
520
1500
10
100
1000
(T+Δt)/Δt

Radcliff No. 1
February 1977 BHP Buildup
Peterson Field
Main Cisco Pay
Roosevelt County, New Mexico
t = 5568 hours

Shut in Time	$(t + \Delta t)/\Delta t$	BHP @ - 3198
1	5569	1223
2	2785	1298
3	1393	1393
8	697	1486
10	558	1507
12	465	1526
15	372	1544
20	279	1567
30	187	1591
40	140	1605
50	112	1614
60	94	1623
70	81	1630
73.5	77	1635

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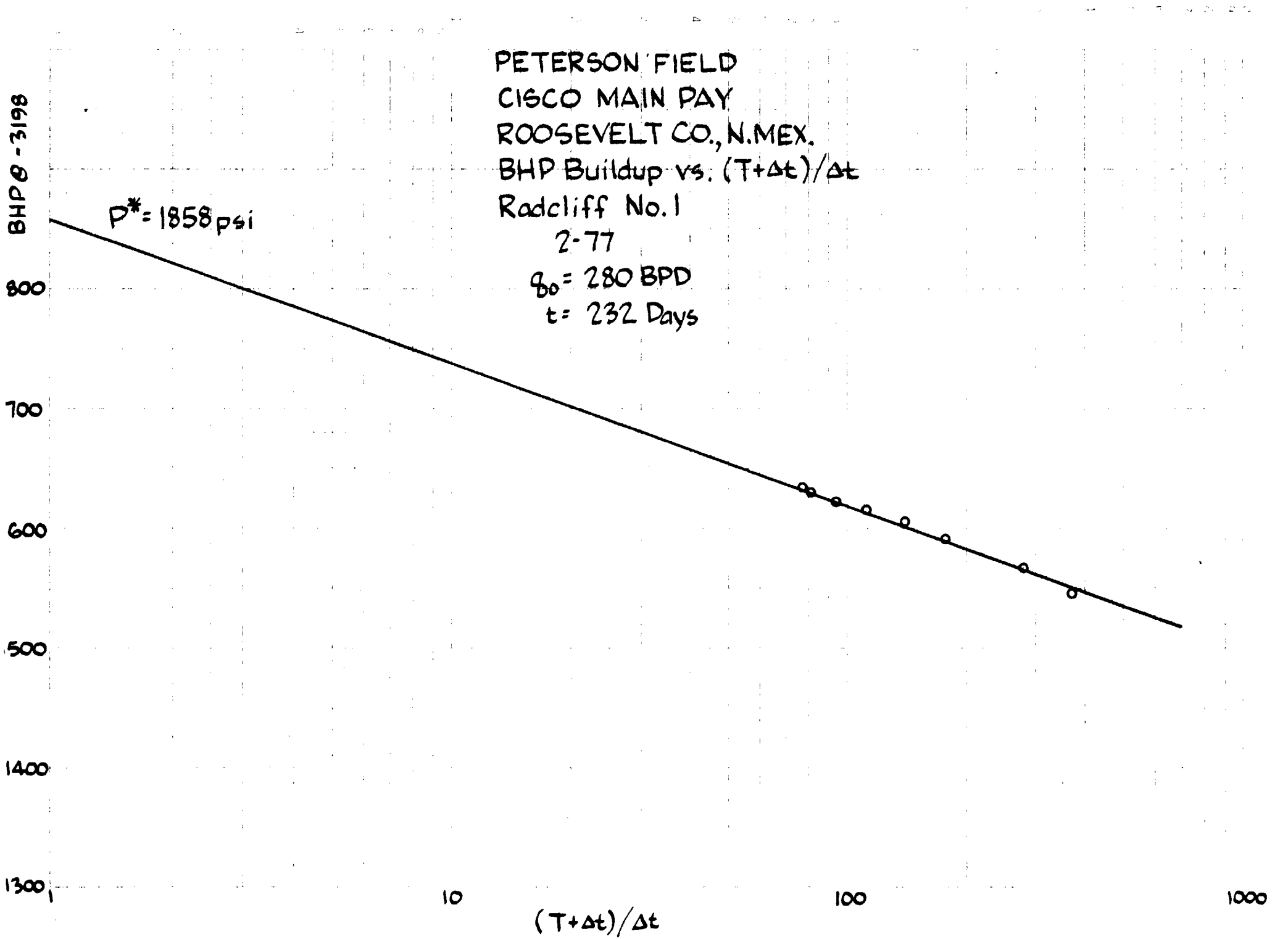
PETERSON FIELD
CISCO MAIN PAY
ROOSEVELT CO., N.MEX.
BHP Buildup vs. (T+Δt)/Δt
Radcliff No. 1
2-77
q_{bo} = 280 BPD
t = 232 Days
P^* = 1858 psi
BHP @ -3198
800
700
600
500
1400
1300
1
10
100
1000
(T+Δt)/Δt

Peterson C No. 1
December 1972 BHP Buildup
Peterson Field
Main Cisco Pay
Roosevelt County, New Mexico
t = 527.72 hours

Shut in Time	$(t + \Delta t)/\Delta t$	BHP @ - 3289
1.98	268	2619
3.00	177	2627
4.00	133	2629
5.0	107	2629
6.0	89	2629
7.0	76	2631
8.0	67	2634
9.0	60	2634
10.0	54	2636
12.0	45	2636
15.0	36	2646
20.0	27	2650
30.0	19	2652
50.0	12	2653
60.0	10	2655
70.0	8.5	2657
71.0	8.4	2657

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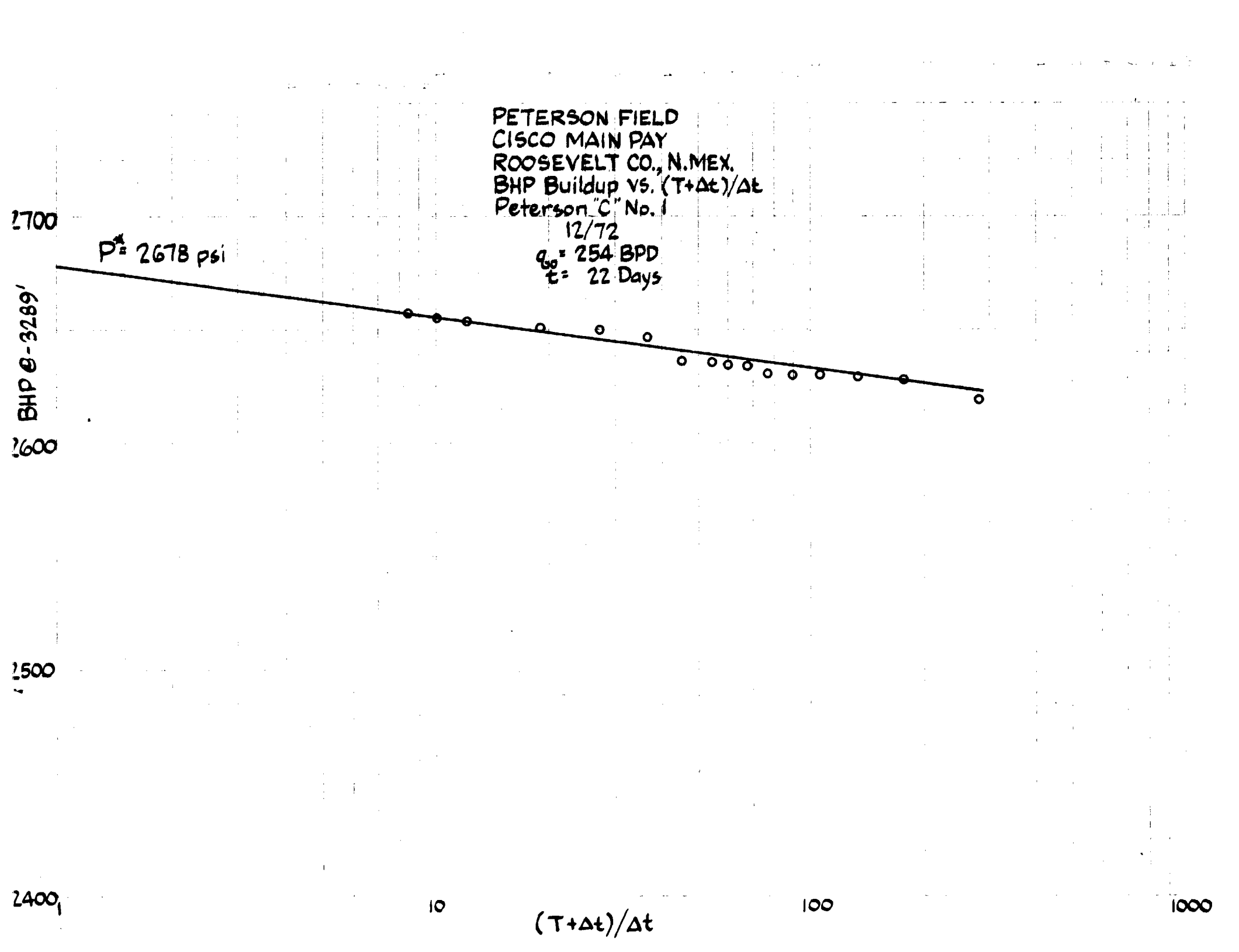
1/2052


PETERSON FIELD
CISCO MAIN PAY
ROOSEVELT CO., N.MEX.
BHP Buildup vs. (T+Δt)/Δt
Peterson "C" No. 1
12/72
q_{oo} = 254 BPD
t = 22 Days
P* = 2678 psi
2700
2600
2500
2400
BHP @ -3289'
10
100
1000
(T+Δt)/Δt

Peterson Field
Cisco Main Reservoir
Roosevelt County, New Mexico

Reservoir Pressure Data

Date	Well	Depth-Mid Perfs Subsea or Datum	Gradient psi/ft	Pressure Mid Perf or Datum psig	Pressure @ - 3310 psig	Pressure @ - 3310 psia
8-25-71	Peterson "A" #1 90hr SI	-3281	0.10	2728	2731	2746
12-30-72	Peterson "C" #1	-3289	0.266	2678*	2684	2699
Avg. Original Pressure						2723
3-10-76	Radcliff #1	-3325	0.294	2683	2679	2694
4-13-76	Swearingen "D" #1	-3323	0.294	2679	2675	2690
Avg 4-1-76						2692
2-5-77	Radcliff #1	-3198	0.294	1858*	1891	1906
3-5-77	Peterson "A" #1	-3131	0.10	1624*	1642	1657
3-5-77	Swearingen "D" #1	-3224	0.294	1696*	1721	1736
Avg 3-5-77						1696
6-25-77	Peterson "C" 1	-3289	0.266 Est	1494*	1500	1515

extrapolated pressure

* P* or maximum possible buildup pressure

original SI press
Swearingen #1 Gas Com

2740

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION
Amoco EXHIBIT NO. 20
CASE NO. 4962 (REOPENED)
Submitted by: RICE
Hearing Date 8-3-77

Peterson Field
Cisco Main Reservoir
Roosevelt County, New Mexico

Pore Volume Data From Isopachous Maps

Gas Cap - 545.52 (frac. Ø) (Ac ft)

Oil Rim - 244.04 (frac. Ø) (Ac ft)

Sw = 31.5% in Oil Rim
Sw - 20.5% in Gas Cap

$$\text{OGIP in gas cap} = \frac{(43560)\ (1-0.205)\ (2723)\ (520)}{(15.025)\ (0.779)\ (600)} \left[545.52\right] =$$

= 3809 MMCF

$$\text{OOIP in oil rim} = \frac{(43560)\ (1-0.315)}{(5.6146)\ (1.866)} \left[244.04\right] =$$

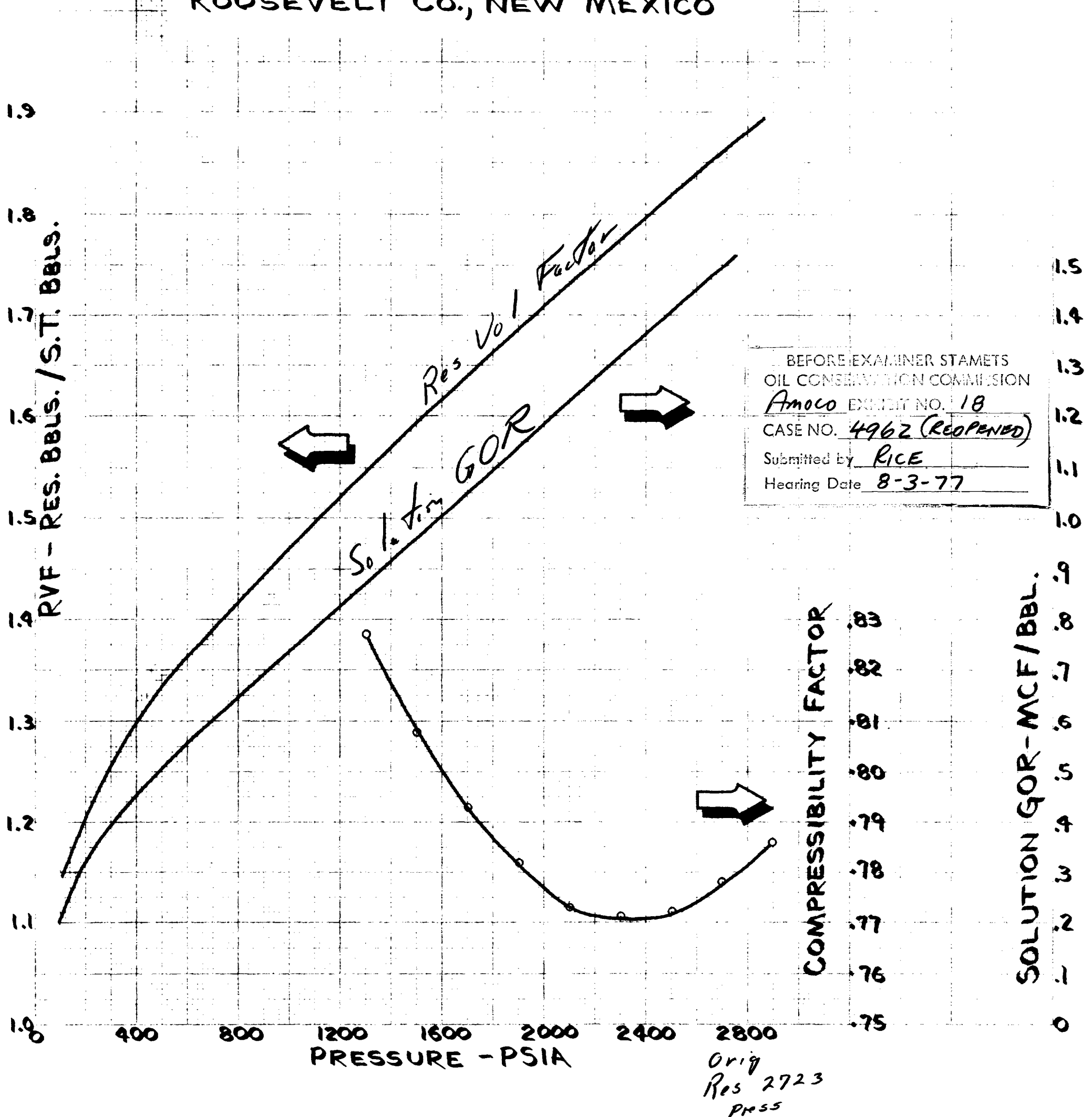
= 695 M Bbls STO

Soln gas-in-place = (695 M) (1.5 M) = 1043 MMCF

Total original gas-in-place = 1043 + 3809 = 4852 MMCF

Total Reservoir 1210 prod. acres

ESTIMATED FLUID PROPERTIES
PETERSON FIELD
CISCO MAIN PAY
ROOSEVELT CO., NEW MEXICO



BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION
Amoco EXHIBIT NO. 18
CASE NO. 4962 (REOPENED)
Submitted by RICE
Hearing Date 8-3-77

Orig
Res 2723
Press