CASE 4693: MOTION OF OCC TO CONSIDER INSTITUTING GAS PRORATIONING IN S. CARLSBAD-MORROW GAS POOL

Case Number

4693

4694

Application

Trascripts

Small Exhibits

ETC.

Edward P. Chase
Attorney and Counselor at Law

Bank of New Mexico Building
Albuquerque, New Mexico 87101
Phone 242-8936

May 4, 1972

Mr. A. L. Porter, Jr.
Secretary-Director
New Mexico Oil Conservation Commission
P.O. Box 2088
Santa Fe, New Mexico 87501

Re: Cases No. 4693 amd 4694
Consolidated.

Dear Mr. Porter:

Pursuant to the Commission's ruling at the hearing on the above case, I am enclosing the following documents:

1. Motion To Dismiss
2. Motion For Continuance
3. Statement of Position of Michael P. Grace, II, and Corinne Grace
4. Various Exhibits

Copies of the above have been forwarded to all parties entering an appearance in the above case. We request thirty (30) minutes oral arguments to present our position concerning the above pleadings. If the Commission will allow the oral argument, please advise me of the date and time for argument and we will notify the other parties.

Very truly yours,

Edward P. Chase

EPC/sl
Enclosures

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION ON ITS OWN MOTION TO
CONSIDER INSTITUTING GAS PRORATIONING
IN THE SOUTH CARLSBAD-MORROW AND
SOUTH CARLSBAD-STRAWN GAS POOLS,
EDDY COUNTY, NEW MEXICO

Cases No. 4693 and 4694
Consolidated

MOTION TO DISMISS

Come now Michael P. Grace II and Corinne Grace by and through their attorneys, and move the Commission to dismiss the above case.

In support of this motion the moveant's state:

1. The commission does not have jurisdiction to institute gas prorationing in the South Carlsbad-Morrow and South Carlsbad-Strawn gas Pools as the evidence presented at the hearing clearly establishes that production of gas from the pools does not exceed the reasonable market demand for such gas and that production will not exceed the reasonable market demand for such gas in the foreseeable future.

2. The Commission does not have jurisdiction to institute gas prorationing in the South Carlsbad-Morrow and South Carlsbad-Strawn Gas Pools as the evidence presented at the hearing clearly establishes that production of gas from the pools in not in excess of the capacity of gas transportation facilities for such gas and that production will not exceed the capacity of gas transportation facilities for such gas in the foreseeable future.

3. The Commission's jurisdiction to institute prorationing is very clearly defined in Section 65-3-13 (c), NMSA (1953 Comp.) which provides:

> "Whenever, to prevent waste, the total allowable natural gas production from gas wells producing from any pool in this State is fixed by the Commission in an amount less than that which the pool could produce if no restrictions were imposed, the Commission shall allocate the allowable amount the gas wells in the pool delivering to a gas transportation facility upon a reasonable bases and recognizing correlative rights..." (Emphases added)

Waste, insofar as the term is used in connection with prorationing, is specifically defined under Section 65-3-3 E. NMSA (1953 Comp.) as follows:

> "The production in this State of natural gas from any gas well or wells, or from any gas pool, in excess of the reasonable market demand from such source for natural gas of the type produced or in excess of the capacity of gas transportation facilities for such type of natural gas..."

We submit that, by statutory definition, the Commission does not have jurisdiction to instituting gas prorationing unless the evidence establishes that production from the specific pool involved exceeds reasonable market demand from the pool or the production is in excess of the capacity of the gas transportation facilities taking gas from the pool. As Transwestern is the only purchaser from the Grace wells and the testimony from Transwestern is that they are ready, willing and able to take all gas produced from the Grace wells and that they will be ready, willing and able to take all gas produced from the Grace wells in the foreseeable future, the moveant's submit that the Commission does not have jurisdiction to institute gas prorationing in South Carlsbad-Morrow and South Carsbad-Strawn Gas Pools at this time.

4. The moveant's wells are not producing from the same common source of supply as the other wells in the South Carlsbad-Morrow and South Carlsbad-Strawn Gas Pool and the institution of gas prorationing including moveant's wells with wells producing from another common source of supply will violate the moveant's correlative rights, cause waste, and deprive the moveant's of their property without due process of law.

Further, moveant's should be permitted to show by additional newly discovered evidence that irreparable damage will result to moveant's wells if same are prorated or shut down. The essence of said evidence is called to the Commission's attention by Exhibits A and B, attached hereto and made a part hereof.

5. The moveant's wells were included within the horizontal and vertical limits of the South Carlsbad-Morrow and South Carlsbad-Strawn Gas Pools without actual notice to the moveant's and an opportunity to be heard even though the moveant's interest in the subject matter of the hearing extending the limits of the pool was known to the Commission and the other operators in the pool. Constructive notice by publication is insufficient for the reason above stated and for the further reason that the same is ambiguous and does not designate what wells are the subject matter of the hearing or the area covered. (See Publisher's Affidavit attached hereto and made a part hereof). If the Commission proceeds with above case without permitting the moveant's to present evidence that their wells are producing from a separate common source of supply, the moveants will be deprived of their property without due process of law and denied equal protection of the laws.

6. The evidence presented at the hearing concerning the various prorationing formulas proposed is so conflicting and incomplete that the Commission can not reasonably make the determinations required by Continental Oil Company vs. Oil Conservation Commission, 70 N.M. 310, and the Commission under the applicable law must dismiss the above case.

Edward P. Chase
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Albuquerque, New Mexico 87101

Of Counsel:
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Charles C. Spann
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Albuquerque, New Mexico 87101

Hunker, Fedric & Higginbotham, P.A.
George H. Hunker, Jr.
P.O. Box 10
Roswell, New Mexico 88201

Attorneys for Michael P. Grace, II,
Corinne Grace and The City of
Carlsbad.

Telegram

215P CDT MAY 5 72 KA 045 NSA 058
NS LFA 004 SJ PDF LAFAYETTE LA 4KC NS LFA 004 SJ NL PDF (DUPE
AND CORRECTED COPY)
LAFAYETTE LA 4
EDWARD T CHASE
1122 BANK OF NEW MEXICO BLDG ALBUQUERQUE NMEX
THE CORINNE GRACE NO . 1 CITY OF CARLSBAD IN THE SOUTH CARLSBAD
FIELD , EDDY COUNTY , NEW MEXICO IS PRODUCING 1,000 BARRELS OF
WATER PER DAY A D 9.5 MMCF OF GAS . WHEN ORIGINALLY COMPLETED
THE WELL MADE MUCH MORE WATER WITH ALMOST NO GAS . AFTER BEING
PLAIED ON THE SALES LINE , THE WELL VERY SLOWLY IMPROVED IN
GAS DELIVERABILITY WITH A MARKED REDUCTION IN WATER PRODUCTION .
ANY ATTEMPTS TO CURTAIL PRODUCTION RATES RESULT IN AN INCREASE
I WATER AND A CORRESPONDING DECREASE IN TUBING FLOWING PRESSURE
AND GAS RATE .
CURTAILMENT OF PRODUCTION TO ANY AMOUNTS LESS THAN THE WELL

SF-1201 (R5-69)

Telegram

CAN FLOW AGAINST SALES LINE BACK PRESSURE CAUSES INIREASED
WATER PRODUCTION AND DECREASING GAS FLOW RATES AT THESE SAME
LESSE
RATES . ANY CURTAILMENT OF PRODUCTION FOR MORE THAN A FEW HOURS
CAN CAUSE THIS WELL TO CEASE FLOWING WITH POSSIBLE WATERING
OUT AND COMPLETE LOSS OF PRODUCTIVITY
RICHARD STEI HORST JR PETROLEUM ENGINEER .

1 1,000 9.5 .

505 242-3935

SF-1201 (R5-69)

TETRA TECH, INC.
630 NORTH ROSEMEAD BLVD
PASADENA, CALIFORNIA 91107
TELEPHONE (213) 449-6400

May 2, 1972

Michael P. Grace
P.O. Box 1418
Carlsbad, New Mexico

Dear Sir:

At Tetra-Tech our geologists and engineers have reviewed data pertinent to the production of gas in the South Carlsbad area and have read with care the transcript of the hearings before the New Mexico Oil Conservation Commission on April 19-20/72..

We have in our possession maps showing the structural geology of the area on two horizons (Morrow and Strawn) prepared by various operators. We assume these operators to have been represented by competent geologist. In summary four different maps of each horizon are available. The maps differ in some details but all of them indicate a minimum trend (a synclinal swale) separating the greater part of the Grace properties from other producing areas of the field. Two of the available interpretations emphasize the structural separation by indicating a fault within the syncline and trending approximately north-south.

Our Tetra-Tech structural interpretation will not be completed for several days but we presently assume that features identified by so many competent professionals are valid and indicate a separation of the Morrow reservoir into two productive areas. We are presently evaluating the question of whether these two separate areas communicate as a reservoir or not.

In assessing the question of potential communication (horizontically or vertically) within the Morrow formation of the South Carlsbad area we take note of statements by employees of the Commission as related in the transcript to the effect that:

(1) Unexplained differentials exist between the various wells.
(2) Unexplained anomalies of potential productivity are recorded.
(3) Anomalous or unexplained pressure draw-downs are noted.

These observations may indicate lack of communication between the areas of Morrow production.

In reviewing the transcript we are disturbed to find that an attempt has been made to evaluate production from this area without:

(1) Waiting for sufficient production history to afford data for evaluation (see testimony).

(2) Without preparation of an isobaric map to relate in geologic form the pressure anomalies referred to in the testimony.

(3) Without preparation of an Iso-productivity (or Iso-deliverability) map to relate in proper form the productive anomalies referred to.

(4) Without a report of studies (if any have been performed) involving the nature of reservoir fluids in the area, for example:
   (a) Testimony suggested danger of the loss of potential liquids by "Excess" gas production but no liquids are adduced to be present other than warm salt water.
   (b) A record of variable water salinity which might reflect non-communication between the two areas by Iso-salinity anomalies has not been prepared.
   (c) Laboratory analyses of the gases produced as related to the geographic and geologic position of the various wells were not presented.

In the absence of so much data and analysis normal to proper reservoir study we offer the following tentative conclusions:

(1) It is essential that maps and exhibits of the various types described be prepared before the South Carlsbad producing areas can be equitably pro-rated. Tetra-Tech is presently engaged in this study and will hope to complete the work within two weeks.

(2) The data as presented appear to indicate that two structurally separated, non-communicating Morrow reservoirs exist in the area.

(3) No data has been presented to indicate that the areas of Morrow production do communicate (other than the reiterated statement that the Commission has, in the past, considered the Morrow to be one pool.

(4) Shut-in or considerable proration of production from such wells in the area as are presently making substantial amounts of water. (as well as gas) would inevitably result in a high head of liquid being brought against and above the producing interval. This unfortunate result might cause irreversible damage to the individual well or, potentially, to the reservoir.

Thomas A. Baldwin
Chief Geologist, Tetra-Tech, Inc.
Thomas A. Baldwin
Certified Geologist # 310, A.I.P.G.
Registered Geologist # 175, California
Registered Petroleum Engineer # 789, Ca.
Active Member A.A.P.G.
Active Member S.E.G.
Fellow G.S.A.

TB:fb

State of New Mexico
County of Eddy

AFFIDAVIT

The undersigned being publisher of the Artesia Daily Press being first duly sworn, deposes and say that the attached photocopy of publication received from the New Mexico Oil & Gas Commission was published in the above stated newspaper on the 29th day of February 1972.

Affiant further saith not.

James R. Green
Publisher

Subscribed and sworn to before me this 5th May, 1972

Juanita L. Jones
Notary Public

My commission expires April 10, 1975

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
OIL CONSERVATION
COMMISSION
SANTA FE - NEW MEXICO

The State of New Mexico by its Oil Conservation Commission hereby gives notice pursuant to law and the Rules and Regulations of said Commission promulgated thereunder of the following public hearing to be held at 9 o'clock a.m. on MARCH 15, 1972, at the OIL CONSERVATION COMMISSION CONFERENCE ROOM, STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO, before Daniel S. Nutter, Examiner, or Elvis A. Utz, Alternate Examiner, both duly appointed for said hearing as provided by law.

STATE OF NEW MEXICO TO:

All named parties and persons having any right, title, interest or claim in the following cases and notice to the public.

(NOTE: All land descriptions herein refer to the New Mexico Principal Meridian, whether or not so stated.)

CASE 4675:

In the matter of the application of the Oil Conservation Commission of New Mexico upon its own motion for the creation of the following pools:

Eagle Creek-Atoka Gas Pool in Township 17 South, Range 25 East, Eddy County;

Golden Lane-Morrow Gas Pool in Township 21 South, Range 29 East, Eddy County;

Hare-Glorieta Pool in Township 21 South, Range 37 East, Lea County;

Osudo-Devonian Gas Pool in Township 20 South, Range 36 East, Lea County;

Washington Ranch-Morrow Gas Pool in Township 25 South, Range 24 East, Eddy County;

and for the contraction of the Eumont Gas Pool in Lea County;

and for the contraction and extension of the Langlie-Mattix Pool in Lea County;

and for the extension of the following pools in Lea County:

North Bagley-Pennsylvanian Pool

South Corbin-Morrow Gas Pool

Lea-Bone Springs Pool

North Vacuum-Abo Pool

Vada-Pennsylvanian Pool

and for the extension of the following pools in Eddy County:

South Carlsbad-Morrow Gas Pool

South Carlsbad-Strawn Gas Pool

and for the extension of the South Presto-Gas Andrew Pool in Roosevelt County.

CASE 4676:

Application of Midwest Oil Corporation for an unorthodox well location and amendment of Or-

der No. R-4254, Eddy County, New Mexico.

Applicant, in the above-styled cause, seeks approval of an unorthodox gas well location for a well to be drilled 1980 feet from the South line and 1900 feet from the West line of Section 6, Township 18 South, Range 29 East, undesignated Morrow Gas Pool, Eddy County, New Mexico, with the non-standard 299-acre proration unit comprising the S/2 of said Section 6 established by Order No. R-4254 to be dedicated to the well.

GIVEN under the seal of the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 25th day of February, 1972.

(SEAL)

STATE OF NEW MEXICO
OIL CONSERVATION
COMMISSION
A. L. PORTER, Jr.,
Secretary-Director

Published in the Artesia Daily Press, Artesia, N. M., Feb. 29, 1972, Legal No. 5061.

(c) Create a new pool in Lea County, New Mexico, classified as an oil pool for Pennsylvanian production and designated as the McDonald-Pennsylvanian Pool. The discovery well is the J. M. Huber Corporation Griffin No. 1 located in Unit A of Section 4, Township 14 South, Range 36 East, NMPM. Said pool would comprise:

TOWNSHIP 14 SOUTH, RANGE 36 EAST, NMPM
SECTION 4: NE/4

(d) Abolish the Northwest Vacuum-Abo Pool in Lea County, New Mexico, described as:

TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
SECTION 2: SW/4
SECTION 3: NE/4 SE/4

(e) Extend the North Vacuum-Abo Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
SECTION 2: SW/4
SECTION 3: SE/4

(f) Extend the Blinebry Oil Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 36 EAST, NMPM
SECTION 36: NE/4

TOWNSHIP 22 SOUTH, RANGE 37 EAST, NMPM
SECTION 8: NW/4

(g) Extend the South Carlsbad-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH RANGE 26 EAST, NMPM
SECTION 25: S/2

TOWNSHIP 22 SOUTH, RANGE 27 EAST, NMPM
SECTION 30: S/2
SECTION 31: W/2

Sec. 2 added at the hearing

(h) Extend the South Carlsbad-Strawn Gas Pool in Eddy County, New Mexico, to include therein:

(Case 4597 continued)

of Section 31, Township 22 South, Range 27 East, and from his Joell Well No. 1 located in Unit C of Section 6, Township 23 South, Range 27 East, South Carlsbad-Strawn Gas Pool, Eddy County, New Mexico, after separation and measurement of the liquids from each well.

CASE 4583: (Continued from the August 18, 1971, Examiner Hearing) Application of V. F. Vasicek and J. M. Fullinwider, doing business as V-F Petroleum for compulsory pooling, Lea 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 15, Township 16 South, Range 35 East, Lea County, New Mexico, said acreage to be dedicated to a well to be re-entered and recompleted in the Pennsylvanian formation and located 1980 feet from the South and East lines of said Section 15. Also to be considered will be the costs of drilling said well, a charge for the risk involved, a provision for the allocation of actual operating costs, and the establishment of charges for supervision of said well.

CASE 4596: Southeastern New Mexico nomenclature case calling for an order for the creation, extension and abolishment of certain pools in Lea, Eddy, and Chaves County, New Mexico.

(a) Create a new pool in Eddy County, New Mexico, classified as an oil pool for Strawn production and designated as the South Hackberry-Strawn Pool. The discovery well is the Perry R. Bass Big Eddy Unit No. 33 located in Unit P of Section 4, Township 20 South, Range 31 East, NMPM. Said pool would comprise:

TOWNSHIP 20 SOUTH, RANGE 31 EAST, NMPM
SECTION 4: SE/4 SE/4

(b) Create a new pool in Eddy County, New Mexico, classified as a gas pool for Morrow production and designated as the Maroon Cliffs-Morrow Gas Pool. The discovery well is the Perry R. Bass Big Eddy Unit No. 7 located in Unit O of Section 19, Township 20 South, Range 31 East, NMPM. Said pool would comprise:

TOWNSHIP 20 SOUTH, RANGE 31 EAST, NMPM
SECTION 19: S/2

Q Are your recommendations prepared in the form of an Exhibit?

A They are prepared in the form of Exhibit 1, Paragraphs "A" through "T".

Q All right. Would you refer to Exhibit 1 and Paragraphs "A" through "T" and point out any differences between it and the docket that has been distributed, any corrections that have been made?

A We have several additions and, as recommended, one Paragraph "H" be dismissed.

Q Let's go through them one at a time.

A All right, sir. The first addition is Paragraph "E" and the addition is the NE/4 of Section 10 in Township 17 South, Range 34 East. That is an extension to the North Vacuum-Abo Pool in Lea County.

In Paragraph "G", South Carlsbad-Morrow Pool, addition in Township 22 South, Range 27 East, N/2 of Section 30 and Township 22 South Range 26 East, S/2 of Section 2.

In Paragraph "H" it is recommended that Paragraph "H" be dismissed pending further study.

Paragraph "I" in addition to the extension shown to the Double L-Queen Associated Pool, in Township 14

State of New Mexico
County of Eddy

AFFIDAVIT

The undersigned being publisher of the Artesia Daily Press being first duly sworn, deposes and says that the attached photocopy of publication received from the New Mexico Oil & Gas Commission was published in the above stated newspaper on the 1st day of September 1971.

Affiant further saith not.

James K. Glenn
Publisher

Subscribed and sworn to before me this 5th May, 1972.

Juanita L. Jones
Notary Public

My commission expires Sept 10, 1975

LEGAL NOTICE

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
OIL CONSERVATION
COMMISSION
SANTA FE -- NEW MEXICO

The State of New Mexico by its Oil Conservation Commission hereby gives notice pursuant to law and the Rules and Regulations of said Commission promulgated thereunder of the following public hearing to be held at 9 o'clock a.m. on SEPTEMBER 15, 1971, at the OIL CONSERVATION COMMISSION CONFERENCE ROOM, STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO, before Daniel S. Nutter, Examiner, or A. L. Porter, Jr., Alternate Examiner, both duly appointed for said hearing as provided by law.

STATE OF NEW MEXICO TO:

All named parties and persons having any right, title, interest or claim in the following cases and notice to the public.

(NOTE: All land descriptions herein refer to the New Mexico Principal Meridian, whether or not so stated.)

CASE 4588:

Application of V. H. Westbrook for a pressure maintenance project, Eddy County, New Mexico.

Applicant, in the above-styled cause, seeks authority to institute a pressure mainenance project by the injection of water into the Delaware formation through his Guy A Reed Well No. 2 located in Unit L of Section 24, Township 24 South, Range 28 East, Malaga-Delaware Pool, Eddy County, New Mexico.

CASE 4589:

Application of Anadarko Production Company for a unit agreement, Eddy County, New Mexico.

Applicant, in the above-styled cause, seeks approval of the Burnham Grayburg San Andres Unit Area comprising 480 acres, more or less, of state lands in Section 2, Township 17 South, Range 30 East, Square Lake Field, Eddy County, New Mexico.

CASE 4596:

In the matter of the application of the Oil Conservation Commission of New Mexico upon its own motion for an order for the creation of the following pools:

South Hackberry-Strawn Pool in Township 20 South, Range 31 East, Eddy County;

Maroon Cliffs-Morrow Gas Pool in Township 20 South, Range 31 East, Eddy County;

McDonald-Pennsylvanian Pool in Township 14 South, Range 36 East, Lea County;

and for the abolishment of the Northwest Vacuum-Abo Pool in Lea County and the extension of the North Vacuum-Abo Pool to include the lands contained in said Northwest Vacuum-Abo Pool;

and for the extension of the following pools in Lea County:

Blinebry Oil Pool
Flying "M"-Pennsylvanian Pool
Flying "M"-San Andres Pool
Langlie-Mattix Pool
East Shoebar-Devonian Pool
North Vacuum-Morrow Gas Pool
North Vacuum-Lower Wolfcamp Pool
Northwest Vacuum-Wolfcamp Pool
Vada-Pennsylvanian Pool

and for the extension of the following pools in Eddy County:

South Carlsbad-Morrow Gas Pool
South Carlsbad-Strawn Gas Pool
Eagle Creek-San Andres Pool
Grayburg-Jackson Pool
Power Grayburg-San Andres Pool

and for the extension of the Double L-Queen Associated Pool in Chaves County.

CASE 4597:

Application of Morris R. Antweil for lease commingling and off-lease storage, Eddy County, New Mexico.

Applicant, in the above-styled cause, seeks authority to commingle condensate produced from his Little Jewel Well No. 1 and Allen Well No. 1 located in Units F and J, respectively, of Section 31, Township 22 South, Range 27 East, and from his Joell Well No. 1 located in Unit C of Section 6, Township 23 South, Range 27 East, South Carlsbad-Strawn Gas Pool, Eddy County, New Mexico, after separation and measurement of the liquids from each well.

GIVEN under the seal of the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 27th day of August, 1971.

STATE OF
NEW MEXICO
OIL CONSERVATION
COMMISSION
A. L. PORTER, Jr.,
Secretary-Director

(SEAL)

Published in the Artesia Daily Press, Artesia, N. M., Sept. 1, 1971. Legal No. 4922.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION ON ITS OWN MOTION TO
CONSIDER INSTITUTING GAS PRORATIONING
IN THE SOUTH CARLSBAD-MORROW AND
SOUTH CARLSBAD-STRAWN GAS POOLS,
EDDY COUNTY, NEW MEXICO.

Cases No. 4693 and 4694
Consolidated

MOTION FOR CONTINUANCE

Come now Michael P. Grace II and Corinne Grace, by and through their attorneys, and move the Commission to continue the above case for a period of ninety (90) days to permit the moveant's sufficient time to present evidence to establish that the moveant's wells are not producing from the same common source of supply as the other wells in the South Carlsbad-Morrow and South Carlsbad-Strawn Gas Pools and to permit the moveant's, the Commission and all other interested parties sufficient time to prepare testimony concerning a proration formula which will most equitably protect correlative rights in the South Carlsbad-Morrow and South Carlsbad-Strawn Gas Pools.

In support of this motion the moveant's state:

1. The moveant's were not permitted an opportunity at the hearing to establish that their wells were producing from a separate common source of supply other than the South Carlsbad-Morrow and South Carlsbad-Strawn Gas Pools. The refusal to hear such testimony was prejudicial error by the Commission and if the moveant's are not permitted an opportunity to present evidence that their wells are producing from a separate common source of supply the moveant's will be deprived of their property without due process of law and denied equal protection of the laws as the moveant's did not have actual knowledge of the hearing held by the Commission which included their

wells within the South Carsbad-Morrow and South Carlsbad-Strawn Gas Pools and did not have an opportunity to be heard concerning the matter. The moveant's submit that the order extending the limits of the South Carlsbad-Morrow and South Carlsbad-Strawn Gas Pool to include the moveant's wells is void as the moveant's did not have actual notice of the hearing and the moveant's interest in the subject matter was known to the Commission and to the other operators in the pool. If the Commission proceeds to institute prorationing in the South Carlsbad-Morrow and South Carlsbad-Strawn Gas Pools without giving the moveant's an opportunity to be heard on the question of whether or not the moveant's wells are producing from the same common source of supply as the other wells within the South Carlsbad-Morrow and South Carlsbad- Strawn Gas Pools the moveant's will be deprived of their property without due process of law and denied equal protection of the laws.

2. The evidence presented at the hearing establishes that there is not sufficient information available at this time to show affirmatively whether or not the moveant's wells are producing from the same common source of supply as the other wells within the South Carlsbad-Morrow and South Carlsbad -Strawn Gas Pools. The hearing should therefore be continued until such time as evidence is available to permit the Commission to make a reasonable determination as to whether or not the moveant's wells should be included in the South Carlsbad-Morrow and South Carlsbad-Strawn Gas Pools. If it can not be affirmatively established that the moveant's wells are producing from the same common source of supply as the other wells within the South Carlsbad-Morrow and South Carlsbad-Strawn Gas Pools the case should be dismissed or continued until such time as such evidence is available in order to protect the moveant's correlative rights, present waste and afford the moveant's equal protection of the laws.

3. The evidence presented at the hearing concerning the various proposed proration fomulas is so conflicting that the Commission cannot at this time make a reasonable determination concerning which formula

will most adequately protect correlative rights and present waste. The operators and other interested parties should therefore be given additional time to conduct reservoir studies and make reservoir engineering calculations and determinations and present testimony concerning the same before the Commission can adopt a formula which will allocate the allowable production upon a reasonable bases and recognizing correlative rights.

Of Counsel:
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P. O. Box 10
Roswell, New Mexico 88201

Edward P. Chase
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Grantham, Spann, Sanchez & Rager
914 Bank of New Mexico Building
Albuquerque, New Mexico 87101

Attorneys for Michael P. Grace II, Corinne Grace and The City of Carlsbad.

Telegram

1040A CDT MAY 5 72 KA 045 NSA 058

NS LFA 004 SJ PDF LAFAYETTE LA 4KC NS LFA 004 SJ NL PDF (DUPE AND CORRECTED COPY)

LAFAYETTE LA 4

EDWARD T CHASE

1122 BANK OF NEW MEXICO BLDG ALBUQUERQUE NMEX

THE CORINNE GRACE NO . 1 CITY OF CARLSBAD IN THE SOUTH CARLSBAD FIELD , EDDY COUNTY , NEW MEXICO IS PRODUCING 1,000 BARRELS OF WATER PER DAY A D 9.5 MMCF OF GAS . WHEN ORIGINALLY COMPLETED THE WELL MADE MUCH MORE WATER WITH ALMOST NO GAS . AFTER BEING PLAIED ON THE SALES LINE , THE WELL VERY SLOWLY IMPROVED IN GAS DELIVERABILITY WITH A MARKED REDUCTION IN WATER PRODUCTION . ANY ATTEMPTS TO CURTAIL PRODUCTION RATES RESULT IN AN INCREASE I WATER AND A CORRESPONDING DECREASE IN TUBING FLOWING PRESSURE AND GAS RATE .

CURTAILMENT OF PRODUCTION TO ANY AMOU TS LESS THAN THE WELL

Telegram

CAN FLOW AGAINST SALES LINE BACK PRESSURE CAUSES INIREASED WATER PRODUCTION AND DECREASING GAS FLOW RATES AT THESE SAME LESSE

RATES . ANY CURTAILMENT OF PRODUCTION FOR MORE THAN A FEW HOURS CAN CAUSE THIS WELL TO CEASE FLOWING WITH POSSIBLE WATERING OUT AND COMPLETE LOSS OF PRODUCTIVITY

RICHARD STEINHORST JR PETROLEUM ENGINEER .

1 1,000 9.5 .

SF-1201 (RS-69)

EXHIBIT "A"

TETRA TECH, INC.
630 NORTH ROSEMEAD BLVD
PASADENA, CALIFORNIA 91107
TELEPHONE (213) 449-6400

May 2, 1972

Michael P. Grace
P.O. Box 1418
Carlsbad, New Mexico

Dear Sir:

At Tetra-Tech our geologists and engineers have reviewed data pertinent to the production of gas in the South Carlsbad area and have read with care the transcript of the hearings before the New Mexico Oil Conservation Commission on April 19-20/72.

We have in our possession maps showing the structural geology of the area on two horizons (Morrow and Strawn) prepared by various operators. We assume these operators to have been represented by competent geologist. In summary four different maps of each horizon are available. The maps differ in some details but all of them indicate a minimum trend (a synclinal swale) separating the greater part of the Grace properties from other producing areas of the field. Two of the available interpretations emphasize the structural separation by indicating a fault within the syncline and trending approximately north-south.

Our Tetra-Tech structural interpretation will not be completed for several days but we presently assume that features identified by so many competent professionals are valid and indicate a separation of the Morrow reservoir into two productive areas. We are presently evaluating the question of whether these two separate areas communicate as a reservoir or not.

In assessing the question of potential communication (horizontically or vertically) within the Morrow formation of the South Carlsbad area we take note of statements by employees of the Commission as related in the transcript to the effect that:

(1) Unexplained differentials exist between the various wells.
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These observations may indicate lack of communication between the areas of Morrow production.

In reviewing the transcript we are disturbed to find that an attempt has been made to evaluate production from this area without:

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(2) Without preparation of an isobaric map to relate in geologic form the pressure anomalies referred to in the testimony.

(3) Without preparation of an Iso-productivity (or Iso-deliverability) map to relate in proper form the productive anomalies referred to.

(4) Without a report of studies (if any have been performed) involving the nature of reservoir fluids in the area, for example:
   (a) Testimony suggested danger of the loss of potential liquids by "Excess" gas production but no liquids are adduced to be present other than warm salt water.
   (b) A record of variable water salinity which might reflect non-communication between the two areas by Iso-salinity anomalies has not been prepared.
   (c) Laboratory analyses of the gases produced as related to the geographic and geologic position of the various wells were not presented.

In the absence of so much data and analysis normal to proper reservoir study we offer the following tentative conclusions:

(1) It is essential that maps and exhibits of the various types described be prepared before the South Carlsbad producing areas can be equitably pro-rated. Tetra-Tech is presently engaged in this study and will hope to complete the work within two weeks.

(2) The data as presented appear to indicate that two structurally separated, non-communicating Morrow reservoirs exist in the area.

(3) No data has been presented to indicate that the areas of Morrow production do communicate (other than the reiterated statement that the Commission has, in the past, considered the Morrow to be one pool.

(4) Shut-in or considerable proration of production from such wells in the area as are presently making substantial amounts of water. (as well as gas) would inevitably result in a high head of liquid being brought against and above the producing interval. This unfortunate result might cause irreversible damage to the individual well or, potentially, to the reservoir.

Thomas A. Baldwin
Chief Geologist, Tetra-Tech, Inc.
Thomas A. Baldwin
Certified Geologist # 310, A.I.P.G.
Registered Geologist # 175, California
Registered Petroleum Engineer # 789, Ca.
Active Member A.A.P.G.
Active Member S.E.G.
Fellow G.S.A.

TB:fb

[illegible]

[illegible] OF [illegible] MEXICO

[illegible]

[illegible] PETROLEUM [illegible]

[illegible]

[illegible] PRODUCTION IN THE [illegible]

[illegible] COUNTY [illegible] FOR A PENDING [illegible]

[illegible]

[illegible] SUFFICIENT RES[illegible] DATA [illegible]

TO [illegible] AT THIS TIME, WE RESPECTABLY REQUEST POSTPONE[illegible]

[illegible]

OF THIS REPORT [illegible] SCHEDULED HEARINGS [illegible]

APPROXIMATELY [illegible] DAYS TO ENABLE US TO ADEQUATELY [illegible]

[illegible] RESPECTABLY

ILLEGABLE

PHIL W.

Exhibit "C"

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION ON ITS OWN MOTION TO
CONSIDER INSTITUTING GAS PRORATIONING
IN THE SOUTH CARLSBAD-MORROW AND
SOUTH CARLSBAD-STRAWN GAS POOLS,
EDDY COUNTY. NEW MEXICO.

Cases No. 4693 and 4694
Consolidated

STATEMENT OF POSITION
of
MICHAEL P. GRACE II AND CORINNE GRACE

Michael P. Grace II and Corinne Grace make the following statement of position to the Commission:

1. In view of the evidence presented at the hearing that the purchasers are ready, willing and able to take all the gas that is being produced from the South Carlsbad-Morrow and South Carlsbad-Strawn Gas Pools and all of the gas that the wells in the pool will be capable to producing in the foreseeable future, it is our position that the Commission does not, at this time, have jurisdiction to institute gas prorationing under the applicable New Mexico statutes.

2. Even if the Commission had jurisdiction to institute gas prorationing in the South Carlsbad-Morrow and South Strawn Gas Pools at this time the Grace wells are producing from a separate common source of supply other than the South Carlsbad-Morrow and South Carlsbad-Strawn Gas Pools and the Commission does not have jurisdiction to institute prorationing in the pool the Grace wells are producing from as the purchasers have testified that they are ready, willing and able to take all of the gas that the Grace wells are capable of producing at this time and all of the gas that they will be capable of producing in the foreseeable future.

3. The order which included the Grace wells within the limits of the South Carlsbad-Morrow and South Carlsbad-Strawn Gas Pools is void as the Grace's interest in the subject matter of the hearing held in that nomenclature case was known to the Commission and the Grace's did not receive actual notice of the hearing. It is our position on this point that the Grace's were denied due process of law and equal protection of the laws when they were not given actual notice of the hearing. We submit that constructive notice probably conferres jurisdiction over unknown parties in interest but that constructive notice will not confer jurisdiction over parties which the Commission knows have an interest in the subject matter of the hearing and the whereabouts of the parties is known to the Commission or can be readily ascertained.

4. It was prejudicial error for the Commission to refuse to permit testimony concerning separation of the two pools when the question was raised as to whether or not the Grace's wells were in fact producing from the same common source of supply as the other wells in the South Carlsbad-Morrow and South Carlsbad-Strawn Gas Pools. The effect of this ruling was to deny the Grace's equal protection of the laws and deprive them of their property without due process of law. The case should therefore be dismissed or a new hearing allowed in order to permit the Grace's to present testimony concerning the matter.

5. If the Commission determines that it will not permit additional testimony in this hearing concerning the vertical and horizontal limits of the South Carlsbad-Morrow and South Carlsbad-Strawn Gas Pools it is our position that the hearing should be continued for a reasonable lenght of time in order to allow all of the operators in the pool sufficient time to conduct studies and make recommendations to the Commission concerning the proration formula which will most adequately protect correlative rights. It is our position that there was not sufficient evidence presented at the hearing to enable the Commission

to make a reasonable determination concerning a proration formula at this time.

6. The testimony presented at the hearing is not sufficient to permit the Commission to make the findings required by Continental Oil Company vs. Oil Conservation Commission, 70 N.M. 310, and the Commission must therefore dismiss the above case or continue the hearing until the proper evidence has been submitted and the proper finding can be made, a portion of which is attached hereto being the Morrow Structure Map and marked Exhibit "A" and made a part hereof. Also accompanying said map is a large mosaic of aerial photographs taken by Dale Carlson, marked Exhibit "B", and handcarried to the Commission.

Edward P. Chase
1122 Bank of New Mexico Building
Albuquerque, New Mexico 87101

Of Counsel:
Grantham, Spann, Sanchez & Rager
Charles C. Spann
914 Bank of New Mexico Building
Albuquerque, New Mexico 87101

Hunker, Fedric & Higginbotham, P.A.
George H. Hunker, Jr.
P.O. Box 10
Roswell, New Mexico 88201

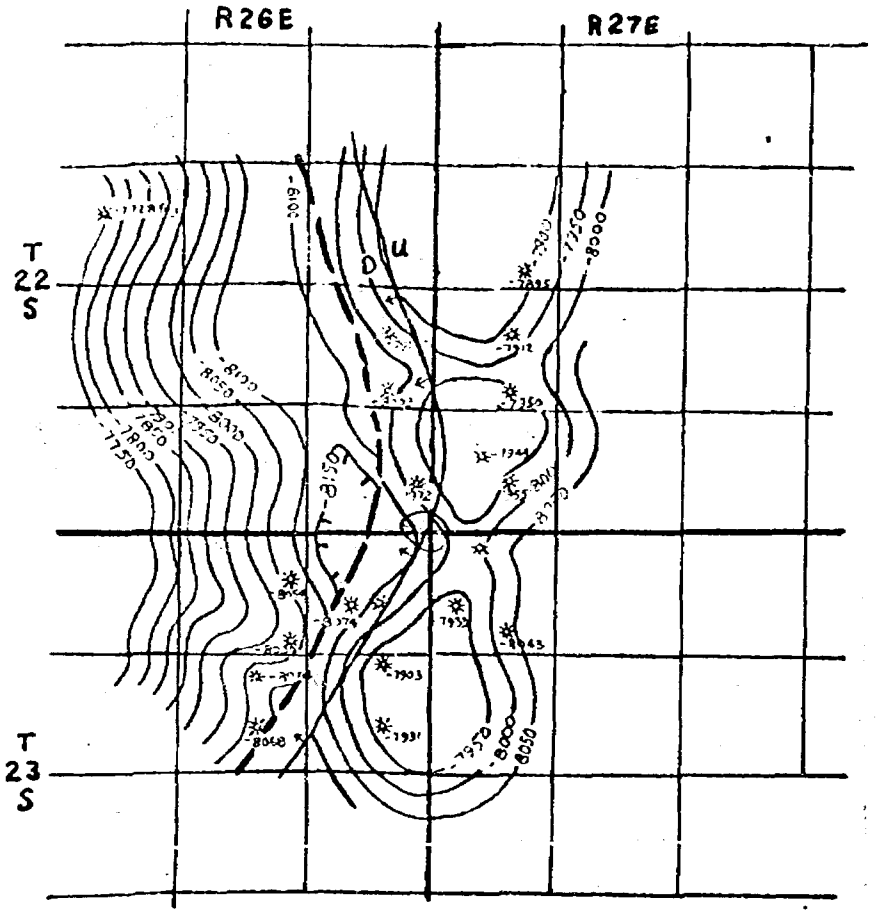
Attorneys for Michael P. Grace, II,
Corinne Grace and The City of Carlsbad.

BY ..... DATE 5-5-72 SUBJECT Morrow Structure Map SHEET NO ..... OF .....

CHKD. BY ..... DATE ..... Contour Interval 50' JOB NO .....

..... Scale 1" = 8,000' .....

Fault traced from Infra-red Aerial Photos



——— Fault line on surface

— — — Fault on Morrow Horizon

The above Morrow Structure Map marked Exhibit "A" is amended by me, same showing a fault traced from infra-red aerial photographs taken by Dale Carlson, geologist.

The fault plane dips between 70 and 80 degrees to the West. Its intersection with the Strawn Formation would lie approximately 200 to 300 feet West of the Penzoil Gulf #1 Well and its intersection with the Morrow would lie over 1,000 feet West of the Pennzoil Gulf Well. Evidence supporting this conclusion may be found in pressure differentials between the Pennzoil Gulf Well and the Grace #1 Gradonoco and the Humble-Grace wells, further indicating that the fault tends to form a sealing barrier between wells. This same fault also appears to be approximately indicated as a surface feature in Cities Service Exhibit No. 3.

Robert W. Becker

Robert W. Becker
Geologist

Exhibit "A"

Edward P. Chase
Attorney and Counselor at Law

Bank of New Mexico Building
Albuquerque, New Mexico 87101
Phone 242-8936

May 4, 1972

ADDITIONAL MEMORANDUM FOR THE BENEFIT OF THE COMMISSION
IN THE MATTER OF CASES No. 4693 and 4694 Consolidated

Not conceding in any way the jurisdiction, authority or constitutionality of the hearings held on the Morrow-Strawn Pools of the South Carlsbad Area in Hobbs recently, this memorandum of law and fact is placed before the Commission in order to facilitate prospective proper decisions.

While various plans of prorationing the two pools were proposed and while the general consensus of expert opinion was that insufficient data had been compiled to arrive at any criteria whatsoever, nevertheless, one radical plan proposed by the Antweil interests subsequently received additional support from Llano Pipe Line, and qualified support from Pennzoil United, at the hearing, on the condition that it be administered by a committee of the operators as to the standards applied. Cities Service pointed out at the hearing that the most offensive factor in this proposal, the use of the size of the perforated interval, was derived from secondary oil field recovery and not application to gas-field practice. No proof was adduced as to the relationship of perforated intervals to reservoir capacity. While, as above, not endorsing the acreage factor used by the Commission after careful study in the past, it must be pointed out here that no departure therefrom can be made as radical and unorthodox as this without equal time and study.*

With a continuance of the hearing and proper study, as indicated above, and to explain and authorize the proper standards for "rateable takes," the Mobil plan, coupled with the Pennzoil proposition of a committee to facilitate the acceptance of practical standards, would probably be under the appropriate future circumstances the most adequate, equitable and acceptable. An oral argument will amplify future endorsement of such a plan when the appropriate time occurs for its usage and we hereby oppose categorically any radical or unorthodox approach to the producing zones in South Carlsbad.

As to the words "appropriate time", let the Commission be reminded that the Carlsbad-Grace is being filed for production as a Strawn well; at least one more well is drilling into the same Strawn zone and three more are being staked, today or tomorrow, making void or voidable most of the Strawn exhibits at the hearing.

*Enclosed Exhibit "A" indicating a plan of research of the various proposals.

Michael P. Grace, II

Michael P. Grace II

TETRA TECH, INC.
630 NORTH ROSEMEAD BLVD
PASADENA, CALIFORNIA 91107
TELEPHONE (213) 449-6400

May 2, 1972

Michael P. Grace
P.O. Box 1418
Carlsbad, New Mexico

Dear Sir:

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We have in our possession maps showing the structural geology of the area on two horizons (Morrow and Strawn) prepared by various operators. We assume these operators to have been represented by competent geologist. In summary four different maps of each horizon are available. The maps differ in some details but all of them indicate a minimum trend (a synclinal swale) separating the greater part of the Grace properties from other producing areas of the field. Two of the available interpretations emphasize the structural separation by indicating a fault within the syncline and trending approximately north-south.

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Active Member S.E.G.
Fellow G.S.A.

TB:fb

Rec'd 5/5/72

BEFORE THE

OIL CONSERVATION COMMISSION OF NEW MEXICO

IN THE MATTER OF THE HEARINGS CALLED BY THE OIL CONSERVATION COMMISSION ON ITS OWN MOTION TO CONSIDER GAS PRORATIONING IN THE SOUTH CARLSBAD-MORROW, AND THE SOUTH CARLSBAD-STRAWN GAS POOLS, EDDY COUNTY, NEW MEXICO

CASES:
No. 4693
No. 4694

CLOSING STATEMENT OF
PENNZOIL UNITED, INC.

Comes now Pennzoil United, Inc., one of the participants in the above cases, and submits its closing statement pursuant to order of the Commission in the foregoing cases, heard on a consolidated record at Hobbs, New Mexico, April 19 and 20, 1972.

These cases were called by the Oil Conservation Commission of New Mexico for the purpose of considering the necessity of prorating the gas production from the two pools involved, and to consider the manner in which such prorationing of production should be handled, in the event the Commission found it necessary to institute prorationing.

Necessity for Prorationing:

The Oil Conservation Commission witness, Elvis Utz, stated three reasons he felt it was necessary to prorate production in the two pools involved: 1) There are two pipeline connections in each of the pools involved, making it difficult if not impossible to insure ratable taking of gas from the different wells; 2) Some wells have split connections, that is they are connected to both of the two pipelines, making it impossible for the pipelines to determine how much gas should be taken from the wells; and 3) Several wells have been assigned a

penalty factor by the Oil Conservation Commission because of their unorthodox location, which factor is meaningless in the absence of prorationing.

In addition, Pennzoil's witness, J. C. Raney, testified that unless there is prorationing in the pool to prevent uncontrolled withdrawals, there is a danger that waste will occur.

On the basis of the testimony, bolstered by the testimony of other witnesses to the effect that they felt prorationing essential, the pool should be prorated to protect correlative rights of the operators in the pool, and to prevent waste.

Duties of the Commission:

The duties of the Oil Conservation Commission when it prorates production are set out in Sections 65-3-13, 65-3-14, and 65-3-29, New Mexico Statutes 1953, as amended, with which the Commission is thoroughly familiar. We would, however, like to quote a portion of Section 65-3-14:

> (a) The rules, regulations or orders of the Commission shall, so far as it is practicable to do so, afford to the owner of each property in a pool the opportunity to produce his just and equitable share of the oil or gas, or both, in the pool, being an amount, so far as can be practically determined, and so far as can be practicably obtained without waste, substanially in the proration that the quantity of the recoverable oil or gas, or both, under such property bears to the total recoverable oil or gas, or both, in the pool, and for this purpose to use his just and equitable share of the reservoir energy.

The foregoing section is substantially the same as the statutory definition of "correlative rights", as set out in Section 65-3-29H. Under the terms of Section 65-3-13, (c), the Commission, in prorating the total allowable of natural gas from a pool, is required to recognize correlative rights.

The New Mexico Supreme Court has had occasion to pass on these provisions of the New Mexico Statutes in two cases:

Continental Oil Company v. Oil Conservation Commission, 70 N.M. 310, 373 P. 2d 809; and El Paso Natural Gas Company v. Oil Conservation Commission, 76 N.M. 268, 414 P. 2d 496.

In these two cases, the first dealing with a gas prorationing order in the Jalmat Gas Pool, Lea County, and the second dealing with a gas prorationing order in the Basin-Dakota Gas Pool, in Northwestern New Mexico, the Supreme Court determined that the Commission, in prorating gas, must determine:

1) The aount of recoverable gas under each producers' tract.

2) The total amount of recoverable gas in the pool.

3) The proportion that 1) bears to 2).

4) What proportion of the arrived at proportion can be recovered without waste.

Essentially, what the Court said in these two cases was that a proposed new formula must be shown to have been "based on the amounts of recoverable gas in the pool and under the tracts, insofar as those amounts can be practicably determined and obtained without waste".

In the face of the statutes, and the court decions, this Commission cannot prorate gas production in the two pools involved on any basis other than one that gives consideration to the reserves in the pool, and under the various tracts.

Evidence to be Considered:

The Commission, during a day and one-half of testimony and numerous exhibits, heard considerable evidence about the two pools involved in these cases. However, the only evidence on the question of gas reserves in the pool and under the tracts of the individual operators was that offered by R. M. Williams for Allen Antweil, and by J. C. Raney for Pennzoil United, Inc.

Briefly, the other evidence offered dealt with the difficulties in arriving at a proration formula. Cities Service Oil Company rejected any other consideration and proposed the pool be prorated on the basis of acreage. This would give all wells in the pool substantially the same allowable, except for the penalized wells, although all witnesses testified that there was considerable difference in the character of the pools across their entire area.

Acreage is only one factor that could be considered by the Commission, if it follows the statutory injunction. It must also give consideration to thickness, porosity, permability, water saturation, and other factors that have a bearing on the computation of the gas reserves underlying the pools and the tracts. The cross section offered by Mr. Williams showed a wide variation in the net pay from one well to another, and his testimony, supported by that of Mr. Raney, clearly showed that if allocation of production from the wells is made on an acreage basis, correlative rights will not be protected.

Both Mr. Williams and Mr. Raney testified that at the present state of knowledge of these pools, and with the scant productive history available, a pore volume calculation is the best method available for determining reserves in the two pools.

Pennzoil proposed that a pore volume calculation be made for each well in the pool. Mr. Raney testified that there is sufficient information presently available to make this calculation, and that from this calculation, a determination of the reserves underlying each well can be made, and the reserves in the reservoir can be determined.

At first glance it may appear that it would be difficult to obtain agreement on the various parameters contained in the Pennzoil formula, but these are matters every operator deals with in evaluating his holdings in any particular reservoir, in determining whether he will drill or not, and in dealing with other operators. As Mr. Raney testified, the basic information is available. As Mr. Stamets testified for the Commission: "If all the operators sat down together they could probably come up with some parameters that would be acceptable . . .", and the Proposal made by Pennzoil will not impose an undue burden on the Commission. Approached in a cooperative spirit, and with a genuine desire for equity and conservation, the proposed formula would provide the framework for prorating the South Carlsbad-Morrow, and South Carlsbad-Strawn Gas Pools. At the same time it would not lock the Commission into a final figure such as that resulting from a present computation of reserves, which could change as additional information is obtained about the two reservoirs, after inequities have resulted.

It was commented by one witness that fifteen pools in Southeastern New Mexico are prorated on the basis of straight acreage, and none on any other basis. That is, in itself, a poor reason for grafting the system on a new pool. It should also be pointed out that only one request for a different system has ever been made in Southeastern New Mexico, in the Jalmat Gas Pool, where the Court found the proposed system did not give consideration to the reserves in the pool and underlying the individual tracts within the pool.

It is urged that the Commission adopt the formula proposed by Pennzoil United, Inc., as an equitable means of

giving full consideration to the reserves in the pool, and reserves underlying each owner's tract, the relationship of one to the other, and the amount of that figure that can be obtained without waste. In other words, the proposed formula gives full consideration to the protection of correlative rights as defined by the statutes, and the New Mexico Supreme Court.

Respectfully submitted,

PENNZOIL UNITED, INC.

By Jason W. Kellahin

KELLAHIN & FOX
P. O. Box 1769
Santa Fe, New Mexico 87501

ATTORNEYS FOR PENNZOIL UNITED, INC.

CERTIFICATE OF SERVICE

I hereby certify that I served a copy of the foregoing Statement on all counsel of record in the above case by mailing a copy thereof, addressed as shown in the Commission's letter of April 25, 1972, this 5th day of May, 1972.

Jason W. Kellahin
Attorney for Pennzoil United, Inc.

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION ON ITS OWN MOTION TO CONSIDER INSTITUTING GAS PRORATIONING AND THE ADOPTING OF SPECIAL RULES AND REGULATIONS INCLUDING PROVISIONS FOR ALLOCATING THE ALLOWABLE PRODUCTION AMONG THE WELLS IN THE SOUTH CARLSBAD STRAWN GAS POOL, EDDY COUNTY, NEW MEXICO.	)	No. 4694

CLOSING STATEMENT OF MORRIS R. ANTWEIL, OPERATOR, AND DELTA DRILLING COMPANY AND MABEE PETROLEUM COMPANY, NON-OPERATORS

The statutes direct the New Mexico Oil Conservation Commission (the Commission) to allocate allowables on the basis of reserves under each tract in proportion that such reserves bear to the total reserves in the pool. Section 65-3-14(a) N.M.S.A., 1953 substantially directs that the rules, regulations and orders of the Commission provide for allocation of allowables on the basis of reserves. Section 65-3-12(c) further provides for such allocation from gas wells in a pool to be on a reasonable basis and recognizing correlative rights.

DETERMINATION OF RESERVES

Antweil presented testimony on the South Carlsbad Strawn reservoir exhibiting the determination of the reserves under each proration unit, the total reserves in the pool, the relationship that each proration unit's reserves bears to the total pool reserves, and what portion of the determined reserves can be recovered without waste.

The testimony clearly demonstrated that the correlative rights of the working interest and royalty interest owners of the

tracts with better reservoir development would be seriously violated if the South Carlsbad Strawn Pool is not prorated and if the allocation of allowable does not consider the thickness and quality of the pay development. Antweil has recommended that the allowables in the South Carlsbad Strawn Pool be allocated on the basis of the determined reserves.

Allocation of the allowables on the basis of acreage rather than reserves would permit the confiscation of approximately 37% of the Antweil reservoir energy from the initial day of such allocation, representing a potential loss from the 3 Antweil tracts of 18 billion cubic feet of gas having a value of five million dollars.

VALIDITY OF RESERVES DETERMINATION

A question asked during the hearing raised the possibility of an inaccuracy in the absolute value of the reserves determined; however, it was not questioned that the relative value of the reserves determined for the individual proration units would provide an accurate measure of equitable proportion of the total field reserves held by each proration unit.

The determination of reserves inherently is interpretive. Antweil presented his determination of reserves for the benefit of the Commission; but the Commission must make the final interpretation.

Interpretations by the Commission are necessary and usual, the many duties of the Commission requiring such interpretations as a matter of course and on a regular basis. All of the following hearings held by the Commission since its formation required an interpretation by the Commission of geologic

and engineering data similar, to a greater or lesser degree, to that being requested by Antweil in determining reserves herein:

273 cases for non-standard proration units,

370 cases for unorthodox locations,

475 cases for secondary recovery projects,

368 cases for unit agreements, and

23 cases for oil or gas proration.

The fact that the determination of reserves is interpretive was no deterrent in the Basin Dakota Case, Case No. 2504, Order No. R-2259-B, affirmed by the New Mexico Supreme Court in El Paso Natural Gas Company v. Oil Conservation Commission, 76 N.M. 268, 414 P.2d 496 (1966). In that case, the Commission determined 2.255 trillion gas reserves under approximately 700 wells covering approximately 224,000 acres. In the instant case, Antweil is asking the Commission to determine reserves only in 7 completed wells covering some 2,240 acres.

PRACTICALITY OF ALLOCATION ON BASIS OF RESERVES

The only substantive question raised at the hearing on the South Carlsbad Strawn Pool concerned the practicality of allocation of allowables based on reserves. The Commission Staff questioned the practicality, but no other party objected to such an allocation. Antweil submits that such allocation is practical as shown in this hearing as follows:

1. Testimony of operators in the field as to its practicality was substantial. Antweil in fact determined reserves for the field as shown by his Exhibits 1 through 10. Pennzoil United stopped one step short of determining reserves by its recommendation of a hydrocarbon pore volume allocation, did

not question Antweil's determination of reserves, and concurred that determination of reserves is necessary under the statute.

2. Testimony established, including testimony from the Commission's Geologist, that determination of reserves in any field by the method used by Antweil is a usual practice in the industry and is applied to most fields as a matter of course.

3. The Commission Geologist, in his testimony, declared that he would so calculate reserves if directed by the Commission.

SOUTH CARLSBAD STRAWN COMPARED WITH SOUTH CARLSBAD MORROW POOL

Antweil has taken no position on the allowable allocation of the South Carlsbad Morrow Pool, consolidated for purposes of hearing with the South Carlsbad Strawn Pool. There was considerable testimony presented in the consolidated hearing showing that the Morrow pay is inconsistent, confusing and difficult to determine or evaluate. This testimony must not be applied to the Strawn reservoir. The differences in the reservoirs are these, as brought out by the Commission geologist and other witnesses in their testimony:

1. The Morrow reservoir is undefined, with additional wells being drilled, completed, staked and planned; on the other hand, the Strawn reservoir is completely developed and defined, so far as can be reasonably determined, making a determination of both tract and total reserves in the pool relatively simple.

2. The Morrow sand pay is composed of many separate stringers, many of which have not been tested and are difficult of determination as to whether productive or not. The Strawn formation is homogeneous limestone with all porosity within the section being interconnected. Thus, the determination of porosity and net pay, the principal constituents of reserves determination, is relatively simple.
3. The Morrow formation produces varying amounts of water in different wells, affecting pressures and the determination of whether a sand stringer is productive or not. The Strawn formation produces no appreciable water, effectively ruling out one variable in reserves determination.

Antweil therefore submits that any determination as to the practicality of reserves determination in the Morrow Formation should have no effect on such determination in the Strawn Formation in the South Carlsbad pools. Should the Commission decide that reserves determination and allocation is practical in the South Carlsbad Strawn Pool and impractical in the South Carlsbad Morrow Pool, the industry would be afforded excellent guidelines as to the Commission's viewpoints for future allocations in other fields.

LACK OF OPPOSITION TO ALLOCATION BASED ON RESERVES

In the South Carlsbad Strawn portion of this hearing, Antweil determined reserves and Pennzoil suggested a determination of hydrocarbon pore volume, the principal constituent of

reserves calculation. No operator questioned that the method of reserves determination and allocation was anything but practical and proper. No evidence for any other allocation formula in the South Carlsbad Strawn Pool was submitted by any party. The lack of controversy and substantial concurrence between operators in the pool should be given considerable weight by the Commission.

PRECEDENT SETTING EFFECT OF ALLOCATION OF ALLOWABLE BASED ON RESERVES

Allocation of the allowable in the South Carlsbad Strawn Pool based on reserves would be a precedent-setting decision. The Commission pointed out that 15 gas fields are currently being prorated in Southeast New Mexico, all on an acreage basis. This should be no factor in the Commission's determination, inasmuch as in all the original hearings prorating these 15 fields, no party requested anything other than acreage proration. In the Basin Dakota case mentioned above, the Commission specifically found in Finding No. 10 of Order No. R-2259-B, that there was no direct correlation between acreage and reserves, and therefore, that acreage should not be used as the sole criterion for allowable allocation. This finding comports with the evidence submitted at this hearing.

The Commission has always been progressive in adopting new methods where the evidence justifies. The statement presented by the Director of the Commission at the morning session of this hearing, to the effect that the Commission will entertain applications for increased allowables when presented with evidence that such an increase would not damage the reservoir,

gives proof of the Commission's willingness to change to meet new conditions and to fulfill its statutory directives. Any precedent-setting effect of allocation of allowable based on reserves for the South Carlsbad Strawn Pool can only further justice and equity in the administration by the Commission of its legislatively created duties.

Law Offices of
McDERMOTT, CONNELLY & STEVENS

BY _____
Post Office Box 1904
Santa Fe, New Mexico 87501

ATWOOD, MALONE, MANN & COOTER

BY _____
Post Office Drawer 700
Roswell, New Mexico 88201

CITIES SERVICE OIL COMPANY

Cities Service Building
Box 300
Tulsa, Oklahoma 74102

May 3, 1972

Oil Conservation Commission
State of New Mexico
P. O. Box 2088
Santa Fe, New Mexico 87501

Attention: Mr. A. L. Porter, Jr.

Re: South Carlsbad-Morrow and
Strawn Gas Pools, Case No. 4693
and Case No. 4694

Gentlemen:

Attached are two copies of the Closing Statement of Cities Service Oil Company in the subject cases. The Statement is submitted in accordance with the Commission's ruling that such statements would be accepted within 15 days of the date of hearing.

Very truly yours,

Robert F. LeBlanc

Robert F. LeBlanc
Senior Attorney

RFLeB
o
Enclosures

cc: Mr. George M. Hatch -w/Attach.
Mr. Charles C. Spann -w/Attach.
Mr. George H. Hunker, Jr. -w/Attach.
Mr. Donald S. Stevens -w/Attach.
Mr. Jason Kellahin -w/Attach.
Mr. Edward P. Chase -w/Attach.
Mr. Fincher Neal -w/Attach.

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

SOUTH CARLSBAD-MORROW GAS POOL - CASE NO. 4693	)	In the Matter of the Hearing Called by the Oil Conservation Commission on its Own Motion to Consider Instituting Gas Prorationing in the South Carlsbad-Morrow Gas Pool and South Carlsbad-Strawn Gas Pool, Eddy County, New Mexico.
SOUTH CARLSBAD-STRAWN GAS POOL - CASE NO. 4694	)	Hearing Held in Hobbs, New Mexico on April 19 and 20, 1972

STATEMENT OF CITIES SERVICE OIL COMPANY

TO THE HONORABLE NEW MEXICO OIL CONSERVATION COMMISSION:

Cities Service Oil Company ("Cities") is the owner of extensive leasehold interests in the South Carlsbad Fields. It operates four Morrow gas wells, owns a working interest in a fifth Morrow well and operates one Strawn well. Because of its interests and in order to protect the correlative rights of all parties in the field, Cities took an active part in the subject hearings and recommended that the Morrow and Strawn gas pools be prorated by this Commission.

Each of the subject pools should be prorated because (1) there are two pipeline purchasers taking gas from each pool, (2) split takes exist from wells in the pools, and (3) penalty factors have been assigned wells for non-standard locations and such are meaningless without an allocation formula. Each of the items mentioned point toward allocation as necessary to protect the correlative rights of all parties in the fields.

Cities recommends that the Morrow gas pool be prorated on an acreage allocation formula basis as the record

will show that this is the only practical basis on which to allocate this gas pool. With respect to the Strawn gas pool, however, Cities would have no objection to the allocation formulae proposed by the other participants at the hearing, assuming the Commission believes it can effectively administer proration under the formula it adopts.

MORROW GAS POOL

The record will show that the productive limits of the Morrow Pool have not been finally determined. The approximate 600 feet of Morrow formation is not homogeneous and is comprised of numerous stringers. There seems to be no pay zone common to every well in the pool. The Morrow is a very complex reservoir and it is very difficult to determine the exact net feet of pay for each well. The record will show that the only way to know if a particular zone in a well will produce is to perforate and test the zone. Even after a successful test, there is no way of knowing, and it is interpretive, as to whether or not the same thickness of the zone extends throughout the particular 320-acre gas unit. No cores have been taken in the Morrow Formation, and the factors such as net feet of pay, porosity, water saturation and permeability are interpretive and tend to confuse reserve calculations.

The Commission should note that not one isopachous map for the Morrow Formation was submitted at the hearing. Witnesses for a more precise reserve type allocation formula testified that the above factors and the preparation of isopachous maps could be worked out by operators in the field and by the Commission staff. What if these differences cannot be resolved or some operators would not attend the joint work sessions? The burden would then be on the Commission staff to resolve the differences, and Cities submits that due to the geological make-up of the Morrow Formation, any conclusions would be arbitrary.

With respect to the possibility of using deliverability as the allocation formula, the record will clearly show that deliverability is not indicative of recoverable reserves. Open flows of wells very widely. To illustrate, one particular well had four times greater deliverability than another well located only 1300 feet away, both wells appearing to be producing from the same zone. Additionally, open flows will change under varying conditions according to test procedures and cleanup time.

Finally, Cities submits that the record in this matter strongly supports that the South Carlsbad-Morrow Gas Pool should be prorated on an acreage allocation formula. Ninety-nine and six-tenths percent of the prorated gas or 15 gas pools in southeast New Mexico are prorated on an acreage allocation formula. Cities respectfully requests that the Morrow Gas Pool be prorated on an acreage allocation formula since acreage is one of the best and most accurate factors to be used in determining recoverable reserves. Adoption of an acreage allocation formula will protect the correlative rights of all interest owners and will give each such owner the opportunity to recover his fair share of the reserves.

Respectfully submitted,

CITIES SERVICE OIL COMPANY

By Robert F. LeBlanc
Robert F. LeBlanc
Senior Attorney

May 3, 1972

RFLeB
o

LLANO, INC.

PHONE 393-2153 P. O. DRAWER 1320

HOBBS, NEW MEXICO 88240

R. F. MONTGOMERY
PRESIDENT

DWIGHT TEED
SECRETARY-TREASURER

April 24, 1972

Mr. A. L. Porter, Jr.
Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Dear Mr. Porter:

As directed, this letter is Llano, Inc.'s position in Case No. 4694 concerning the South Carlsbad Strawn Reservoir.

Llano, Inc. favors the proposal as presented by Morris R. Antweil in testimony during the April 19th Hearing held in Hobbs, New Mexico. It is Llano's opinion that Antweil's proposal, or variation thereof, to prorate the Strawn Reservoir on reserves will be the most equitable method of proration to all parties concerned.

Yours very truly,

R. F. Montgomery

Randall F. Montgomery

DLG/zs

cc: Jason Kellahan, Santa Fe (Pennzoil)
Charles Span, Albuquerque (Grace)
Don Stevens, Santa Fe (Antweil)
Terry Davis, Midland (Superior)
Jim Thomas, Houston (Trans Western)
Robert F. LeBlanc, Tulsa (Cities Service)
Alan Antweil, Hobbs (Antweil)

SOUTH CARLSBAD-MORROW PRODUCTION BASED ON EXTRAPOLATED
PRODUCTION FOR THE GOPOGO WELLS NOS. 1 & 2

Actual October, 1972 Production	1,214,845
Est. Gopogo No. 2 Production (actual 25,330)	515,033
Est. Gopogo No. 1 Production (actual 1,383)	29,251
Total Est. Pool Production	1,759,129

18 wells; 17.02 Ac. factors

1,759,129 ÷ 17.02 = 103,356 per 1.00 (320 Ac.)
.99 = 102,322 .61 = 63,047
.98 = 101,288 .51 = 57,711
.97 = 100,255

First Classification Results 1-1-73; 12 Marginal Wells, Prod. = 433,081

1,759,129 - 433,081 = 1,326,048 ÷ 5.44 = 243,758
.99 = 241,320 .51 = 124,316
.98 = 238,883
.97 = 236,445

Second Classification Results 7-1-73; 15 Marginal Wells, Prod. = 902,677

1,759,129 - 856,452 = 902,677 ÷ 2.51 = 359,632
.51 = 183,369

Third Classification Results 1-1-74; 16 Marginal Wells, Prod. = 949,180

1,759,129 - 949,180 = 809,949 ÷ 2.0 = 404,974

Fourth Classification Results 7-1-74 - None

Fifth Classification Results 1-1-75; 17 Marginal Wells, Prod. = 1,244,096

1,759,129 - 1,244,096 = 515,033 ÷ 1 = 515,033

Proration no longer necessary with these conditions.

M.P.G

TETRA TECH, INC.
630 NORTH ROSEMEAD BLVD
PASADENA, CALIFORNIA 91107
TELEPHONE (213) 449-6400

CORINNE GRACE

City of Carlsbad

Well #1

Thomas A. Baldwin
Chief Geologist, Tetra Tech, Inc.
December, 1972

Corinne Grace, City of Carlsbad Well #1

1980 f EL, 660 f SL
Section 25-T22S-R 26 E
South Carlsbad, Morrow Pool

This study evaluates the probable effect of reducing the production rate (or shutting in) City of Carlsbad, Well #1. In summary, such an action would cause water invasion of the gas producing interval with permanent damage to the well and to the surrounding area of the field.

The subject well was drilled to 11, 970 feet then perforated in the Morrow formation between 11, 516 feet and 11, 522 on 1/12/71. The total porous interval involved (referred to as the M + 300 zone), is 20 feet thick, from 11, 512 to 11, 532 feet.

After perforation the well was swabbed for 45 days with an increasing gas rate and decreasing water rate. The total water produced (estimated from disposal shipments) was 63, 000 barrels. In 3/2/71 the well was shut in while awaiting connection as a commercial gas well. Between 2/2/72 and 2/25/72 the well was swabbed down for production (producing 32, 000 barrels of water) and hooked up.

Between 2/25/72 and the present, the well has produced gas (starting at 9150 Mcf/D rate) and water (starting at 1000 B/D rate but quickly stabilizing at 750 B/D). During this period, 260, 000 barrels of water were produced. About 350, 000 barrels of water have been produced in total. Some of the water has been used as salt drilling fluid in later wells, the balance being disposed of in a salt water injection well.

Draining Radius Study

This part of the study was performed to evaluate the effect on neighboring properties of producing City of Carlsbad Well #1 at the present gas and water rates. In summary, at the present water production rate the up-dip properties will not be effected for at least 20 years.

Before the subject well could pull gas down structure from the neighboring producers, it would have to produce 5. 5 million barrels, about 20 times the true production.

These parameters are expressed in Drainage Radius Curve "A" (Radius of Drainage versus volume of water production) which demonstrates that water production to date has come from a drainage area with a radius of not over 450 feet. The closest property not operated by the Grace interests is 2,000 feet away.

During the initial swabbing period (1/12/71 to 3/2/71) some gas was produced almost immediately. Thus, it is necessary to assume that gas saturated sand was exposed in the well bore, but that initially higher pressure existed at the bottom of a water saturated zone. Under these conditions preferential production of water occurred until the water reservoir pressure was reduced to a stabilized balance with the pressure in the gas column. This condition was reached in about 1 month after line connection and thereafter, the well has produced 750 B/D of salt water and 11 m mcf/D of gas.

From this data and study of the electric log it is calculated that the 20 foot porous zone consists of 10 feet of gas sand above 10 feet of water sand with free vertical communication.

Drainage Radius Curve "B" represents drainage radius versus produced water volume for a 10 foot interval of water saturated zone. This curve indicates that all water produced to date represents a drainage area of radius 650 feet. More than 10 times this volume must be produced before any effect occurs on the nearest non-Grace properties.

Drainage Radius Curve "B" is the best present representation of reservoir conditions in the vicinity of City of Carlsbad Well #1.

Two drainage maps have been prepared: Drainage Area Map "A" representing the hypothetical case evaluated by Drainage Curve "A" and Drainage Area Map "B" the best present representation as evaluated by Drainage Curve "B".

Differential Pressure Analysis

Two illustrations are offered (I & II), each shows a portion of the Gamma Ray & Acoustic logs for the subject well enlarged to the scale 1"=3'.

The porous interval 11, 512 to 11, 532 is clearly indicated by reduced velocity on the Acoustic-Log in each illustration. Gas Saturation and water saturation are indicated respectively by red stippling and blue stippling.

Illustration I includes two curves, a red curve (based upon Initial shut in pressure prior to production) shows pressure through the gas zone to have been approximately equal (3150 psi surface recorded) and further indicates an increase in bottom hole pressure responding to the 10 foot head of water involved. This 5 pound pressure increase at the bottom of the zone was, prior to production, in stable adjustment. Illustration I shows (in green) the estimated instantaneous pressure gradient that would result if the well were shut in today. Since water productivity has stabilized at about 50% of the initial record it is estimated that hydropressure at column bottom has been reduced 50%, from 5 pounds to 2.5 pounds. Similarly, gas pressure has been reduced but to a greater degree since the gas is depletable while water in the Morrow appears to be replenishable.

Illustration II indicates the result that must be anticipated should the subject well be shut-in, or flow sharply restricted for any substantial period. It must be anticipated that water pressure would quickly be restored to normal (3155 lbs.), while pressure in the gas column would rise more slowly and would never return to the original condition, but would reflect the depletion caused by gas production to the present by reaching a maximum of about 3145 lbs. The difference in pressure between the gas zone and the bottom of the water zone would be about 10 pounds, a force sufficient (under restriction of production) to lift the water level to the top of the porous interval. The resulting invasion of the gas zone would very probably result in the loss of City of Carlsbad Well #1, and would at the least restrict or possibly destroy any gas production capacity in portions of the surrounding properties.

Conclusion:

The most efficient rate of production for City of Carlsbad Well #1 coincides with the only possible economic rate of production, that rate which results in stabilized water production of about 750 B/D.

Corinne Grace, City of Carlsbad Well #1

Drainage Radius Curve "A"

Hypothetical 20 feet of
Water Saturated Interval

Drainage Radius vs Volume of Water Produced

assume 15% average porosity

20' of porous sand, water saturated

R = Radius of Drainage

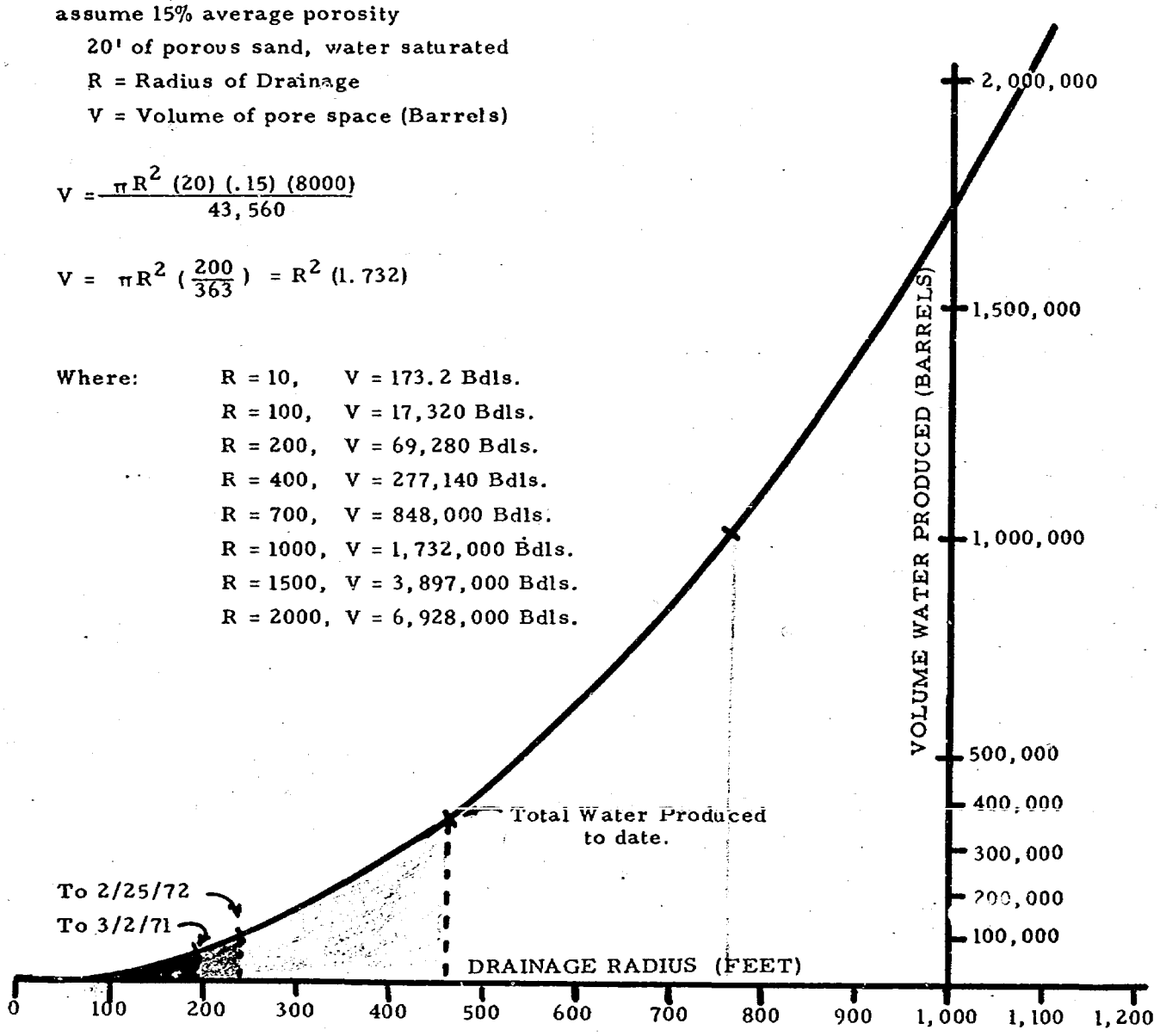
V = Volume of pore space (Barrels)

$$V = \frac{\pi R^2 (20) (.15) (8000)}{43,560}$$

$$V = \pi R^2 \left(\frac{200}{363}\right) = R^2 (1.732)$$

Where:

R = 10, V = 173.2 Bdls.
R = 100, V = 17,320 Bdls.
R = 200, V = 69,280 Bdls.
R = 400, V = 277,140 Bdls.
R = 700, V = 848,000 Bdls.
R = 1000, V = 1,732,000 Bdls.
R = 1500, V = 3,897,000 Bdls.
R = 2000, V = 6,928,000 Bdls.



Corinne Grace, City of Carlsbad Well #1

Drainage Radius Curve "B"

Calculated with a
10' column of
Water Saturated Sand

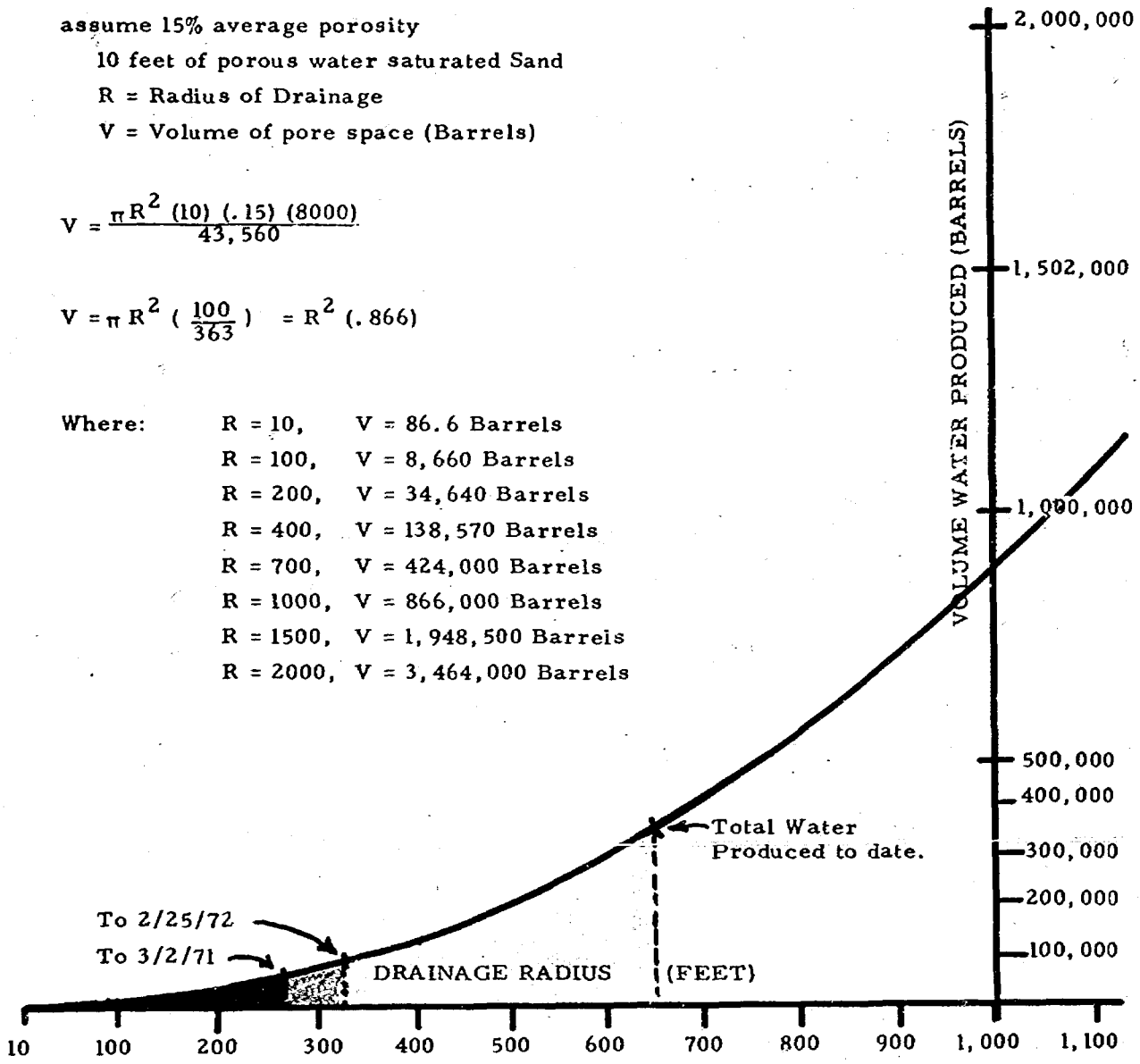
Drainage Radius vs Volume of Water Produced

assume 15% average porosity
10 feet of porous water saturated Sand
R = Radius of Drainage
V = Volume of pore space (Barrels)

$$V = \frac{\pi R^2 (10) (.15) (8000)}{43,560}$$

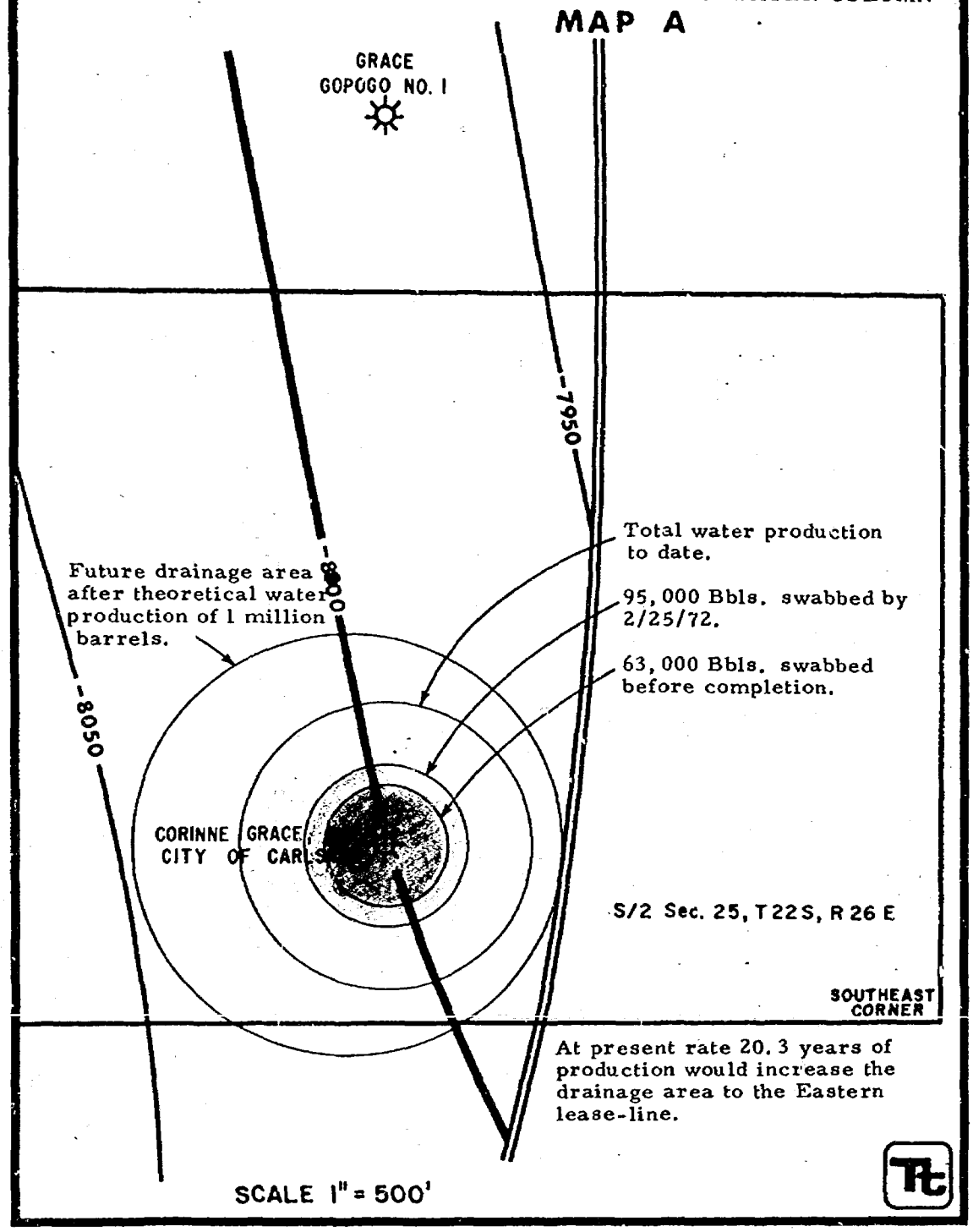
$$V = \pi R^2 \left(\frac{100}{363}\right) = R^2 (.866)$$

Where:
R = 10, V = 86.6 Barrels
R = 100, V = 8,660 Barrels
R = 200, V = 34,640 Barrels
R = 400, V = 138,570 Barrels
R = 700, V = 424,000 Barrels
R = 1000, V = 866,000 Barrels
R = 1500, V = 1,948,500 Barrels
R = 2000, V = 3,464,000 Barrels



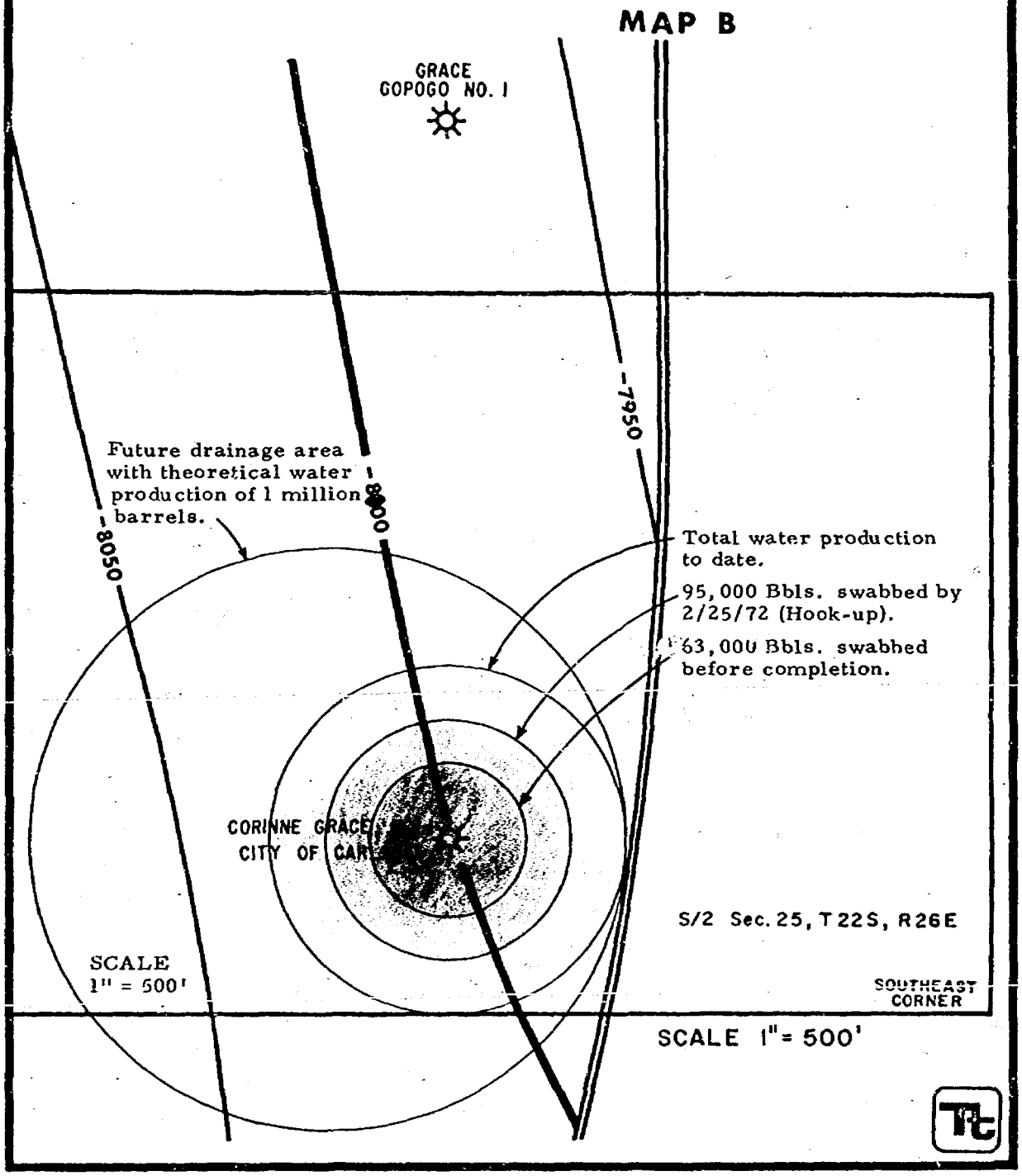
CORINNE GRACE, NO. 1 CITY OF CARLSBAD

DRAINAGE AREA vs WATER PRODUCTION ASSUMING 20' WATER COLUMN



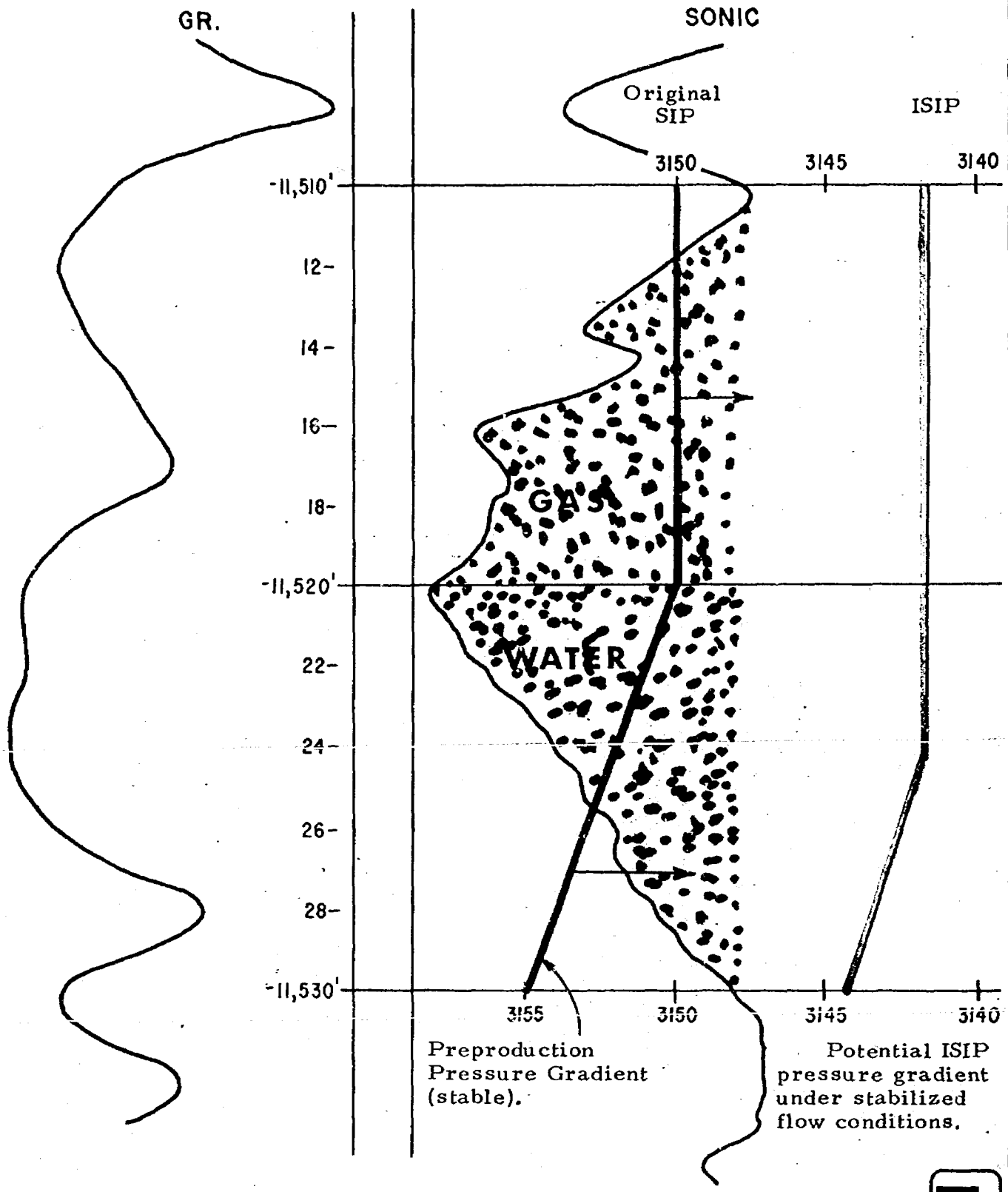
CORINNE GRACE, NO. 1 CITY OF CARLSBAD

DRAINAGE AREA vs WATER PRODUCTION ASSUMING 10' OF WATER COLUMN



I

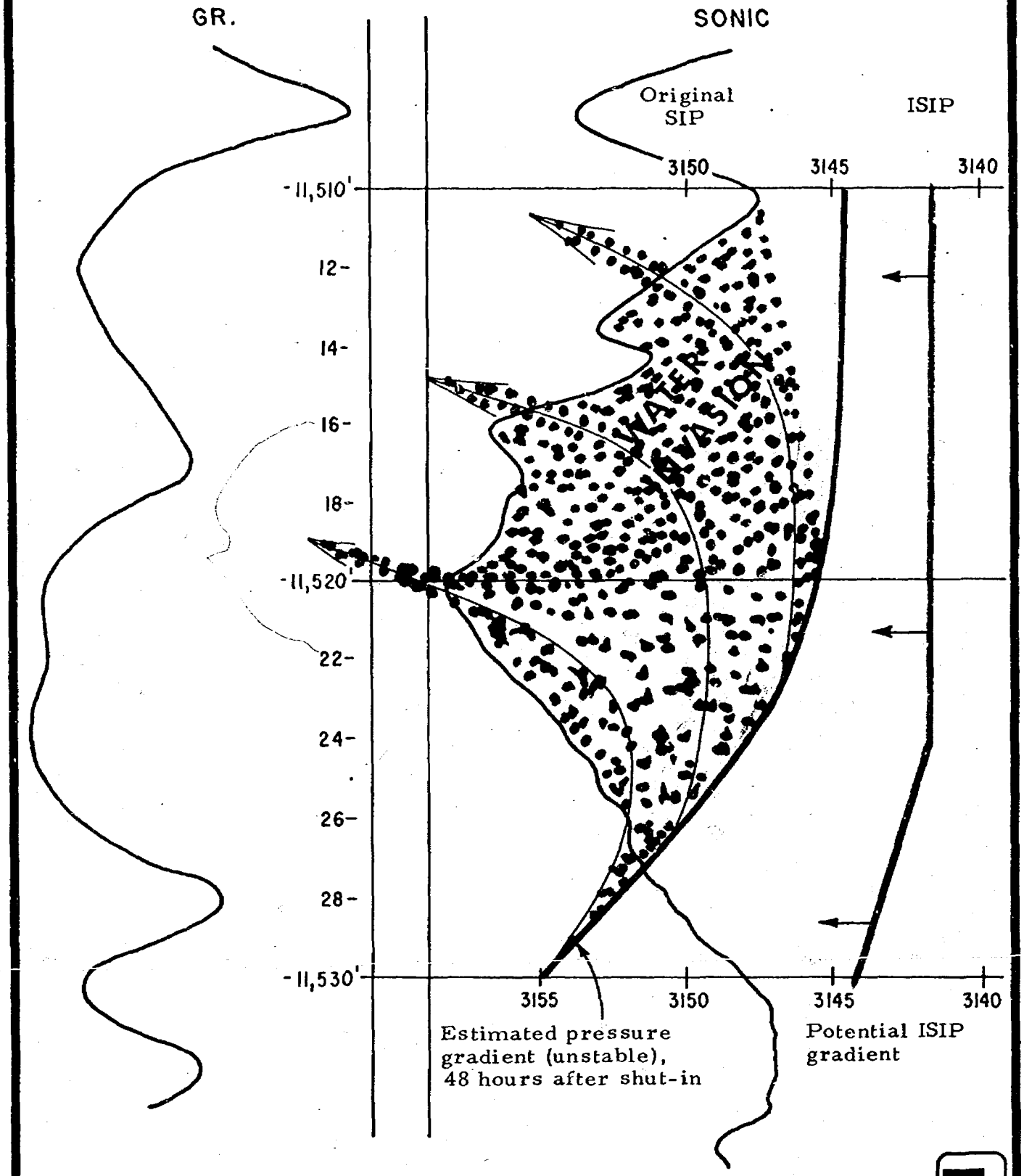
CORINNE GRACE, NO. I CITY OF CARLSBAD



II

CORINNE GRACE, NO. I CITY OF CARLSBAD

SEVERE RESTRICTION OR SHUT-IN RESULTING IN WATER INVASION



OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501

GOVERNOR
BRUCE KING
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

April 25, 1972

Mr. Robert F. LeBlanc
Cities Service Oil Company
Box 300
Cities Service Building
Tulsa, Oklahoma 74102

Dear Mr. LeBlanc:

Mr. George Hatch of this office has asked me to furnish you with the names and addresses of the attorneys who appeared in Cases 4693 and 4694 on April 19, 1972 at Hobbs, New Mexico. Here are the names and addresses:

Mr. Charles C. Spann
Grantham, Spann, Sanchez & Rager
Attorneys at Law
914 Bank of New Mexico Bldg.
Albuquerque, New Mexico 87101

Mr. George H. Hunker, Jr.
Hunker, Fedric & Higginbotham
P. O. Box 1837
Roswell, New Mexico 88201

Mr. Donald S. Stevens
McDermott, Connelly & Stevens
Post Office Box 1904
Santa Fe, New Mexico 87501

Mr. Jason Kellahin
Kellahin & Fox
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico 87501

Mr. Robert F. LeBlanc
Cities Service Oil Company
Box 300
Cities Service Building
Tulsa, Oklahoma 74102

April 25, 1972

Mr. Edward P. Chase
Attorney at Law
Suite 1122
Bank of New Mexico Building
Albuquerque, New Mexico 87101

Mr. Fincher Neal
Neal & Neal
Attorneys at Law
Post Office Box 278
Hobbs, New Mexico 88240

If we can be of further service, please let us know.

Very truly yours,

IDA RODRIGUEZ
Secretary to Mr. Porter

ir/

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date 12/8/71

Name of Employee Lelan Mermis

Time of Departure 11:00 a.m. Time of Return 3:45 p.m.

Miles Travelled 124

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

Field Inspection:

Checked Samedan Oil Corporation, Grandi Ranch #1-J, 19-23-26, not ready to plug.

Checked Corinne Grace, Humble-Grace Com #1-P, 2-23-26, gas is being flared, and there is no well sign. Also no well sign on the Panagra #1-B 11-23-26,

Lelan Mermis
Employee's Signature
District #

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date 12/10/71

Name of Employee Lelan Mermis

Time of Departure 9:15 a.m. Time of Return 7:00 p.m.

Miles Travelled 125

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

Samedan Oil Corporation, Gandi Ranch #1, 19-23-26, spotted 40 sx plug at base of 9 5/8" stub at 7269 and 40 sx plugs at 5,000, 3300, 2100, 1600, 365. They do not have top plug in, will go back.

Also checked Corinne Grace #1-Gradonoco in section 2-23-26, and Humble Grace #1 in section 2-23-26, both wells flairing gas from casing side, will go back.

Lelan Mermis
Employee's Signature
District # 2

OIL CONSERVATION COMMISSION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

August 28, 1972

COPY

Mr. Paul Cooter
P. O. Drawer 700
Roswell, New Mexico

Dear Mr. Cooter:

In response to our conversation, following is a list of attorneys who made an appearance in Cases 4693 and 4694:

Edward P. Chase	Suite 1122, Bank of New Mexico Bldg.	Albuquerque, N.M.
Charles C. Spann	Suite 914, Bank of New Mexico Bldg.	Albuquerque, N.M.
George H. Hunker	P. O. Box 1837	Roswell, N. M.
Robert F. LeBlanc	P. O. Box 300	Tulsa, Oklahoma
Jason Kellahin	P. O. Box 1769	Santa Fe, N.M.
Donald G. Stevens	P. O. Box 1797	Santa Fe, N. M.
Fincher Neal	P. O. Box 278	Hobbs, N. M.
James Allison	P. O. Box 1502	Houston, Texas
George M. Hatch	P. O. Box 2088	Santa Fe, N. M.
William J. Cooley	152 Petroleum Center Bldg.	Farmington, N. M.

Very truly yours,

GEORGE M. HATCH
Attorney

GMH/dr

OIL CONSERVATION COMMISSION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

MAY 8, 1972

M E M O R A N D U M

TO: LAND COMMISSIONER ALEX J. ARMIJO

FROM: A. L. PORTER, Jr., SECRETARY-DIRECTOR

SUBJECT: SOUTH CARLSBAD PRORATION CASES - 4693 and 4694

COPY

You will recall that on April 20 in Hobbs we announced that 15 days would be allowed for closing arguments in the above-captioned cases. I am attaching statements which were received by the May 5th deadline as follows:

Edward P. Chase representing Michael P. Grace II and Corinne Grace; Robert F. LeBlanc representing Cities Service Oil Company; Jason W. Kellahin representing Pennzoil United, Inc.,; Donald S. Stevens representing Morris R. Antweil, Delta Drilling Company and Mabee Petroleum Company. You will please note that Mr. Chase has also filed a Motion to Dismiss and a Motion for Continuance. He has also requested 30 minutes for oral arguments before the Commission.

You will recall these cases were originally advertised for an examiner hearing on March 1, but upon request by Corinne Grace on February 24, a memorandum was issued by this office stating that the cases would be advertised to be heard at the next regular hearing to be held in Hobbs on April 19, 1972.

I would like to meet with you sometime during the next few days to discuss the closing statements and the motions from Mr. Chase, including the request for 30 minutes for oral arguments.

Attachments

ALP/ir

Received 4/20/72
9:05

WU HB HOBBS

KA193 LB202

L PNA085 PW PDF PASADENA CALIF 19 1218P PST

OIL COMMISSION OF NMEX

CITY HALL HOBBS NMEX

GEOLOGISTS ASSIGNED ON GRACE CARLSBAD PROJECT STILL AT DENVER CONVENTION STOP UNABLE TO TESTIFY NOW OFFICIAL FIGURES AND FACTS APPEAR TO BE INAQUATE FOR OUR RESEEARCH STOP CONTINUING THE PLEASE SUPPLY MORE INFORMATION IMMEDIATELY FOR OUR PROJECT

TETRATECH INC S O PATTERSON

PPC

(120)

Case Notice

APR 15 12 22 PM '72

Received 4-20-72

UP CST APR 18 72 KA266 NSA338

NS MDA044 RS NL PD MIDLAND TZX 18

NEW MEX OIL CON COMM

PO BOX 1980 HOBBS NMEX

REGARDING HEARING APRIL 19 1972 CASE 4693, SOUTH CARLSBAD MORROW GAS POOL AND CASE 4694 SOUTH CARLSBAD STTAWN GAS POOL EEDDY CO NEW MEXICO ?

REF IS MADE TO OUR LETTTER DATZD FEB 28 1972 RELATTVEE TO CASE 4668 UNION SUPPORTTYLAND ALLICATTON METTOD BASED 100 PERCEET ON ACREAGE IN OUR OPINION SUCH A FORMULA IS FAIR AND EQUITWBLE AND PROTTECTTS CORRLATTIVE RIGHTS OF ITE VARIOUS MINERAL OWNERSHIP WE FURTHER BELIEV THIS ADMINISTTATIVE BURDEN IS MAINTAINED WITTIN REASONABLE LIMITS BY SUCH FORMULA

UNION OIL CO OF CALIF G W COOMBES DISTHOPN MGR.

19 1972 4693 4694 28 1972 4668 100.

TEXAS EASTERN Transmission Corporation
921 MAIN AT McKINNEY P. O. BOX 2521 HOUSTON, TEXAS 77001

JIM B. THOMAS
GENERAL MANAGER OF SUPPLY

May 8, 1972

Mr. A. L. Porter
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: NMOCC Cases Nos. 4693 and 4694

Dear Mr. Porter:

After reviewing the testimony presented in the subject cases, we would like to reiterate our position that we are willing and able to purchase all gas volumes produced from the acreage dedicated to us in the South Carlsbad Field area. We think that any artificial restriction placed on maximum production would be detrimental to the public interest.

We were surprised to learn from the transcript of a proposal by one operator to base gas well allowables on the number of feet of perforated interval in each well. The number of feet of perforated interval in a well does not necessarily have any relation at all to the gas reserves underlying the lease on which the well is situated. In many instances production from a gas well comes from only a very small number of the many perforations in such well, and in other instances a small perforated interval can as well drain the gas reserves as a larger perforated interval. Adoption of such a proposal would penalize those operators who have already elected to perforate a small interval, and would benefit those who have perforated a larger interval. In addition, the mischief which might ensue in the future from adoption of this proposal seems self-evident; operators in the future would naturally make unnecessary and even non-productive perforations in their wells simply to gain an allowable advantage. We sincerely hope the Commission will not adopt such a rule which would cause Transwestern and the other purchasers of gas to take gas from the various wells in the field on such an unequitable basis.

Yours very truly,

Jim B. Thomas

Jim B. Thomas

JBT/ab

Mobil Oil Corporation

P.O. BOX 633
MIDLAND, TEXAS 79701

April 18, 1972

New Mexico Oil Conservation Commission
Post Office Box 2088
Santa Fe, New Mexico 87501

Attention: Mr. A. L. Porter, Jr.

Gentlemen:

MOBIL OIL CORPORATION'S
RECOMMENDATIONS TO THE COMMISSION
FOR CONSIDERATION AT THE HEARINGS
CALLED TO CONSIDER GAS PRORATIONING
CASE 4693 - SOUTH CARLSBAD-MORROW
GAS POOL AND CASE 4694 - SOUTH
CARLSBAD-STRAWN GAS POOL,
EDDY COUNTY, NEW MEXICO

Mobil Oil Corporation, as a working interest and royalty interest owner in the South Carlsbad-Morrow Gas Pool and the South Carlsbad-Strawn Gas Pool, Eddy County, New Mexico, recommends that the total allowable natural gas production from each of the aforementioned gas pools be fixed at amounts equal to the market demand and to the capacity of gas transportation facilities subject to provisions as follows:

1. That the monthly nominations of gas market demand for each pool submitted by each gas purchaser be limited to a total equal to the sum of the products obtained by multiplying: (operating deliverability) times (ratable take factor) times (allocated acreage divided by 320) times (number of days per month) times (purchaser's connected interest in well, if split connection) for each well in the pool.

2. The allowable to be assigned to each marginal well shall be equal to the average monthly production of said well during the preceding gas proration period.

3. The pool allowable remaining after deducting the total allowable assigned to marginal wells shall be allocated to each non-marginal well entitled to an allowable in said pool in the amount equal to the product obtained by multiplying: (ratable take factor) times (allocated acreage divided by 320) for each well.

Mobil feels that the above stated provisions are necessary to the proposed gas prorationing of the subject pools to protect correlative rights and to afford each operator the opportunity to produce their just and equitable share of the gas in the subject pools, and are further necessary to prevent waste.

Yours very truly,

Ira B. Stitt
Division Operations Engineer

JHSeerey/mw
cc: NMOCC - Dist. 1

PROPOSED GAS PRORATIONING

SOUTH CARLSBAD - MORROW & STRAWN GAS POOLS

DEFINITION

Operating deliverability is defined as the measured volume of gas produced during a 24-hour period, such period being preceded by a 24-hour stabilization flow period at a rate of at least 80% of the operating flow rate. The operating deliverability shall be determined at producing pressures and temperatures which normally exist from day to day in the installed equipment. Operating deliverability shall be determined annually or at lesser intervals at operator's option.

JHS/mw

Jim Allison - Transwestern

Rondall Montgomery - Hanco —

OIL CONSERVATION COMMISSION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

February 28, 1972

COPY

Mrs. Corinne Grace
Post Office Box 2062
Santa Fe, New Mexico

Re: Case 4668

Dear Mrs. Grace:

With reference to your letter of February 24, 1972, I am sure that by this time you have received my memorandum directed to all the producers and purchasers of gas in the South Carlsbad-Morrow and South Carlsbad-Strawn Pools. As stated in the memorandum, Case 4668 will be dismissed and the matter will be set before the Commission at its regular hearing in Hobbs on April 19, 1972.

In a case of this nature I would have honored a request by any interested party to re-schedule the matter before the Commission instead of an examiner. In other words, it would not have been necessary for you to make a trip to Santa Fe. A phone call to me would have been sufficient.

Because of the many demands upon the time of the Governor and the Commissioner of Public Lands, the examiner system was established seventeen years ago. Since that time only a small fraction of the total applications are heard by a quorum of the Commission. Since other proration cases have been heard by examiners, it was not expected that there would be any objection to the same procedure in this case.

There was an inference in your letter that you were influenced by various employees of the Commission to drill wells on the two units, which, after notice and hearing, were limited to 51% and 61% of a standard 320-acre unit, the factor of influence being that such

OIL CONSERVATION COMMISSION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Mrs. Corinne Grace
Post Office Box 2062
Santa Fe, New Mexico

February 28, 1972

employees advised your representatives that the pools would not be prorated. You may have received such advice from someone, but it is inconceivable that it came from any employee of the Commission. In fact, all of our technical employees know that any interested party has a right to ask for proration at any time or, as in this case, the Commission can call a hearing to prorate upon its own motion.

From your letter it is apparent that you are not fully acquainted with the functions of the Commission nor with the factors to be considered in gas proration. Broadly, the functions of the Commission are to prevent the waste of oil and natural gas, to afford the opportunity for each owner in a common reservoir to recover his just and equitable share of the oil and gas in place, and to protect fresh water.

It is not a function of the Commission to generate revenue for the state. It is commonly accepted, however, that the maintenance of a sound and stable regulatory atmosphere is conducive to the investment of capital in the development of our oil and gas resources.

All interested parties are urged by the Commission to attend the hearing in Hobbs and to present testimony if they so desire. Such testimony, of course, must be pertinent to the question of whether the pools should be prorated, and, if so, what proration formula should be used in the pools.

Our Commission maintains offices in Santa Fe, Hobbs, Artesia and Aztec. A great deal of our time is devoted to helping operators to understand and comply with our laws and regulations. Many problems and inconveniences can be avoided by contacting any of our employees. They are always glad to be of assistance.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

cc: Governor Bruce King
Commissioner Alex J. Armijo
Mr. Bill Gressett

Michael P. Grace II
Corinne Grace
P. O. BOX 2062
SANTA FE, NEW MEXICO 87501

February 24, 1972

Mr. Pete Porter
Director
New Mexico Oil Conservation Commission
Santa Fe, New Mexico 87501

Re: Gas Prorationing in South Carlsbad-Morrow and South Carlsbad-Strawn Gas Pools, Eddy County, New Mexico

Dear Mr. Porter:

In regard to the above matter, my husband and I respectfully and humbly request that this hearing be held before the full Commission, inasmuch as it involves approximately 60 million cubic feet of gas a day and the fields that have been in existence between three and four years. Six separate operators are involved, not counting two or three more operators with participating interests.

Since the initiation of the first Morrow well in the above field, no well has delivered to the State of New Mexico an override, as no wells selling gas were located on State acreage,* yet there have been no field rules as to proration or allowables to date.

Oddly enough, on February 18, 1972, Transwestern Natural Gas Pipe Line Company started a planned increase of its facilities, which until then had been admittedly inadequate. Yet, oddly, at approximately that very same time the New Mexico Oil Conservation Commission sought to institute proration, which might have been necessary previously, but surely would not be necessary now. The first well in the Morrow was completed four years ago. Until February 3 and 4, 1972, when two of our wells went on production, Morrow production had been for the most part marginal. On February 18, Transwestern hooked on above-mentioned wells and several others to their new large loop. It is their opinion that this loop will now take all the gas all the wells contracted to them will make, with four more wells to be hooked on soon. In anticipation of our well presently being drilled on entirely State acreage in Section 36, Township 22 South, Range 26 East, and another well planned thereupon in the above section, Transwestern is going to lay an additional line.

*Texas Oil & Gas is producing 200,000 cubic feet, more or less, on State acreage.

Proration therefore would have been far more effective in the past than now. This is especially a most inopportune time to pro rate when for the first time in the field's history the State itself has obtained a valuable override, namely, from our four wells.

As you undoubtedly know, two of our wells were granted unorthodox locations due to the Airport runway, one well's production to be cut by 49% and one by 39% with the possible installation of proration. Both have communitized State acreage.

Enclosed is a chart showing how much money the State will lose immediately as a result of such penalties.

Representatives of ours were told by various employees of your Commission that we should request the above unorthodox locations rather than drill slant holes, because proration would not occur in light of the increasing demand for gas. We followed this advice and now before we have received our first check, your announcement of the docket hearing arrived at our office with only eight days' notice to us. Thus warning us peremptorily that the State's and our revenues could be summarily reduced.

We spent over 2 million dollars in the last year and a half in exploration in the above area and have projected to spend as much again in this year's budget if this proration goes through summarily and as planned we will have to change our plans radically and invest in other states where we are not punished for achieving the best gas contract in the Permian Basin and where we have woefully neglected our leases such as in Alaska, Wyoming, Utah, and Colorado.

I believe the Commission can check State and Federal records, for example, and find that as great as are our holdings in New Mexico, they are yet quantitatively and qualitatively better in Alaska, where, while the legal expertise may not be equal to that of the several firms who worked for us here, at least the respect therefor is commensurate thereunto.

Sincerely yours,

Corinne Grace

Corinne Grace

CG:h
Enclosure

cc The Honorable Bruce King
Governor of New Mexico

The Honorable Alex J. Armijo
Commissioner of Public Lands

C H A R T

Humble-Grace Well in S½ of Section 2,
Township 23 South, Range 26 East,
Eddy County, New Mexico

Without Proration		With Proration @ 61% due to ratable take factor alone	
At 8,900 MCF per day = 267,100 MCF per month @ .30 = $80,100 per month		At 5,429 MCF per day = 162,870 MCF per month @ .30 = $48,861.00 per month	
State royalty on 200 acres = 7.8125% =	$6,257.81	State royalty on 200 acres =	$3,817.27 per mo.
State taxes =	$4,785.86	State taxes	$2,919.37 per mo.
Total State Income	$11,043.67	Total State Income	$6,736.64 per mo.

Gradonoco Well in N½ of Section 2,
Township 23 South, Range 26 East,
Eddy County, New Mexico

Without Proration		With Proration at 51% due to ratable take factor alone	
At 5,700 MCF per day = 171,000 MCF per month @ .30 = $51,300.00 per month		At 2,907 MCF per day = 87,210 MCF per month @ 30¢ = $26,163.00 per month	
State royalty on 160 acres of State land = .0625 of the Gross =	$3,206.25	State royalty on 160 acres =	$1,635.19
State taxes	$2,909.25	State taxes*	1,483.72
Total State Income	$6,115.50	Total	$3,118.91
		State loss due to proration	$3,096.59 per mo.

*Tax exemption taken for Federal royalty of 1/8 on 160 acres

Loss on Humble-Grace Well due to proration	$4,307.03
Loss on Gradonoco Well due to proration	$3,096.59
Total loss to State on 2 Wells	$7,403.62

FEBRUARY 24, 1972

M E M O R A N D U M

TO: ALL PRODUCERS AND PURCHASERS IN THE SOUTH CARLSBAD-MORROW AND SOUTH CARLSBAD-STRAWN GAS POOLS

FROM: A. L. PORTER, Jr., SECRETARY-DIRECTOR

SUBJECT: CASE 4668 (GAS PRORATION CASE)

The Commission has had a request that Case 4668, which has been docketed for hearing March 1, 1972, be heard by a quorum of the Commission rather than by an examiner. The Commission will therefore dismiss Case 4668, and the subject matter will be re-advertised to be heard at the next regular hearing of the Commission to be held in Hobbs on April 19, 1972. This will allow ample time for all interested parties to be prepared for the hearing. No further delay should be necessary.

ALP/ir

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501

GOVERNOR
BRUCE KING
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY – DIRECTOR

FEBRUARY 24, 1972

M E M O R A N D U M

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ALP/ir

Case 4693

CASE 4692: In the matter of the hearing called by the Oil Conservation Commission on its own motion for the amendment of the gas well testing procedures promulgated by Order No. R-333-F, as amended, for Northwest New Mexico. The Commission will consider changing certain dates as set forth in said Order No. R-333-F, as amended, to adapt the testing rules and procedures for gas wells in Northwest New Mexico to a one-year proration period beginning January 1 of each year, and to incorporate said rules and procedures into one order.

CASE 4693: In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider instituting gas prorationing in the South Carlsbad-Morrow Gas Pool, Eddy County, New Mexico. The Commission will consider fixing the total allowable natural gas production from the South Carlsbad-Morrow Gas Pool, Eddy County, New Mexico, at an amount equal to reasonable market demand and to the capacity of gas transportation facilities. The Commission will also consider adoption of special rules and regulations for the pool including provisions for allocating the allowable production among the wells in the pool and a proration period of one year.

CASE 4694: In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider instituting gas prorationing in the South Carlsbad-Strawn Gas Pool, Eddy County, New Mexico. The Commission will consider fixing the total allowable natural gas production from the South Carlsbad-Strawn Gas Pool, Eddy County, New Mexico, at an amount equal to reasonable market demand and to the capacity of gas transportation facilities. The Commission will also consider adoption of special rules and regulations for the pool including provisions for allocating the allowable production among the wells in the pool and a proration period of one year.

CASE 4695: Southeastern New Mexico nomenclature case calling for an order for the creation and extension of certain pools in Lea, Eddy and Chaves Counties, New Mexico.

(a) Create a new pool in Eddy County, New Mexico, classified as a gas pool for Morrow production and

J. R. MODRALL
JAMES E. SPERLING
JOSEPH E. ROEHL
GEORGE T. HARRIS, JR.
DANIEL A. SISK
LELAND S. SEDBERRY, JR.
ALLEN C. DEWEY, JR.
FRANK H. ALLEN, JR.
JAMES P. SAUNDERS, JR.
JAMES A. PARKER
JOHN R. COONEY
KENNETH L. HARRIGAN
PETER J. ADANG

DALE W. EK
DENNIS J. FALK
FARRELL L. LINES
ARTHUR D. MELENDRES

LAW OFFICES OF
MODRALL, SPERLING, ROEHL, HARRIS & SISK
PUBLIC SERVICE BUILDING
P. O. BOX 2168
ALBUQUERQUE, NEW MEXICO 87103

JOHN F. SIMMS (1885-1954)
AUGUSTUS T. SEYMOUR
(1907-1965)

TELEPHONE 243-4511
AREA CODE 505

March 31, 1972

Mr. George Hatch
Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: Case Nos. 4693 and 4694

Dear George:

The above cases are set for hearing in Hobbs. This letter is to advise that I am New Mexico counsel for Transwestern Pipeline Company in these matters. I will appreciate your noting my appearance with the firm of Vinson, Elkins, Searls & Smith, of Houston, Texas, who will also appear in these cases. I do not plan to be present personally.

Best regards,

James E. Sperling

JES:jv

cc: Mr. James W. McCartney
Vinson, Elkins, Searls & Smith
Attorneys at Law
First City National Bank Bldg.
Houston, Texas 77002

Telegram

western union

Telegram

P

AYA182

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OIL COMMISSIONER OF NEW MEXICO

HOBBS CITY HALL HOBBS NM

DEAR SIR OUR FIRM GEO-TECH PETROLEUM MANAGEMENT CORP
6222 NORTH CENTRAL EXPRESSWAY DALLAS TEXAS 75206 HAS BEEN
RETAINED BY MICHAEL P AND CORRINE GRACE OF CARLSBAD
NEW MEXICO TO EVALUATE THEIR PRODUCTION IN THE SOUTH
CARLSBAD AREA EDDY COUNTY NEW MEXICO FOR A PENDING PRORATED
HEARING TO BE HELD BEFORE THE NEW MEXICO OIL COMMISSION
DUE TO ASEBCA OF THE GEOLOGIST ASSIGNED TO THIS PROJECT
CURRENTLY ATTENDING MEETINGXS IN DENVER AND THE EAST COAST
COUPLED WITH LACK OF SUFFICIENT RESOLVIOR DATA AVAILABLE
TO THEM AT THIS TIME, WE RESPECTABLY REQUEST POSTPONEMENT
OF THIS REPORTED SCHEDULED HEARING FOR APPROXIMATELY 60
DAYS TO ENABLE US TO ADEQUATELY APPARAISE THE SUBJECT LEASES

RESPECTUFLLY

ROBERT G COX PRESIDENT GEO TECH PETROLEUM MANAGMENT CORP

DRAFT

GMH/dr

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING CALLED
BY THE OIL CONSERVATION COMMISSION
ON ITS OWN MOTION TO CONSIDER
INSTITUTING GAS PRORATIONING IN
THE SOUTH CARLSBAD-MORROW GAS
POOL, EDDY COUNTY, NEW MEXICO.

Records Center

CASE NO. 4693
Order No. R-1670-A

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on April 19, 1972, at Hobbs, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this _____ day of June, 1972, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That by Order No. R-3731, dated April 18, 1969, the Commission created the South Carlsbad-Morrow Gas Pool, Eddy County, New Mexico, for the production of gas from the Morrow formation.

(3) That the horizontal limits of said pool have been extended from time to time by order of the Commission.

(4) That the horizontal limits of the South Carlsbad-Morrow Pool, as defined by the Commission, at the time of hearing this case comprised the following described area:

EDDY COUNTY

TOWNSHIP 22 SOUTH, RANGE 26 EAST, NMPM
Section 25: S/2

TOWNSHIP 22 SOUTH, RANGE 27 EAST, NMPM
Section 19: S/2
Section 30: All
Section 31: All
Section 32: W/2

TOWNSHIP 23 SOUTH, RANGE 26 EAST, NMPM
Section 1: W/2
Section 2: All
Section 11: All
Section 12: All

TOWNSHIP 23 SOUTH, RANGE 27 EAST, NMPM
Section 6: All
Section 7: N/2

~~(23)~~ That the producing capacity of the South Carlsbad-Morrow well connected to both systems in February, 1972, at 850 psi is approximately 19,400 MCF per day, which 9,545 MCF per day is committed to Transwestern and 9,855 MCF per day is committed to Llano; that the capacity of said well at absolute open flow is approximately 20,157 MCF per day, of which 9,917 MCF per day is committed to Transwestern and 10,240 MCF per day is committed to Llano.

~~(24)~~ That the combined producing capacity of the fourteen South Carlsbad-Morrow wells connected to gas transportation facilities in February, 1972, at 850 psi is approximately 124,250 MCF per day; that the capacity of said wells at absolute open flow is approximately 136,820 MCF per day.

~~(25)~~ That ~~since~~ after February, 1972, and prior to the time of this hearing, Transwestern ~~has~~ connected to its system one additional well producing from the South Carlsbad-Morrow Gas Pool.

~~(26) That since February, 1972, Llano has connected to its system two additional wells producing from the South Carlsbad-Morrow Gas Pool.~~

~~(26)~~ ~~(27)~~ That wells ~~described~~ in the subject pool connected to the Transwestern system, and as described in Findings (20), (21), and (22), above, are capable of producing gas substantially in excess of Transwestern's capacity to take gas from the South Carlsbad-Morrow Gas Pool.

~~(27)~~ ~~(28)~~ That wells in the subject pool connected to the Llano system, and as described in Findings (27) and (28), above, are capable of producing gas substantially in excess of Llano's capacity to take gas from the South Carlsbad-Morrow Gas Pool.

~~(28)~~ ~~(29)~~ That the combined capacity of the wells connected to both systems ~~wells~~ in the subject pool ~~are capable of producing gas~~ is substantially in excess of the capacity of the combined gas transportation facilities in the pool.

~~(29)~~ ~~(30)~~ That the Transwestern system is currently purchasing approximately 41,000 MCF per day at an average pipeline pressure of 870 psi from the seventeen wells in the South Carlsbad-Atoka, South Carlsbad-Strawn and South Carlsbad-Morrow Gas Pools connected to its system.

35 ~~(3) (31)~~ That the Llano system an~~ticipates its~~ *is currently purchasing* ~~current purchases~~ from the South Carlsbad-Strawn and South Carlsbad-Morrow Gas Pools un~~der existing contracts to be approximately 21,800~~ *substantially less than 25,000* MCF of gas per day *at an average pipeline pressure of 900 psi.*

36 ~~(31) (32)~~ That in February, 1972, Transwestern purchased approximately ~~27971.55~~ *27972* MCF per day from the twelve wells connected to its system producing from the South Carlsbad-Morrow Gas Pool.

37 *That at the time of this hearing Transwestern was purchasing gas from thirteen wells producing from the South Carlsbad-Morrow Gas Pool, three wells producing from the South Carlsbad-Strawn Gas Pool, and one well producing from the South Carlsbad-Atoka Gas Pool.*

38 ~~(34) (35)~~ That in February, 1972, Llano purchased approximately ~~2857.72~~ *2858* MCF of gas per day from the three wells connected to its system producing from the South Carlsbad-Morrow Gas Pool.

39 *That at the time of this hearing Llano was purchasing gas from three wells producing from the South Carlsbad-Morrow Gas Pool and three wells producing from the South Carlsbad-Strawn Gas Pool.*

(under)

gas from ~~four~~ wells in the South Carlsbad-Strawn *and* ~~and~~ South Carlsbad-Atoka Gas Pool~~s~~, it must be taking substantially less than 41,000 MCF per day from the South Carlsbad-Morrow Gas Pool.

41 ~~(37) (38)~~ That considering the fact that Llano is taking gas from three wells in the South Carlsbad-Strawn Gas Pool~~,~~ it must be taking substantially less than ~~21,800~~ *25,000* MCF per day from the South Carlsbad-Morrow Gas Pool.

42 ~~(38) (39)~~ That *both systems are currently purchasing combined* ~~the combined purchases of the two systems in the South Carlsbad-Morrow Gas Pool is~~ substantially less than ~~62,800~~ *66,000* MCF per day *from the South Carlsbad-Morrow Gas Pool.*

113 ~~(39) (40)~~ That the reasonable market demand for gas from the wells in the South Carlsbad-Morrow Gas Pool connected to the Transwestern system is less than 41,000 MCF per day.

114 ~~(40) (41)~~ That the reasonable market demand for gas from the wells in the South Carlsbad-mOrrow Gas Pool connected to the Llano system is less than ~~21,800~~ 25,000 MCF per day.

115 ~~(41) (42)~~ That the reasonable market demand for gas from the wells in the South Carlsbad-Morrow Gas Pool connected to both systems is less than ~~62,800~~ 66,000 MCF per day.

116 ~~(42) (43)~~ That the wells in the ~~subject pool~~ South Carlsbad-Morrow Gas Pool connected to the Transwestern system are capable of producing gas in excess of Transwestern's reasonable market demand for gas from those wells.

117 ~~(43) (44)~~ That the wells in the ~~subject pool~~ South Carlsbad-Morrow Gas Pool connected to the Llano system are capable of producing gas in excess of Llano's reasonable market demand for gas from those wells.

118 ~~(44) (45)~~ That the wells in the ~~subject pool~~ South Carlsbad-Morrow Gas Pool are capable of producing gas in excess of the combined reasonable market demand for gas from the South Carlsbad-Morrow Gas Pool.

119 ~~(45) (46)~~ That gas ~~is being~~ in February, 1972, was taken from the better wells in the South Carlsbad-Morrow Gas Pool connected to Transwestern's system at a rate varying from ~~51%~~ 45.6% of Transwestern's ~~producing day's market for gas from the pool~~ average take per connection day to ~~273%~~ 240.8% of said ~~market.~~ average take,

120 ~~(46) (47)~~ That gas ~~is being~~ in February, 1972, was taken from the ~~better~~ two wells in the subject pool connected to Llano's system at a rate varying from ~~96%~~ 80.9% of Llano's ~~producing day's market for gas from the pool~~ average take per connection day to ~~109%~~ 119.0% of said ~~market~~ average take,

121 ~~(47) (48)~~ That gas ~~is being~~ in February, 1972, was taken from the ~~better~~ wells in the subject pool connected to Transwestern's system at a rate varying from ~~5.6%~~ 1.6% of Transwestern's monthly market for gas from the pool to ~~26%~~ 26.5% of said market.

52 ~~(48) (49)~~ That gas ~~is being~~ was taken from the ~~better~~ wells in the subject pool connected to Llano's system at a rate ~~of approxi-~~ varying from ~~mately 60%~~ 40.5% to 59.5% of Llano's monthly market for gas from the pool in February, 1972

53 ~~(49) (50)~~ That gas ~~is being~~ was taken from the ~~better~~ wells in the subject pool at a rate varying from approximately ~~5%~~ 1.5% of the monthly market for gas from the pool to ~~24%~~ 24.0% of the monthly market for gas from the pool.

~~(51) That gas is being taken from the better wells in the subject pool connected to Transwestern's sytem at a rate varying from 50% of a well's fair share of Transwestern's monthly market to 400% of Transwestern's monthly market from the subject pool.~~

~~(52) That gas is being taken from the better well in the subject pool connected to Llano's system at a rate of approximately 100% of a well's fair share of Llano's monthly market from the subject pool.~~

54 ~~(50) (53)~~ That gas ~~is being~~ was taken from the better wells in the pool at a rate varying from ~~43.9%~~ 44.0% of a well's fair share of the total pool monthly market to ~~360.29%~~ 368.3% of a well's fair share of the total pool monthly market in February, 1972

55 ~~(51) (54)~~ That gas ~~is being~~ was taken from the ~~better~~ wells in the subject pool connected to Transwestern's system at a rate varying from ~~18%~~ 9.5% of a well's daily deliverability to ~~87%~~ 86.6% of a well's daily deliverability. in February, 1972

56 ~~(52) (55)~~ That gas ~~is being~~ was taken from the ~~better~~ wells in the subject pool connected to Llano's system at a rate ~~of approximately~~ varying from 10.6% ~~50% of its daily deliverability~~ to 53.2% of a well's daily deliverability. in February, 1972

57 ~~(53) (56)~~ That gas ~~is being~~ was taken from the ~~better~~ wells in the subject pool at a rate varying from ~~18%~~ 9.5% of a well's daily deliverability to ~~85%~~ 86.6% of a well's daily deliverability.

58 ~~(54) (57)~~ That the reasonable market demand for gas from a well is that well's fair share of the total market demand for gas from that pool that can be produced without waste.

59 ~~(55) (58)~~ That gas is being produced from some wells in the subject pool in excess of the reasonable market demand for gas from those wells.

60 ~~(56) (59)~~ That gas is being produced from some wells in the subject pool in an amount less than the reasonable market demand for gas from those wells.

61 ~~57 (60)~~ That gas is not being taken ratably from the various producers in the pool.

62 ~~58 (61)~~ That there are owners of property in the subject pool who are being denied the opportunity to produce without waste their just and equitable share of the gas in the pool.

63 ~~59 (62)~~ That there are owners of property in the subject pool that are producing more than their just and equitable share of the gas in the pool.

64 ~~60 (63)~~ That drainage is occurring between tracts in the pool which is not equalized by counter drainage.

X 66 ~~62 (64)~~ That waste is occurring in the subject pool.

X 65 ~~61 (65)~~ That the correlative rights of some producers in the pool are being violated.

67 ~~63 (66)~~ That in order to prevent waste and to ensure that all owners of property in the subject pool have the opportunity to produce their share of the gas, the subject pool should be prorated in order to limit the amount of gas to be recovered from each tract to the reasonable market demand for gas from that tract that can be produced without waste.

68 ~~64 (67)~~ That to ensure that each owner of property in the subject pool has the opportunity to produce that amount of gas that can be practicably obtained without waste substantially in the proportion that the recoverable gas under his tract bears to the total recoverable gas in the pool, the subject pool should be prorated in order to limit the amount of gas to be produced from the pool to the reasonable market demand and the capacity of the gas transportation facilities.

69 ~~(68)~~ That the subject pool has not been completely developed.

70 ~~(69)~~ That production from the Morrow formation in the subject pool is from many separate stringers which vary greatly in porosity, water saturation, and thickness, both within individual stringers and between stringers.

71 ~~(70)~~ That the above-described stringers are not continuous across the pool, but are interconnected by the perforations in the various completions in the pool.

72 That due to the above-described variations in the stringers and the lack of continuity of the stringers, the effective feet of pay, porosity of the pay, and water saturation of the pay underlying each developed tract cannot be practically determined from the data obtained at the wellbore.

73 ~~(71)~~ That there are recoverable gas reserves underlying each of the developed 320-acre tracts within the horizontal limits of the subject pool; that there are 15 developed 320-acre tracts in the pool as defined by the Commission.

74 ~~(72)~~ That due to the nature of the reservoir the amount of recoverable gas under each producer's tract cannot be practically determined in the subject pool by a formula which considers effective feet of pay, porosity, and water saturation~~, as they appear at the wellbore only.~~

75 ~~(73)~~ That due to the nature of the reservoir the amount of recoverable gas under each producer's tract cannot be practically determined in the subject pool by a formula which considers only the deliverability of a well~~, and the acreage assigned to the well~~.

76 ~~(74)~~ That the amount of gas that can be practicably obtained without waste by the owner of each property in the subject pool substantially in the proportion that the recoverable gas under his tract bears to the total recoverable gas in the pool can be practically determined best by allocating the allowable production among the wells on the basis of developed tract acreage compared to total developed tract acreage in the pool.

77 ~~(75)~~ That considering the nature of the ~~type of~~ reservoir and the known extent of development, a proration formula based upon surface acreage will afford the owner of each property in the pool the opportunity to produce his just and equitable share of the gas in the pool so far as such can be practicably obtained without

waste substantially in the proportion that the recoverable gas under such property bears to the total recoverable gas in the pool.

78 ~~73 (76)~~ That in order to prevent waste the total allowable production from each gas well producing from the subject pool should be limited to the reasonable market demand for gas from that well.

79 ~~74 (77)~~ That in order to prevent waste the total allowable production from all gas wells producing from the subject pool should be limited to the reasonable market demand for gas from the pool.

80 ~~75 (78)~~ That in order to prevent waste the total allowable production from gas wells in the subject pool should be limited to the capacity of the gas transportation system for the subject pool's share of said transportation facility.

81 ~~76 (79)~~ That considering the available reservoir information, a 100% surface acreage formula is presently the most reasonable basis for allocating the allowable production among the wells delivering to the gas transportation facilities.

82 ~~77 (80)~~ That in order to prevent drainage between tracts that is not equalized by counter drainage the allowable production from the pool should be prorated to the various producers upon a just and equitable basis.

83 ~~78 (81)~~ That the adoption of a 100% surface acreage formula for allocating the allowable production in the subject pool will, insofar as is presently practicable, prevent drainage between producing tracts which is not equalized by counter-drainage.

84 ~~79 (82)~~ That in order to ensure that each operator is ~~ensured~~ afforded the opportunity to produce his property ratably with all other operators connected to the same gas transportation facility, allowable production from the pool should be prorated to the various producers upon a just and equitable basis.

~~(83)~~ That the adoption of a 100% surface acreage formula for allocating the allowable production in the subject pool will, insofar as is presently practicable, allow each operator the opportunity to produce his property ratably with all other operators connected to the same transportation facility.

~~(84)~~ That the subject pool should be governed by the General Rules and Regulations for the Prorated Gas Pools of Southeastern New Mexico promulgated by Order No. R-1670, as amended, insofar as said General Rules and Regulations are not inconsistent with this order or the Special Rules and Regulations for the subject pool promulgated by this order.

IT IS THEREFORE ORDERED:

(1) That the South Carlsbad-Morrow Gas Pool in Eddy County, New Mexico, is hereby prorated, effective September 1, 1972.

(2) That the subject pool shall be governed by the General Rules and Regulations for the Prorated Gas Pools of Southeastern New Mexico promulgated by Order No. R-1670, as amended, insofar as said General Rules and Regulations are not inconsistent with this order or the Special Rules and Regulations for the subject pool as hereinafter set forth, in which event the Special Rules shall apply.

SPECIAL RULES AND REGULATIONS
FOR THE
SOUTH CARLSBAD-MORROW GAS POOL

A. WELL LOCATION AND ACREAGE REQUIREMENTS

RULE 2. Each well completed or recompleted in the South Carlsbad-Morrow Gas Pool shall be located no closer than 660 feet to the nearest side boundary of the dedicated tract nor closer than 1980 feet to the nearest end boundary nor closer than 330 feet to any governmental quarter-quarter section line.

RULE 5(A). Each well completed or recompleted in the South Carlsbad-Morrow Gas Pool shall be located on a standard proration unit consisting of any two contiguous quarter sections of a

single governmental section, being a legal subdivision (half section) of the United States Public Land Surveys. For purposes of these rules, a standard proration unit shall consist of 316 through 324 contiguous surface acres.

C. ALLOCATION AND GRANTING OF ALLOWABLES

RULE 8(A). The allowable production in the South Carlsbad-Morrow Gas Pool shall be allocated as follows:

The pool allowable remaining each month after deducting the total allowable assigned to marginal wells shall be allocated among the non-marginal wells entitled to an allowable in the proportion that each well's acreage factor bears to the total of the acreage factors for all non-marginal wells in the pool.

C. GENERAL

RULE 25. The vertical limits of the South Carlsbad-Morrow Gas Pool shall be the Morrow formation.

RULE 26. The first proration period for the South Carlsbad-Morrow Gas Pool shall commence September 1, 1972, and shall terminate December 31, 1973. Subsequent proration periods shall be the twelve-month periods as provided in the General Rules.

IT IS FURTHER ORDERED:

(1) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

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BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION ON ITS OWN MOTION TO CONSIDER INSTITUTING GAS PRORATIONING IN THE SOUTH CARLSBAD-STRAWN GAS POOL, EDDY COUNTY, NEW MEXICO.

RECORDS CENTER

CASE NO. 4694
Order No. R-1670-M

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on April 19, 1972, at Hobbs, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 30th day of June, 1972, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That by Order No. R-3922, dated February 20, 1970, the Commission created the South Carlsbad-Strawn Gas Pool, Eddy County, New Mexico, for the production of gas from the Strawn formation.

(3) That the horizontal limits of said pool have been extended from time to time by order of the Commission.

(4) That the horizontal limits of the South Carlsbad-Strawn Pool, as defined by the Commission, at the time of hearing this case comprise the following described area:

EDDY COUNTY

TOWNSHIP 22 SOUTH, RANGE 27 EAST, NMPM
Section 30: S/2
Section 31: All

TOWNSHIP 23 SOUTH, RANGE 26 EAST, NMPM
Section 1: E/2

TOWNSHIP 23 SOUTH, RANGE 27 EAST, NMPM
Section 6: All

(5) That in February, 1972, there were four wells completed in the Strawn formation within the above-described area and connected to gas transportation facilities.

(6) That in February, 1972, one of the wells was connected to the Transwestern Pipeline Company gas gathering system and that three of the wells were connected to the Llano, Inc. gas gathering system.

(7) That the South Carlsbad Field comprises the South Carlsbad-Atoka, South Carlsbad-Strawn, and South Carlsbad-Morrow Gas Pools.

(8) That the capacity of the Transwestern system serving the South Carlsbad Field is 90,000 MCF of gas per day.

(9) That the capacity of the Llano system serving the South Carlsbad Field is 30,000 MCF of gas per day.

(10) That the Transwestern system that takes gas from the South Carlsbad-Strawn Gas Pool also takes gas from the South Carlsbad-Morrow and South Carlsbad-Atoka Gas Pools.

(11) That the Llano system that takes gas from the South Carlsbad-Strawn Gas Pool also takes gas from the South Carlsbad-Morrow Gas Pool.

(12) That at the time of this hearing, the most recent month for which production figures were available was February, 1972.

(13) That there is evidence that additional wells have been connected to gas transportation facilities in the South Carlsbad-Morrow Gas Pool and South Carlsbad-Strawn Gas Pool after February 1, 1972, and prior to the time of this hearing.

(14) That there is no substantial evidence that the manner of producing the wells in the South Carlsbad-Strawn Gas Pool has been substantially altered after February, 1972.

(15) That it can reasonably be inferred that the manner of producing the wells in the South Carlsbad-Strawn Gas Pool is substantially the same as it was in February, 1972.

(16) That at the time of the hearing of this case, the Transwestern system was purchasing approximately 41,000 MCF of gas per day from the three pools combined.

(17) That in February, 1972, the Transwestern system purchased an average of 1815 MCF of gas per day from the one well in the South Carlsbad-Strawn Gas Pool connected to its system.

(18) That at the time of this hearing Transwestern was

purchasing gas from thirteen wells producing from the South Carlsbad-Morrow Gas Pool, three wells producing from the South Carlsbad-Strawn Gas Pool, and one well producing from the South Carlsbad-Atoka Gas Pool.

(19) That considering the fact that Transwestern's system is taking gas from thirteen wells in the South Carlsbad-Morrow Gas Pool and from one well in the South Carlsbad-Atoka Gas Pool, its capacity to take gas from the South Carlsbad-Strawn Gas Pool is substantially less than 90,000 MCF of gas per day.

(20) That in February, 1972, the Llano system purchased 10,393 MCF of gas per day from three wells producing from the South Carlsbad-Strawn Gas Pool.

(21) That at the time of this hearing Llano was purchasing gas from three wells producing from the South Carlsbad-Strawn Gas Pool and three wells producing from the South Carlsbad-Morrow Gas Pool.

(22) That considering the fact that Llano's system is presently connected to three wells in the South Carlsbad-Morrow Gas Pool, its capacity to take gas from the South Carlsbad-Strawn Gas Pool is substantially less than 30,000 MCF of gas per day.

(23) That the combined capacity of the two systems for gas from the South Carlsbad-Strawn Gas Pool is substantially less than 120,000 MCF of gas per day.

(24) That the shut-in pressures of the four wells in the South Carlsbad-Strawn Gas Pool connected to gas transportation facilities in February, 1972, ranges from a low of 3421 psi to a high of 3955 psi; that the average of said pressures is 3742 psi.

(25) That considering the nature of the South Carlsbad-Strawn Gas Pool reservoir and the high pressures existing in the pool, the daily deliverability of a well at 850 psi is essentially the same as it would be at 870 psi or 900 psi.

(26) That the producing capacity of the one South Carlsbad-Strawn well connected to the Transwestern system in February, 1972, at 850 psi is approximately 22,500 MCF of gas per day; that the capacity of said well at absolute open flow is approximately 23,012 MCF of gas per day.

(27) That the combined producing capacity of the three South Carlsbad-Strawn wells connected to the Llano system in February, 1972, at 850 psi is approximately 51,500 MCF of gas per day; that the capacity of said wells at absolute open flow is approximately 59,350 MCF of gas per day.

(28) That the combined producing capacity of the four South Carlsbad-Strawn wells connected to gas transportation facilities in February, 1972, at 850 psi is approximately 74,000 MCF of gas per day; that the capacity of said wells at absolute open flow is approximately 82,362 MCF of gas per day.

(29) That since February, 1972, Transwestern has connected to its system two additional wells producing from the South Carlsbad-Strawn Gas Pool.

(30) That wells in the subject pool connected to the Transwestern system and as described in Findings (26) and (29), above, are capable of producing gas substantially in excess of Transwestern's capacity to take gas from the South Carlsbad-Strawn Gas Pool.

(31) That wells in the subject pool connected to the Llano system as described in Finding No. 22, above, are capable of producing gas substantially in excess of Llano's capacity to take gas from the South Carlsbad-Strawn Gas Pool.

(32) That the combined capacity of the wells connected to both systems is substantially in excess of the capacity of the combined gas transportation facilities in the pool.

(33) That the Transwestern system is currently purchasing approximately 41,000 MCF of gas per day at an average pipeline pressure of 370 psi from the seventeen wells in the South Carlsbad-Atoka, South Carlsbad-Strawn and South Carlsbad-Morrow Gas Pools connected to its system.

(34) That the Llano system is currently purchasing from the South Carlsbad-Strawn and South Carlsbad-Morrow Gas Pools substantially less than 25,000 MCF of gas per day at an average pipeline pressure of 900 psi.

(35) That in February, 1972, Transwestern purchased approximately 1815 MCF of gas per day from the one well connected to its system producing from the South Carlsbad-Strawn Gas Pool.

(36) That at the time of this hearing Transwestern was purchasing gas from thirteen wells producing from the South Carlsbad-Morrow Gas Pool, three wells producing from the South Carlsbad-Strawn Gas Pool, and one well producing from the South Carlsbad-Atoka Gas Pool.

(37) That in February, 1972, Llano purchased approximately 10,393 MCF of gas per day from the three wells connected to its system producing from the South Carlsbad-Strawn Gas Pool.

(38) That at the time of this hearing Llano was connected to three wells producing from the South Carlsbad-Morrow Gas Pool and three wells producing from the South Carlsbad-Strawn Gas Pool.

(39) That considering the fact that Transwestern is taking gas from thirteen wells in the South Carlsbad-Morrow Gas Pool and one well in the South Carlsbad-Atoka Gas Pool, it must be taking substantially less than 41,000 MCF of gas per day from the South Carlsbad-Strawn Gas Pool.

(40) That considering the fact that Llano is connected to three wells in the South Carlsbad-Morrow Gas Pool, it must be taking substantially less than 25,000 MCF of gas per day from the South Carlsbad-Strawn Gas Pool.

(41) That both systems combined are currently purchasing substantially less than 66,000 MCF of gas per day from the South Carlsbad-Strawn Gas Pool.

(42) That the reasonable market demand for gas from the wells in the South Carlsbad-Strawn Gas Pool connected to the Transwestern system is substantially less than 41,000 MCF of gas per day.

(43) That the reasonable market demand for gas from the wells in the South Carlsbad-Strawn Gas Pool connected to the Llano system is less than 25,000 MCF of gas per day.

(44) That the reasonable market demand for gas from the wells in the South Carlsbad-Strawn Gas Pool connected to both systems is less than 66,000 MCF of gas per day.

(45) That the wells in the South Carlsbad-Strawn Gas Pool connected to the Transwestern system are capable of producing gas in excess of Transwestern's reasonable market demand for gas from those wells.

(46) That the wells in the South Carlsbad-Strawn Gas Pool connected to the Llano system are capable of producing gas in excess of Llano's reasonable market demand for gas from those wells.

(47) That the wells in the South Carlsbad-Strawn Gas Pool are capable of producing gas in excess of the combined reasonable market demand for gas from the South Carlsbad-Strawn Gas Pool.

(48) That the daily deliverability of the wells connected to Llano's system in February, 1972, ranges from a low of 10,500 MCF of gas per day to a high of 21,000 MCF of gas per day; that the deliverability of the well connected to Transwestern's system in February, 1972, is 22,500 MCF of gas per day.

(49) That in February, 1972, gas was taken from the well in the South Carlsbad-Strawn Gas Pool connected to Transwestern's system at an average take per connection day of 1815 MCF.

(50) That in February, 1972, gas was taken from the wells in the South Carlsbad-Strawn Gas Pool connected to Llano's system at an average take per connection day of 3464 MCF.

(51) That gas is being taken from the wells in the subject pool at a rate varying from approximately 14.9% of the monthly market for gas from the pool to 29.2% of the monthly market for gas from the pool.

(52) That in February, 1972, gas was taken from the well in the subject pool connected to Transwestern's system at a rate of 8.1% of its daily deliverability.

(53) That in February, 1972, gas was taken from the wells in the subject pool connected to Llano's system at a rate varying from 16.3% of a well's daily deliverability to 32.5% of a well's daily deliverability.

(54) That in February, 1972, gas was taken from the wells in the subject pool at a rate varying from 8.1% of a well's daily deliverability to 32.5% of a well's daily deliverability.

(55) That the reasonable market demand for gas from a well is that well's fair share of the total market demand for gas from that pool that can be produced without waste.

(56) That gas is being produced from some wells in the subject pool in excess of the reasonable market demand for gas from those wells.

(57) That gas is being produced from some wells in the subject pool in an amount less than the reasonable market demand for gas from those wells.

(58) That gas is not being taken ratably from the various producers in the pool.

(59) That there are owners of property in the subject pool who are being denied the opportunity to produce without waste their just and equitable share of the gas in the pool.

(60) That there are owners of property in the subject pool that are producing more than their just and equitable share of the gas in the pool.

(61) That drainage is occurring between tracts in the pool which is not equalized by counter drainage.

(62) That the correlative rights of some producers in the pool are being violated.

(63) That waste is occurring in the subject pool.

(64) That in order to prevent waste and to ensure that all owners of property in the subject pool have the opportunity to produce their share of the gas, the subject pool should be prorated in order to limit the amount of gas to be recovered from each tract to the reasonable market demand for gas from that tract that can be produced without waste.

(65) That to ensure that each owner of property in the subject pool has the opportunity to produce that amount of gas that can be practicably obtained without waste substantially in the proportion that the recoverable gas under his tract bears to the total recoverable gas in the pool, the subject pool should be prorated in order to limit the amount of gas to be produced from the pool to the reasonable market demand and the capacity of the gas transportation facilities.

(66) That the subject pool has not been completely developed.

(67) That no cores of the Strawn formation are available in the South Carlsbad-Strawn Gas Pool.

(68) That there are logs available of said wells and that the logs indicate a marked and sometimes rapid variation between wells in thickness of pay, porosity, net effective feet of pay, and water saturation.

(69) That due to the above-described variations the effective feet of pay, porosity, and water saturation underlying each developed tract cannot be practically determined from the data available at the wellbore.

(70) That there are recoverable gas reserves underlying each of the developed 320-acre tracts within the horizontal limits of the subject pool; that there are 6 developed 320-acre tracts in the pool as defined by the Commission.

(71) That due to the nature of the reservoir the amount of recoverable gas under each producer's tract cannot be practically determined in the subject pool by a formula which considers effective feet of pay, porosity, and water saturation.

(72) That due to the nature of the reservoir the amount of recoverable gas under each producer's tract cannot be practically determined in the subject pool by a formula which considers only the deliverability of a well.

(73) That the amount of gas that can be practicably obtained without waste by the owner of each property in the subject pool substantially in the proportion that the recoverable gas under his tract bears to the total recoverable gas in the pool can be practically determined best by allocating the allowable production among the wells on the basis of developed tract acreage compared to total developed tract acreage in the pool.

(74) That considering the nature of the reservoir and the known extent of development, a proration formula based upon surface acreage will afford the owner of each property in the pool the opportunity to produce his just and equitable share of the gas in the pool so far as such can be practicably obtained without waste substantially in the proportion that the recoverable gas under such property bears to the total recoverable gas in the pool.

(75) That in order to prevent waste the total allowable production from each gas well producing from the subject pool should be limited to the reasonable market demand for gas from that well.

(76) That in order to prevent waste the total allowable production from all gas wells producing from the subject pool should be limited to the reasonable market demand for gas from the pool.

(77) That in order to prevent waste the total allowable production from gas wells in the subject pool should be limited to the capacity of the gas transportation system for the subject pool's share of said transportation facility.

(78) That considering the available reservoir information, a 100% surface acreage formula is presently the most reasonable basis for allocating the allowable production among the wells delivering to the gas transportation facilities.

(79) That in order to prevent drainage between tracts that is not equalized by counter drainage the allowable production from the pool should be prorated to the various producers upon a just and equitable basis.

(80) That the adoption of a 100% surface acreage formula for allocating the allowable production in the subject pool will, insofar as is presently practicable, prevent drainage between producing tracts which is not equalized by counter-drainage.

(81) That in order to ensure that each operator is afforded the opportunity to produce his property ratably with all other operators connected to the same gas transportation facility, allowable production from the pool should be prorated to the various producers upon a just and equitable basis.

(82) That the adoption of a 100% surface acreage formula for allocating the allowable production in the subject pool will, insofar as is presently practicable, allow each operator the opportunity to produce his property ratably with all other operators connected to the same transportation facility.

(83) That the subject pool should be governed by the General Rules and Regulations for the Prorated Gas Pools of Southeastern New Mexico promulgated by Order No. R-1670, as amended, insofar as said General Rules and Regulations are not inconsistent with this order or the Special Rules and Regulations for the subject pool promulgated by this order.

IT IS THEREFORE ORDERED:

(1) That the South Carlsbad-Strawn Gas Pool in Eddy County, New Mexico, is hereby prorated, effective September 1, 1972.

(2) That the subject pool shall be governed by the General Rules and Regulations for the Prorated Gas Pools of Southeastern New Mexico promulgated by Order No. R-1670, as amended, insofar as said General Rules and Regulations are not inconsistent with this order or the Special Rules and Regulations for the subject pool as hereinafter set forth, in which event the Special Rules shall apply.

SPECIAL RULES AND REGULATIONS
FOR THE
SOUTH CARLSBAD-STRAWN GAS POOL

A. WELL LOCATION AND ACREAGE REQUIREMENTS

RULE 2. Each well completed or recompleted in the South Carlsbad-Strawn Gas Pool shall be located no closer than 660 feet to the nearest side boundary of the dedicated tract nor closer than 1980 feet to the nearest end boundary nor closer than 330 feet to any governmental quarter-quarter section line.

RULE 5(A). Each well completed or recompleted in the South Carlsbad-Strawn Gas Pool shall be located on a standard proration unit consisting of any two contiguous quarter sections of a single governmental section, being a legal subdivision (half section) of the United States Public Land Surveys. For purposes of these rules, a standard proration unit shall consist of 316 through 324 contiguous surface acres.

C. ALLOCATION AND GRANTING OF ALLOWABLES

RULE 8(A). The allowable production in the South Carlsbad-Strawn Gas Pool shall be allocated as follows:

The pool allowable remaining each month after deducting the total allowable assigned to marginal wells shall be allocated among the non-marginal wells entitled to an allowable in the proportion that each well's acreage factor bears to the total of the acreage factors for all non-marginal wells in the pool.

C. GENERAL

RULE 25. The vertical limits of the South Carlsbad-Strawn Gas Pool shall be the Strawn formation.

RULE 26. The first proration period for the South Carlsbad-Strawn Gas Pool shall commence September 1, 1972, and shall terminate December 31, 1973. Subsequent proration periods shall be the twelve-month periods as provided in the General Rules.

IT IS FURTHER ORDERED:

(1) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

BRUCE KING, Chairman

ALEX J. ARMIJO, Member

A. L. PORTER, Jr., Member & Secretary

S E A L

dr/

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Extra

Case 4693-94

DIRECT TESTIMONY OF JIM B. THOMAS
TRANSWESTERN PIPELINE COMPANY

Q. Please state your name, address, and present position.

A. My name is Jim B. Thomas, my address is P. O. Box 2521, Houston, Texas, and I am General Manager of Supply for Transwestern Pipeline Company.

Q. Please briefly describe your education and experience.

A. I received a Bachelor of Science degree in Petroleum Engineering from Texas Technological College in 1949. After graduation, I was employed by the Railroad Commission of Texas as a Petroleum Engineer in the district office at Midland, Texas. I worked in various engineering positions with the Scurry County Engineering Area Committee, Forest Oil Corporation and the Scurry Area Canyon Reef Operators Committee until 1962. In 1962 I joined Transwestern Pipeline Company as Supervisor of their Dedicated Reserves Section of the Reserves and Deliverability Department. In January, 1964, I was promoted to Manager of the Reserves and Deliverability Department, and in January, 1966, I was promoted to Manager of Gas Supply. In August, 1971, I was appointed General Manager of Supply for Transwestern Pipeline Company.

Q. What are your duties as General Manager of Supply for Transwestern?

A. My responsibility covers Transwestern's gas acquisition program, which includes responsibility for negotiating and contracting for new gas supplies, its operations under existing Gas Purchase Contracts, the supervision of proration and allocation problems regarding gas supply, and the supervision of matters relating to reserves and deliverability. My responsibilities also require me to be informed of the activities of the Exploration and Production Division of the Company.

Q. Have you previously testified before any regulatory bodies?

A. I have testified before the Federal Power Commission and the Railroad Commission of Texas on various occasions.

Q. Mr. Thomas, are you familiar with the South Carlsbad Field area of Eddy County, New Mexico?

A. Yes.

Q. How many wells does Transwestern presently have connected to its system in this area?

A. Transwestern is presently connected to 17 wells of which 13 are completed in the Morrow zone, 3 are completed in the Strawn zone, and 1 in the Atoka zone.

Q. Do you anticipate any additional connections to your system?

A. Transwestern has additional dedicated acreage in this area, and if additional wells are successfully completed on this acreage, they, of course, would be connected to our system. At this time we have no way of knowing how many wells may be drilled on this acreage.

Q. What are your minimum and maximum contractual purchases in this area?

A. The provisions of our various contracts provide for various minimum take obligations and generally require the producer to have available a delivery capacity of 125% of the minimum takes. Where wells are completed in the same reservoir, we are required by contract and do attempt to take ratably from each well.

Q. What volume of gas does Transwestern now take and anticipate taking from this area in the future?

A. At the present time, we are taking approximately 41,000 MCF per day. Our present need for gas is

such that we will purchase all available gas produced from this area.

Q. Have you prepared a plat showing the Transwestern gathering system in this area.

A. Yes, we have prepared such a plat and are prepared to present it at this point.

Q. This will be identified as Transwestern Exhibit I.

Q. Would you describe the size and capacity of your gathering system.

A. Our gathering system in the South Carlsbad area consists of two (2) eight inch (8") lines running generally northwest from the northeast corner of Section 3-24N-27E to the field from our main lateral and four inch (4") gathering lines running from these eight inch (8") lines to each of the connected wells. Our main lateral has a capacity of approximately 120,000 MCF per day of which approximately 90,000 MCF per day could be taken from the South Carlsbad Field Area. If more gas supplies become available, we will expand our system to enable us to purchase all such gas.

Q. What is the pressure in your gathering system?

A. At the present time, our gathering system pressure is averaging approximately 870 PSIG.

Q. Is the gas produced into your system from this area processed into a plant prior to delivery?

A. No.

Q. Where is this gas delivered by Transwestern?

A. All of this gas flows into our main system for delivery to our customer in California.

Q. Have you prepared a summary of the data you have presented in your testimony?

A. Yes.

Q. Please identify this as our Exhibit II.

Q. Do you have anything further that you would like to add with regard to the matter at hand?

A. No.

Q. We offer Transwestern Exhibits I and II in evidence. This ccncludes Transwestern's direct testimony. This witness is tendered for cross-examination.

PROPOSED GAS PRORATIONING

SOUTH CARLSBAD - MORROW & STRAWN GAS POOLS

DEFINITION

Operating deliverability is defined as the measured volume of gas produced during a 24-hour period, such period being preceded by a 24-hour stabilization flow period at a rate of at least 80% of the operating flow rate. The operating deliverability shall be determined at producing pressures and temperatures which normally exist from day to day in the installed equipment. Operating deliverability shall be determined annually or at lesser intervals at operator's option.

Del. @ Prod. Press. = 100%
and Prod. pressure or,
Meter pressure.

JHS/mw

CASE 4692: In the matter of the hearing called by the Oil Conservation Commission on its own motion for the amendment of the gas well testing procedures promulgated by Order No. R-333-F, as amended, for Northwest New Mexico. The Commission will consider changing certain dates as set forth in said Order No. R-333-F, as amended, to adapt the testing rules and procedures for gas wells in Northwest New Mexico to a one-year proration period beginning January 1 of each year, and to incorporate said rules and procedures into one order.

CASE 4693: In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider instituting gas prorationing in the South Carlsbad-Morrow Gas Pool, Eddy County, New Mexico. The Commission will consider fixing the total allowable natural gas production from the South Carlsbad-Morrow Gas Pool, Eddy County, New Mexico, at an amount equal to reasonable market demand and to the capacity of gas transportation facilities. The Commission will also consider adoption of special rules and regulations for the pool including provisions for allocating the allowable production among the wells in the pool and a proration period of one year.

CASE 4694: In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider instituting gas prorationing in the South Carlsbad-Strawn Gas Pool, Eddy County, New Mexico. The Commission will consider fixing the total allowable natural gas production from the South Carlsbad-Strawn Gas Pool, Eddy County, New Mexico, at an amount equal to reasonable market demand and to the capacity of gas transportation facilities. The Commission will also consider adoption of special rules and regulations for the pool including provisions for allocating the allowable production among the wells in the pool and a proration period of one year.

CASE 4695: Southeastern New Mexico nomenclature case calling for an order for the creation and extension of certain pools in Lea, Eddy and Chaves Counties, New Mexico.

(a) Create a new pool in Eddy County, New Mexico, classified as a gas pool for Morrow production and

OIL CONSERVATION COMMISSION
STATE OF NEW MEXICO
P. O. BOX 2088 · SANTA FE
87501

GOVERNOR
BRUCE KING
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

FEBRUARY 24, 1972

M E M O R A N D U M

TO: ALL PRODUCERS AND PURCHASERS IN THE SOUTH CARLSBAD-MORROW AND SOUTH CARLSBAD-STRAWN GAS POOLS

FROM: A. L. PORTER, Jr., SECRETARY-DIRECTOR

SUBJECT: CASE 4668 (GAS PRORATION CASE)

The Commission has had a request that Case 4668, which has been docketed for hearing March 1, 1972, be heard by a quorum of the Commission rather than by an examiner. The Commission will therefore dismiss Case 4668, and the subject matter will be re-advertised to be heard at the next regular hearing of the Commission to be held in Hobbs on April 19, 1972. This will allow ample time for all interested parties to be prepared for the hearing. No further delay should be necessary.

ALP/ir

Case 4694

J. R. MODRALL
JAMES E. SPERLING
JOSEPH E. ROEHL
GEORGE T. HARRIS, JR.
DANIEL A. SISK
LEE [illegible] SEDBERRY, JR.
[illegible] DEWEY, JR.
FI[illegible] ALLEN, JR.
JAMES P. SAUNDERS, JR.
JAMES A. PARKER
JOHN R. COONEY
KENNETH L. HARRIGAN
PETER J. ADANO

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JOHN F. SIMMS (1885-1954)
AUGUSTUS T. SEYMOUR
(1907-1965)

TELEPHONE 243-4511
AREA CODE 505

March 31, 1972

Mr. George Hatch
Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: Case Nos. 4693 and 4694

Dear George:

The above cases are set for hearing in Hobbs. This letter is to advise that I am New Mexico counsel for Transwestern Pipeline Company in these matters. I will appreciate your noting my appearance with the firm of Vinson, Elkins, Searls & Smith, of Houston, Texas, who will also appear in these cases. I do not plan to be present personally.

Best regards,

James E. Sperling

JES:jv

cc: Mr. James W. McCartney
Vinson, Elkins, Searls & Smith
Attorneys at Law
First City National Bank Bldg.
Houston, Texas 77002

6-27-72

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING CALLED
BY THE OIL CONSERVATION COMMISSION
ON ITS OWN MOTION TO CONSIDER
INSTITUTING GAS PRORATIONING IN
THE SOUTH CARLSBAD-STRAWN GAS
POOL, EDDY COUNTY, NEW MEXICO.

CASE NO. 4694
Order No. R-1670-M

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on April 19, 1972, at Hobbs, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this ______ day of July, 1972, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cuase and the subject matter thereof.

(2) That by Order No. R-3922, dated February 20, 1970, the Commission created the South Carlsbad-Strawn Gas Pool, Eddy County, New Mexico, for the production of gas from the Strawn formation.

(3) That the horizontal limits of said pool have been extended from time to time by order of the Commission.

(4) That the horizontal limits of the South Carlsbad-Strawn Pool, as defined by the Commission, at the time of hearing this case comprise the following described area:

EDDY COUNTY

TOWNSHIP 22 SOUTH, RANGE 27 EAST, NMPM
Section 30: S/2
Section 31: All

TOWNSHIP 23 SOUTH, RANGE 26 EAST, NMPM
Section 1: E/2

TOWNSHIP 23 SOUTH, RANGE 27 EAST, NMPM
Section 6: All

(5) That in February, 1972, there were four wells completed in the Strawn formation within the above-described area and connected to gas transportation facilities.

(6) That in February, 1972, one of the wells was connected to the Transwestern Pipeline Company gas gathering system and that three of the wells were connected to the Llano, Inc. gas gathering system.

(7) That the South Carlsbad Field comprises the South Carlsbad-Atoka, South Carlsbad-Strawn, and South Carlsbad-Morrow Gas Pools.

(8) That the capacity of the Transwestern system serving the South Carlsbad Field is 90,000 MCF per day.

(9) That the capacity of the Llano system serving the South Carlsbad Field is 30,000 MCF per day.

(10) That the Transwestern system that takes gas from the South Carlsbad-Strawn Gas Pool also takes gas from the South Carlsbad-Morrow and South Carlsbad-Atoka Gas Pools.

(11) That the Llano system that takes gas from the South Carlsbad-Strawn Gas Pool also takes gas from the South Carlsbad-Morrow Gas Pool.

(12) That at the time of this hearing, the most recent month for which production figures were available was February, 1972.

(13) That there is evidence that additional wells have been connected to gas transportation facilities in the South Carlsbad-Morrow Gas Pool and South Carlsbad-Strawn Gas Pool after February 1, 1972, and prior to the time of this hearing.

(14) That there is no substantial evidence that the manner of producing the wells in the South Carlsbad-Strawn Gas Pool has been substantially altered after February, 1972.

(15) That it can reasonably be inferred that the manner of producing the wells in the South Carlsbad-Strawn Gas Pool is substantially the same as it was in February, 1972.

(16) That at the time of the hearing of this case, the Transwestern system was purchasing approximately 41,000 MCF of gas per day from the three pools combined.

(17) That in February, 1972, the Transwestern system purchased an average of 1815 MCF of gas per day from the one well in the South Carlsbad-Strawn Gas Pool connected to its system.

(18) That at the time of this hearing Transwestern was purchasing gas from thirteen wells producing from the South Carlsbad-Morrow Gas Pool, three wells producing from the South Carlsbad-Strawn Gas Pool, and one well producing from the South Carlsbad-Atoka Gas Pool.

(19) That considering the fact that Transwestern's system is taking gas from thirteen wells in the South Carlsbad-Morrow Gas Pool and from one well in the South Carlsbad-Atoka Gas Pool, its capacity to take gas from the South Carlsbad-Strawn Gas Pool is substantially less than 90,000 MCF of gas per day.

(20) That in February, 1972, the Llano system purchased 10,393 MCF per day of gas from three wells producing from the South Carlsbad-Strawn Gas Pool.

(21) That at the time of this hearing Llano was purchasing gas from three wells producing from the South Carlsbad-Strawn Gas Pool and three wells producing from the South Carlsbad-Morrow Gas Pool.

(22) That considering the fact that Llano's system is presently connected to three wells in the South Carlsbad-Morrow Gas Pool, its capacity to take gas from the South Carlsbad-Strawn Gas Pool is substantially less than 30,000 MCF of gas per day.

(23) That the combined capacity of the two systems for gas from the South Carlsbad-Strawn Gas Pool is substantially less than 120,000 MCF of gas per day.

(24) That the ~~four available tests~~ the four shut-in pressures of ~~the four~~ wells in the South Carlsbad-Strawn Gas Pool connected to gas transportation facilities in February, 1972, ~~ranges from a low of 3421 psi~~ to a high of 3955 psi; that the average of said pressures is ~~3741.5~~ 3742 psi.

(25) That considering the nature of the South Carlsbad-Strawn Gas Pool reservoir and the high pressures existing in the pool, the daily deliverability of a well at 850 psi is essentially the same as it would be at 870 psi or 900 psi.

(26) That the producing capacity of the one South Carlsbad-Strawn well connected to the Transwestern system in February, 1972, at 850 psi is approximately 22,500 MCF/D gas per day; that the capacity of said well at absolute open flow is approximately 23,012 MCF, ~~per~~ day.

(27) That the combined producing capacity of the three South Carlsbad-Strawn wells connected to the Llano system in February, 1972, at 850 psi is approximately 51,500 MCF/D per day; that the capacity of said wells at absolute open flow is approximately 59,350 MCF/D per day.

(28) That the combined producing capacity of the four South Carlsbad-Strawn wells connected to gas transportation facilities in February, 1972, at 850 psi is approximately 74,000 MCF/D per day; that the capacity of said wells at absolute open flow is approximately 82,362 MCF/D per day.

(29) That since February, 1972, Transwestern has connected to its system two additional wells producing from the South Carlsbad-Strawn Gas Pool.

(30) That wells in the subject pool connected to the Transwestern system and as described in Findings ~~21~~ (26) and ~~25~~ (29), above, are capable of producing gas substantially in excess of Transwestern's capacity to take gas from the South Carlsbad-Strawn Gas Pool.

(31) That wells in the subject pool connected to the Llano system as described in Finding No. 22, above, are capable of producing gas substantially in excess of Llano's capacity to take gas from the South Carlsbad-Strawn Gas Pool.

(32) That the combined capacity of the wells connected to both systems is substantially in excess of the capacity of the combined gas transportation facilities in the pool.

(33) That the Transwestern system is currently purchasing approximately 41,000 MCF per day at an average pipeline pressure of 870 psi from the seventeen wells in the South Carlsbad-Atoka, South Carlsbad-Strawn and South Carlsbad-Morrow Gas Pools connected to its system.

(34) That the Llano system is currently purchasing from the South Carlsbad-Strawn and South Carlsbad-Morrow Gas Pools substantially less than 25,000 MCF of gas per day at an average pipeline pressure of 900 psi.

(35) That in February, 1972, Transwestern purchased approximately 1815 MCF per day from the one well connected to its system producing from the South Carlsbad-Strawn Gas Pool.

(36) That at the time of this hearing Transwestern was purchasing gas from thirteen wells producing from the South Carlsbad-Morrow Gas Pool, three wells producing from the South Carlsbad-Strawn Gas Pool, and one well producing from the South Carlsbad-Atoka Gas Pool.

(37) That in February, 1972, Llano purchased approximately 10,393 MCF of gas per day from the three wells connected to its system producing from the South Carlsbad-Strawn Gas Pool.

(38) That at the time of this hearing Llano was connected to three wells producing from the South Carlsbad-Morrow Gas Pool and three wells producing from the South Carlsbad-Strawn Gas Pool.

(39) That considering the fact that Transwestern is taking gas from thirteen wells in the South Carlsbad-Morrow Gas Pool and one well in the South Carlsbad-Atoka Gas Pool, it must be

taking substantially less than 41,000 MCF per day from the South Carlsbad-Strawn Gas Pool.

(40) That considering the fact that Llano is connected to three wells in the South Carlsbad-Morrow Gas Pool, it must be taking substantially less than 25,000 MCF per day from the South Carlsbad-Strawn Gas Pool.

(41) That both systems combined are currently purchasing substantially less than 66,000 MCF per day from the South Carlsbad-Strawn Gas Pool.

(42) That the reasonable market demand for gas from the wells in the South Carlsbad-Strawn Gas Pool connected to the Transwestern system is substantially less than 41,000 MCF per day.

(43) That the reasonable market demand for gas from the wells in the South Carlsbad-Strawn Gas Pool connected to the Llano system is less than 25,000 MCF per day.

(44) That the reasonable market demand for gas from the wells in the South Carlsbad-Strawn Gas Pool connected to both systems is less than 66,000 MCF per day.

(45) That the wells in the South Carlsbad-Strawn Gas Pool connected to the Transwestern system are capable of producing gas in excess of Transwestern's reasonable market demand for gas from those wells.

(46) That the wells in the South Carlsbad-Strawn Gas Pool connected to the Llano system are capable of producing gas in excess of Llano's reasonable market demand for gas from those wells.

(47) That the wells in the South Carlsbad-Strawn Gas Pool are capable of producing gas in excess of the combined reasonable market demand for gas from the South Carlsbad-Strawn Gas Pool.

(49) ~~(48)~~ That in February, 1972, gas was taken from the well in the South Carlsbad-Strawn Gas Pool connected to Transwestern's system at an average take per connection day of ~~1814.7~~ 1815 MCF ~~of gas per day~~.

(48) That the ability of the wells connected to Llano's system in February, 1972, ranges from a low of 10,500 MCF per day to a high of 21,000 MCF per day, that the daily ability of the wells connected to Transwestern's system in February, 1972, is 22,500 MCF per day.

(49) That in February, 1972, gas was taken from the ~~better~~ wells in the ~~subject pool~~ connected to Llano's system at ~~a rate varying from 32.8% of Llano's average take per connection day to producing day's market for gas from the pool to 34.2% of said average take~~.

~~(50) That in February, 1972, gas was taken from the well~~ in ~~the subject pool connected to Transwestern's system at a rate of 100% of Transwestern's monthly market for gas from the pool.~~

~~(51) That in February, 1972, gas was taken from the wells~~ in ~~the subject pool connected to Llano's system at a rate varying from 32.7% of Llano's monthly market for gas from the~~ pool ~~to 34.2% of said market.~~

~~(52)~~ That gas is being taken from the wells in the subject pool at a rate varying from approximately 14.9% of the monthly market for gas from the pool to ~~25%~~ of the monthly market for gas from the pool.

~~(53) That in February, 1972, gas was taken from the better wells in the pool at a rate varying from 98.3% of a well's fair share of the total pool monthly market to 102.7% of a well's fair share of the total pool monthly market~~.

(54) That in February, 1972, gas was taken from the well in the subject pool connected to Transwestern's system at a rate of ~~8.0%~~ of its daily deliverability.

(55) That in February, 1972, gas was taken from the wells in the subject pool connected to Llano's system at a rate varying from 16.3% of a well's daily deliverability to 32.5% of a well's daily deliverability.

(56) That in February, 1972, gas was taken from the wells in the subject pool at a rate varying from ~~8.0%~~ of a well's daily deliverability to 32.5% of a well's daily deliverability.

(55) ~~(57)~~ That the reasonable market demand for gas from a well is that well's fair share of the total market demand for gas from that pool that can be produced without waste.

(56) ~~(58)~~ That gas is being produced from some wells in the subject pool in excess of the reasonable market demand for gas from those wells.

(57) ~~(59)~~ That gas is being produced from some wells in the subject pool in an amount less than the reasonable market demand for gas from those wells.

(58) ~~(60)~~ That gas is not being taken ratably from the various producers in the pool.

(59) ~~(61)~~ That there are owners of property in the subject pool who are being denied the opportunity to produce without waste their just and equitable share of the gas in the pool.

(60) ~~(62)~~ That there are owners of property in the subject pool that are producing more than their just and equitable share of the gas in the pool.

(61) ~~(63)~~ That drainage is occurring between tracts in the pool which is not equalized by counter drainage.

(62) ~~(64)~~ That the correlative rights of some producers in the pool are being violated.

(63) ~~(65)~~ That waste is occurring in the subject pool.

(64) ~~(66)~~ That in order to prevent waste and to ensure that all owners of property in the subject pool have the opportunity to produce their share of the gas, the subject pool should be prorated in order to limit the amount of gas to be recovered from each tract to the reasonable market demand for gas from that tract that can be produced without waste.

(65) ~~(67)~~ That to ensure that each owner of property in the subject pool has the opportunity to produce that amount of gas that can be practicably obtained without waste substantially in the proportion that the recoverable gas under his tract bears to the total recoverable gas in the pool, the subject pool should be prorated in order to limit the amount of gas to be produced from the pool to the reasonable market demand and the capacity of the gas transportation facilities.

[illegible]

(66) (68) That the subject pool has not been completely developed.

~~(69) That production~~

(67) That no cores of the Strawn formation are available in the South Carlsbad-Strawn Gas Pool.

~~across the pool~~

(68) That there are logs available of said wells and that the logs indicate a marked and ~~rapid~~ sometimes rapid variation between wells ~~of~~ in thickness of pay, porosity, net effective feet of pay, and water saturation.

(69) That due to the above-described variations the ~~net~~ effective feet of pay, porosity, and water saturation underlying each developed tract cannot be practically determined from the data ~~at the~~ available at the well bore.

~~That due to the above-described variations the [illegible] continuity of the stringers, the [illegible] of the pay, and water saturation [illegible] each developed tract cannot be [illegible] data obtained at the wellbore.~~

(70) ~~(71)~~ That there are recoverable gas reserves underlying each of the developed 320-acre tracts within the horizontal limits of the subject pool; that there are ~~15~~ 6 developed 320-acre tracts in the pool as defined by the Commission.

(71) ~~(72)~~ That due to the nature of the reservoir the amount of recoverable gas under each producer's tract cannot be practically determined in the subject pool by a formula which considers effective feet of pay, porosity, and water saturation ~~as they appear at the well bore only~~.

(72) ~~(73)~~ That due to the nature of the reservoir the amount of recoverable gas under each producer's tract cannot be practically determined in the subject pool by a formula which considers only the deliverability of a well ~~and the acreage assigned to the well~~.

(73) ~~(74)~~ That the amount of gas that can be practicably obtained

without waste by the owner of each property in the subject pool substantially in the proportion that the recoverable gas under his tract bears to the total recoverable gas in the pool can be practically determined best by allocating the allowable production among the wells on the basis of developed tract acreage compared to total developed tract acreage in the pool.

(74) ~~(75)~~ That considering the nature of the reservoir and the known extent of development, a proration formula based upon surface acreage will afford the owner of each property in the pool the opportunity to produce his just and equitable share of the gas in the pool so far as such can be practicably obtained without waste substantially in the porportion that the recoverable gas under such property bears to the total recoverable gas in the pool.

(75) ~~(76)~~ That in order to prevent waste the total allowable production from each gas well producing from the subject pool should be limited to the reasonable market demand for gas from that well.

(76) ~~(77)~~ That in order to prevent waste the total allowable production from all gas wells producing from the subject pool should be limited to the reasonable market demand for gas from the pool.

(77) ~~(78)~~ That in order to prevent waste the total allowable production from gas wells in the subject pool should be limited to the capacity of the gas transportation system for the subject pool's share of said transportation facility.

(78) ~~(79)~~ That considering the available reservoir information, a 100% surface acreage formula is presently the most reasonable basis for allocating the allowable production among the wells delivering to the gas transportation facilities.

(79) ~~(80)~~ That in order to prevent drainage between tracts that is not equalized by counter drainage the allowable production from the pool should be prorated to the various producers upon a just and equitable basis.

(80) ~~(81)~~ That the adoption of a 100% surface acreage formula for allocating the allowable production in the subject pool will, insofar as is presently practicable, prevent drainage between producing tracts which is not equalized by counter-drainage.

(81) ~~(82)~~ That in order to ensure that each operator is afforded the opportunity to produce his property ratably with all other operators connected to the same gas transportation facility, allowable production from the pool should be prorated to the various producers upon a just and equitable basis.

(82) ~~(83)~~ That the adoption of a 100% surface acreage formula for allocating the allowable production in the subject pool will, insofar as is presently practicable, allow each operator the opportunity to produce his property ratably with all other operators connected to the same transportation facility.

(83) ~~(84)~~ That the subject pool should be governed by the General Rules and Regulations for the Prorated Gas Pools of Southeastern New Mexico promulgated by Order No. R-1670, as amended, insofar as said General Rules and Regulations are not inconsistent with this order or the Special Rules and Regulations for the subject pool promulgated by this order.

IT IS THEREFORE ORDERED:

(1) That the South Carlsbad-Strawn Gas Pool in Eddy County, New Mexico, is hereby prorated, effective September 1, 1972

(2) That the subject pool shall be governed by the General Rules and Regulations for the Prorated Gas Pools of Southeastern New Mexico promulgated by Order No. R-1670, as amended, insofar as said General Rules and Regulations are not inconsistent with this order or the Special Rules and Regulations for the subject pool as hereinafter set forth, in which event the Special Rules shall apply.

SPECIAL RULES AND REGULATIONS
FOR THE
SOUTH CARLSBAD-STRAWN GAS POOL

A. WELL LOCATION AND ACREAGE REQUIREMENTS

RULE 2. Each well completed or recompleted in the South Carlsbad-Strawn Gas Pool shall be located no closer than 660 feet

to the nearest side boundary of the dedicated tract nor closer than 1980 feet to the nearest end boundary nor closer than 330 feet to any governmental quarter-quarter section line.

RULE 5(A). Each well completed or recompleted in the South Carlsbad-Strawn Gas Pool shall be located on a standard proration unit consisting of any two contiguous quarter sections of a single governmental section, being a legal subdivision (half section) of the United States Public Land Surveys. For purposes of these rules, a standard proration unit shall consist of 316 through 324 contiguous surface acres.

C. ALLOCATION AND GRANTING OF ALLOWABLES

RULE 8(A). The allowable production in the South Carlsbad-Strawn Gas Pool shall be allocated as follows:

The pool allowable remaining each month after deducting the total allowable assigned to marginal wells shall be allocated among the non-marginal wells entitled to an allowable in the proportion that each well's acreage factor bears to the total of the acreage factors for all non-marginal wells in the pool.

C. GENERAL

RULE 25. The vertical limits of the South Carlsbad-Strawn Gas Pool shall be the Strawn formation.

RULE 26. The first proration period for the South Carlsbad-Strawn Gas Pool shall commence September 1, 1972, and shall terminate December 31, ~~1972~~ 1973. Subsequent proration periods shall be the twelve-month periods as provided in the General Rules.

IT IS FURTHER ORDERED:

(1) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
CITY HALL BUILDING
HOBBS, NEW MEXICO
April 19 & 20, 1972

COMMISSION HEARING

IN THE MATTER OF:	)	
	)	
The hearing called by the Oil Conservation Commission on its own motion to consider instituting gas prorationing in the South Carlsbad-Morrow Gas Pool and the South Carlsbad-Strawn Gas Pool, Eddy County, New Mexico	)	Case No. 4693 and Case No. 4694

BEFORE: State Geologist A. L. Porter, Jr., Secretary-Director
Land Commissioner Alex Armijo, Member

Vol I

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TRANSCRIPT OF HEARING

MR. PORTER: The Hearing will come to order. I should have made the announcement earlier this morning, I did make it last evening and most of you were here, in regard to Governor King who had to cancel out at the last minute. I was in his office at 10:30 o'clock the day before yesterday before I came down to Hobbs and he had already made reservations and fully intended to come to the Hearing.

As you know, Governor King is very much interested in the affairs of the Oil and Gas Industry and the development of resources in the State. He also wanted to come to Hobbs and was extremely sorry he could not be here. Things came up that required him to cancel his appearance. He asked me to express his regrets to you that he could not be here.

We will take Cases 4693 and 4694.

MR. HATCH

MR HATCH: I have asked that Cases 4693 and 4694, having to do with instituting proration in the South Carlsbad Morrow Gas Pool and the South Carlsbad Strawn Gas Pool be consolidated for the purpose of this Hearing only. There will be two separate Orders that will be written by the Commission.

The Commission will have two witnesses, Mr. Stamets and Mr. Utz. The two pipe line companies who purchase gas

in those two pools have voluntarily consented to also put on testimony concerning their facilities and concerning questions of market demand and capacity.

So first I will present Mr. Stamets and then Mr. Utz to be followed by the representatives from the pipe line companies.

Mr. Nutter, have you distributed the Exhibits to the pipe line companies and to all the operators distributors?

MR. NUTTER: Yes.

MR. PORTER: Let me ask you, are there any objections to consolidating these cases for the purpose of taking testimony. As Mr. Hatch has indicated there will be separate Orders issued.

MR. NEAL: I am C. Fincher Neal of Neal and Neal, Hobbs, New Mexico. We represent Cities Service along with Mr. LeBlanc of Tulsa. We are only interested in Case 4693, but we have no objection to the Hearing being consolidated. Our testimony, however, will only apply to that one Case and that one formation.

MR. PORTER: I don't believe that will be any problem.

MR. HATCH: No problem.

MR. NEAL: Thank you.

MR. STEVENS: Donald Stevens of McDermott, Connelly & Stevens, Santa Fe. We have no objection to consolidation,

but for the purpose of clarity we suggest that perhaps testimony on the Morrow can be heard first and then we can have cross-examination and discussion. I say this on the basis that the two fields are vastly dissimilar in composition and in pay quality.

MR. PORTER: Do you have any objection to that, Mr. Hatch, or have you prepared your testimony to present both pools at the same time?

MR. HATCH: I think the Commission could do that very easily, but I am not sure whether the pipe line companies' testimony would be that easily separated. We can ask them if they have any objection.

MR. PORTER: What about the Commission's testimony?

MR. HATCH: The Commission's testimony can be divided easily.

MR. KELLAHIN: Jason W. Kellahin of the firm of Kellahin & Fox, Santa Fe, appearing for Pennzoil. Our testimony is so prepared that if we follow the procedure outlined by Mr. Stevens there will be a lot of unnecessary repetition. It would be simpler for us to go ahead with the entire presentation which will be very easily distinguished as to which pool we are talking about.

MR. PORTER: The Commission desires to hear all of the testimony in the proper order, however, I must state

at this point that we are limited in time since Mr. Armijo must get back to Santa Fe this evening. Now, there can be quite a bit of testimony presented and quite a bit of cross-examination, I'm sure. So as far as we are concerned we would like the testimony presented in the manner in which it can be most expeditious to handle from a point of time.

The case was originally listed and there was a request for a full Commission Hearing so it was continued for two months.

MR. CHASE: We represent Mr. and Mrs. Grace, Michael P. Grace and his wife, Corinne Grace, of the City of Carlsbad. My name is Edward Chase and my office is in the Bank of New Mexico Building, Albuquerque, New Mexico. My associates, Mr. Charles C. Spann and Mr. George Hunker, Jr. I will hand the Reporter, with your permission, the cards of these gentlemen.

If it please the Commission, we would like to have the Strawn case heard first. The reason is that it would simplify the matter and, we think, get to the heart and guts of the situation quicker. Mr. Spann of the firm of Grantham, Spann, Sanchez and Rager, in Albuquerque, will take the lead in this case as our trial lawyer and Mr. George Hunker, Jr., of Roswell, is our associate.

Mr. Spann, do you care to say anything?

MR. SPANN: We, of course, think the Strawn should be heard first, but we will comply with the ruling of the Commission.

MR. STAMETS: My testimony is designed to cover both pools, and the Morrow first primarily, but the Exhibits which we have prepared cover both pools.

MR. HATCH: I have a letter here from one company saying that if everybody enters into the spirit of cooperation and conservation, and I think we can do that, and I would recommend we go ahead on the original grounds because I think we are already wasting time here.

MR. PORTER: That is a fact and the Commission is going to rule that the Cases will be consolidated for this Hearing and the Commission may proceed at this time with its first witness.

RICHARD M. STAMETS,

was called as a witness and after being duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. HATCH:

Q Will you state your name and position for the record?

A R. L. Stamets, Technical Support Chief for the Oil Conservation Commission of the State of New Mexico.

Q And your place of residence is in Santa Fe?

A Yes.

Q And your principal place of work is in Santa Fe?
A It is.
Q You gave your position as Technical Support Chief, does that position include any duties pertaining to your training as a geologist -- perhaps I should have asked you the question: Are you a geologist?
A Yes, sir. My position as Technical Support Chief is a position dealing both in technical and administrative services to the Secretary-Director of the Commission.
Q Would you state how many years you have worked for the Commission?
A I have worked for the Commission since October of 1957. During that time I have been classified as a geologist for about fifteen years.
Q Where did you work for the Commission prior to moving to Santa Fe?
A I spent twelve years, before moving to Santa Fe, working for the Commission in District Two, which is primarily Eddy County and a portion of Chevez County which covers the territory we are going to be speaking of here today.
Q Then you are familiar with the South Carlsbad field?
A Yes, I am.
Q Are you familiar with the purposes of Cases 4693 and 4694?

A Yes, sir, I am.

Q Have you made a study of these areas in preparation for these two Cases?

A Yes. In preparing for this Hearing I examined logs, well records, sample descriptions, scouting records, and various Commission records on the South Carlsbad Gas Pools. Although I made an attempt to get core data there was none available as far as the Morrow was concerned. As near as I have been able to determine no cores have been taken of the Morrow formation, there is one core in the Strawn which comes from a nonproductive Strawn well.

Q In connection with your study of the various pools in the South Carlsbad field, have you prepared certain Exhibits to be presented to the Commission for their consideration?

A I have. Some of these Exhibits will bear a double designation, for instance, Exhibit Number 1 in Case 4693 also bears the designation of Exhibit "A" in Case 4694. This was done for the purpose of clarity in the record.

Q Generally your Exhibits are marked with numbers, those Exhibits which pertain to the Morrow formation, and letters dealing with the Strawn formation?

A Yes, that is correct.

Q Is there another pool in the South Carlsbad Pool besides the two that you have mentioned?

A Yes, there is the South Carlsbad Atoka Field.

Q Would you refer to what you have marked as Exhibit 1 and explain to the Commission what it is intended to represent?

A Exhibit 1 is entitled, Well Data, and lists all of the wells drilled in the two pools. These are identified by operator or by lease name, well number and location. On here I have put the well elevation, the total depth of the well by my pick of the top of the Strawn line and the top of the Morrow.

All these wells listed on here are Morrow completions unless it is noted otherwise.

Q There are three pages here and this Exhibit has been marked with the two different Case numbers. Which of the pages have to do with the Morrow formation?

A Basically all the pages deal with both formations. This Exhibit and the information on this Exhibit was used in the preparation of all the Exhibits which will follow.

Q Now, you pointed out that there is certain information on here regarding the top of the Morrow marker and that it would be your interpretation?

A Correct.

Q Compiled from the various logs and other information you had available?

A Yes.

Q What about the locations of the wells and the elevations, was all that taken from Commission records?

A These are from Commission records. There is one well that we are not just exactly clear on where it will be drilled at this time. The Union Oil Company of California has received a nonstandard location approval at location 1230 north, 1980 west. However, at this time we do show the well on our map.

Q There are a few blank spaces on the Exhibit, would you give the Commission a reason why that information is missing?

A Well, the well might not have been drilled deep enough to pick the Morrow marker; we might not have the logs on them in the cases of incompleted wells. There was one in which I did not pick the top of the Strawn line because I was unable to with the logs available.

Q Would you refer to what has been marked Exhibit 2 and explain to the Commission what it shows?

A Yes, Exhibit 2 is a structure contour map of the top of the Morrow marker with a contour interval of fifty feet. This shows all of the wells and information

taken from the data sheets. The completed gas wells are identified by the standard gas well symbol as shown in the legend. The wells completed in the Morrow are colored red and the dual completions are colored red and green. At this time Pennzoil-Mobil Twelve Federal in the north half of Section 12 is a dual well and it was completed in the Morrow and the Atoka. The drilling wells are identified by circles, these are either drilling or are incomplete.

This contour map shows a trend going north northeast to south southwest. The Morrow marker is also shown on this Exhibit. Further, you will note the line on the cross section as A and A' and B and B' on this map. This is my own interpretation.

Q Mr. Stamets, considering what you have presented so far, do you think the horizontal limits of the Morrow Pool have been determined?

A No, I do not. My own feelings about the Morrow is that it is very difficult to tell if you have actually determined the limits of the field. You may get some bad wells on the edge and step out a little further and get some good wells.

Q Are there a number of wells shown on this Exhibit that have been drilled that would indicate that the horizontal limits have not been determined yet?

A Yes.

Q Would you point out some of them?

A Well, the Union of California - Lea Well in Section 29 of 22 South, Range 27 East; the Phillips Petroleum well in Section 18, 23 South, 27 East; and I understand that Mrs. Grace is in the process of completing a well in Section 11, 23 South, 26 East. There are other wells you can see around there and I don't think there is any need to discuss each one.

Q I believe you are going to refer to Exhibits 3, 4 and 5 without me interrupting you. Perhaps you can go through those and present them to the Commission showing what they depict.

A Exhibit 3 is a tabulation of all of the Morrow completions and these are identified as to operator or lease name, well number and location. Additionally, I have shown the perforation for each of the wells on here from Commission records. I just noticed awhile ago in preparation of this that I had the personnel in Santa Fe get me the production from these wells for most of December, January and February. I just noticed awhile ago that in the Morrow there are no liquids of any kind being reported to the Commission on C-115 even though some of the wells are producing liquids. I know some must be producing substantial

amounts of liquids because there are some pretty good size tanks sitting down there.

Q What liquids do you think are being produced?

A There is water being produced from the Morrow wells.

Exhibit Number 3 leads directly into our Exhibit Number 4 which is a graphic display of this same data. All of the wells are shown there and all are identified across the top. The perforations are noted by the short horizontal lines.

From what I have seen from the logs the thickness of the Morrow is quite regular so the perforated zones should be horizontally correlative. What this shows, if you get your straight edge out, you see my interpretation and you see there is no one pay zone common to every well in the pool. Before proceding any further, there is no particular order on these wells, but in general you will find the ones in the south in the left-hand side of the page and the ones in the north in the right-hand side of the page. There is no one well producing from a zone wholly isolated from every other producing well in the field. I feel this shows there are some isolated pay zones in the field, in the Carlsbad Morrow Field, but if you will look at the Cities Service Wells, the Merland A and the Merland B and if you will look at the Texas Oil

and Gas Pan American Number 1 you can see where it appears there is an isolated zone that is perforated in that well only and does not extend to the other wells, apparently. This interval runs from about 160 feet to 260 feet below the Morrow marker.

Now, perhaps you would like to just take a look at some of the offset wells just to see what actually is out there. For example, let's take Pennzoil Federal Number 1, it is rather centrally located in the south half of the pool and if you look to the northwest you can see it is offset by the Grace Number 1. Let's look down and see the perforated interval. We can see this is a different zone and the same zone does not appear to be producing these two wells. Similarly if we look further to the southwest the offset is the Grace-Humble Number 1 and we see it is not producting from the same zone as the Pennzoil well. Let's take a look at the Grace well we just got through talking about. Let's compare the interval there to the interval being produced from the Texas Oil and Gas American Number 1. We can see some of the perforations of the Pan American Number 1 and they are not in the same interval as in the Grace well. Similarly, you can do the same thing with the other wells and I believe if you will do this you will see

that generally there is more porosity in the south half of the pool.

If you look at what has been marked Exhibit Number 5 in this case -- I'm sorry, this Exhibit will not be in every folder, we have a dozen set of Exhibits with the exception of this one and there were only six. I will hold this up and maybe we can all see what this shows. This is a log to log comparison of two wells. The left-hand well is the Pennzoil-Gulf Federal Number 1 and the right well is the Superior Oil Company Estate Number 1. As you see both of these wells are located in Section 1, 23 South, 26 East. These wells are the closest wells in the pool, they are 1,320 feet apart. The logs are both gamma ray sonic logs. On here in red I have marked a number of correlative zones, of course, there are many up and down here, but I did not mark each one. At these zones you can -- let me point out the Pennzoil well as a producer from the Morrow and the productive interval is marked with a little red dot which represents perforation below about 11,640 feet and this is all confined to that one zone which is marked in red. You can see by looking at this that there are substantial variations in the lithology and porosity between the correlative zones

of these two closest wells in the pool.

In my opinion this is quite typical of the Morrow in this area in Eddy County.

Q Do you have anything further to add on Exhibits 3, 4, and 5?

A No, I don't, but I think the same variety in porosity will be seen in our next Exhibit.

Q You are referring to Exhibits 6 and 7?

A These next two Exhibits are identified as Exhibits 6 and 7 in Case 4693 and as Exhibits "D" and "C" in Case 4694. These are cross sections and the first cross section, A and A', is in the southwest. The cross sections are identified across the top. The top of the Strawn line is marked and the top of the Morrow marker is noted. Again, you can see variations in the lithology in the Morrow zone. I would like to point out at this time, referring to the Strawn section, the Jewel Number 1, which is about in the center of the Exhibit in the Strawn section, you can see this good clean line or reef development that occurs from a depth of about 10,260 to 10,440. At the present time this is the best reef well in the South Carlsbad area and as you look from side to side, from left to right, you can see how the reef diminishes as you move away from the Jewel Well Number 1.

The next Exhibit, Exhibit 7, in Case Number 4693 and Exhibit "C" in 4694, shows essentially the same information from the top of the Strawn line to the top of the Morrow marker in lithology, porosity, and also perforation. I believe that is basically what these Exhibits show.

Q Mr. Stamets, considering the Exhibits you have presented and your studies have you formed any opinion as to whether the South Carlsbad Morrow Pool -- rather the wells that you have shown here as producing from the South Carlsbad Morrow formation are all producing from one pool?

A Yes. As the Morrow Pools have been described they are quite common to a number of zones producing in the Morrow. In general these zones are not sufficiently continuous to be economically drilled and quite often they are not even economically feasible to make full completions out of, so the Commission has recognized this and the Morrow is generally treated as a single producing zone when it is encountered.

Q Are all of the wells on your Exhibit Number 3 connected throughout the formation?

A I believe I have so testified.

Q Have you formed any opinion as to the difficulty in determining the quantity of recoverable gas under

each tract?

A I have arrived at a number of conclusions. I can conclude that the Morrow sands in the South Carlsbad Pool are really rather typical of the Morrow sands in Eddy County. They show a considerable amount of thickening and thinning and discontinued unity over short distances. The porosities are very wide between wells in the same zones and water saturation varies from twenty percent to eighty percent. Further, the Morrow is notorious for being damaged by drilling, even to the point of furiously affecting the producibility of the zone or the well. It is possible to have indicated gas pays without the capability of producing in part or in whole because of this damage.

All of the factors which I have cited here tend to confuse the reserve calculations in the Morrow formation.

Q Have you fairly well completed your testimony concerning the Morrow formation?

A Yes.

Q Would you refer to what has been marked Exhibit "A" concerning the Strawn formation?

A I would call your attention to Exhibits "A", "B", and "C". Exhibit "A" is well data and Exhibits "B" and "C"

are the cross sections. With that I will move directly to Exhibit "D" in Case 4694.

Q I think you have given everybody an opportunity to refer back to those Exhibits that you have mentioned, "A", "B" and "C" .

A Yes.

Q Which you are using in both cases?

A That's right.

Q Go right ahead with Exhibit "D" then.

A Exhibit "D" is a structure contour map of the top of the Strawn line. The data for the perforation was taken from Exhibit "A" and is confined to the top of the Strawn line. We have a closed Lea in the north and an open Lea in the south. I feel this is primarily stratigraphic with the structure being a secondary feature. There appears to be a line reef which corresponds with the Pennzoil-Gulf Federal Number 1 which was not productive in the Strawn and is located in the northeast of the southwest of Section 1, 23 South, 26 East. This shows fossilized limestone with some structural fracturing. In doing my research on this, I referred to the description of the Husk-Strawn which is a classic Strawn Pool and it was described thusly: strong limestone fossilization with porosity and a highly fractured porous reef and

I say this well describes the Strawn in the South Carlsbad Pool. The reef trend is from the northeast from the southwest and in my opinion is quite narrow, maybe no more than three-quarters of a mile wide. If you will look again at Section 1, 23 South, 26 East, and Section 6 of 23, 27 and I am going to move from west to east, the Pennzoil-Gult Federal Number 1 penetrated the Strawn, but was essentially dry. The Superior well is a Strawn completion; the Pennzoil-Gulf Federal Number 2 is a Strawn completion; the Missouri-New Mexico Land Number 1 was dry in the Strawn. I believe that is basically the well data.

Q You mentioned certain Strawn completions, are there other Strawn completions shown on the Exhibit?

A Yes, there should be six.

Q Would you go ahead with Exhibit "E"?

A Exhibit "E" is a similar tabulation to the one we have previously seen on the Morrow. It lists the wells showing the operators' or lease names and the well numbers locations and performations. Again, this was used in the preparation of this Exhibit.

Q Continue right on with Exhibit "F" is a graphic diagram of the completions and the perforated intervals in the Strawn formation. I have also shown the top of the Strawn line which graphically demonstrates

how the top of the line rises in this section. The wells are all actually offset wells and the section moves basically from the southwest to the northeast. The perforations show that there is more continuity between wells than exhibited in the Morrow. This can also be seen by referring back to Exhibit "B" and Exhibit "C", the cross sections, we have previously looked at.

Q Do you have anything further to add to that testimony concerning that Exhibit?

A No, I don't.

Q After your study of the Strawn formations have you formed any opinions concerning whether or not all of the wells on Exhibit "F" are producing from the same pool?

A Yes, I have. I am convinced that they are.

Q Have you formed any opinion concerning the difficulty or nondifficulty of arriving at the quantity of recoverable gas under each tract?

A Yes, I have. In relation to the Strawn I have concluded that the Strawn formation is producing more as a single unit than the Morrow. Again there were no cores of the pay zone with which to compare the log data and there may be bugs present in the formation which would increase the net pay above the

figure calculated from the logs. The productive zone is fairly narrow and it makes it difficult to determine the exact number of producing acres under any tract.

Q Do you have anything further to add to your testimony?

A No, sir.

Q Do you have an opinion to offer the Commission at this time?

A Not at this time.

Q Mr. Stamets, I believe we have Exhibits 1 through 7 for the Morrow formation?

A That's right.

Q And Exhibits "A" through "F" -- when I say the Morrow formation that would be in Case 4693?

A That's right.

Q And Exhibits "A" through "F" on Case 4694?

A That is correct.

Q Did you prepare each of those Exhibits yourself?

A They were prepared by me or under my direction.

Q Who worked for you under your direction?

A Some of this information came from your District Supervisor in Artesia and came from information which was prepared by myself. Quite a bit of the drafting work and the actual preparation of the Exhibits was done in our Hobbs office.

Q And this was all done by members of the Commission Staff?

A Yes.

MR. HATCH: I would like to move for the introduction of Exhibits 1 through 7 in Case 4693, and for the introduction of Exhibits "A" through "F" in Case 4694.

THE WITNESS: I would like to give credit where credit is due. Mr. Runyan has spent quite a bit of time in the preparation of these Exhibits and I am very thankful for his help.

MR. PORTER: Without objection the Exhibits as offered will be admitted into the record.

(Whereupon Exhibits 1 through 7 in Case 4693 were admitted into evidence.)

(Whereupon Exhibits "A" through "F" in Case 4694 were admitted into evidence.)

MR. HATCH: That's all the questions I have.

MR. PORTER: Mr. Stamets is now available for cross-examination.

CROSS-EXAMINATION

BY MR. KELLAHIN:

Q Will another witness testify to the proposed allocation formula to be used in this pool?

A Yes.

Q Is it your testimony that while there are separate zones, particularly in the Morrow, none of these zones constitute a separate, common source of supply?

A I didn't check the figures available on the Morrow formation in that manner.

Q The Commission has defined it as one single pool?

A It has.

Q Now, in connection with your testimony on the recoverable gas under each tract, did I understand you to say it is difficult to determine this, particularly in the Morrow?

A Yes, sir.

Q But not impossible, is it?

A In this modern day a man would be a fool to say anything is impossible.

Q But, as a practicable matter, Mr. Stamets, would it be possible for the Commission to comply with the Order of the New Mexico Supreme Court in prorating this pool? I will refresh your memory, the Supreme Court has said that the Commission must consider the amount of recoverable gas under each producer's tract to the total amount of recoverable gas in the pool in proportion to what one of these bears to the other and what proportion can be recovered without waste.

A Run that question by me one more time.

Q As a practicable matter can the Commission comply with the directive of our New Mexico Supreme Court?

A You have asked quite a difficult question.

Q I am aware of that.

A Comply absolutely? Mr. Kellahin, I do not feel that we can do that as a practicable matter. If you would like to describe what limits you would like your question to refer to, I will try to give you an answer. We are dealing with something that is really going to be tricky, we are going to have to look at each zone and try to figure out what it does exactly, where it goes, how far it extends from the well bore, and then we can get started on attempting to figure out the reserve. I have pointed out that even though we may see reserves there they may not be contributing to the well because they may be blocked off at the Morrow formation to a point where you might have a well cased off and cemented.

Q Let me read what has been said should be done, it says: The rules, regulations or orders of the Commission, so far as it is practicable to do, should afford the owner of each property in the pool the opportunity to produce a just and equitable share of the oil or gas, or both, in the pool being an

amount, so far as can be practicably determined, and so far as can be practicable obtained, and which is substantially in proportion to the continued recovery of oil and gas, or both, under the property and to the total recoverable oil or gas in the pool and for this purpose to use a just and equitable share of the reservoir energy. Now, I submit that that is a statement to which you must comply if prorationing the pool. Can the Commission do this in these two pools bearing in mind it must be a practicable matter.

A Considering the practicability I am going to have to answer at this time, no. After the presentation of the Exhibits and the testimony by the other people who are interested I may be forced to change my answer, but from my own investigation and my own observations at this time, because of the lack of cores, and with all of the problems that exist in this reservoir, I am going to have to answer no right now.

Q There are logs on every well in the pool?

A Yes.

Q And geological information can be obtained from logs Hobbs; can it not?

A Yes, it can.

Q If all the logs of the pool were identical then all

the wells would be the same; isn't that right?

A You would think so, yes.

Q Now, if the logs indicated that the interval being produced was dissimilar from well to well could you determine from the logs within some reasonable approximation the amount of recoverable gas in place under that well?

A It's quite possible I could come up with a figure which I would consider reasonable, but I have a feeling that every operator in the pool would not feel it was reasonable.

Q Mr. Stamets, certain factors relating to information obtained from logs has been consistently used in the State of New Mexico for allocating production from secondary recoverable units; isn't that right?

A You are speaking of the operators getting together?

Q Yes.

A Yes, that's true. There have been meetings of the minds of people concerned and they have come up with some parameters which they have all accepted and these have been used, yes.

MR. KELLAHIN: That's all. Thank you, Mr. Stamets.

CROSS EXAMINATION

BY MR. RAMEY:

Q I believe it was discussed one time when you were

trying to determine some water saturation, wasn't there a difference of opinion on what factors should be used in determining water saturation?

A Yes. In preparation for this Hearing I talked to as many people as I could and there was a difference of opinion on what matrix velocity should be used and at looking at some of the things that were sent to me by different companies and comparing that data with my data I worked out, and this was admittedly worked out hurridly, and I found a difference in the porosity of the calculated water saturation between the figures I adopted and the figures submitted by the companies.

Q And these would be factors in determining reserves?

A These would be factors. I don't know that if we all set down together we probably couldn't work this out and we probably could come up with some parameters which would be acceptable. I feel that if I developed the parameters they would not be accepted by the majority in the field.

MR. RAMEY: That's all I have.

MR. PORTER: Anyone else?

CROSS EXAMINATION

BY MR. STEVENS:

Q You testified as to the difference between the Strawn

and the Morrow reservoirs, is there a significant difference in definition and type and homogeneous of the producing intervals of the Strawn and Morrow?

A Yes, the Strawn has a more homogeneous type of reservoir than the Morrow.

Q In your opinion would it be easier to determine the reserves in the Strawn than in the Morrow?

A You are dealing here with a reef and as I testified it is quite narrow. The fingers of this reef come and go and there are shales and sand at the reef margin, so you would experience quite a bit of difficulty, in my opinion, in picking where the edges of this reef actually are and exactly what the development is. As I pointed out, there is a pinnacle in the Jewel well and exactly what the extent of that pinnacle is is quite a difficult thing to determine.

Q These factors that you saw difficult to determine, aren't they, as a matter of fact, determined, whether correctly or incorrectly by engineers in southeast New Mexico working with the rocks on a continuous basis?

A Yes, I would say that is quite true.

MR. STEVENS: That's all.

MR. PORTER: Anyone else have any questions

of Mr. Stamets?

CROSS-EXAMINATION

BY MR. SPANN:

Q I would like to direct my questions to your testimony concerning the Morrow.

A Yes, sir.

Q I believe that the information appearing on these Exhibits was taken from the records of the Commission?

A Which Exhibits?

Q All of the Exhibits. The logs and the well data were all taken from the records in Santa Fe? What I am trying to find out is if you prepared these in Santa Fe from those records or if there are other records which you had available to you other than the records in Santa Fe?

A Let me tell you what I did. I requested that the District Supervisor furnish me with a list of the wells, which he did from his records in the District Office and these were duplicate records. We took all of the electric logs from the Artesia Office to Santa Fe and there I looked at the logs and picked the tops and made a number of calculations from that data and developed at that point what was taken to Hobbs where it was drafted. A number of the Exhibits were made, the structure map and cross sections and the

graphic displays, were drafted in Hobbs.

Q Did you have any information or records available in preparing your Exhibits that were not available in either Artesia or Santa Fe?

A In preparation of the Exhibits?

Q What I am trying to find out is whether anything on these Exhibits that are not in the Commission records, and if so, will you tell me what is?

A I don't think there is except things which came from my own knowledge, but I don't think there is anything on the Exhibits which was not developed from Commission records.

Q Have you been, prior to this Hearing, involved in the preparation of data and Exhibits for prorationing Hearings in other gas fields in New Mexico?

A Yes, sir.

Q Which ones?

A The Indian Basin Field, that would be the upper Pennsylvanian and Morrow and is located in Eddy County several miles west of Carlsbad.

Q And were similar records prepared in connection with that?

A I cannot remember right now exactly what all of the Exhibits were, but I did prepare structure maps, cross sections, and various data.

Q Is there any information in the Commission records, either in Artesia or Santa Fe, that you did not include in your Exhibits that would be material to a determination of whether these various wells are producing from the same source of supply?

A I certainly hope not. I endeavored to dig out any material which would have a bearing on this factor.

Q Well, I know that there would be information, would there not, as to the shut-in pressure of the wells when they were brought in?

A This information will be developed by the next witness.

Q But that information does go to the question as to whether these wells are producing from the same source of supply which you didn't have in your Exhibits?

A That's right.

Q Is there any other information that goes with that that is not contained in your Exhibits?

A Well, I have already said that I didn't think that there was, so if you know of some I will let you tell me.

Q You are the one who is giving the opinion so I want to be sure of what you have in mind about what the background information should be.

A I think I've answered the question.

Q Did you consider these factors of the shut-in pressures of the various wells when you evaluated the situation here and determined that these wells were producing from the same source of supply?

A No, I didn't give the pressures anything but a passing consideration. I did not develop this data, Mr. Utz, the next witness, did.

Q Would this be information which might establish something as to whether there is communication between these wells; isn't that true?

A It certainly might be.

Q And you do not have such information?

A No, however, if you look at the accumulation of gas reserves in this data in all likelihood the original pressure would likely not vary too much for similarly developed zones. However, after a period of time in production the zones that might represent limited reservoirs or noninterconnected reservoirs could note significant pressure differentials.

Q But we just don't have that information available at this time?

A As far as I know we did not have it.

Q Now, you also testified about what a difficult zone the Morrow formation is and that you have no information

at this time as to whether there is any communication between zones within this Morrow formation?

A Vertical communication?

Q Yes.

A No, I didn't. There were no cores taken from the Morrow with which you could possibly identify vertical fracturing between these zones, bugs or anything else which would facilitate vertical communication of gas.

Q Unless we know that, of course, we cannot tell whether these wells are producing from a common source of supply, can we?

A That is true and another factor to consider is the cement jobs on these wells. Let's suppose we got a poor cement job in there, they might be connected behind the pipe.

Q Actually, based on your testimony, we really don't have enough information to determine whether this field should be prorated or not, isn't that true?

A I don't think that was my testimony.

Q If you cannot determine if the wells are producing from the same source of supply, as I understand your definition of a pool, you can't determine whether we have one or thirty pools; isn't that right?

A I think my testimony was that you cannot find any well in there which is producing from a wholly isolated pool. And further, the Commission has in general recognized the Morrow as a single producing zone.

Q You say that the Commission has generally recognized that, what do you mean by that? Have you prorated other Morrow pools?

A Yes, Indian Basin is prorated.

Q When was that prorated?

A Indian Basin is some miles west of Carlsbad.

Q When was that done?

A Elvis, do you know the date on that? Several years ago, five or six years ago. I'm sorry, but I didn't think to look it up for today's Hearing.

Q Did you participate in that Hearing?

A Yes.

Q Do you recall if anyone protested or objected at that time?

A I don't recall that there were any protests at that time, there was a considerable amount of discussion, but I don't know if you would call it protest.

Q So it could have been that your opinions regarding that were accepted without question; is that right?

A Well, I remember one fellow vigorously wanting me to redraw a line, and I guess you would call that protest. They were not standing in line over there to accept what I had to say, no.

Q Well, they are today?

A I don't know about that. I kind of feel like a Christian back in Rome being told: "Don't worry, the lions are pretty small today."

Atoka

One thing I did not point out is that the old Pennsylvanian Pool south of Artesia has been prorated for a number of years and about a year or two ago Mountain State Petroleum came in and drilled a well on the west side and got virgin pressure. Another well or two were drilled in there and subsequently this section was broken out of it, together with the Pennsylvanian Pool, and a new gas pool for Morrow production was established on the west side of the Atoka-Pennsylvanian. So here you had an instance where one pool was depleated and another pool was discovered just right to the west with virgin pressure.

Q Where was that?

A The Atoka-Pennsylvanian area south of Artesia.

Q All these formations are in the Pennsylvanian; is that correct?

A That's right.

Q And the Commission has treated those different formations as being acceptable for the purpose of proration?

A For the purpose of proration, yes.

Q You are a geologist, a graduate geologist?

A Yes, sir.

Q Would you describe the characteristics of the Morrow formation from a geological standpoint?

A Well, I would like to tell you about the cores that I looked at and the samples I have seen, but I have not seen any. There are no cores and we did not get samples, however, in some of the sample descriptions which I have looked at there are sands reported and the sands are interbedded with shales and there are some limestones in the Morrow.

Q Would that prevent communication between zones within the Morrow formation?

A Not necessarily. Normally fairly thick shale would be sufficient to prevent vertical migration, if vertical fracturing is insistent there can be communication even though you normally don't see it.

Q Doesn't this indicate there is no communication between the various zones within the formation?

A In the absence of any concrete evidence that there

are fractures then you would have to say that the zones are isolated; conversely, in the absence of any definite evidence that there are not fractures you can't say there aren't any.

Q And you have no evidence that there are fractures in these zones?

A That's right.

MR. SPANN: That's all I have

MR. PORTER: Any further questions?

CROSS-EXAMINATION

BY MR. KELLAHIN:

Q Mr. Stamets, in connection with these zones, are there any wells that are perforated in all, or in substantially all of the zones where you have communication in the well bore?

A Let me look at Exhibit Number 4 in Case 4693. I don't think you can say that from looking at the second well from the left-hand side, the Pennzoil. You can also continue looking down through there at a lower set well and I guess the lowest set of perforations are below the 400 foot line. There is another well, the Cities Service Merland with holes shot in that same section and it is kind of a long way across there. I don't know if those wells are actually horizontally communicating or not, that's

quite a distance.

Q How about the two at the bottom on the right-hand side of your Exhibit, they are perforated quite an interval; are they not?

A Yes, the Cities Service Merland Number 1 covers quite a bit of what would be described as the main pay interval.

Q How persistent is the shale bed across the pool; have you any information on that?

A I have not looked at that particular item. We could take a look at the north-south cross section which would be Exhibit Number 6 in Case 4693. Let's look down about, let's see, 350 feet below the Morrow marker, there is relatively persistent shale bed there even though the porosity doesn't exactly read shale, at least to the eyeball it doesn't read shale. That is fairly persistent across there.

Q Is that the only persistent shale bed you see?

A To me it is the only obvious one. It is kind of hard to tell on a small scale.

Q Cities Service Merland Number 1 is completed both above and below that interval; is it not?

A Yes, it is.

Q So they have communication in that well bore in any event?

A Yes. Of course, these logs are cut off and I'm not sure if any of them are completed below that point or not.

MR. KELLAHIN: That's all I have.

MR. PORTER: Does anyone have any further questions of this witness?

(No response)

MR. PORTER: If not, the witness will be excused.

(Witness excused.)

MR. PORTER: I believe at this time we are going to recess the Hearing until 1:15. It appears that our crowd did not become small enough to fit in the Oil Commission Room, so the City has very graciously offered us a room down in the City Hall which will seat approximately one hundred people so we will recess the hearing at this point and reconvene at 1:15 on the second floor of the City Hall Building at 300 North Turner Street.

(Whereupon, a luncheon recess was taken.)

(Hearing resumes.)

MR. PORTER: The Hearing will come to order. Let the record show that the Hearing in Cases 4693 and 4694 has reconvened at the Hobbs City Hall at 1:15 P.M. Mr. Hatch, will you call your next witness?

MR. HATCH: Mr. Utz.

ELVIS UTZ,

appeared as a witness on behalf of the Oil Conservation Commission and after being duly sworn according to law, testified as follows:

DIRECT EXAMINATION

BY MR. HATCH:

Q Will you state your name, position and place of employment for the record?

A Elvis Utz, engineer for the New Mexico Oil Conservation Commission.

Q And where is your main place of employment?

A Santa Fe, New Mexico.

Q As an engineer?

A Yes.

Q Are you charged with any duties concerning the proration of gas in New Mexico?

A Yes, I am in charge of administering the rules pertinent to gas proration as well as putting out publications.

Q Do you also have any duties relating to making recommendations to the Commission concerning conditions that might lead them to prorate a pool or not prorate a pool?

A Yes, sir.

Q Again, how long have you held your present position?

A Well, I said sixteen or seventeen years this morning, and I figure that's pretty close.

Q It hasn't changed during the day?

A No -- a few hours.

Q Have you prepared certain Exhibits to present to the Commission to determine whether or not the pools in the South Carlsbad area should be prorated?

A Yes, I have. I have prepared six Exhibits, three Exhibits pertain to the Morrow and three Exhibits pertain to the Strawn pools.

Q How are those numbered?

A The Exhibits in the Morrow Pool are numbered Exhibits 8, 9, and 10; the Strawn Pool are lettered "G", "H", and "I".

Q Would you please refer to Exhibit Number 1 and explain to the Commission what this Exhibit shows -- excuse me Exhibit Number 8.

A Exhibit Number 8 is a map of plat showing the horizontal limits of the South Carlsbad Morrow Pool. You will note that there are circles inside the horizontal limits of this pool and inside the circles are certain numbers. The circles indicate the location of the wells within the quarter-quarter section and the numbers indicate the wells as shown on the

companion Exhibit, Exhibit Number 9.

Q Can I interrupt you for a moment? When you speak of horizontal limits of a pool, what records did you prepare that information from?

A The New Mexico Oil Conservation Commission nomenclature records.

Q Nomenclature? Are those cases that the Commission has held hearing on creating pools and extending pools from time to time?

A That is correct. This Exhibit is up to date to the best of my knowledge.

Q And Orders were issued by the Commission in each case?

A Yes. The number at the left-hand side of Exhibit 9 indicates the well locations on Exhibit Number 8. So if you want to know what the Number 1 well is on Exhibit Number 8 you turn to Exhibit 9 and number 1 indicates the Morris-Allen.

Q Does Exhibit 8 detail the horizontal limits of the Morrow pool -- you are not presenting this to show the productive limits of the pool?

A No, I am not. Only limits that have been defined by the Oil Commission as indicated by producing wells.

Q Will you turn to Exhibit 9 and explain Exhibit 9.

A Exhibit 9 is pretty much an information sheet. It lists all fifteen completed wells as of a couple of

weeks ago. In the left-hand column -- the next column, we are going from left to right, in the next column it shows the location of the wells, the absolute overflow, the rate, the ~~cut-in~~ Shut-in pressure, and the date of connection.

Q Would you identify for the Commission where the information in each of those columns comes from?

A Yes. Of course, the name of the well and the location of the well was taken from the well file. The absolute ~~overflow~~ open flow is defined in form C-122 of the Commission. You will note that there are absolute ~~overflow~~ open flow figures there with a dash and a number. That number indicates the length of the flow period. For example, 3490 is the absolute ~~overflow~~ open flow figure for the first well and then you have a dash and a figure, that indicates that the test was for four one-hour flows. The number 4 well therefore, would indicate a twenty-four hour flow. The reason one-hour flows were run on some of these wells is that these were taken before connection to a pipe line and our rule requires flows no longer than one-hour being run in those cases.

The next column is the rateable take and acreage factor which is taken from the well file and indicates the dedicated acreage or dedicated acreages as corrected

by the Commission Order. What I mean by the Commission Order, Order R-4034 came before the three well penalty factor.

Q This was Order R-4034?

A Yes.

Q I would like the Commission to take notice of Order R-4034 which set forth the rateable take factor and acreage factor in that order.

MR. PORTER: The Commission will take administrative notice of that Order.

Q (By Mr. Hatch) Continue with the next column.

A The next column is the deliverability. To explain it a little, this was taken from the characteristic slope of the absolute overflow test. Those of you who are familar with this type of flow, four points are plotted on the log and the slope is established. If these tests are accurate tests they indicate the characteristics of the well and the producibility. Therefore, you can take various pieces and plug them into a formula, I didn't plug these into a formula, I read these from a graph and read the deliverability at 850 pounds off of the log slope of each test.

I think it might be in order to say at this time that the alignment, the point of alignment, on each of these tests where I have noted here it is a sloped

alignment. This indicates it was a valid test. However, I had no information on these tests to indicate whether the flow rates designated were actually stabilized flow rates. As an example, the one-hour flows may not have been stabilized flows. Of course, if they are not, then the test is not a valid test, it is more an information test.

I will further note that even though some of these tests were on one-hour flows, if they were not stabilized I doubt if we would have gotten to the point of alignment. Therefore, I consider these tests valid tests and relatively accurate.

In deriving this information off of these tests I believe it gives us a reliable and accurate indication of the availability of gas at the well head of all wells listed hereon.

Q Why did you use 850 pounds?

A Eight hundred and fifty pounds was used because the purchaser in the pool indicated that that was close to the flow of the current line pressure.

The next column is the shut-in pressure. This shut-in pressure, unless otherwise noted by a -48 and so forth, is the shut-in pressure reported to us on C-122. Now, again, these pressures may or may not have been stabilized, but from what I had available

to me it would indicate in most cases that forty-eight hours was adequate stabilized pressure in this pool. The dash -48 means that the pressure taken was at a forty-eight hour shut-in. Well number 5 indicates bottom hole pressure, this test was a bottom hole test and you will note on down to number 13 that the pressure was a 184-hour test, the well was shut-in for 184 hours. That should have been stabilized and should be pretty accurate as to shut-in pressure.

The next column, I don't think an explanation is necessary, but you will note for number 7 it is a separate connection, by that I mean the well has two purchasers. This is to the best of my knowledge based on the information available to me. The date of the connection, I don't think needs any explanation. You will note that at the bottom of the well there is a NC and this means that the well was not connected.

Q Going back to the 850 pounds, are there any substantial differences -- did you find any substantial differences in deliverability between the wells?

A Oh, yes. There were very substantial differences in deliverability between wells. Some of the wells are excellent wells and others could be referred to as what are commonly called stinkers.

The figure is a daily figure shown on this Exhibit.

Q Are all of these wells been assigned to the South Carlsbad Morrow Gas Pool in the Commission records?

A Yes, they have.

Q Do you have anything further to add to your testimony concerning Exhibit 9?

A The only thing I might say at this point is I know questions will undoubtedly be asked regarding shut-in pressure. You will note there is a substantial variance in shut-in pressures. The bottom hole pressure simply means that it is substantially higher than the well head pressure as to how much higher I am unable to state because that depends on how much liquids are in the well bore.

Q Should the pressure show a difference in the zones, or is the pressure applicable as a combination pressure?

A A combination pressure. The Commission designated this entire Morrow section as a single section.

Q Do you have anything further?

A I think I will explain a little bit about why I think these pressures vary. It has been testified here, and I am sure it is true from the information available to the Oil Commission, that there is a

varying amount of liquid being produced in these wells, both in hydrocarbons and water. Many of these lower tests could be substantially affected by liquids in the oil bore which, I am sure, is no surprise to any of you here. But since this is the only information I have available as far as shut-in pressure, I regarded this information for the purpose of information more than anything else.

Q Will you turn to Exhibit 10, please, and go through each column on Exhibit 10 and tell us where the information came from and what it shows.

A Exhibit 10 is the way I chose to calculate the rateable take. Going from left to right we have the rateable take and acreage factors, which are the same as in Exhibit 10. Then we have the name of the well and the location of the well and all the information I had available to me as to production at the time I prepared the Exhibit was January and February of 1972. Therefore, I chose to use only that information in order to show how the well had produced as related to the straight acreage allowable, had one been calculated and assigned to these wells.

The next column indicates the production and the number of days as reported to the Oil Commission. The number of days a well was actually producing is shown

on the chart and the rateable share of production indicates a straight acreage allocation for each well for the month of January -- each well connected.

Q I think it would be wise if you would explain to the Commission how you came out with the numbers. If the pool had been prorated this would be similar to what had happened on the straight acreage basis?

A Yes.

Q Would you explain to the Commission where you got the figure 74,222, and where you got the marginal figure?

A Yes, I will be glad to. You will note the total January production for both purchasers was 542 MCF for the month of January. I took this figure and divided up by the total acreage and the rateable take factor as shown in the first column to the left -- did I say divided the total of the column into this figure? If I didn't, that's what I meant to say. Then I went back to the unit factor, by the factor shown in the left-hand column for each individual well, and the total was within a few MCF of the 542 MCF. Therefore, I made the calculation in accordance with the wells' rate of take factor.

Q I don't believe you explained to the Commission how you arrived at the marginal well.

A I was just about to do that. I did the same for the month of February and then I took both allocation factors and looked at the production allowable and if the well had not produced in either month enough production to equal its allowable, then I considered the marginal well. Therefore, I classified it as a marginal well. You will note there are four marginal wells. On the final allocation shown on this Exhibit I took away from the 579,542 the total production for the full marginal well -- I'm sorry, I don't have that here, but the production is noted on this Exhibit and the remaining production was nonmarginal production. I divided this into the nonmarginal production and the total nonmarginal rateable take factor and that gave me 74,222. I used the same process for the month of February and came up with a nonmarginal factor, or rateable share of production of 102,651.

Q If you will go ahead to the next column now and explain how you arrived at that number?

A The deliverability of 850 pounds is simply multiplication by the days in the month of January and the days in the month of February, the daily figures shown on Exhibit 9. So this is an indication to me of the availability of gas at the well head. This, to me, indicates one criteria in prorating gas, the

availability of gas at the well head is greater than the market demand, the market demand being the production. As far as the rateable share of production is concerned you will note that for the month of January I have indicated that 74,222 was the rateable share for that month. Following the production information you will note that most do not resemble that figure, some are over, some are much less. The one figure that comes close is the Cities Service well which produced 75,564 against an estimated 74,222, that's pretty close. Going over to the month of February I estimated that 102,651 would be the rateable share of production for that month and you will note by the same comparison that very few wells produced close to 102,651. Therefore, my only conclusion was that the production during the month of February was not rateable, it was not rateable.

I would like to call your attention to the fact that we had one well here with a penalty factor which gives the allowable adjusted by the penalty factor of 17,697. That well produced 4,100. I call your attention next to another well with an adjusted allowable in a nonstandard location, that well produced 214,696 in twenty-five and four-tenths days.

Q Do you have anything further to add to your testimony

concerning Exhibit 10?

A There is a correction I just noticed. The Pennslyvania Federal Number 1 is listed as 13,194, that figure should be 5,880. I don't believe that will change the 2,602,964, my original figure.

Q Anything further?

A No, that's all.

Q Going on to Exhibit "G", would you identify Exhibit "G"?

A Exhibit "G" and "H" and "I" indicate virtually the same type information, or the same type of information for the South Carlsbad Strawn Pool. You will note that at the time of the preparation of this Exhibit there were six wells completed.

Q You are referring to Exhibit "G"?

A Exhibit "G", yes. In the same manner as shown on the second Exhibit, or Exhibit "H", the number indicates the location of the well and reading from left to right it gives the well name, the well number, the location, the absolute overflow, the rateable take factor, the deliverability, and the shut-in pressure. You will note that two wells of the four were not connected at the time of this Exhibit. The Cities Service Spencer is running tests now to determine whether it will ever be connected or not, along with

the Pennzoil Central Number 2.

Q Is the Pennzoil well also a well that has less than a normal acreage factor?

A Yes, it is. That is another nonstandard location necessitated because the operator chose to drill his well in an unorthodox location including another producing well. Therefore we determined that his penalty factor for doing this should be eighty-two by virtue of the nonstandard location.

Q These three Exhibits which you are talking about now have to do with which pool?

A The South Carlsbad Strawn.

Q And that would be in Case 4694?

A Yes.

Q Did you find it difficult in determining the absolute open flow and shit-in pressure as you did on the Morrow Pool?

A Yes, I found some difficulty. Three wells, however, were relatively close, but there was a difference in the order of 11,000, 20,000, 27,000, and 33,000.

Q Do you have anything further to offer concerning Exhibit "H"?

A Well, I might comment on the shut-in pressures in the pool. You will note that the shut-in pressures here are a little more consistent than they were in

the Morrow Pool, the low pressure being 3,421 which could be explained in that there might have been liquid in the well bore. Let me check and see how long the shut-in was if I can find it. I don't have a figure as to how long that well was shut in, therefore it is not shown on the C-122.

Q Mr. Utz, do you have the Order number that set up the rateable take factor and acreage factor in the Case of the proration for the Pennzoil well?

A I'm sorry, but I don't.

Q I believe that Order was 4205.

A It might have been.

MR. HATCH: I would like the Commission to take notice of that Order, 4205.

MR. PORTER: The Commission will take administrative notice of the Order establishing the factor of eighty-two.

Q (By Mr. Hatch) Do you have anything further?

A No, I have nothing further on this Exhibit.

Q Will you turn to Exhibit "I" and explain to the Commission what it shows?

A Exhibit "I" is an Exhibit which shows much the same data as was shown in the third Exhibit of the South Carlsbad Morrow Pool. The rateable take, sample based on January and February is on the left-hand side. It again shows the rateable take factors

which total 5.82. Production is shown for January and February, and again the rateable share of production is shown for each month. You will note that one of the four wells that was connected as of the end of February was a marginal well. This classification was arrived at by the same method explained previously.

You will note also that the rateable share in this instance and the production was substantially lesser than they were in the Morrow Pool both in the January and February rateable take.

Now, I don't think this in itself precludes the need for proration in the pool as previously stated. This is all the information I had available in January and February and there are other months to be considered in this proration. The mere fact that these produced pretty close for most of January and February certainly doesn't mean they will produce close for the rest of the year. Further, we have a penalty factor in the pool of .82 and I believe I stated in the other pool as to the penalty factors, that there are two penalty factors in the Morrow formation but the Commission has no way to administer the penalty factors necessitated by the nonstandard location other than

to set up an allowable so we will know what the rateable figure is.

Q You have one well as marginal although it shows a higher deliverability.

A I would consider that an unstabilized test. The test could very likely have been in error.

Q Do you have anything further to add to your testimony concerning Exhibit "I"?

A Yes. The deliverability at 850 pounds, you will note, is respectively for January and February, 2,094,100, and 2,045,252. This figure was for only the wells connected. I do not have the tests for the two unconnected wells. This indicates to me the availability of gas is greater than the market at this time.

Q Anything further?

A I don't believe so.

Q Mr. Utz, did you prepare each of these six Exhibits?

A Yes, I did.

MR. HATCH: I would like to move for the introduction of Exhibits 8, 9, and 10, in Case 4693; and Exhibits "G", "H", and "I", in Case 4694.

MR. PORTER: Without objection the Exhibits will be admitted.

THE WITNESS: I'm not sure, Mr. Hatch, that I

gave all three reasons for recommending these pools be prorated. These reasons are:

1. There are two pipe lines in each pool, one pipe line doens't know what the other pipe line is going to take unless we set a figure.

2. There is one separate (split) connection in the Morrow Pool and another possible (split) connection in the Strawn Pool. These pipe lines don't know what to take and they won't know unless we set a figure.

3. Probably one of the most important factors is the penalty factor. There are three wells that have been indicated as having a rateable take penalty factor. Rateable take to me means gas proration allowables set as rateable factors and without knowing what that figure is I don't know how you are going to enforce the penalty factor.

That's all I have.

MR. PORTER: Mr. Utz, do you have any formula to recommend?

THE WITNESS: Well, I hadn't intended to recommend a formula because I think we are going to have enough formulas proposed for the Commission to decide on, but my Exhibits were prepared on a straight acreage formula and that's all the information I had. In other words, I had no indication at the time I made these Exhibits

to indicate any other formula.

MR. PORTER: So you are not recommending any particular formula?

THE WITNESS: Not at this time.

Q (By Mr. Hatch) I think that in a gas proration Hearing, gas allowable Hearing, you mentioned you had fifteen prorated pools in southeast New Mexico. What formula was used in those various pools?

A Straight acreage.

A VOICE: In all fifteen?

THE WITNESS: Yes.

Q (By Mr. Hatch) This case was advertised to include provisions for one year in each of the cases, provisions for a proration period of one year. Now, you testified concerning other pools in another case this morning and you testified recommending a one year proration; are you making that recommendation for these two pools?

A Only if the Commission accepts the previous recommendation, this morning's recommendation. I would not recommend these pools be prorated on a one-year basis while everything else was on a six-months basis.

Q You are not recommending changing the spacing pattern on those pools?

A No.

MR. HATCH: I have nothing further.

MR. PORTER: Would anyone like to cross-examine the witness?

CROSS-EXAMINATION

BY MR. STEVENS:

Q You said that the rateable take determination would be in accordance with allocation?

A It certainly would.

Q Would this vary from month to month?

A Ordinarily I would consider a straight acerage basis being a permanent provision, but generally speaking it is not a permanent thing, it depends on what the well produces.

MR. STEVENS: That's all.

CROSS-EXAMINATION

BY MR. KELLAHIN:

Q Do I understand correctly that your rateable share of production is based solely on the computation of the actual production reallocated back to the individual tract giving consideration for the penalty and other factors that enter into it?

A Yes.

Q You didn't use deliverability of the wells any way in arriving at what their rateable share would be?

A Only the acreage.

Q For what purpose did you use deliverability, if anything?

A Deliverability was used to show the availability of gas.

Q When were the shut-in pressures taken on the two Exhibits you offered?

A I can't tell you, I only have one or two of the tests all the rest of the tests are in the files in Santa Fe.

Q They were not necessarily initial pressures?

A No, but they were pretty close to initial pressures because the only production that has been produced out of these wells has been very meager.

Q You have no production history on the basis of which you could make the reserve computation in the pool?

A No production history.

Q Do you have sufficient productive history to make a valid computation of the pressure production decline?

A No, sir.

Q As I understand it you are not necessarily recommending acreage as a formula?

A No, I believe I said that, Mr. Kellahin.

MR. KELLAHIN: Thank you. That's all.

CROSS-EXAMINATION

BY MR. SPANN:

Q Mr. Utz, as I understand your Exhibit "A" which shows the extremities of the field, the horizontal extremities of the field, that is based on Orders that have been entered by the Commission after nomenclature Hearings?

A Correct.

Q I listened to one of those this morning and the information that was presented, on the basis of the information presented, it simply showed that new wells had been developed or brought in the same formation as adjacent wells; isn't that about it?

A No, I don't think that is entirely true.

Q There is no geological information used as a basis for determining these new wells are producing from the same source of supply as the other wells; is there?

A I wouldn't say that has been done here, but I know it's been done in many cases.

Q I don't recall any testimony as to that fact.

A No.

Q To get it clear in my mind, essentially what you do is extend the extremity of the pool as to present evidence that a new well has been brought in in the

same formation, in the proximity of the formation; is that about it?

A No, I don't think so.

Q What other information is there?

A Geological information, Mr. Spann.

Q For example?

A I don't believe Mr. Runyon would recommend to the Commission that they extend the Strawn Pool to the Morrow formation.

Q I didn't say that.

A He had to look at geological information.

Q Okay, he is not going to recommend the Morrow into the Strawn, but you extended the Strawn Pool based on the information that a Strawn well had been ~~delivered~~ Drilled in the proximity; isn't that about it?

A Well, yes, but proximity is not the whole story. He testified from geological information for that Strawn well and he also had available to him pressure data at the same time.

Q On your Exhibit 9, you have certain shut-in pressures on various wells, I think there is one bottom hole pressure and other surface pressures, and that average pressure was from various producing zones; is that right?

A That is correct.

Q Do you have available in your records bottom hole pressure from each well that was brought in these various locations?

A No, I don't believe we have bottom hole pressures. In most instances most of the pressures are reported to us as surface pressure.

Q Isn't bottom hole pressure a significant factor in determining whether there is communication between wells; isn't that true?

A If it were corrected for all wells, I think it would be.

Q But there is no such information from your records concerning bottom hole pressure of these various wells and no such tests were made, to your knowledge?

A Only on this well to the best of my knowledge.

Q You mentioned, I believe, and Mr. Hatch asked the Commission to take judicial notice of Order R-4034 which put a limiting factor on the two Grace wells, I believe those are wells 9 and 10 on your Exhibit 8. Now, that Order was entered prior to the date those wells were drilled and completed; isn't that true?

A Yes, that's correct.

Q So you had no geological information concerning those wells at the time that Order was entered;

isn't that true?

A No, I'm not sure they were in the pool at the time this Order was entered. I rather believe they were not.

Q You don't believe they were in the pool?

A I don't believe this acreage was in the pool at the time this Order was entered. These factors had nothing to do with whether or not they were in the pool.

Q You just assumed because of the surface location it would drain the acreage?

A It was a little more than assumption, we made a study to determine what these wells would drain.

Q In any event the wells had not been drilled so you knew nothing about the capability of the wells and had none of the factors which you now show on your Exhibit 9 which, of course, was prepared after the wells were completed?

A That's correct.

Q Now, in the Order I notice that in paragraph fifteen it states that jurisdiction of these causes be retained for the entry of such further Orders the Commission may deem necessary. Do you know whether the Commission has in mind that they might reconsider this penalty factor after further information was

developed concerning the production from these wells, their capabilities, and perhaps other geological information determined from adjacent wells?

A No, this is the standard provision and I think every Order that the Commission issues always retains jurisdiction of any Order issued by the Commission. I am sure the Commission had nothing in mind as far as changing these, I am sure they had in mind proration because they stated in the Order: if in the event it was prorated.

Q If it was prorated?

A That's right.

Q In your Exhibit 10 I noticed that in February the Humble-Corinne Grace and the Grace-Humble produced 214,696 cubic feet and you are suggesting it be granted an allowable of 58,295; is that right?

A On the basis of straight acreage, that's correct.

Q Which means you would cut that well's production by one-quarter?

A We didn't ask them to drill a well there.

MR. HATCH: I don't think this is the proper place to attack a prior Order of the Commission. I don't think it is relevant or material to this case. This was an Order that set a penalty on an applicant and the

applicant had time to ask for a Denovo Hearing to appeal and they chose not to take either of those courses. I don't think this is the place to go into reviewing that Order.

MR. SPANN: I believe, Mr. Hatch, you asked the Commission to take judicial notice.

MR. HATCH: So they would see where the panalty factor he shows on his Exhibit came from.

MR. SPANN: There were some other factors such as their inability to drill in any other location.

MR. HATCH: I renew my objection.

MR. PORTER: Mr. Spann, I think you should discontinue this line of questioning.

Q (By Mr. Spann) Mr. Utz, if I could clarify this, you are basing your market demand as set forth in your Exhibit, and I am referring now to the Morrow Exhibits, on what the two purchasers have taken during January and February; is that right?

A That is correct.

Q And I noticed that one of the purchasers, Great Western, took almost double their capacity between January and February; do you know why that was?

A I don't know that I follow your question, Mr. Spann.

Q One of the purchasers in January took 488,073; is that right?

A Yes.

Q And in February, 811,175; do you know the reason for that almost ninety percent increase?

A Well, some of it was due to additional wells connected in February.

Q Well, that would indicate that -- are you saying that market demand is based on the ability of the wells to produce rather than on the ability of the -- the need of the purchaser?

A I don't think I said that and I don't think the Exhibit indicates that, Mr. Spann. What I said was that the market demand, as far as my job is concerned is the production in the pool, x amount of production from the pool is the market demand from the pool. The market demand from the pool is what the purchaser chooses to take.

Q Can we assume that if the market demand increases in the same amount next month, then the market demand under your view would increase that much again and you would have to recalculate the allowable?

A Well, we calculate the allowable on that basis every month.

Q That is what I Wondered.

A Yes. Mr. Spann, in order to clear up that question I will explain a little bit about how the Commission

attempts to set allowables equal to production. In every instances proration does not in any way curtail production out of a pool, it simply allocates the production among the wells in the pool.

Q But we have different pools, as of course, we contend is the case, different sources of supply, if you throw one well in one pool into the other which is in a different market demand then you affect the amount that the first pool is allowed to produce; isn't that correct?

A Well, on the basis of your question it is true, that one fact.

Q You have assumed, based on your testimony, that we have one single source of supply for all of these wells; isn't that true?

A That's right, and the Commission has so designated that.

Q But on an acreage basis -- they have not designated that from a geological standpoint?

A I think I answered that too, Mr. Spann. I was of the opinion that geology has been used in designating these two areas in question.

Q In order to determine if gas should be prorated between purchasers you have to have more than one purchaser in a pool; isn't that true?

A True.

Q So if you only had one purchaser then there would be no reason to prorate production, you would just allow them to take whatever they take?

A Unless the wells in question have penalty factors, then we have to prorate in order to enforce the penalty factor.

Q That is the reason then that the proration in what you have described geographically as the South Carlsbad Morrow in your Exhibit Number 8, that is the reason you feel that this area needs to be prorated because we have the penalty factor involved in these two wells?

A That's one of the reasons.

Q And another reason is that you have two pipe lines in the pool; is that right?

A That is correct.

Q So if you didn't have the two pipe lines that reason isn't present; is that true? If we have two pools shouldn't you throw out that rule?

A I would say that would be one of the factors eliminated.

Q And you said another reason was that the pipe lines did not know what each of them was to take unless you take a figure?

A Right.

Q So if you don't have two pipe lines there is no problem?

A Unless you have separate connections.

Q But in substance that factor would not be present; is that right?

A I would say probably not.

Q So really, we are down to the question that if it is established that there are two separate producing zones in this area that you have designated and that the wells are producing from two separate pools the real reason you would need proration is because of the penalty factors.

A Using your assumption I think you would be correct, but on the other hand, you are going to have to convince the Commission that what they have done is not right.

Q I understand that. Do you know anything about the Antweil-Little Jewel taking 38,792 in January and reducing it to 33,531 in February; do you know the reason for that? Would that be because of the well's inability to produce?

A I don't think it was because of the well's inability to produce.

Q Do you know any problem out there because of a pipe line problem, the lack of capacity of the pipe

line to take the production from these wells; do you know anything about that fact?

A No, I don't know that that is a fact. I do know the pipe line companies are trying to sell all the gas they can take out of the wells. This is not my job, I set the allowable for the well area.

Q If the pipe lines were taking all the gas that the fields could produce there would be no reason for proration?

A If it is shown that that was true I would say probably not.

Q Isn't it important then to know whether or not this failure is the result of a lack of capacity on the part of the pipe lines rather than on the wells themselves? I am trying to find out if we are perhaps prorating production in the field simply because the pipe lines do not have the capacity to take what the field produces.

A Charlie, that's the name of the game. One pipe line can't take as much gas as another pipe line and the only way we can protect correlative rights is to prorate. If the pipe lines were interconnected that would take care of the situation.

Q If a pipe line has the capacity to take all of the production from a particular pool you should not

penalize that one pipe line because another adjacent pool has a pipeline that can't take their full capacity; should you?

A I think I stated several times that we allocate production for a pool, if you can show the area you are referring to is a pool, you will have a valid question there.

MR. SPANN: I believe that's all.

MR. PORTER: Does anyone else have any questions of Mr. Utz?

MR. ALLISON: If the market demand exceeds the availability of supply does the Commission then prorate the production in a pool?

THE WITNESS: Ordinarily no.

MR. ALLISON: Thank you sir.

MR. PORTER: Any further questions?

CROSS-EXAMINATION

BY MR. LEBLANC:

Q The last question raised some curiosity in my mind. Does not the Commission consider correlative rights in regard to their allocations?

A That's absolutely right.

MR. LEBLANC: That's all.

MR. PORTER: Anything further?

(No response.)

(Witness excused.)

MR. HATCH: I would like to call Mr. Stamets to the stand for a few minutes.

RICHARD L. STAMETS,

was recalled as a witness and having been already duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. HATCH:

Q Let the record show that Mr. Stamets has been sworn. Mr. Stamets, you stated before that you had worked in the Artesia District Office for a number of years?

A Yes, sir.

Q In working in the Artesia District Office does the Office include the South Carlsbad Field?

A Yes.

Q Have you ever been asked to make recommendations to the Commission concerning nomenclature cases that involved the creation of pools or the extension of existing pools?

A In general?

Q Yes.

A Yes. That was prior to my duties in the Artesia District Office.

Q You have done this on a number of pools?

A Right.

Q Would you describe for the Commission the procedure followed in recommending the creation of a pool, where you get your requests from and what information is presented to you?

A The procedure currently in effect is one designed for simplicity of administration and still allows the operator an opportunity to make any corrections of our errors that he might feel is appropriate. If, for instance, a well were to be spotted at this time within one mile of the outer boundaries of the South Carlsbad Morrow Pool and this well were to be drilled to the Morrow formation, then in accordance with Commission rules and regulations we would say this well was an extension to the South Carlsbad Morrow Pool and it will be governed by the South Carlsbad Morrow regulations. If the C-101 showed no pool name, but showed it was in the Morrow, we would write in there in red, "undesignated South Carlsbad Morrow" and a copy of this form would be sent back to the operator. If upon completion of the well in the Morrow formation the operator filed that well as a wildcat Morrow completion we would change the pool name from the South Carlsbad Morrow and use a stamp and we would

stamp in red "advising operator of the pool name" and we would put it on there and tell them that he should contact us if he does not agree with this pool name. Now, normally what happens in a case like this is once we advise an operator of a pool name he accepts this. I don't recall an instance at this time where one of these forms ever came back to us where anybody had ever objected to our terminology. If he goes ahead and accepts it we simply close off the undesignated makeup and at the first nomenclature Hearing subsequent to this completion this well would be taken into the pool. The reason we have come up with this procedure is so we don't have all this correspondence back and forth between the operator and the Commission.

The old procedure sort of went like this, we would send a letter asking what pool the operator would like to have and he would answer anything but the South Carlsbad-Morrow and ninety-nine times out of a hundred, the well always wound up going into the same pool.

So once you filed the form with us, we would put it on in a Nomenclature Hearing and sent it through and after it came through, we would send you a form that would say by such and such a hearing, we placed your well in the South Carlsbad-Morrow Pool.

In order to eliminate all this correspondence back and forth, which rarely, if ever, accomplished anything; I can't remember an instance where a change was made, we adopted this other procedure which still affords the operator an opportunity to object to the well being placed in a particular pool.

MR. PORTER: Mr. Stamets, in all this procedure, if you get a well which you consider, say on the surface of the thing, an extension of the South Carlsbad-Morrow Pool, would you not check into the well records and the well forms before making a recommendation to the Commission that this case be advertised for extension?

THE WITNESS: Yes, this is part of the information we put on this undesignated sheet. We have the pool name

and the location -- or the well name and the location and the perforated interval and logs are required. We have the logs of the other wells in the pool and if there is any question at all, we pull these logs out and take a look at them and compare them.

MR. PORTER: This procedure is followed in each of the district offices; is this correct?

THE WITNESS: As far as I know it is the procedure that has been adopted. It came about by going to the Hobbs District office and observing the procedure they used.

Q (By Mr. Hatch) You said that you recall no time in which an operator has objected to the pool that the Commission put the well in; was that only in your district?

A That was only my personal experience in my district, yes. I know that in District 3, there were some differences of opinion and I think these were probably taken care of before the extension was made in most cases.

Q I think you testified this morning concerning an existing pool in which the operator became informed and requested a new pool.

Part of the old pool had been deleted and a new pool had been created?

A Yes.

Q And that occurred in your district?

A It did.

MR. HATCH: I have nothing further.

MR. PORTER: Does anyone have any questions of Mr. Stamets?

CROSS-EXAMINATION

BY MR. SPANN

Q How long after the well had been drilled did this occur?

A I think it would have been a period of several months. I cannot recall at this time whether it was before or after the connection of the well, but it was a substantial period of time because the well had already been placed in the original pool and that takes a certain amount of time.

Q Wasn't it after the Nomenclature Hearing had already gone on and someone objected and asked that it be excluded?

A I don't know if you would classify it an objection, they simply asked that the Commission take a look at the prepared request to put this well in a different pool.

I don't think that they, at that time, made any recommendations that it be in any other pool, I think

they were surprised that they got a different reservoir.

Q The operators disclosed their geological information at some later date, showing that it was in the wrong pool; isn't that in fact what happened?

A There was a separate source of supply and a separate pool, yes.

Q And there is nothing in your rules for such a contention being made at a hearing on proration.

MR. HATCH: I would like to object to that question because I think it is a little misleading. This case was advertised to prorate a pool. I think there is going to be a case for a new pool that that is outside the call of this hearing.

MR. PORTER: Do you have any further questions?

MR. SPANN: I didn't get an answer to that one, but I guess the Commission sustained the objection.

MR. HATCH: I am asking Mr. Porter to sustain that objection.

MR. PORTER: Objection sustained.

MR. SPANN: I have no further questions -- just a minute.

MR. PORTER: Mr. Spann, do you have any more questions of Mr. Stamets?

MR. SPANN: Yes.

Q (By Mr. Spann) Would you mind telling us where that

well was that you mentioned that was later changed?
A Right offhand, I cannot think of the location, but it is on the west side of the Atoka-Pennsylvanian Pool and I think that pool may be west of the Atoka-Pennsylvanian-State Petroleum, but that is as close as I can get.

MR. HATCH: You have no objection to getting that information and supplying Mr. Spann with it?

THE WITNESS: I will be happy to.

MR. PORTER: If there are no further questions, the witness will be excused.

(Witness excused.)

MR. HATCH: I would like at this time for Mr. Jim Allison to present some testimony on behalf of Transwestern.

MR. ALLISON: I am Jim Allison representing Transwestern Pipeline Company. We were invited to appear at this hearing to give certain testimony about Transwestern Pipeline's capacity and the market in the area.

We would like to call Mr. James L. Thomas as a witness.

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
CITY HALL BUILDING
HOBBS, NEW MEXICO
April 19 & 20, 1972

COMMISSION HEARING

IN THE MATTER OF:	)	
	)	
The hearing called by the Oil Conservation Commission on its own motion to consider instituting gas prorationing in the South Carlsbad-Morrow Gas Pool and the South Carlsbad-Strawn Gas Pool, Eddy County, New Mexico	)	Case No. 4693 and Case No. 4694

BEFORE: State Geologist A. L. Porter, Jr., Secretary-Director
Land Commissioner Alex Armijo, Member

Vol II

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TRANSCRIPT OF HEARING

JAMES L. THOMAS,

was called as a witness and after being duly sworn according to law, testified as follows:

DIRECT EXAMINATION

BY MR. ALLISON

Q Will you state your name, address and present position, sir?

A I must apologize for my laryngitis, I hope you can hear me. My name is Jim Lee Thomas and my address is Post Office Box 2521, Houston, Texas.

I am general manager of Transwestern Pipeline.

Q Would you briefly describe your educational experience, Mr. Thomas?

A I received a Bachelor of Science Degree as a petroleum engineer from Texas Technological College in 1949. After graduation, I joined the Railroad Commission as a petroleum engineer in Midland, Texas.

As a district engineer, I worked in various engineering postions, and in 1962, I joined Transwestern Pipeline Company as a supervisor of dedicated reserves.

In January of 1964, I was promoted to manager of the reserves in the deliverability department. In January of 1966, I was promoted to manager of gas supply and in August of 1971, I was appointed general manager of supply for Transwestern Pipeline Company.

Q What are your duties as manager of supply?
A My responsibilities cover Transwestern's gas acquisition program which includes responsibility for negotiating and contracting for new gas supplies.

Our operations under gas purchase contracts entails supervision of proration and allocation problems regarding gas supplies and supervision of matters concerning reserves and deliverability.

I am responsible also and am required to be informed of exploration and development of the company.

Q Have you previously testified before regulatory bodies?
A The Railroad Commission of Texas and the Federal Power Commission.
Q Are you familiar with the South Carlsbad field area in Eddy County, New Mexico?
A Yes, sir.
Q How many wells does Transwestern have in its system?
A Transwestern has, presently connected, seventeen wells of which thirteen are completed in the Morrow Zone, three in the Strawn Zone, and one in the Atoka Zone.
Q Do you anticipate additional connections to be added to your system?
A There is additional dedicated acreage in the area and wells are completed on the acreage. If we are able to contract for additional wells, they, of course,

will be connected to our system.

At this time, we have no way of knowing how many wells will be drilled.

Q What are your minimum and maximum contractual purchases?

A The provisions in the various contracts provide for various minimum take obligations. It is generally required that the producers' deliverability capacity be 125 percent of the minimum takes.

Q What volume of gas does Transwestern now take and what volume of gas does Transwestern anticipate taking in the future?

A At the present time we are taking 4100 MCF per day. Our present need for gas is such that we will purchase all available gas produced from the area.

Q You have prepared a plat showing Transwestern's gathering system in the area?

A Yes.

Q Are you prepared to present it at this point?

A Yes.

MR. ALLISON: Sir, we would like to have Transwestern's Exhibit 1 marked.

(Marked Transwestern's Exhibit 1 for identification.)

Q (By Mr. Allison) Would you describe --

MR. HATCH: May I interrupt you? Will Exhibit

Number 1 be in both cases?

MR. ALLISON: In both cases, if you please, I'm sorry.

Q (By Mr. Allison) Would you describe the size of the capacity of Transwestern's system?

A In the Carlsbad area, it consists of two eight-inch lines, running generally northwest from the northeast corner of Section 3, Township 24, North, Range 27 East.

From our main lateral, we have four-inch gathering lines from these eight-inch lines to each of the connected wells. Our main lateral has a capacity of approximately 120,000 MCF per day of which perhaps 90,000 per day would be taken from the South Carlsbad field area.

If more gas supply becomes available, we expect our system will enable us to purchase all such gas.

Q What is the pressure at your gathering system?

A At the present time, our gathering system pressure is averaging approximately seventy-five pounds per square inch.

Q Is the gas produced into your system produced at a plant prior to delivery?

A No, all the gas flows through the main system for delivery, at the present time, to our customer in California.

87 S 7 processed

Q Mr. Thomas, are you now purchasing all the gas you understand to be available from this sill area?
A Yes, sir.
Q In other words, you are taking everything that is offered to you?
A Yes.
Q And have you prepared a summary of the data you have presented in your testimony?
A Yes, I have.

MR. ALLISON: We would like to have this marked as Transwestern's Exhibit Number 2.

(Marked Transwestern's Exhibit Number 2 for identification.)

Q (By Mr. Allison) Do you have anything further to add to your direct testimony, Mr. Thomas?
A Only that the indication on Exhibit 1 which shows the Pennzoil-Mobile lateral is in error. It is Transwestern's lateral and it happened to be one of the first of the wells we connected to, and it inadvertently got into this Exhibit.

MR. ALLISON: At this time, we will offer Transwestern's Exhibits Numbers 1 and 2 on both dockets.

MR. PORTER: Without objection, the Exhibits will be received in evidence.

(Whereupon Transwestern's Exhibits Numbers 1 and

2 were received in evidence.)

MR. ALLISON: Sir, this concludes Transwestern's direct testimony and I tender this witness for cross-examination.

MR. PORTER: Does anyone have any questions of Mr. Thomas?

CROSS-EXAMINATION

BY MR. UTZ

Q You indicated you are ready, willing and able to purchase up to ninety millionsper day, do you mean by that your eight-inch lateral going down to your main line is capable of carrying ninety millions a day?

A I believe there are two eight-inch laterals.

Q And you mean that your two eight-inch laterals are capable of carrying ninety millions a day?

A That's my information from our engineering department.

Q How much are you taking at the present time?

A Approximately forty-one million per day.

Q It is mentioned in Exhibit 2 that you will take rateables between wells, what do you mean by rateables?

A In the same field, we can take the well capacity or an equal rate from every well in the field. If a well is incapable of producing as much as we want to take from the other wells, we will take that well's

capacity.

Q It has nothing to do with contractual obligations?

A No, sir.

Q Then, in effect, if every well had the same acreage, you would be taking on a straight acreage basis; have I interpreted that correctly?

A If they had the same acreage and the same capability.

Q If a well was more capable than a penalty factor allowed -- if a well had a penalty factor --

A I heard about this penalty factor yesterday, for the first time, and I could not answer a question pertaining to a penalty factor.

MR. UTZ: That's all.

MR. PORTER: Does anyone else have any questions of Mr. Thomas?

(No response.)

MR. PORTER: If not, the witness may be excused.

(Witness excused.)

MR. ALLISON: I would like to call Mr. Randall Montgomery to present testimony.

RANDALL MONTGOMERY,

was called as a witness and after being duly sworn, according to law, testified as follows:

DIRECT EXAMINATION

BY MR. ALLISON

Q Mr. Montgomery, would you state your name and position?

A My name is Randall Montgomery and I am the manager of the Llano Gas Company.

Q I understand you have prepared certain Exhibits that you would like to present to the Commission concerning the acitivities and physical set-ups for Llano in the South Carlsbad field?

A Yes, I have. I presented to Mr. Hatch and the Staff of the Commission earlier Llano's pipeline facilities in the South Carlsbad area.

Q Would you identify these Exhibits for us -- you have two Exhibits, would they apply to both Cases, 4693 and 4694?

A That is correct.

(Llano's Exhibits Numbers 1 and 2 marked for identification.)

Q (By Mr. Allison) Would you identify these Exhibits for us?

A Llano's Exhibit Number 1 is a plat outlining the acreage Llano Inc. has under contract in the South Carlsbad area. The acreage dedicated to these contracts that are presently connected are colored in yellow.

This Exhibit also traces Llano's systems, pipeline

facilities, and indicates the pool limits of the South Carlsbad-Morrow fields and this is outlined in black.

The South Carlsbad-Strawn field is outlined in green.

Exhibit Number 2 is a summary of Llano's capacity and markets from the South Carlsbad area. We have an eight-inch line with four-inch laterals going to each well.

The line has a capacity of thirty million feet per day and beginning September 1, 1972, the capacity in the South Carlsbad field will increase to some fifty million per day.

In addition to that, Llano has other gas lines in the area within some four or five-miles and if additional gas should become productive, additional capacities can be obtained at a very early date.

Llano is presently connected with three Strawn wells and five Morrow wells, for a total of eight wells in the field.

The Exhibits indicate the average daily production in February and the location of the various wells that we are connected to at this time. The wells we are connected to have a maximum contractual obligation of twenty-five million feet a day and we

will reach that in the calendar year of 1972.

The designation of this gas for use is for the Carlsbad area and Hobbs.

Q Do you have anything further?

A I have nothing further, but if there are any specific questions anyone would like me to answer, I would be happy to do so.

MR. PORTER: Any questions of Mr. Montgomery?

CROSS-EXAMINATION

BY MR. STEVENS

Q I notice, Mr. Montgomery, that you might be talking about comparatively low takes on the Little Jewel and on the Allen in the Morrow, what is the reason for that?

A At the present time, there is a restricted market, but not a restricted pipeline capacity. This additional market from these wells will be available within some seven to ten days.

The reason the gas was not produced in January and February was we were waiting for regulatory approval from the Federal Power Commission.

Q This resulted in the Little Jewel in January being called a marginal well, in the future it will be taken off marginal status?

A That is correct, the Little Jewel is a very strong

well and capable of much more.

MR. STEVENS: I have nothing further.

CROSS-EXAMINATION

BY MR. SPANN

Q You said you had eight wells, five in the Morrow and three in the Strawn?

A Yes.

Q You have listed on here (indicating) three in the Morrow, are there some other wells you did not list?

A Yes, notice of gas connection has not been filed yet nor has the allowable been granted.

Q On which ones?

A Notice of gas connection or allowable has not been assigned to Cities Service Merlin Number 1, nor Cities Service Merlin Number 2.

Llano Inc. has under contract a portion of those properties.

Q So what you are saying is you have a contract now for five in the Morrow and three in the Strawn?

A Yes, that's correct.

Q There was testimony by Mr. Thomas that Transwestern Pipeline would take all of the gas in the wells they had contracts with, all the gas these wells could produce; is Llano in the same situation?

A Yes.

Q When would you be able to do that?
A We will reach our contractual obligation within the next seven to ten days.
Q So there is no problem as far as your capacity is concerned, you will take anything and everything anybody can produce?
A We will take our contractual obligations.
Q Which is complete production from each one?
A No, our contract is very similar to what the Transwestern people testified to, the producers will retain one hundred twenty-five percent. ?
Q MR. SPANN: I have nothing further.
MR. PORTER: Does anyone else have any questions?

CROSS-EXAMINATION

BY MR. LeBLANC

Q Mr. Montgomery, with reference to the rateable take that were asked of Transwestern, do your contracts obligate you to take the rateable?
A They do.
Q What do you mean by rateable?
A In accordance with the rules and regulations of the Oil Conservation Commission. These might change from time to time and in lieu of a specific proration formula, we would take on an acreage basis.
Q You would take on an acreage basis?

A Yes.
Q Does that mean each well would have 320 acres allocated?
A If the wells were capable.
Q Assuming that one well was not capable, you would take less from that well?
A That's true.
Q Do you engage in any type of balancing between wells?
A Yes.
Q Over what period of time?
A Balancing agreements are generally stated as being over a reasonable period of time.
Q Balancing agreements between who?
A Between the operator or operators and the pipelines. These factors are worked out with time.
Q Are you suggesting that if you have two different operators and each operates on 320 acres, absent some sort of agreement between them on the balancing period, that you have a problem?
A Operators on two different tracts, there would be no agreement between the operators, it would be up to the pipeline.
Q Within a reasonable period of time?
A Yes.
Q Waht do you consider a reasonable period of time?
A Twelve months is the normal time in the gas industry.

Q So if a well had a mechanical problem and shut down for ten days, I presume thereafter you would take that well's producing capacity; is this correct?

A Yes, subject to market requirements.

MR. LeBLANC: I have nothing further.

MR. PORTER: Does anyone else have any questions?

(No response.)

MR. PORTER: If there are no further questions, Mr. Montgomery may be excused.

(Witness excused.)

MR. PORTER: At this time, I want to express my appreciation to Mr. Montgomery, Mr. Allison, and Mr. Thomas who came here and testified at the request of the Commission to give us some information concerning the gas take.

Mr. Hatch, does this conclude the testimony of the Commission Staff?

MR. HATCH: Yes, it does.

(Whereupon Llano's Exhibits Number 1 and 2 were admitted into evidence.)

MR. PORTER: I believe we will take a recess for about ten minutes.

(Whereupon a recess was taken.)

(Hearing resumes.)

MR. PORTER: The hearing will come to order. At this time, the Commission will recognize the attorney for Cities Service.

MR. LeBLANC: I am Robert LeBlanc, representing Cities Service Oil Company. Mr. Pincher Neal and I are appearing together in this Cause. I have two witnesses to be sworn.

E. E. TAYLOR,

was called as a witness and after being duly sworn according to law, testified as follows:

DIRECT EXAMINATION

BY MR. LeBLANC

Q Would you state your name, please?

A My name is E. E. Taylor and I work for Cities Service Oil Company and I live in Midland, Texas.

Q And what is your current employment status?

A Region Development Geologist for the southwestern region.

Q Which includes the South Carlsbad area, I presume?

A Yes, sir.

Q Will you give us your educational background?

A I have a degree in geology from O.U.

MR. PORTER: Is that Oklahoma University?

THE WITNESS: Yes, sir, it is.

Q (By Mr. LeBlanc) Will you give us your experience in the field of geology?

A I graduated in 1950 and went to work for Cities Service in 1950. I spent five years as a geologist in field operations in Kansas.

I then moved into our home office in Bartlesville, Oklahoma. For a period of approximately nine months, I was on the staff there and was transferred then to Midland, Texas.

In 1958, I was sent to Canada for six months and came back to Midland in 1962 by way of Algiers and Italy. I have been in Midland ever since, for the past ten years.

Q And you have been involved in the geology of the South Carlsbad area for the last ten years -- or the area of the State of New Mexico for the past ten years?

A Yes, sir.

Q Have you testified before this Commission on prior occasions as a geologist?

A Twice previously.

Q Have you made a geological study of the Morrow formation in the South Carlsbad area?

A Yes, sir.

MR. LeBLANC: I would like to interject at this

point that Cities Service Oil Company is interested in the Morrow formation only, we will not present any testimony with reference to the Strawn.

Q (By Mr. LeBlanc) Have certain Exhibits been prepared under your supervision which you intend to discuss today?

A Yes, sir.

MR. LeBLANC: May we have the first of these Exhibits marked?

(Marked Cities Services' Exhibit 1.)

Q (By Mr. LeBlanc) Would you identify this Exhibit please, and discuss the data contained thereon?

A This is what we call an Index Map of the South Carlsbad field immediately south of the City of Carlsbad. The yellow shadowing represents Cities Service acreage in the field and in the surrounding vicinity of the field.

You will note the legend in the lower left-hand corner of the map contains symbols pertaining to the various producing zones of the wells in the field.

Rather than to go through these systems of colors, I might stop right here and add that Cities Service just arbitrarily broke down the Morrow into four zones for correlation purposes.

We start at Zone Number 4 and work out way up

the Morrow to Zones 5, 6, and 7. By referring to Cities Service Well in Section 32 of 22 South, 27 East, you will note there are three lines around this well.

If you just go around the clock, so to speak, Zone 4 is located at 9:00 o'clock, Zone 5 at 6:00 o'clock.

Q Going back down to the legend in the lower left-hand corner of your map, the triangle represents a Morrow producer?

A Yes, sir.

Q And does the circle represent a Strawn producer?

A Yes, it does. Inadvertently, I didn't check, and there are two missing circles, namely the Antweil Number 1 Little Jewel and the Antweil Number 1 Allen.

Q That was merely a draftman's oversight omitting the circles?

A Yes, sir.

Q And the remainder of the legend refers to the Morros; is that correct?

A Yes, sir, from Zone 7 down through Zone 4. Cities Service operates four wells located in the southwest quadrant of Township 22 South, 27 East. We have four Morrow producers and one "almost Strawn producer;" it is not producing.

Q And does not Cities Service own also an interest in a fifth Morrow producer?

A Yes, they have a thirteen percent interest in the Corinne Grace Number 1, City of Carlsbad in Section 25, which is also a Morrow producer.

Q Do you have anything else to say about this Exhibit?

A There is one other thing, you will note there is a cross section in the northern part of A, A' prime and also in the southern part of the field, B, B' prime.

Both cross sections are cutting across the narrow dimension of the field.

Q And those are lines of the cross section information which you will present later?

A Yes, sir.

Q Anything else?

A No, sir. I would just like to comment on one of the factors why we put this here. It was to show we do have a fairly substantial acreage holding in this field and that's why we made this map (indicating).

MR. LeBLANC: May we have Cities Service Exhibit Number 2 marked?

(Marked Cities Service Exhibit Number 2 for identification.)

Q (By Mr. LeBlanc) Will you identify Exhibit 2, please.

A Exhibit 2 is merely the type log we chose for the Cities Service Stracbein 1. If you will open up the log you will note the Morrow pick that we used was at 11,185 and as I mentioned previously these various zones were just arbitrarily used in here to break this into four divisions in the Morrow.

In all of this there is an average of 600 feet of Morrow section in the South Carlsbad area.

Q Would you say the use of these zones are similar to the use of markers?

A Yes, they are for correlation purposes.

Q In your opinion, is this log representative of the Morrow formation in this particular field?

A Yes, sir.

Q Do you have anything else?

A I would just like to point out one thing, if you will notice the different fands that you encounter in the Morrow at the point we are looking at, these formations contain innumerable thick, but never exceedingly sand bodies.

MR. LeBLANC: May we have this marked as Exhibit 3?

(Marked Cities Service Exhibit Number 3 for

identification.)

Q (By Mr. LeBlanc) Would you identify this Exhibit and describe the data contained therein?

A Exhibit Number 3 is a structure map contoured to the top of the Morrow with a 100 foot contour interval and it shows the South Carlsbad Morrow field as a northeast by southeast structure. It is probably four and one-half to five miles long and approximately two miles across and at the present time the productive limits of the field have not been determined.

You will note in the northeastern portion of Township 23 South, Range 26 East, and also the southeastern portion of Township 22, 26 East, there is a line or a fault running between the Pennzoil-Gulf Federal and the Superior Number 1 state.

This is minimal and is on the neighborhood of 100 to 125 feet and doesn't affect or interrupt the Morrow formation.

Q Is that the general area where the first witness this morning, Mr. Stamets presented a different geological interpretation?

Yes, I recall he went from the northwest back to the southeast in order to pick up the Gulf Number 1 and the Pennzoil Federal which is thoroughly acceptable as well as this is.

Q Do you have anything else?

A I have no other comments on this map.

MR. LeBLANC: I suggest that we mark Exhibits 4 and 5 at the same time.

(Marked Cities Service Exhibits 4 and 5 for identification.)

Q (By Mr. LeBlanc) Would you please identify and describe Exhibit Number 4?

A Exhibit Number 4 is a cross section, principally the northern cross section shown on Exhibit 1 which runs from west to east. The first well on the left side is the Corinne-Grace Number 1 City of Carlsbad.

This cross section simply shows the top of the Morrow and our designation of the various zones that we have in the Morrow. The red shading on each of the electric logs represent the perforated interval of the individual well.

You will note that the City of Carlsbad well perforations are at one interval and the well base is calculated to an open flow of 10.5 million.

The next well to the west is Cities Service Spencer Number 1 and this well is perforated at two intervals with a calculated open flow of 19.2 million on this well. The third and last well is Cities Service Number 1-S and was perforated in three

intervals with a calculated open flow of 4.9 million.

Q Would you now go to Exhibit 5 which should represent the cross section of B, B'?

A This is the southern cross section shown on Exhibit Number 1 running from west to east showing the same information as was discussed on the previous cross section.

In this cross section the well on the left is the Corinne-Grace Humble Grace Number 1 and it is perforated in one interval and the calculated open flow is 33.2 million.

The next well is the Pennzoil-United Gulf Federal Number 1 and it was also perforated in one interval and the calculated open flow was 12.7 million.

The last well is the Morris-Antweil Number 1 Missouri-New Mexico Land Company Number 1 and it was perforated at one interval and the calculated open flow is 2.4 million.

Q Do you have any other Exhibits you intend to present today?

A I have no other Exhibits.

Q Based on your geological studies, have you arrived at any conclusion in reference to the geology in this field, the Morrow?

A Yes, sir. For one thing these cross section show we

are dealing with -- we are not dealing with a simple homogeneous formation, but we are rather dealing with 600 feet of Morrow and it is very difficult, if not impossible to determine the Morrow members.

Also, as determined from the electric logs, visual examination of the wells, cuttings and sedimentation, it would be very difficult to determine the exact net feet of pay for an individual well especially when you try to protect that net feet of pay over a 320 acre productive unit.

Q To paraphrase your opinion, and correct me if I am wrong, you cannot predict from location to location what part of the Morrow formation will be productive nor how thick the productive interval will be until you drill it and perforate it; is that correct?

A In essence, that is correct.

Q Would it follow that if you do not have perforated intervals, that you cannot predict the productivity until there is perforation?

A Yes, sir.

Q You have not presented an isopach, a net pay isopach, would you tell us why not?

A The reason I haven't presented one is because after I went to all of the trouble of making it it wouldn't allow me to, in my opinion, make a very good determination

of the recoverable reserves. Therefore, I didn't prepare an isopach.

Q Would you say that as many geologists who prepare isopachs you would have as many different interpretations of the isopachs as there are geologists?

A Very likely.

MR. LeBLANC: That's all we have of this witness, Mr. Porter.

MR. PORTER: The witness is available for cross examination.

CROSS-EXAMINATION

BY MR. KELLAHIN:

Q On your cross section and on your contour map you show a fault, what is the basis of that fault? How did you determine there is one there?

A I didn't see it cut in that particular well, it was simply because -- could I open up the map here?

If you will note the original dip in general is from the southeast and, for instance, on the Corinne-Grace Number 1 the Morrow is 6,052 and moving directly southeast. The next well is the Superior and the Morrow is approximately 100 feet high to the Pennzoil-Gulf Federal so this is one way, it is not the only way, but it is one way to determine this.

Q But you have no evidence of a fault having been cut by the well?
A I didn't see it in the well.
Q Or any well?
A No, sir.
Q On your Exhibit, I didn't get the number but I believe it is Exhibit 5, in your B, B' cross section you cross two well locations; what was the reason for that?
A No real reason, I just didn't want to make the cross section too wide.
Q It would have some significance if you show the fault in between these wells; would it not?
A Not really.
Q Now, you omitted the Antweil-Missouri well in Section 6 and you skipped two intervening wells and got over to the Pennzoil-Gulf Federal.
Q One of the main reasons I skipped those two wells is they are Strawn producers and I am not concerned with the Strawn.
Q But they are also logged in the Morrow?
A Yes.
Q And you are using logs so there is no reason that information would not be available?
A There was no ulterior motive.
Q I am just trying to find out if you had a reason for

not using them.

A I think the first answer I gave was my reason, to just keep it down to size.

Q But the Commission has used them on their interpretations; have they not?

A For contouring it they did.

Q But in determining the existence of a fault you did not?

A I didn't, no.

Q Now, as I understood your testimony, and correct me if I am wrong, you said you cannot determine the reserves in the pool?

A That's what I said -- I think what I said was that a net pay map, in my opinion, would be useless for that.

Q But there would be other means available for determining reserves?

A I suppose there would be if you had sufficient data.

MR. KELLAHIN: That's all.

CROSS-EXAMINATION

BY MR. STAMETS:

Q Did you determine any pattern to the producing zone on your Morrow map?

A Not really, but the only thing I noticed is the zone that we referred to as zone six seems to be more

predominant than the other zones.

Q If the fault that you have drawn in there is actually there do you feel this would allow gas to migrate between the various Morrow zones in the vicinity of that fault?

A Yes.

Q What about if this is some rather sharp drop rather than a fault; do you feel there could be fracturing of the formation in the particular area and would you allow the interconnecting of zones in the Morrow?

A Yes, sir.

MR. STAMETS: That's all the questions I have.

CROSS-EXAMINATION

BY MR. SPANN:

Q Is it your testimony that you cannot determine if there is communication between the wells producing from the Morrow?

A I don't believe I said that. Actually what I said was that it is difficult, probably impossible, to trace any number of thin sand members in the Morrow for any great distance at all.

Q You could not determine then that all of the wells in the Morrow formation are producing from the same reservoir or source of supply; isn't that correct?

A I don't think you can determine that exactly.

MR. SPANN: That's all.

CROSS-EXAMINATION

BY MR. STAMETS:

Q Do geologists agree where the top of the Morrow is found?

A Well, within certain bounds, but not exactly.

MR. STAMETS: That's all.

MR. PORTER: Are there any further questions of this witness?

(No response.)

MR. PORTER: If not, the witness may be excused.

(Witness excused.)

E. F. MOTTER,

was called as a witness and after being duly sworn according to law, testified as follows:

DIRECT EXAMINATION

BY MR. LeBLANC:

Q Would you give us your name, address and occupation?

A E. F. MOtter, Midland, Texas. I am Regional Engineer of the Southewestern Region for Cities Service Oil Company, which encompasses West Texas, New Mexico, and parts of other states.

Q Would you give us your educational background?

A Yes, sir. I have a degree in Mechanical Engineering from Kansas State University and in addition I have done graduate work at Southwestern Louisiana University in Petroleum Engineering.

Q What has been your work experience since you obtained your degree?

A I have been with Cities Service for twenty-two years. I began in Kansas and for the last eleven years I have been here in Hobbs.

I did spend five years in Midland, but Hobbs was still under my supervision.

Q Have you testified before this Commission on prior occasions?

A Yes, many times. I believe fifteen years ago was the first time.

Q Now, getting to this particular field, have you studied the South Carlsbad Morrow formation in an attempt to determine what would be a proper allocation formula?

A Yes. In preparation for this Hearing I looked at several factors which normally are considered in the prorationing of a gas field.

I would like to enumerate some of these. Acreage productivity, acreage reserves, deliverability on open flow, well head pressure, bottom hole pressure,

and sometimes a combination of these are used.

Due to the complexity of the reservoir that previous witnesses have testified to, I disregarded many of these factors because they are based on interpretation and you must have a great deal of confidence in some of these interpretations.

So basically, I confined my review to open flows, or as Mr. Utz used earlier, deliverability.

Q Do you have any comments with regard to the factors you have considered?

A Yes, I would first like to look at the open flows from the South Carlsbad Pool.

I prepared Exhibit 6 and I believe these are open flows which were filed with the New Mexico Oil Commission.

Q Before getting into that -- if you don't mind I would prefer to go through the open flows on Exhibit 6.

(Marked Cities Service Exhibit 6 for identification.)

A (continuing) Exhibit 6 comes from the Morrow wells completed in the South Carlsbad Pool and this is the latest data we had available up through April 1st.

This data was taken from New Mexico Oil Commission records. On the left-hand side we identified operator, the well, and the well location.

The third column of test data and the last column

is calculated on open flow. I would like to point out a couple of what I feel are irregularities in some of the wells in open flow.

The first two I would like to compare are the Antweil Number 1 Little Jewel and the Antweil-Allen. These are both located in Section 31 and are approximately 1,300 feet apart. The Little Jewel is perforated at 11,441 to 11,468; the Allen is perforated to 11,440 to 11,463.

I would assume they are in the same zone in the Morrow and the calculated open flow on the Little Jewel was 15.769 million. The open flow on the Antweil-Allen was 3,494 MCF.

Before making the comparison I would like to direct your attention to the Corrine-Grace, I have trouble pronouncing this name, and the Humble-Grace, which are both located in Section 2, 23 South, 26 East. Guadanaco

The Corinne-Grace Guadanaco was perforated at 11,656 to 11,686 and the Humble-Grace was perforated to 11,168 to 11,190. Again, I consider these wells are probably in the sand body in the Morrow zone.

The Guadanaco had a calculated open flow of 7,543 MCF and the Grace-Humble had a calculated open flow of 33,239 MCF.

Q Would this wide disparity in deliverability between the

two wells, in each case approximately 1,300 feet apart, in your opinion is it reasonable to believe that the deliverability is indicative of the recoverable reserves underlying the particular 320 acre tract?

A Not necessarily. In this particular case the open flow is nearly four-fold times the other, but we do have second flows and there are certain problems in the Morrow sand which I plan to get into in the next Exhibit.

However, before I leave the present Exhibit, I would like to call your attention to several other wells and if you refer to Cities Service Stracbein, this well in the original completion had an open flow of 5,025 MCF --

Q Excuse me, you may be with the Commission, but you have lost me. Are you referring to a different Exhibit?

A No, I am still referring to Exhibit 6, the Cities Service Stracbein Number 1 on Exhibit 6.

Q All right.

A I will now go on down to the Cities Service Merlin Number 1 which on October 1, 1971, we completed and the open flow was 2,066 MCF.

On January 6th the open flow was 7,600 MCF and on January 29th, immediately following the connection

with the Transmission Company on January 29th, we ran another open flow and obtained a test of 3,049 MCF.

The Texas Oil and Gas Pan American State on completion in October of 1970, had an open flow of 1,973 MCF and following connection with the Transmission Company the open flow was indicated at 502 MCF.

I think that points out some changes that can occur in the open flow or deliverability.

Q Does this illustrate that the deliverability of the wells range from approximately one million to approximately thirty-three million?

A Correct, in the South Carlsbad Pool. I might comment, not on this particular Exhibit, but on open flows in general. They are always dependent in some way on several other factors.

Number 1, turbulent flow on the high rate; Number 2, flow on the low rate; and Number 3, fluid production, varying amounts of fluids.

Q Does the manner in which the open flow tests are conducted affect the result?

A Yes, it does in most cases.

Q Does well stimulation affect deliverability?

A Yes. I would like to point out this and I believe it is on Exhibit Number 7.

MR. LeBLANC: Can we have this marked?

(Marked Cities Service Exhibit Number 7 for identification.)

Q (By Mr. LeBlanc) Would you identify and describe Exhibit Number 7?

A Yes. Exhibit Number 7 is the result of studying stimulation effects on Morrow Gas Pools in southeastern New Mexico.

These pools are not necessarily confined to the South Carlsbad area. This result came from investigating some fifty to seventy-five stimulations of Morrow Wells and we have made rather a random pick and these by no means were selected purposely to show one thing or another.

In fact, I think if you will follow through the rest of my testimony, this shows stimulation both

ways.

Q I notice at the far left-hand column, it merely refers to wells A, B, and C, are these actual wells in existence?

A Yes, we purposely identified them as A, B, and C. I do have the names of those wells.

The first column tells us where the well is found and the next column shows the approximate producing depth. The next column is the drill stem test conducted prior to running the casing.

The next column is the initial production following the running of the casing. The next column is the stimulation.

The next column is the production after stimulation in MCF per day and the last column, naturally, is the remark section.

One comment, most service companies consider these successful if they can bring production back to the drill stem test production. Out of these wells, I have listed there are some that probably were considered successful.

For instance, in Well C, the drill stem test production was 1,790 MCF, following stimulation, it was 3,300 MCF. In Well G, the drill stem test was 7,800 MCF and production following stimulation was

9,200 MCF.

Well H produced 3,750 MCF in the drill stem test production and after stimulation, 4,800 MCF. Well J on the drill stem test -- the drill stem test was actually too small to measure and following stimulation it was 1,209 MCF.

Well M produced 3,000 MCF on the drill stem test and 5,234 following stimulation.

I would also like to direct your attention to the fact that sometimes open flow -- excuse me, drill stem test data do not always respond in the same manner.

The first one I call your attention to is Well B, let's compare Well B with Well H. Those two wells on the drill stem tests both showed over three million, Well B after stimulation was only one million two hundred thousand, while Well H was four million four hundred thousand.

We can also compare Well E and Well G. Well E on the drill stem test produced eight and a half million and the open flow on Well G was seven point six million. The open flow following stimulation was down to one million one hundred twenty thousand and then Well G improved to nine million two hundred thousand.

Now, as far as commenting on these wells, and how the open flows changed, I would like to call your attention to Well D. This well following stimulation had a calculated open flow of five million two hundred fifty thousand. After producing for forty-five days, another open flow was taken and the well was then thirteen million three hundred twenty-six thousand.

If in Well H, although I don't have the open flows, I do have the rate this well produced after stimulation, this was four point eight million. Ninety days later it produced at a rate of nine point eight million.

Well K at the end of stimulation was three million eight hundred sixty-four thousand and after six months of production the open flow had gone down to three point eight million.

The last one I will point out is Well N, this well was stimulated twice and following the second stimulation, the open flow was seven point six million.

However, after thirty days production, it declined to three and a half million.

Q Do you have anything further?

A I would like to repeat that I hope this does show the wide affects of stimulation to open flows and how

they can cause a change, especially during a period of time.

Q Based on your studies of deliverability, have you drawn any conclusions as to the use of deliverability in allocating proration?

A Yes. Although in general calculated open flows are good indicators of well production, we look at this type of data, I think, to maintain an equitable position.

Pool tests would have to be run regularly, maybe every eighty or ninety days, and I would feel that this would be quite a burden on the Commission and quite a burden on the operators who are running these tests this often.

Q Is it correct that deliverability in itself indicates productivity of the well, or the producing capacity of the well, but does not necessarily relate to recoverability of reserves?

A Yes, I would that was a true statement.

Q Based on all of your engineering studies with reference to this field, do you have a recommendation for a proper allocation formula for the Morrow field?

A As I mentioned earlier, I ruled out nearly all but acreage and deliverability, or open flows. As a result of this, I hope that you can see my recommendation

as straight acreage or one hundred percent acreage would be somewhat more of an equitable means of allocation in this field.

Q Considering all of the information available, and even the lack of information available, is it your opinion insofar as is practicable, that surface acreage allocation would be indicative of the recoverable reserves underlying the three hundred twenty acre units?

A I think it is one of the best factors we have available to us.

Q Do you have another Exhibit?

A Yes.

MR. LeBLANC: May we have this marked?

(Marked Cities Service Exhibit 8 for identification.)

Q (By Mr. LeBlanc) Would you identify Exhibit 8, please?

A This is a rather large Exhibit showing southeastern New Mexico.

Q Is this the last Exhibit you plan to introduce?

A No, I believe there is one more. I might comment that the data on this particular Exhibit came from information that was taken from the Gas Proration Order Letter of the State of New Mexico for the month of April, 1972.

I believe there was some testimony earlier this morning that there were fifteen pools in southeastern New Mexico which were prorated on an acreage basis --

Q Excuse me, maybe we can introduce this last Exhibit?

(Marked Cities Service Exhibit 9 for identification.)

A (Continuing) basically, Exhibit 8 portrays the southeastern New Mexico oil and gas pools. We have shaded in red the South Carlsbad Pool which is the subject of this hearing.

We have also over-lapped through transparency thirteen of the fifteen prorated gas pools in southeastern New Mexico.

I might comment that there are two that are not on this Exhibit and are on our Exhibit 9. These are in Roosevelt County and due to the fact I would have to make the Exhibit two feet longer, I left them off, but they are rather small in production anyway.

Q Those are two pools that are not on your map?

A That's right.

Q They are all listed on Exhibit 9 though?

A Yes. These are all prorated on an acreage basis in southeastern New Mexico.

Now, there are other gas pools shown on the map and I shall not set them out individually because we do have oil pools there, but these do not have proration

in effect.

If you will take a look at the two pools to the north in Roosevelt County, or upper Lea County -- ninety-nine point six percent of the wells are prorated for gas in southeastern New Mexico on a straight acreage basis.

Q. You are not suggesting by any means that just because this was done in the past, it would be appropriate here; are you?

A. No.

Q. Are you suggesting that what is proposed today is not unique, however?

A. It is not unique, that's what I wanted to show.

MR. PORTER: You might ask the witness what happened to the one pool we prorated on a different basis.

THE WITNESS: I believe I have been through this, Mr. Porter, for several months.

MR. PORTER: Does anyone have any questions of this witness?

CROSS-EXAMINATION

BY MR. STEVENS

Q. Your consideration of the proration factors was limited solely to the Morrow formation?

A. Yes, that is correct. I think our attorney stated that at the outset.

CROSS-EXAMINATION

BY MR. KELLAHIN

Q As I gather from your testimony, you didn't feel that deliverability has any direct relationship to recoverable reserves?

A In the Morrow formation, I feel it is not a reliable factor whatsoever.

Q So you rejected it as a measure?

A Yes, I would think I would have to do that.

Q The only thing you have left, according to your testimony, is acreage?

A Yes.

Q Because you can measure it?

A Right.

Q Will acreage give you an accurate measure, even a reasonably accurate measure, of the reserves underlying any tracts?

A I think it's as good as anything we have available for proration purposes. As far as reserve information I don't believe we have information for use, it is very difficult to interpret this from electric logs, whether you have pay or not, until you actually have perforation to know whether that zone is productive.

It might look good on the log, but it might not produce one MCF.

Q These have all been prorated?
A Not in all zones.
Q I am talking about one bore. If the well bore is open and producing in the zone, the well is producing?
A Yes.
Q From the logs, you can interpret the productivity of that zone?
A Not from the log, you can't predict productivity.
Q You can't pick any net feet from a log, net productivity feet from a log?
A You could predict net feet, but you can't predict productivity, this would have to be measured on the surface.
Q Isn't net feet a measure of the reserve of the well?
A It is usually an indicator.
Q It is one directly used in allocating production in a secondary recovery process; isn't it?
A Yes.
Q How accurate is a forty-acre tract, must you have reserves underlying that tract?
A Mr. Kellahin, I don't believe I follow you on this forty-acre tract.
Q A 320-acre tract is accurate as a measure of the reserves underlying it in any given pool?
A From what basis?

Q On the basis of prorationing. Let me put it this way, the Commission is required by law to allocate production to the individual operators in an equitable fashion giving consideration to the correlative rights of those operators which means they must be afforded an opportunity to produce their just and equitable share of the oil and gas underlying their tract of land.

Now, is the acreage method a good way to accomplish this?

A It is as good a factor as we have available to us.

Q You wouldn't accept any other factors?

A Well, I will go along and abide by the Commission.

Q I mean as an engineer?

A (No response.)

MR. KELLAHIN: That's all I have.

CROSS-EXAMINATION

BY MR. SPANN

Q Mr. Motter, just because this is the only factor that you feel is available under the circumstances, that doesn't mean anything insofar as protecting correlative rights or furnishing a particular operator the right to protect his fair share of the gas; is it?

A I don't believe I said that. The other factors are interpretative and I place some dubious value on the

interpretation of these and therefore I feel acreage is as good a way as we have available to us.

Q Is it good enough to properly comply with the statutory requirements that are necessary before you prorate a field?

A In my estimation, it will until we have further geological data.

Q Then you must mean it is a fair indication of the reserves under a given tract and I thought I understood from your answer to Mr. Kellahin's question that you didn't believe it was.

A These wells have been drilled on three hundred twenty acre spacing and I believe the assumption has been made, at least with the Commission, of the productivity under the three hundred twenty acres.

Q That's because that is the rule for statewide spacing for gas?

A Right.

Q But that doesn't correspond with any geological information as to a single formation; does it?

A Not until a well is drilled.

MR. SPANN: I have nothing further.

MR. PORTER: Does anyone else have any questions?

CROSS-EXAMINATION

BY MR. STAMETS

Q Mr. Motter, referring to your Exhibit Number 7, I believe you show that most of the wells have less potential on completion than they had on the drill stem tests. Can you give us your opinion as to why that is true?

A We agree that the Morrow is susceptible to contamination by drilling fluids along the formation -- by the formation being exposed to drilling fluids, there is probably more blocking and we have to permit gas flow into the well bore.

Q Do the Cities Service Wells in the Morrow produce water?

A Yes, in a small amount.

Q Do you have a figure at what percent water saturation commences to flow to the well bore?

A Our wells will produce anywhere from one to three barrels a day. I don't know if we can go out there and try to measure what rate the water production may be.

MR. STAMETS: That's all.

MR. PORTER: Anyone else have any questions?

CROSS-EXAMINATION

BY MR. NUTTER

Q You have testified to the most desirable formation formula for prorating gas here, do you think it is necessary or desirable to prorate this pool at this time, the Morrow Pool?

A I think that any time you have more than one purchaser in a field, it should be prorated.

MR. NUTTER: That's all.

MR. PORTER: Does anyone have any further questions?

(No response.)

MR. PORTER: If not, the witness may be excused.

(Witness excused.)

MR. LeBLANC: May I formally offer in evidence the Exhibits we have presented today?

MR. PORTER: Would you give me the numbers of those Exhibits?

MR. LeBLANC: Cities Service Oil Company Exhibits 1 through 9.

MR. PORTER: If there is no objections, Cities Service Exhibits 1 through 9 will be admitted.

(Whereupon Cities Service Exhibits 1 through 9 were admitted in evidence.)

MR. STEVENS: My name is Donald Stevens, representing Morris Antweil. We desire to present evidence as to the reserves in the Strawn Field along with the statutory directive which states that the Commission should as Mr. Kellahin pointed out, insofar as practicable allow each property owner to recover a percentage of the gas under his tract.

In that connection, we have one witness we would like to call.

R. M. WILLIAMS,

was called as a witness and after being duly sworn according to law, testified as follows:

DIRECT EXAMINATION

BY MR. STEVENS

Q Would you state your name?

A R. M. Williams.

Q What is your occupation?

A An engineer with Morris Antweil.

Q Have you examined the South Carlsbad Field since its inception?

A Yes, I have been with Morris Antweil since the first well was drilled in the field and I have been familiar with drill completions and production of the wells in the field.

Q Have you previously had your qualifications accepted

by the Commission?

A Yes, I have.

Q Have you previously outlined your education and experience for the record?

A I am a graduate petroleum engineer, I graduated from Penn State -- Pennsylvania State University in 1953 and went to work for the Shell Oil Company here in Hobbs for approximately four years.

I was then employed by the Monterrey Oil Company and I worked in the Fullerton Unit with their office in Hobbs. Monterrey was purchased by Humble and I was with Humble then for some six years.

I have been with Mr. Antweil for six years. My experience has been in all phases of engineering, but particularly related to reservoir engineering.

MR. STEVENS: Are the witness's qualifications accepted?

MR. PORTER: They are.

Q (By Mr. Stevens) Have you prepared certain Exhibits to aid you in your testimony?

A Yes, I have a set of some ten Exhibits that have been prepared either by me or under my direction.

(Whereupon Antweil Exhibits 1 through 10 were marked, respectively, for identification.)

Q (By Mr. Stevens) Referring you to what has been

marked Exhibit Number 1, would you describe that Exhibit for the Commission?

A It is simply a location map of the South Carlsbad Field. The Morrow Wells in the area are designated by yellow, the Atoka well is identified by green, and the STrawn wells are designated by red.

Q Referring to what has been marked Exhibit Number 2, a structure map, could you explain it for the Commission?

A Exhibit Number 2 is our interpretation of the structure contour on the top of the Strawn lime mine.

Q Would you consider the South Carlsbad field defined at the present time?

A It is probably pretty well defined in this reservoir (indicating). There have been dry holes or noneconomic producers almost completely around the field at this time and I think with one exception to that, the probability that the Grace Carlsbad Well in Section 36 is completed in the Strawn.

4-1-ajj

Q Since this would be a defined field, would this make it easier to determine the reserves of the field as opposed to a field that is not yet defined.

A Yes. If you have a defined field, you will have much greater success in determining reserves than say you would if you were on an active drilling program.

Q Referring to what has been marked Exhibit 3, a north-south cross section, could you explain that to the Commission?

A Yes. Exhibit 3 is a north-south cross section. It extends from the Pennzoil-Mobil Federal Well through all the producing wells in the Strawn Reservoir and ending at the Cities Service Well to the north.

On this cross section, we have indicated with blue lines the top of the Strawn line and also the top of the Atoka, or the base of the Strawn formation.

Each of the logs shown are sonic logs and this type of survey has been run on each of the Strawn Wells in the field. The perforated intervals on the completed wells are designated in the center of the log and on the gamma ray portion ~~and~~ on the left-hand portion of the log, we have indicated the clean line rock that is contained as evidenced by the low measured activity indicating clean line

development.

Where it has been shaded ~~yellow~~ on the right-hand log, or the sonic survey, we have indicated what we would consider the net pay development. ~~If the five percent indicated is the porosity~~ and any interval in excess of the five percent indicated ~~is~~ porosity that is indicated in the clean lime rock ~~and this~~ is indicated as being pay.

Q Does this indicate a large or small difference in the variation of the amount of porosity in what you call pay?

A I think as you compare the individual wells moving from the east of the field into the center of the field and then into the area of Section 31, you can see the build-up of the lime and the increased amount of porosity development and net pay development in those wells.

Q I note that on some of the wells, you have picked what you call pay that has not been perforated, do you consider that to be pay that the well will produce?

A This is why we made the pay selection on the basis of the five percent cutoff and the clean limestone rock.

I think that the field is interconnected and

that indicates a poor volume by the standards of these wells and is an indication of gas in place at that location and it would be available to produce from this well or other wells in the field.

Q Referring to what has been marked Exhibit 4, the east-west cross section, would you explain that to the Commission?

A It is just an east-west cross section showing the same markings that I defined on Exhibit 3 and again showing the build-up of this lime bank as we move across Section 31.

It also shows the extreme differences in porosity and pay development in the wells as you move across the field.

Q Will you explain Exhibit Number 5 to the Commission?

A Exhibit Number 5 is an actual print of a full-scale log. This particular log is of the Morris Antweil Number 1 Allen Well in Section 31.

We entered this to show more visually the selection of the pay and the porosity that we have made. If you would look particularly at the two-foot interval at 10,214 feet to 10,216 feet, this is the upper two feet and the uppermost interval indicated is the pay interval in this well log.

At this two-foot interval, you see the porosity

based on the matrix velocity of 23,000. We looked at each two-foot interval in the same method and for the two-foot intervals, selected two feet of net pay and read an average porosity for the two feet of six and a half percent.

Moving on down the log to 10,216 to 10,218, the same principle applied. We selected two feet of net pay and also six and a half percent porosity.

I call your attention to the two-foot interval at 10,267 to 10,269, this is the peak that occurs in the porosity interval. We read two feet of pay and a porosity of ten and a half percent.

The porosity of each of these two foot intervals were then tabulated and determined the thickness times the porosity. If you multiply .065 times two feet, it would give you a porosity thickness of 3.13.

Q. Would it be multiplying and then adding them all together to determine that the individual space that contains gas in this well bore?

A. That's right. By making the same calculations on each two-foot interval and then totaling the indicated porosity thickness in the entire Strawn interval, we could then determine the total indicated porosity thickness for this well.

For example, this well has an indicated porosity

thickness, each two-foot interval, totals a porosity thickness of 9.555.

Q You used the sonic log for your porosity, is that an acceptable tool to measure porosity?

A Yes, this was the tool recommended to us and we selected the best porosity measurement tool available for this type of limestone formation and I think possibly our selection would be some way justified due to the fact that sixteen wells in the field selected this same tool to guide them in determining where their porosity was and what intervals they would perforate.

Q Is this possibly a better tool in a gas field than in an oil field?

A Yes, a sonic tool would probably give you a better reading in a gas field because it is not affected by the gas as a neutron log would be.

A sonic tool may read somewhat conservatively in a limestone formation of this type, but we would like to point out that the approach we were taking was a comparison of the wells and the same type porosity determination has been used on each of the wells.

Q We have had some testimony here about the fact that cores might help in determining porosity in a well,

what is your opinion in determining porosity of a limestone field such as this?

A I think there is considerable controversy on this point and the controversy centers on how the cores are supposed to be handled once they are taken.

By cutting into the formation with a diamond-head and relieving the stresses that exist at this depth in the ground and moving that core to the surface and releasing the hydrostatic pressures, rock distortions in the porosity take place and possibly some fracturing of the rock takes place from relieving the stresses of the hydrostatic pressures.

This is a drawback in the use of core, also the logs have the advantage that they are making a measurement which is related to the porosity on these rocks in place ~~under~~ in the well bore and under existing conditions.

Q You have used five percent porosity to arrive at your determination, was there any particular reason for this?

A This is just a percentage factor in limestone reservoirs of this type.

Q I notice up at 10,200, on the bottom part of your porosity, this is not perforated; could you make a generalization as to perforated pay in the other wells

and the Antweil Well as to the percentage it shows even though it is not perforated?

A I gave this well credit for four feet of pay up above the perforation and I think about four or five feet of pay below the perforation.

This is a small percentage of the total pay that was assigned this well and on the other wells where porosity and pay determination was made, the criteria of five percent cutoff and clean lime rock whether it was perforated or not, didn't influence the selection of the pay and I would say the majority of the wells have a much higher percentage of unperforated pay than has been credited to them.

Q Referring to Exhibit Number 6, the Table of Porosity Thickness Determinations, would you explain that?

A Subsequent to my discussion of the determination of the porosity thickness of the Antweil Allen Well, this table summarizes a like determination that had been made on the sixteen wells which have been penetrated in the Strawn formation in the South Carlsbad area.

The first six wells listed are wells that are existing proration units, designated proration units in the South Carlsbad-Strawn field, and it is indicated whether they are producing or shut-in.

On the Pennzoil Well, I have listed it as completed and I understand the pipeline connection may have taken place, or may not have quite taken place as yet.

I don't know the exact status, but it will be connected.

Also listed are other wells, namely Morrow Wells penetrated in the Strawn that have logs available through intervals where I could not make a determination of the net ~~thickness~~ porosity and the porosity thickness.

Q I noticed the average porosity in your next column was multiplied to determine the porosity thickness in each well?

A You have got your mathematics backwards. Each two-foot interval was discussed in determining what the previous Exhibit was and multiplied by the average porosity to get the porosity thickness for that two-foot interval.

The porosity thickness thus determined was then totaled to get the total porosity thickness for that well. Then the average porosity was determined by dividing that porosity thickness by the net feet of pay.

Q What are the differences that results from these determinations of the various wells?

A I think you can see the different porosity thicknesses that we observed on our cross section.

The cross section wells there in Section 36, the Antweil Allen and the Antweil Little Jewel had an indicated porosity thickness of 9.555 feet for the Allen and 7.025 feet for the Little Jewel Well.

Comparing that with, say, the Superior Collette Well, off to the southwest, which has a determined porosity thickness of 3.5, and this is a producing well presently in the field.

The Cities Service Spencer Well, which Mr. Motter called his "possible Strawn completion" had an indicated porosity of 1.935 .539.

Q Referring to Exhibit Number 7, could you explain it?

A This was presented as a table determining thicknesses. That data on the top of the Exhibit refers to the well locations.

As you see the Allen Well, that we have continually referred to, is 9.555 feet of porosity thickness.

The well spots at the corner of each well is the determined porosity thickness at the well bore. This information was offered to represent the areas of equal porosity thickness development in this Strawn Reservoir.

In Section 31, and technically we should say a

cross section of Section 31, the center of the indicated volume in the field in Section 31 is decreasing to the edges or boundaries of the reservoir.

As you asked before, the reservoir appears to be well defined in that there are wells surrounding this reservoir and these have been tested and found to be nonproductive in the Strawn.

Q The interpretation countour line -- the word is interpretative, is that a valid interpretation?

A As you say, it is an interpretative method of the contours and the countours were described to reflect the core volume.

The points that were determined in each well bore have been honored and the general shape reflects the guidance that we had from the structure and indicated build-up of the cross Sections.

I might also point out that we have indicated in this Exhibit the Strawn -- the designated Strawn proration unit with an additional designation of a proration unit for a gas well in Section 36.

Q Since this might be interpretative and others could make a different interpretation, would you offer that all the general interpretations as shown here prevail?

A Yes, I think the data is strong enough to show these two and three fold differences in the porosity

thicknesses of the wells and as you move from the center of the field to the edges of the field, any interpretation would reflect substantially this same location of configuration of the core volume in the reserve.

MR. PORTER: It is apparent, I think, that we won't be able to conclude today, or at least this afternoon, and we need to give the reporter a rest for a few minutes.

Mr. Robson, I wonder if you would know about the availability of this room for tomorrow.

MR. ROBSON: I am sure it is.

MR. PORTER: I am sure we can check and make that determination. In the meantime, we will take a short recess and we will make a determination of what we will do with regard to continuing this Case until tomorrow, after we have concluded with this witness.

(Whereupon a recess was taken.)

(Hearing continues.)

MR. PORTER: Gentlemen, the Commission has decided that we will conclude with the present witness and he will be available for cross-examination. We hope to conclude the cross-examination of this witness today. We are then going to recess the hearing until 8:30 in the morning and we will reconvene here in this room.

Mr. Stevens, you may proceed.

Q (By Mr. Stevens) Mr. Williams, do you have any further comment on Exhibit Number 7?

A Yes, one comment I might make in regard to the core volume map leading into our next Exhibit. If you will notice, there is a -- I call your attention to the area extending to the southwest of the reservoir, the extended area in here, indicated porosity thicknesses from zero to about one and a half in the Pennzoil-Mobil Well.

None of the wells in this area were able to establish commercial production from the Strawn at this time and in fact if you look in detail at the map, no well below the two-foot contour on the map has established production in the Strawn Reservoir and any well above the indicated two-foot thickness contour has been a successful completion.

So I think this seems to indicate that possibly the productive area of the field is that area within the two-foot porosity thickness contour.

Q Referring to Exhibit 8, would you explain it for us?

A Yes. By looking at the contour map of the porosity thickness and determining the area within each of the contours, we can determine the total core volume in acre feet for the total reservoir, or by entering the individual dedicated proration unit, we can

determine the indicated core volume in acre feet for the proration unit as defined for the individual well.

I have done this on here (indicating) and provided here an actual combination, actually there are two tables, one table is set up for the total field and this is including all of the indicated core volume.

Here you will see the indication of the core volume of 9,057 acre feet and it shows the distribution of that core volume among the seven proration units indicated.

Some fifteen percent of the total field core volume is not within the designated proration units.

To the right side of that, I have made the same compilation over to the productive area, this is the area within the two-foot porosity thickness contour on the previous exhibit that I have just pointed out, and that appears to best represent the productive area.

Here we would determine 7,295 acre feet of core volume and only three percent of that core volume lies outside of the existing proration units.

If you will look at the individual proration units, designated by the well's name, the Antweil Allen proration unit, being in the east half of Section

31 and the first well listed on the table here, indicates a core volume within ~~the altitude of~~ the zero contour line which measures 1706 acre feet of core volume which would represent 22.19 percent of the developed area or 18.84 percent of the total field core volume.

The determination is made for the productive area where we have 1,688 acre feet of core volume representing ~~seventeen percent or~~ 23.14 percent of the total productive area.

Q Referring now to Exhibits 9a and 9b, could you tell us about the mechanism evidence in the field and how you determined this reserve calculation?

A All the evidence we have examined indicates this is a pressure depletion closed gas reservoir.

Q Could you explain the significance of Exhibits 9a and 9b?

A Exhibit 9a is a calculation of the reserves in the South Carlsbad-Strawn field and this is considering the field as being designated as a productive area such as we have previously defined.

In determining the reserves, we use such factors as the core volumes that we have determined and that were tabulated on previous Exhibits and the additional assumptions that went into the calculations of the

reserves where the original reserve pressures of 5468 PSI.

This was the measured pressure in ~~the amount~~ that the Allen Well measured on the drill stem test and would appear to be at or very close to the build-up pressure of the reservoir.

I assumed the abandonment pressure of 200 pounds, the reservoir temperature of 178 degrees, and this was measured temperature in our Little Jewel Well, and the water saturation of twenty-five percent of the core volume, this was determined from the water saturation determination from the logs ~~and~~ in some of our wells, there has been some possibility suggesting evidence of higher water saturation.

I think this could possibly be from some variation in the water saturation from well to well. I have assumed they are constant and I think if any variation existed, the information would indicate the water saturation would be higher in the wells with thinner pay sections and lower in the porosity developed sections and would be a detriment in the thinner, poorer wells of the field.

I think my assumption of twenty-five percent here will treat all the wells fairly.

Q Is there any pressure variation that you have noted

in the field in either initial drill stem tests or subsequent pressure tests?

A Of course, any withdrawal of fluid from this reservoir or any reservoir immediately begins to distort the pressure information and you review the pressure measurements by drill stem tests or bottom hole pressures taken on producing wells and you will find some variation, but I think the pressure I have selected of 5400 pounds is a fair representation of the original reservoir pressure.

Q Based on these figures, and I note on Exhibit 9 that you have a range for the reservoir of over three billion cubic feet up to nineteen billion cubic feet from the smallest to the largest reserve determination?

A Yes, these are the reserves as tabulated on a table that we have determined and this again is a reflection of the thickening of the Strawn formation and the increase in the porosity development and net pay development as you get into the better wells.

Q What portion of each tract percentage of production can be produced without waste?

A I would estimate that all these reserves so determined can be produced and are being produced without waste.

Q This method you have used in determining the reserves, is this a usual and ordinary method used in such

determinations in the industry?

A Yes, it is the normal method of determining reserves particularly in a gas reservoir.

To meet the requirements in determining reserves on each proration unit, this approach is the only method available.

Q The pressure method would apply here in any manner?

A The pressure balance calculations or pressure depletion curves could be used successfully and will establish field reserves, but could not be used to determine the reserves under an individual lease.

Q Would the production decline curve have that same effect?

A Yes.

Q To your knowledge, as an expert witness, do you know if the Commission has ever been asked before to determine the allocation formula onthe basis of reserves?

A Not to my knowledge.

Q Accordingly, what does Exhibit 10 propose?

A Pardon me, but I would like to refer to our Exhibit 9b. This is the same calculation and the same type of tabulation that I have just reviewed under 9a.

This is for considering the total field core volume as we set those out on Exhibit 8. This shows

two methods of determining the relationship of one well to another or one well to the total field.

It would be our recommendation that the best determination of reserves are those that we have shown in the area which we called the productive area on Exhibit 9a.

On Exhibit 9a, we also determined both ways to comply with the statute.

Q And the productive area is that area inside the two-foot contour line?

A That is correct.

Q Have you any further statements?

A No, nothing more for Exhibits 9a and 9b.

Q Exhibit 10, could you explain that for us?

A On Exhibit 10, we have set out some possible allocation allowables for the South Carlsbad-Strawn field and have shown here a possible acreage allowable on definite individual wells.

There is one penalized well that has an acreage penalty on it, the Pennzoil-Gulf Federal Number 2 in the south of Section 6, was penalized to eighty-two percent of the normal proration unit.

We have also shown how the eighteen million cubic foot per day allowable for the field would be allocated among the wells.

In the second column, the second major column on the table, we have shown how this same eighteen million cubic feet per day would be allocated on the basis of reserves.

Here we are considering the productive area of reserves that we determined and feel best represent the field.

Here the percentage that the individual proration units reserves represent to the total as applied against the total reserves to determine the allowable for that well.

To take a specific example, the Antweil Allen Well had reserves that represented twenty-three point eight seven percent of the total developed areas of the field and this twenty-three percent of the total of the fields allowable, the field allowable was eighteen million, this would represent four thousand two hundred and ninety-seven MCF per day allowable.

This would compare to the acreage allocation of some 2640 MCF per day or would indicate that this particular tract would be losing some 1657 MCF per day.

Similar calculations are shown on each of the wells. The third column is the same type presentation for the total field.

Reserves are determined on a total field basis and that is represented by Exhibit 9b.

Q Based on the these calculations shown in the Exhibit, how much gas under the Antweil tract would be produced by other tracts on a straight acreage formula as opposed to a reserve formula?

A If acreage type allocation was selected approximately one-third of the gas reserve under the three Antweil designated proration units would be confiscated by other wells in the field.

This would represent approximately one-third of fifty billion feet of gas that we are talking about.

Q Previously we have had objections stated to the total allocation allowable based on reserves, one was that it is ~~a~~ different determined porosity, what is your opinion based on your study after you have gone through this contention?

A The information available to us with good logs on all of these wells, all the producing wells and the surrounding wells, gives us additional control on the reservoir and this quality of log gives a reliable porosity for a determination and since the same type analysis and the same type logging tool is available and used on each of the wells, the comparative value,

well to well, should be very good.

Q We have also had objections concerning the determination of reserves based on the fact that this narrow protective zone affects the determination of the productive area, what is your opinion as to this contention?

A By the cross sections and by the locations of the completions, we have seen that the reservoir changes very rapidly and is relatively narrow and I think this is fairly represented by our contour of the core volume on Exhibit Number 7.

Q Does this affect the determination of reserves?

A No, I don't see where it makes any more difference.

Q What is your recommendation to the Commission concerning the allocation of proration in the South Carlsbad-Strawn field?

A Our recommendation would be that the reserves of the individual proration units can be determined and we have here presented our determinations of those reserves.

In keeping with this statute, the allowables should be allocated on a basis of the reserves.

Q Would the adoption of your proposed allocation prevent waste and protect correlative rights and conform to the statute directing such allocations? Yes

Q Were these Exhibits prepared by you or under your direction?

A Yes. I said earlier these were, most of them, were prepared by me, and those that were not were prepared by our office in conjunction with me.

MR. LeBLANC: I move for the introduction of Exhibits 1 through 10.

MR. PORTER: Without objection, Exhibits 1 through 10 will be admitted.

(Whereupon Antweil Exhibits 1 through 10 were admitted into evidence.)

Q (By Mr. ~~LeBlanc~~) Mr. Williams, is it your opinion that the Strawn Pool should be prorated?

A After looking at the difference in proration units for the individual wells and the possibility of proration on acreage, I would feel definitely that these should be prorated on the basis of reserves to protect the correlative rights of the individual leases.

MR. ~~LeBLAND:~~ I have nothing further.

MR. PORTER: Does anyone have any questions?

CROSS-EXAMINATION

BY MR. KELLAHIN

Q Just one question in connection with one of your Exhibits, you testified that all of the gas you

calculated the reserves of could be produced without waste. What recovery factor did you use in making your determination of the reserves?

A I am saying in effect that one hundred percent of this gas that would be withdrawn between the original reservoir pressure and the abandonment pressure of 200 PSI would be recovered as a recovered ~~rateable~~ reserve and would not create waste.

MR. KELLAHIN: Thank you.

CROSS-EXAMINATION

BY MR. NUTTER

Q One other simple question, when you calculate reserves on a tract and assign an allowable and that well finally has produced that amount of reserve and still can be produced, what do you do, plug it in?

Isn't this one of the facets of putting this formula into effect?

A There is a possibility that the field total would have more gas than we have determined here and the wells would exceed these estimates.

There is also the possibility that the final production would be somewhat less than these, but I think there is an indicated relationship from one well to another and this is indicated by the reserve calculations and the fact that they would give an

equitable allocation of the allowable.

Q But if the well ceases to produce and it is not yet produced the calculated reserves, or when a well has produced, but can still produce more, would that show there was some failure in your formula?

A Not necessarily in the formula. Really, the relationship of one well to the other, and this is what we are really concerned with, we think the reserve calculations are a valid indication of how one particular proration unit compares to the other and if the allowable is assigned on that basis, then each operator or each lease owner has an opportunity to produce the gas under his tract.

Q In the event a log or core could show you that you have pay somewhere, would you give credit to the pay?

A I think any of this pay observed on these logs are interconnected in the reservoir and the gas contained in that pay is free to move and be produced from this or other wells in the field.

Q The application of a formula such as you are proposing depends on the data as presented in the log data to interpret the net pay and the manner in which you have computed the net pay before you start your perimeter calculations?

A Yes, and this is our interpretation of that, there are

several stages where the interpretation must be made to determine reserves.

Q Every time a new well is brought in, you have to recalculate the whole thing?

A Calculate the reserves of that well.

Q You might even recount the whole pool too?

A It's very possible, but we don't think it is too likely in this case because we think the field is well defined and in my example calculations, and so forth, I have assumed that the Grace Well in Section 36 will be able to be successfully completed in the Strawn.

Q Now, you have given credit on your reserve calculations to the Cities Service Spencer Well, the "almost Strawn Well" that they have been talking about?

A That "almost Strawn Well" has produced gas from the Strawn and they filed a completion report on the well and it showed it produced 139 MCF a day.

They did not file a four-point test at that time, but I understand they have done some additional work on the well and are attempting to determine if they can make a completion at this time.

This is one of the guidelines that I used to say that you had to have at least two feet to indicate porosity thickness before you could really make the

well -- or before the well could be considered in a productive area.

As I understand it, there is a possibility of a low pressure gas system in the field and they may possibly be able to sell gas to that type system.

MR. NUTTER: That's all.

CROSS-EXAMINATION

BY MR. KELLAHIN

Q Mr. Williams, in making your porosity calculations, what matrix velocity and fluid velocity figures did you use?

A I think I stated the matrix velocity was 23,000.

Q Did you figure the fluid velocity?

A No, I didn't.

MR. KELLAHIN: That's all.

CROSS-EXAMINATION

BY MR. STAMETS

Q I believe you said that you feel this area is pretty well defined, however, isn't there potential for future development in the southwest of Section 29, 22 South, 27 East?

A I don't have a map open, Dick, would you point out the Section again.

Q The southwest of Section 29, 22 South, 27 East?

A I think there is always a possibility and I think we

have indicated that the pays that were picked up by the Cities Service Wells, both to the west and to the south of that particular quarter section would cast some doubt on it and would indicate that the limits of this field in effect leave that quarter section out as I have indicated on our map designated Exhibit 7.

Q That would be the general trend of this structure reefing?

A Yes, and I think if you would ask me if there is a likelihood of another lime build-up of this type along the trend, I would say this is a possibility.

I don't think it would be quite as close at the southwest quarter of Section 29, but possibly a mile or two from this.

There is a possibility of another lime build-up, but I think it would be in effect another reservoir.

Q But the potential is there; do you agree to that?

A Yes, I think exploration activities that we have seen have led a lot of people to believe that the potential is there all the way from here back to the Strawn field -- I mean the western Strawn fields.

Q If there is a substantial amount of porosity in all portions of the Strawn section in any of these wells, could that have a great effect on the reserves?

A Yes, the type of survey that has been used, the sonic survey, would tend to ignore that and the porosity readings that were determined would be low.

I think the likelihood of this occurring is most relevant in the thicker wells, the wells that have more net pay development.

Q Can limestone with less than five percent porosity contribute to production if the formation has substantially fractured?

A Yes, it could. I think when you get down in that range, the porosity is normally less than five percent in that range.

The porosity on the poorer side distribution is quite small and your water saturation, because of the effect on the core volumes, and you have indicated quite a high water saturation and you didn't have a significant volume of gas contained in that type of porosity.

Because of the high water saturation, that gas that is contained cannot move, there isn't sufficient gas saturation to provide mobility for the gas.

Q Do you have any concrete evidence as to the existence or non-existence of vugs or fractures in the Strawn pay?

A The only signs, as you pointed out, are the wells were not cored, particularly the producing wells.

The only thing we have to guide us are the sample descriptions that have been made. From the sample descriptions and examinations of the samples, the porosities that have been seen and described are primarily intercrystalline porosity or matrix type porosity.

There is some evidence of secondary crystallization and this would point to the possibility of some bugs in this type of formation. This lime bank or something approaching a reef build-up, I think the description that you used in comparing it to the husk sealed, this type of formation isn't the type that we normally think of that will develop large bugs or dependencies or large bugs to provide our core volume as distinguished from the Devonian type reserves.

Q Does your iso-pore volume map assume the unformed change in porosity thickness between wells?

A Not exactly. The individually determined core volumes were placed on the map and then the map was contoured and as I pointed out this was not a mechanically contoured map, but an interpretively contoured map.

Q You contoured it interpretively?

A Yes.

Q Assuming now that another gas well was completed, who is going to make the determination, who is going

to be called upon to get an allowable for this well?

Have you figured the operator will be the one to calculate the pore volume and come in ask us to approve it, or do you think the Commission will do this each time?

To go one step further, what about a dry hole? I am sure the operator wouldn't care two hoots about coming to the Commission and telling us about a dry hole.

What effect would a dry hole have on your contour map?

A This would present a redetermination if an additional well was completed. Our position on this South Carlsbad-Strawn field is that the data available in this case shows the field to be developed to this point that it is defined and there are wells that cannot or have not been completed entirely around the reservoir, but this is a defined reservoir and the possibility of a lot of additional wells being completed is very remote and this is a determination that we have made at this time and our determination would firmly represent the reserves and would hold for a long period of time.

Q If this type formula were adopted in the pool, would it be your recommendation that the operator have a

chance to have his say as to exactly what his production is under his acreage before the formula applied to him?

A Yes, I think this would have to be done. This is our interpretation that we have presented.

The two points we would like to make are that the reserves can be determined and that it isn't an impossible task from the data available and the reserves can be determined.

The second point we would like to make is that the determined reserves indicate significant differences in the individual wells and the significant difference in the allowables assigned to these wells should exist to permit each operator an opportunity to produce the gas under his tract.

The question of whether or not it has to be should not prorated on the basis of reserves rides on the possibility of some slight discrepancy in our work here.

We are selling the concept and I think the final determination of reserves for proration purposes probably could best be made in something like an operators' meeting under the direction of the Commission.

MR. STAMETS: That's all.

MR. PORTER: Anyone else have any questions?

MR. CLAY: Terry Clay of Superior Oil --

MR. PORTER: I believe we should conclude the examination of this witness before we accept statements. Does anyone have any questions of this witness?

(No response.)

MR. PORTER: If not, the witness may be excused.

(Witness excused.)

MR. PORTER: Now, Mr. Clay, would you like to make your statement?

MR. CLAY: I do have one to make, but since there is going to be additional data on the Strawn Fields Pool, I would like to hold off until the other data is presented.

MR. PORTER: Would you identify yourself for the record?

MR. CLAY: Terry Clay with Superior Oil.

MR. PORTER: The hearing will be in recess until 8:30 tomorrow morning when we will reconvene in this room.

CASE 4694: MOTION OF OCC TO CONSIDER INSTITUTING GAS PRORATIONING IN S. CARLSBAD-STRAWN GAS POOL