CASE 3185: Appli. of **SOUTHERN UNION GAS CO.** for an amendment to **ORDER NO. R-1670.**

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

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

P. O. BOX 2088
SANTA FE

March 30, 1965

Mr. Richard S. Morris
Seth, Montgomery, Federici & Andrews
Attorneys at Law
Post Office Box 2307
Santa Fe, New Mexico

Re: Case No. 3185
Order No. R-2890
Applicant:

SOUTHERN UNION Gas Company

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC x
OTHER Mr. Ben Nowell, Mr. Guy Buell, Mr. Paul Payne, Jr.,
Mr. Jason Kellahin, Mr. Bill Schoger - USGS, Roswell, N.M.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 3185
Order No. R-2890

APPLICATION OF SOUTHERN UNION GAS
COMPANY FOR AN AMENDMENT TO ORDER
NO. R-1670, FULCHER KUTZ-PICTURED
CLIFFS POOL, SAN JUAN COUNTY, NEW
MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on December 16, 1964, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 30th day of March, 1965, 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 the applicant, Southern Union Gas Company, seeks amendment of the Special Rules and Regulations governing the Fulcher Kutz-Pictured Cliffs Gas Pool promulgated by Order No. R-1670, as amended, to exempt from gas prorationing all wells in the E/2 of Section 8, all of Sections 9 through 12, the N/2 of Sections 14 and 15, and the E/2 of Section 16, all in Township 28 North, Range 11 West, and all wells in Township 29 North, Ranges 11 through 13 West, and Township 30 North, Range 12 West, NMPM, San Juan County, New Mexico.

(3) That the applicant has not established that approval of the application will afford to the owner of each property in the pool the opportunity to produce his just and equitable share of the gas in the pool.

(4) That the application cannot be approved under the provisions of Section 65-3-13(c), N.M.S.A., (1953 Comp.).

(5) That the subject application should be denied.

IT IS THEREFORE ORDERED:

(1) That the subject application is hereby denied.

(2) 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

Jack M Campbell

JACK M. CAMPBELL, Chairman

Guyton B. Hays

GUYTON B. HAYS, Member

A. L. Porter Jr.

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

esr/

DOCKET NO. 34-64

DOCKET: REGULAR HEARING - WEDNESDAY - DECEMBER 16, 1964

OIL CONSERVATION COMMISSION - 9 A.M., MORGAN HALL, STATE LAND OFFICE BUILDING

SANTA FE, NEW MEXICO

ALLOWABLE (1) Consideration of the oil allowable for January, 1965.

(2) Consideration of the allowable production of gas for January, 1965, for ten prorated pools in Lea and Eddy Counties, New Mexico. Consideration of the allowable production of gas for nine prorated pools in San Juan, Rio-Arriba and Sandoval Counties, New Mexico, for January, 1965, and also presentation of purchasers' nominations for the six-month period begining February 1, 1965, for that area.

CASE 3185: Application of Southern Union Gas Company for an amendment to Order No. R-1670, Fulcher Kutz-Pictured Cliffs Pool, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an amendment to Order No. R-1670 as amended, to provide that the special rules and regulations for the Fulcher Kutz-Pictured Cliffs Pool eliminate gas prorationing from all wells within that portion of said pool comprising the E/2 of Section 8, all of Sections 9 through 12, the N/2 of Section 14, the N/2 of Section 15, and the E/2 of Section 16, all in Township 28 North, Range 11 West, San Juan County, New Mexico; also to eliminate from gas prorationing all of that portion of said Fulcher Kutz-Pictured Cliffs Gas Pool lying within Township 29 North, Ranges 11, 12 and 13 West and 30 North, Range 12 West.

CASE 3186: Southeastern New Mexico nomenclature case calling for an order for the creation and extension of certain pools in Eddy, Chaves, Lea and Roosevelt Counties, New Mexico:

a) CREATE A new oil pool for San Andres production, designated as the South Button Mesa-San Andres Pool, and described as:

TOWNSHIP 9 SOUTH, RANGE 32 EAST, NMPM
SECTION 5: SE/4

b) CREATE A new gas pool for Morrow production, designated as the Dagger Draw-Morrow Gas Pool, and described as:

TOWNSHIP 20 SOUTH, RANGE 25 EAST, NMPM
SECTION 6: S/2

c) CREATE A new gas pool for Strawn production, designated as the Dagger Draw-Strawn Gas Pool, and described as:

TOWNSHIP 20 SOUTH, RANGE 25 EAST, NMPM
SECTION 6: S/2

d) CREATE A new oil pool for Permo Pennsylvanian production, designated as the Morton-Permo Pennsylvanian Pool, and described as:

TOWNSHIP 15 SOUTH, RANGE 35 EAST, NMPM
SECTION 7: NW/4

e) CREATE A new oil pool for Wolfcamp production, designated as the Osudo-Wolfcamp Pool, and described as:

TOWNSHIP 21 SOUTH, RANGE 35 EAST, NMPM
SECTION 4: NW/4

f) CREATE A new pool in Roosevelt County, New Mexico, classified as an oil pool for Devonian production, designated as the North Sawyer-Devonian Pool, and described as:

TOWNSHIP 8 SOUTH, RANGE 38 EAST, NMPM
SECTION 32: NW/4

g) CREATE A new gas pool for Yates production, designated as the Vacuum-Yates Gas Pool, and described as:

TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
SECTION 35: SE/4

h) EXTEND the Bronco Siluro-Devonian Pool to include therein:

TOWNSHIP 12 SOUTH, RANGE 38 EAST, NMPM
SECTION 35: SE/4

i) EXTEND the Flying "M"-San Andres Pool to include therein:

TOWNSHIP 9 SOUTH, RANGE 33 EAST, NMPM
SECTION 17: N/2 SE/4 and S/2 SW/4

j) EXTEND the Fowler-Blinebry Pool to include therein:

TOWNSHIP 24 SOUTH, RANGE 37 EAST, NMPM
SECTION 9: SE/4

k) EXTEND the Southwest Gladiola-Devonian Pool to include therein:

TOWNSHIP 12 SOUTH, RANGE 37 EAST, NMPM
SECTION 34: NE/4

l) EXTEND the Jalmat Gas Pool to include therein:

TOWNSHIP 24 SOUTH, RANGE 36 EAST, NMPM
SECTION 16: N/2 NW/4

m) EXTEND the Justis-Blinebry Pool to include therein:

TOWNSHIP 24 SOUTH, RANGE 37 EAST, NMPM
SECTION 35: NW/4

n) EXTEND the Justis-Paddock Pool to include therein:

TOWNSHIP 25 SOUTH, RANGE 37 EAST, NMPM
SECTION 23: S/2 SE/4
SECTION 26: NE/4

o) EXTEND the Justis Tubb-Drinkard Pool to include therein:

TOWNSHIP 25 SOUTH, RANGE 37 EAST, NMPM
SECTION 14: W/2 NE/4 and E/2 NW/4

p) EXTEND the Kemnitz-Wolfcamp Pool to include therein:

TOWNSHIP 16 SOUTH, RANGE 34 EAST, NMPM
SECTION 22: SE/4

q) EXTEND the Leslie Spring-San Andres Pool to include therein:

TOWNSHIP 7 SOUTH, RANGE 26 EAST, NMPM
SECTION 26: S/2 NE/4 and SE/4 NW/4

r) EXTEND the East McMillan Seven Rivers-Queen Pool to include therein:

TOWNSHIP 19 SOUTH, RANGE 27 EAST, NMPM
SECTION 34: E/2 SE/4 and SE/4 NE/4

s) EXTEND the Pecos-San Andres Pool to include therein:

TOWNSHIP 7 SOUTH, RANGE 26 EAST, NMPM
SECTION 32: SE/4 NW/4

t) EXTEND the Spencer-Pennsylvanian Pool to include therein:

TOWNSHIP 17 SOUTH, RANGE 36 EAST, NMPM
SECTION 25: NW/4

u) EXTEND the Square Lake Grayburg-San Andres Pool to include therein:

TOWNSHIP 16 SOUTH, RANGE 31 EAST, NMPM
SECTION 27: S/2 SE/4

v) EXTEND the Vacuum-Abo Reef Pool to include therein:

TOWNSHIP 18 SOUTH, RANGE 34 EAST, NMPM
SECTION 1: N/2 SE/4

w) EXTEND the Vacuum-Glorieta Pool to include therein:

TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
SECTION 25: NE/4

TOWNSHIP 18 SOUTH, RANGE 34 EAST, NMPM
SECTION 2: NE/4

TOWNSHIP 18 SOUTH, RANGE 35 EAST, NMPM
SECTION 5: NE/4
SECTION 6: NE/4

x) EXTEND the Vacuum-Upper Pennsylvanian Pool to include therein:

TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
SECTION 25: SW/4

y) EXTEND the Vacuum-Queen Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
SECTION 11: E/2 and SW/4

z) EXTEND the Weir-Blinebry Pool to include therein:

TOWNSHIP 20 SOUTH, RANGE 37 EAST, NMPM
SECTION 22: NE/4

ATWOOD & MALONE
LAWYERS

P. O. DRAWER 700
TELEPHONE 505 622-6221
SECURITY NATIONAL BANK BUILDING
ROSWELL, NEW MEXICO
88201

JEFF D. ATWOOD (1883-1960)
ROSS L. MALONE
CHARLES F. MALONE
RUSSELL D. MANN
PAUL A. COOTER
BOB F. TURNER

ROBERT A. JOHNSON
JOHN W. BASSETT, JR.

DECEMBER
12th
1964

Mr. A. L. Porter, Jr., Secretary
New Mexico Oil Conservation Commission
Post Office Box 871
Santa Fe, New Mexico

Dear Mr. Porter:

We enclose herewith our Entry of Appearance in Case No. 3185 for Pan American Petroleum Corporation. Would you please file the same.

Appreciating your courtesy and with our kind regards, we are,

Very truly yours,

for ATWOOD & MALONE

P
C

*

v

Encls.

BEFORE THE OIL CONSERVATION COMMISSION

OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF SOUTHERN UNION GAS COMPANY FOR AN AMENDMENT TO ORDER NO. R-1670, FULCHER KUTZ-PICTURED CLIFFS POOL, SAN JUAN COUNTY, NEW MEXICO.	)	No. 3185

ENTRY OF APPEARANCE

The undersigned, Atwood & Malone of Roswell, New Mexico, a firm of attorneys, all of whose members are duly licensed to practice law in the State of New Mexico, hereby enters its appearance as local counsel with Buy Buell, Esquire, of the Texas Bar, for Pan American Petroleum Corporation in the above entitled cause.

DATED at Roswell, New Mexico, this 12th day of December, 1964.

ATWOOD & MALONE

By _____

Attorneys for Pan American
Petroleum Corporation
Post Office Drawer 700
Roswell, New Mexico

J. O. SETH (1883-1963)

A. K. MONTGOMERY
WM. FEDERICI
FRANK ANDREWS
FRED C. HANNAHS
RICHARD S. MORRIS

JOHN G. JASPER
SUMNER G. BUELL

SETH, MONTGOMERY, FEDERICI & ANDREWS
ATTORNEYS AND COUNSELORS AT LAW
350 EAST PALACE AVENUE
SANTA FE, NEW MEXICO 87501

POST OFFICE BOX 2307
AREA CODE 505
TELEPHONE 982-3876

November 17, 1964

Case 3185

New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico

Re: Application of Southern Union Gas Company to Revise the Special Rules and Regulations for the Fulcher Kutz - Pictured Cliffs Gas Pool

Gentlemen:

Enclosed is the application of the Southern Union Gas Company to revise the special rules and regulations for the Fulcher Kutz-Pictured Cliffs Gas Pool, San Juan County, New Mexico by eliminating from prorationing all wells within a certain designated portion of said pool.

In view of the nature of this application, we request that the matter be set for hearing before the full Commission at its hearing on December 16, 1964.

Very truly yours,

Richard S. Morris

Richard S. Morris

Enclosure
cc: Mr. William S. Jameson
RSM:jm

DOCKET MAILED
Date 12-4-64

BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

SOUTHERN UNION GAS COMPANY)
) Case No.
Applicant)

TO THE HONORABLE CHAIRMAN AND MEMBERS
OF THE NEW MEXICO OIL CONSERVATION COMMISSION:

Southern Union Gas Company, Applicant herein, hereby makes Application for a revision of the Commission's Rules and Regulations for the Fulcher Kutz - Pictured Cliffs Gas Pool to eliminate requirements for limitation or proration of production from certain wells, and in support thereof respectfully states:

I.

The name and general description of the common sources of supply affected by the order herein sought is the Fulcher Kutz - Pictured Cliffs Pool in San Juan County, New Mexico, as heretofore classified, designated and defined by the Commission.

II.

The Fulcher Kutz - Pictured Cliffs Gas Pool, as heretofore designated by the Commission for gas production from the Pictured Cliffs formation, includes, among other lands and acreage, the following lands in San Juan County, New Mexico:

Township 30 North, Range 12 West, N.M.P.M.

Section 19: All
Section 20: SW¼
Section 27: W½
Section 28: All
Section 29: All
Section 30: All
Section 31: All
Section 32: All
Section 33: All
Section 34: All
Section 35: SW¼

Township 29 North, Range 13 West, N.M.P.M.

Section 1: NE¼

Township 29 North, Range 12 West, N.M.P.M.

Section 1: All
Section 2: All
Section 3: All
Section 4: N½
Section 5: N½
Section 6: All
Section 7: N½ and SE¼
Section 10: E½ and NW¼
Section 11: All
Section 12: All
Section 13: All
Section 14: All
Section 24: N½
Section 23: NE¼

Township 29 North, Range 11 West, N.M.P.M.

Section 7:	SW¼	Section 29:	All
Section 17:	SW¼	Section 30:	All
Section 18:	W½ and SE¼	Section 31:	NE¼
Section 19:	All	Section 32:	All
Section 20:	All	Section 33:	All
Section 21:	SW¼	Section 34:	All
Section 27:	SW¼	Section 35:	SW¼
Section 28:	All		

Township 28 North, Range 11 West, N.M.P.M.

Section 8:	E½	Section 12:	All
Section 9:	All	Section 14:	N½
Section 10:	All	Section 15:	N½
Section 11:	All	Section 16:	E½

Gas production from wells located in the Fulcher Kutz - Pictured Cliffs Pool on the above described land is now subject to proration and limitation of production under rules and regulations adopted by the Commission in Order No. R-1670, as amended.

III.

Applicant owns and operates a natural gas gathering system in San Juan County, New Mexico through which Applicant purchases and takes delivery under long term contracts of natural gas produced from a substantial number of wells in the Fulcher Kutz - Pictured Cliffs Pool that are located on the above described land. The various Fulcher Kutz - Pictured Cliffs wells on the above described land are owned and operated by numerous individual producers and working interest owners.

IV.

The total rate of production from a substantial majority of Fulcher Kutz - Pictured Cliffs wells on the above described land, as restricted by proration of production under the existing rules and regulations of the Commission, has declined to levels at which repayment of reasonable costs of well operation cannot be made from proceeds of sale of gas production, and operation of individual gathering lines to those wells cannot be continued on an economically feasible basis. Continuation of this condition will cause an early and premature abandonment of substantial numbers of the Fulcher Kutz - Pictured Cliffs wells on the above described land with resulting waste arising out of permanent loss of gas reserves which would

have been recoverable with continued operation of the prematurely abandoned wells.

V.

Operation of the Fulcher Kutz - Pictured Cliffs wells on the above described land and operation of individual gathering lines to those wells at the lowest possible cost per unit of production is necessary to prevent premature abandonment of the wells with resulting waste, and such minimization of operating costs requires, as a necessary prerequisite, that the wells be operated at a constant rate of production with a minimum of well switching and at as low a gathering pressure as can be achieved through compression of the gas in centrally located facilities. In order to comply with the present rules and regulations of the Commission for proration of production from the Fulcher Kutz - Pictured Cliffs Pool and comply with the Commission's proration schedules under such rules and regulations, the Fulcher Kutz - Pictured Cliffs wells on the above described land must be produced intermittently with frequent and costly switching of the wells, and this intermittent well production causes substantial variation from day to day in the aggregate volumes of gas production with a unit cost of gas compression substantially in excess of the cost of compressing similar volumes of gas at a constant rate of flow. Consequently, proration of production from the Fulcher Kutz - Pictured Cliffs Pool precludes operation of Fulcher Kutz - Pictured Cliffs wells on the above described lands and operation of gathering lines to those wells at the lowest possible cost per unit of production.

VI.

Modification of the Commission's rules and regulations for the Fulcher Kutz - Pictured Cliffs Pool to eliminate requirements for proration of production from wells on the above described lands is necessary so that proceeds from sale of production from those wells will repay reasonable operating costs and thus prevent premature abandonment and resulting waste that would otherwise be occasioned by loss of recoverable gas reserves. Such modification is likewise necessary to permit operation of individual well

gathering lines on an economic basis and thus prevent premature abandonment of wells because of early abandonment of the gathering line to that well.

VII.

Applicant requests that hearing of this application be conducted before the Commission.

WHEREFORE, Applicant respectfully requests that this Application be set for hearing before the Commission, that notice of such hearing be given in the manner required by law and, upon hearing, that the Commission make and enter its order amending, modifying and changing the Commission's rules and regulations for the Fulcher Kutz - Pictured Cliffs Pool so as to eliminate all presently existing requirements for limitation and proration of production from Fulcher Kutz - Pictured Cliffs wells at locations on the above described lands and that the Commission take such further action as to the Commission shall appear proper, all premises considered.

Respectfully submitted, this 3rd day of November, 1964.

SOUTHERN UNION GAS COMPANY

By _____
Vice President

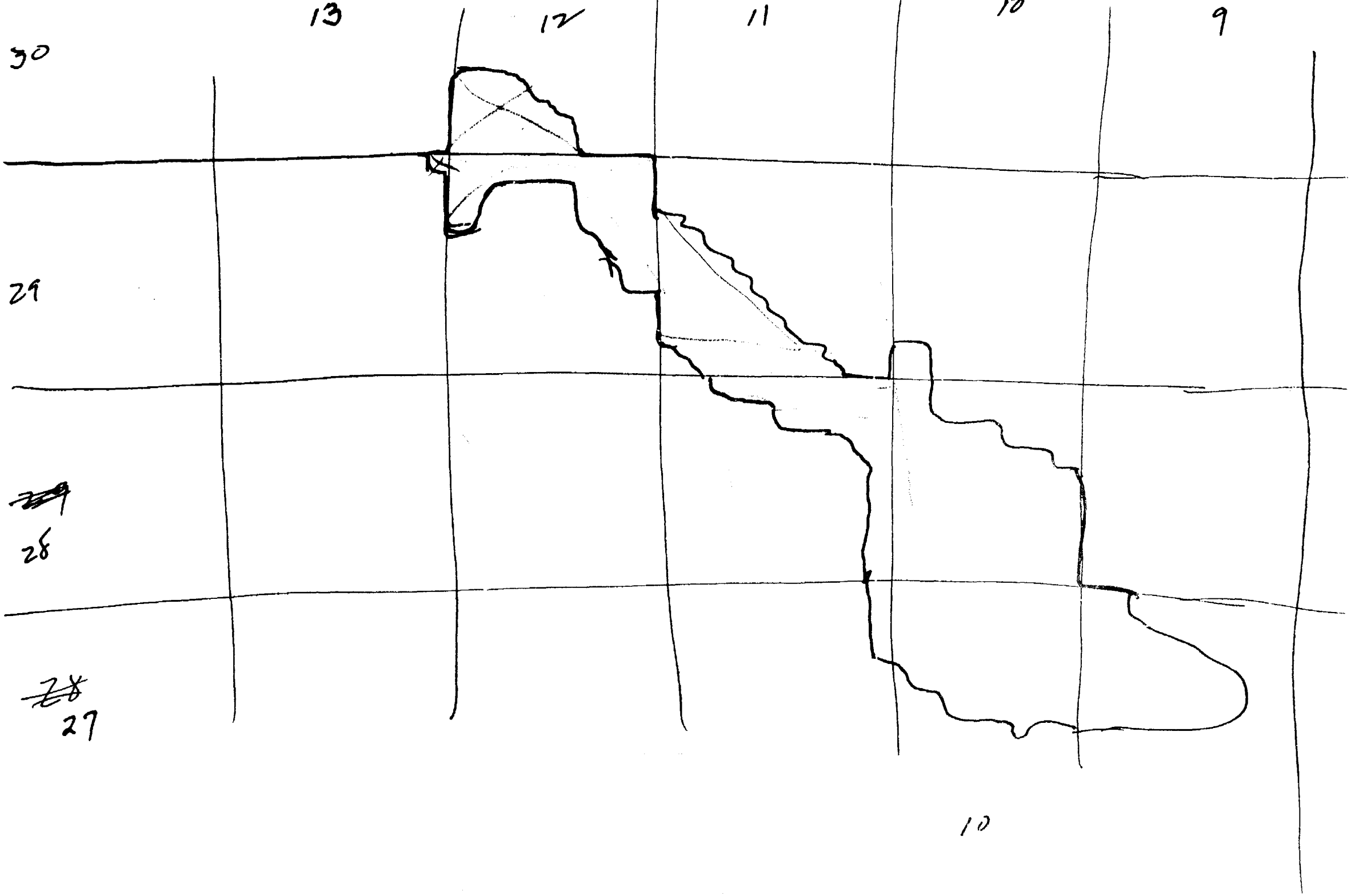
A. S. Grenier
William S. Jameson
Fidelity Union Tower
Dallas, Texas 75201

By _____
William S. Jameson

Seth, Montgomery, Federici & Andrews
350 East Palace Avenue
Santa Fe, New Mexico

By _____

Attorneys for Southern Union Gas Company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BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
December 16, 1964

REGULAR HEARING

IN THE MATTER OF:
Application of Southern Union Gas Company for an amendment to Order No. R-1670, Fulcher Kutz-Pictured Cliffs Pool, San Juan County, New Mexico.

Case No. 3185

BEFORE:

HONORABLE JACK M. CAMPBELL
MR. A. L. (Pete) PORTER
MR. E. S. (Johnny) WALKER

TRANSCRIPT OF HEARING

MR. PORTER: Case Number 3185.

MR. DURRETT: Application of Southern Union Gas Company for an amendment to Order No. R-1670, Fulcher Kutz-Pictured Cliffs Pool, San Juan County, New Mexico.

MR. PORTER: Mr. Morris.

MR. MORRIS: If the Commission please, I'm Richard Morris of Seth, Montgomery, Federici and Andrews, Santa Fe, New Mexico, appearing on behalf of Southern Union Gas Company, Southern Union Production Company and Aztec Oil and Gas Company.

Associated with me and also representing those companies is Mr. William S. Jameson of the Dallas, Texas Bar.

I would also like to enter my appearance for El Paso Natural Gas Company, and associated with me for the El Paso will be Mr. Ben R. Howell.

MR. PORTER: Mr. Buell.

MR. BUELL: For Pan American Petroleum Company, Atwood-Malone of Roswell by letter and Guy Buell here in person.

May I request at this time permission to make a very brief preliminary statement to the Commission at the conclusion of the appearances?

MR. PORTER: Yes, sir.

MR. MORRIS: If there are no other appearances, Mr. Commissioner --

MR. PORTER: Are there any other appearances in the case?

MR. PAYNE: I am Paul Payne, Junior, Producing Royalties, Incorporated, at Lubbock.

MR. PORTER: And you are appearing for them, Producing Royalties, Incorporated?

MR. PAYNE: Yes, sir, in this case.

MR. PORTER: Any other appearances? Mr. Morris, I believe you indicated that you had something further.

MR. MORRIS: We would also have an opening statement to make. In the interest of orderly procedure, I wonder if we could have a short recess to post some large exhibits on the board before we start the presentation of this case, even the opening remarks in the case?

MR. PORTER: You anticipate that you will use the exhibits in your opening statement, Mr. Morris?

MR. MORRIS: No, I don't think that will be necessary.

MR. PORTER: We will have a short recess.

(Whereupon, a recess was taken.)

MR. PORTER: The meeting will come to order, please. Which one of you gentlemen wants to go first?

GOVERNOR CAMPBELL: Go ahead.

MR. JAMESON: Due to the nature or the way we

possibly stated the proposal in our application and in our published notice, the questions that we received indicated that possibly some opening statement is necessary to put the proposal into proper posture. We expect to show on this some of the background of the Fulcher Kutz-Pictured Cliffs Pool as expressly defined and delineated by the Commission.

That background will show that there's substantial differences between the north end and the south end of the pool insofar as pressure and the capacity of wells to deliver gas.

The north end is the portion of it that is affected by this proceeding and the north end has been depleted substantially further than the south end and the pressures are substantially less than the south end.

What, in essense, we are proposing here, is a depletion program designed to achieve a maximum recovery of gas reserves in the north end, and we feel that some difference in treatment from that accorded under the existing proration regulations is necessary in order to enable that objective to be reached in the north end.

Now, as to the south end, we don't feel that the pressure decline has progressed to the point, or that the pressures have reduced to the point that the similar treatment is necessary at this time for the south end.

There has been some suggestions to me by some of

the interested parties that this application is asking to abolish all proration regulations for the north end. What we actually had in mind in proposing this application, a treatment for the north end of substantially the same, it doesn't have to necessarily be the same as that accorded marginal wells at the present time.

It would enable us to keep all of those wells on the line on the gathering system a full 30 days each month or every day during the year in order to achieve a maximum recovery of gas.

I think to some degree, if this proposal is favorably acted on by the Commission, the method of handling would necessarily be influenced by administrative ease of handling by the Commission and it occurs to us that this thing could be handled in the same way that marginal wells are now being handled in that each well would be permitted to produce what it was capable of producing on the line during the entire year without overages and underages being assigned to it.

On the other hand, it occurs to us that the Commission could drop these wells from the proration schedule, not even carry them in the proration schedule should administrative ease of handling dictate that method of accomplishing the result that we propose.

We believe that our testimony will show that what

we propose in this instance is necessary to prevent waste attendant with premature abandonment of individual wells in the north end in this Fulcher Kutz-Picture Cliff Pool and that this objective can be accomplished according proper protection to correlative rights in the pool as is required under the basic statutes.

I might say at this point that this is more or less a case of first impression, however, it probably will not be the last situation before the Commission.

This just happens to be the first area up in the San Juan Basin that has been depleted to the point that something needs to be done in order to prevent the loss of possible recoverable reserves.

As the fields are produced and pressures decline in the Ballard Picture Cliffs, the Aztec Picture Cliffs, the south end of this field, the Tapicito, this situation will be recurring and probably will be back before the Commission posing the same problems as to what type of program should be authorized and how the Commission should handle a depletion type program designed to deplete the field in a manner that will gain the most recovery of gas reserves.

So, I think this case is important in that regard because the same situation during succeeding years will undoubtedly occur.

GOVERNOR CAMPBELL: Can you state why it is that you would consider abandoning at an earlier date these wells under the present system than under the system you are proposing?

MR. JAMESON: Yes, sir, I think our testimony, this is anticipating our testimony a little bit, we hope to develop that in the testimony, but we feel that in order to achieve a maximum recovery in this area, due to the characteristics of the north end of the Fulcher Kutz Pool and the depleted condition of the reservoir, it's necessary to have all of the wells on the line every day during the entire year.

It's also necessary for Southern Union Gas Company as operator of the gathering system to reduce it's pressure in it's gathering system to the maximum or to the lowest level possible on the suction side of it's compression equipment.

I think our testimony will show we can drop it down to about 25 pounds on the suction side. However, it's not economical to compress gas at something different from a hundred percent load factor, or let's say a level through put through the compression facilities.

You get the lowest possible cost by a constant flow and we feel that that would be achieved if well switching, turning on and off of wells unnecessarily required by giving

recognition to proration schedules, overages and underages could be eliminated to let us get that constant rate of flow.

We feel that the small volumes of gas that can be taken on that basis from many areas as a matter of economics necessarily requires that in order to achieve that lowest unit cost. That will be developed in our testimony however.

MR. PORTER: Thank you.

GOVERNOR CAMPBELL: Mr. Buell.

MR. BUELL: May it please the Commission, it appears to me that a head-on conflict exists between the Conservation Statutes of the State of New Mexico and the application of Southern Union Gas Company. When I read Section 65-3-13 of the Conservation Statute, and my interpretation of that section, it is mandatory upon this Commission that when it prorates a gas pool that it must prorate all the wells in that gas pool. Then I read the docket sheet containing Southern Union's application where the only result would be that a portion of the wells in this gas pool would be prorated and a portion of the wells in this gas pool would not be prorated.

I'll be the first to admit that I did not have a full understanding of Southern Union's case. We did not receive a copy of their application to the Commission nor have we attended any operator's meetings where this proposal has been discussed.

In view of this apparent conflict, I would like to request that the Commission ask Southern Union's counsel to reconcile this conflict between the Conservation Statutes and their application.

GOVERNOR CAMPBELL: In other words, you are raising a question as to whether, on it's face, the application is contrary in a legal sense to the Statute, --

MR. BUELL: Yes, sir.

GOVERNOR CAMPBELL: And to act on it would be contrary to law?

MR. BUELL: Yes, sir. I did not want to make that type of a motion due to my lack of understanding of their case. I thought this would probably be the best procedure to get it. I realize it's a little unusual, but I hated to make a motion without full knowledge of their case.

GOVERNOR CAMPBELL: Is counsel for the applicant prepared to discuss that question, the legal question involved here, as to whether this Commission has, under the statute, any jurisdiction to enter an order assuming the evidence justified it based upon the application that you make?

MR. JAMESON: Yes, sir. May it please the Commission, to summarize this briefly at this point, we studied this in some detail before we presented this application. We feel that the primary purpose and intent of the entire statute is to

prevent waste and that it gives this Commission a duty to prevent waste and protect correlative rights. Borrowing from the language of the Supreme Court,in the Jalmat Case, "actually the prevention of waste is the paramount power, inasmuch as this term is an integral part of the definition of correlative rights."

Going back to the statute referred to by Mr. Buell, that statute requires only that the Commission , in prorated pools, allocate the allowable production on a reasonable basis given effect insofar as practicable giving consideration to correlative rights.

That's not the exact language, but that's the way I read it. What we are asking here is no different from what the Commission is now doing in connection with marginal wells.

As I understand the marginal well policy and regulations, any well that cannot, as a matter of capacity, produce the top allowable granted to units in that pool is classified a marginal well, or at least that's as I read the regulation, that's essentially the idea of it.

Now, we are assigning marginal wells in essence, production that is in line with their capability to produce and we are not using the A.D. factor on it.

What we're seeking here is nothing in substance

different from that, other than asking that these wells, since they have less reserves further depleted from the rest of the wells in the pool, be accorded a chance to produce in the interest of prevention of waste the volumes of gas that they are capable of producing under the existing gathering conditions.

GOVERNOR CAMPBELL: Isn't that true in almost every gas pool with differing degrees?

MR. JAMESON: I think so. If Mr. Buell is right on the law, I think this Commission has no authority to accord the present treatment it's according marginal wells. Certainly our testimony will show that based on economics, these things are marginal, not only from the standpoint, or let's say the vast majority of them, there may be one or two, or three or four in the area, but the vast majority of them are marginal not only by Commission standards, but they're marginal from the standpoint of economics.

GOVERNOR CAMPBELL: Of course you haven't asked for any kind of an order by the Commission, or rule by the Commission, on gas wells relative to a level of determination of what well becomes marginal and special treatment for it here, have you?

MR. JAMESON: No, sir, that possibly could have been presented on that basis. What we had in mind was taking these wells with an assigned allowable under the existing criteria that's applicable to the Fulcher Kutz Pool, namely the minimum

allowable for some wells that has been assigned by the Commission to prevent premature abandonment; the allowable assigned to ones classified as marginal and the allowable for those assigned out on the A.D. factor.

So, we have three categories, notice, on the proration schedules in this pool. As we see it, what we are proposing is no different from the treatment now accorded to marginal wells.

MR. PORTER: May I point out what I consider one difference here, that is that under your proposal, if we granted your application, there would be no production restrictions on the wells in the area involved in your application, whereas in the southern half of the pool there would still be restrictions on some of the wells.

MR. JAMESON: That is correct.

GOVERNOR CAMPBELL: Is it your position that under the statute, the Commission has the authority and jurisdiction to enter an order the effect of which is to prorate part of the wells and not prorate part of the wells, is that your legal position or one of them, or do you think that you are not in fact doing that? Which is your position?

MR. JAMESON: Well, might I state it this way, that gets right close to it. Our position is this, that the Commission is not bound to apply a rigid formula such as the A.D. factor

or some other factor rigidly across this entire pool. It can recognize differences in areas within the pool, in fact the statute specifically states that the Commission can recognize certain differences such as acreage, pressure; pressure is one factor --

GOVERNOR CAMPBELL: In establishing the formula, they can do that?

MR. JAMESON: Right. Well, they say in protecting correlative rights they can give that. Our position boils down basically to this, as far as the authority of the Commission, it's absolutely within the discretion of this Commission to prorate this pool in any manner that meets the test of reasonableness based upon substantial evidence in this record so long as they are affording proper protection to correlative rights once again based upon substantial evidence in this record with proper findings of fact on that.

I believe that will meet the test, all the tests that the courts have laid down in the Jalmat Case.

GOVERNOR CAMPBELL: What sayeth thou?

MR. BUELL: I would like to comment very briefly on his analogy between the marginal allowable provision of the Commission in gas pools and the southern proposal. As I understand his proposal, there is no analogy. At the current time under your marginal allowable provision that is available

to any well in this pool, north and south, that fits that classification, but now, as I understand his proposal, Pan American, in the open end of this pool, is not going to have the same opportunity to produce at capacity as are the wells in this other area.

There's absolutely no analogy between their proposal as I understand it and the marginal allowable concept of the Commission. If the counsel for Southern Union is through, I would like to make a motion.

MR. JAMESON: We'd be happy to present some of these conclusions in a formal brief in greater length to the Commission. I might mention this too, one thing that Mr. Buell is overlooking, the statute specifically contemplates that this Commission can assign specific allowables to wells to prevent waste.

I find nothing in the statute that has to be a finite Mcf quantity. That minimum allowable could be what that well could produce under the existing conditions up here.

There's nothing in the statute it has to be a thousand Mcf or fifteen hundred.

GOVERNOR CAMPBELL: I think that's probably true. What seems to me is the crux of this is whether or not you can divide a pool in two and apply one standard one place and another standard in the other. That is the basic legal question

it seems to me. Is it your position that you can do that under our statute?

MR. JAMESON: I think it is. I think there's some reasonable basis, I haven't mentioned it earlier for interpreting this statute under these conditions due to the reason that there is a market demand for every foot that can come out of there.

The south end, I say, can produce in excess of market demand. So indeed, there is authority to proration the north end.

GOVERNOR CAMPBELL: I hope you re- ize what you are doing to the whole concept of gas proration.

MR. JAMESON: That's the reason I didn't want to mention that. I could have mentioned it earlier on the thing. I don't think that this proposal can injure the entire concept of gas proration if due recognition is going to be given to the prevention of waste.

Let me say this, and I want to qualify this so that there will be no misunderstanding on this proposal. If we can't make a case that proper protection is being afforded to correlative rights here, I don't think we are entitled to what we're seeking.

MR. PORTER: Mr. Buell.

MR. BUELL: May it please the Commission, on behalf

of Pan American, I would like to move that this case be dismissed because there is a head-on conflict between the Conservation Statutes and Southern Union's application and in my opinion, the Commission does not have statutory jurisdiction to grant the relief that it is my understanding that Southern Union is asking for. So I move that the case be dismissed.

MR. PORTER: The Commission will delay a ruling on your motion, Mr. Buell, until after we have heard the testimony in the case.

MR. BUELL: Thank you.

MR. PORTER: Mr. Morris, would you proceed?

MR. JAMESON: Mr. Haseltine is our first witness and we ask that he be sworn.

(Witness sworn.)

ORAN HASELTINE

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. JAMESON:

Q State your name, please?

A Oran Haseltine.

Q By whom are you employed, Mr. Haseltine?

A Southern Union Gas Company.

Q In what capacity?

A Manager of gas supply.

Q In that capacity, could you give us a brief statement of your duties?

A Duties are concerned with the administration of contracts and proration, the purchase and procurement of gas for Southern Union Gas Company.

Q Have you ever testified before this time before the New Mexico Oil Conservation Commission?

A Yes, sir.

MR. PORTER: This witness has previously qualified and his qualifications are accepted.

Q (By Mr. Jameson) Mr. Haseltine, are you familiar with the application of Southern Union Gas Company now under consideration before the Commission?

A Yes, I am.

Q What is the general subject matter of that application?

A The general subject matter is to achieve a change in rules such that we can economically continue to gather gas in the north end of the Fulcher-Kutz Pool and to recover the maximum amount of gas that is recoverable underlying that acreage.

The subject matter is such that economically we're faced with a choice of abandoning the reserves in place or

getting it at a faster rate.

Q Could you briefly give us a history of the Fulcher Kutz Pool and it's producing characteristics?

A The Fulcher Kutz Pool, of course, was one of the first pools drilled into in the San Juan Basin. I think the first well was drilled in 1927 and was in the area near the borderline that we're going to propose in this application.

The development proceeded slowly after 1927, until in the 30's, the early 30's, there were probably 12 to 15 wells completed in the Fulcher Kutz Pool, all in the north end, and these wells at that time were serving Farmington, Albuquerque, with their gas supply.

The development was slow through the 30's due to low demand out of the area and, of course, it spread outward from the area in this old Congress Angel Peak area in a step-out fashion.

Real development of the entire pool didn't even occur until in the 50's, largely through the mid 50's, and the late 50's, in which the wells in the south end were drilled. This was generally 25 years after the initial development of the pool in the Congress Angel Peak area.

The older wells that were drilled up in that north end, of course, were connected to a gathering system on the Southern Union Gas Company that was laid in the late 20's and

early 30's, and extended through that time. Those are the wells and that is the gathering system that are under the consideration of this proposal here today.

The development actually came in, you could say, in two major times. The small development and slow development there in the north end through the late 20's, and mid 30's, and then the major development of the south end during the mid 50's and late 50's, and actually on into the 60's.

Q Can you give us a brief description of the characteristics of the reservoir that underlies this Fulcher Kutz Pool?

A It is typical San Juan sandstone. It's hard and tight. Production is affected by fractures either natural or induced, and in most instances commercial production is dependent on fractures.

The matrix permeability of that rock is probably in the order of one millidarcy or less. It's not a structural type of trap. It's a sand bar type of development. It's a fairly flat structure, actually there's very little dip from the shallow west portion of the pool to the deepest portion.

The original reserve pressures were in the range of 550 to 650 psi, and porosity was in the range of 10 to 12, 14 percent in there.

Q What is the depth of the producing interval?

A Measured depth probably ranges from 1700 to, oh,

probably 25, 2600 at the maximum, and actually that measured depth is dependent more on topography than dip in the actual reservoir. The actual dip of the reservoir from the southeast corner down here on the southeast portion to the, or the southwest corner on the northeast, probably doesn't exceed 350 feet. It's generally a very flat sand bar.

Q You mentioned the original pressures in the reservoir were in the neighborhood of 550 to 650 pounds. Was there any substantial variation from that range in the initial pressures in any area of the pool?

A In general we can say that as the wells were drilled, they found initial reservoir pressure, even those wells that were drilled 30 years after the first wells were drilled and on production, 35 years, those wells drilled in '61 and '62 found essentially virgin reservoir pressure.

Q And the wells drilled in the early 60's were completed with an initial reservoir pressure essentially the same as the old wells that were completed in the 30's had at the time of their initial completion?

A That is right.

Q Is the Fulcher Kutz Pool prorated at the present time?

A Yes, it is.

Q Under Commission regulations, that proration is accomplished under Commission regulations?

A That is right.

Q Could you give us a summary as to how that present proration practice works when applied to the Fulcher Kutz Pool?

A Well, of course it's like all the other prorationing systems in the San Juan Basin, nominations are adjusted by production 60 days past. That figure is established as a total pool new allocation marginal and minimum allowable figures are subtracted out of that figure to arrive at some net figure to be given to non-marginal wells and that total pool allocation then is spread to the non-marginal wells on the basis of A and A.D.'s.

Q What are the characteristics or the manner in which the pool is operated by the producers and the gathering system in the area operated by Southern Union to accommodate with proration rights?

A If I understand your question, --

Q Let me amplify it this way. Do proration requirements necessitate constant switching of wells in the pool?

A Yes, they do. You are faced not only with keeping wells fairly well in balance with their current allowable, but of course you also have 32 days, as a practical figure, each year in which the operation of those wells is not a function of what the pipe liner needs for his market, but what the Commission requires as test period.

Actually, the Commission requires 21 days of flow and 7 days of shut-in, but since everybody uses 8-day charts, why it comes into four chart periods and you end up with 32 days of switching and taking care of wells, and the gathering equipment pertaining to a given well, that is for the accomplishment of prorationing purposes, not to accommodate a market demand.

(Whereupon, Applicant's Exhibit No. 1 was marked for identification.)

Q Now, Mr. Haseltine, I'll refer you to a map or plat that has been identified for the record as Applicant's Exhibit No. 1, and ask you to describe and explain that exhibit.

A If I might, I would like to refer to the large copy of that that we have up here. There have been several small copies distributed and I believe there are a few others there if some of you want them.

This is a base map showing the outlines, first of all the Fulcher Pool as established by the Commission. It shows section lines and in some instances, lease lines on the half section, quarter section lines, section numbers and to the best of our knowledge, it shows the operator of a given tract, the location of his well and the number and name of his well.

The map also shows in yellow, acreage in which the wholly owned subsidiary of Southern Union Gas Company has an

interest in Southern Union Production Company. That's the acreage marked in yellow. The map has two reference lines on it that we'll refer to later on, AA Prime and BB Prime. I believe that's about the extent of what's on this base map.

Q Now, you have shown on that map a line marked "north zone limit" and "south zone limit". Could you explain that line and what it shows?

A That line is in accordance with our proposal here today, which would define the area to be granted an exempt status under proration mechanism, divide that from the south end which would be continued under present rules.

That line, as far as we are concerned, will be shifted a little bit, but for practical economic considerations, it just couldn't be shifted much.

Q Is it correct that everything as shown on that map that is within the pool boundaries and lies north of that zone limit line is the acreage that's affected by this application?

A That is correct.

MR. PORTER: At this point, Mr. Haseltine, could you tell us approximately how many wells are in each division? Do you have that information?

A On our system in the north end, we have about 58 connections. I think El Paso has probably 10 to 20 in the north end.

MR. PORTER: So you would have about 70 to 75 in the north?

A Yes, and in the south end, I would just have to check the proration schedule; I don't have that figure in my head.

MR. PORTER: It looks like about a three to one ratio.

A That's probably right. I think that's probably right.

MR. PORTER: Excuse the interruption, Mr. Jameson.

Q (By Mr. Jameson) Now, there's two lines shown on that plat, Exhibit 1, one designated A and A Prime, and another one designated B and B Prime. Would you explain those lines for us?

A Well, AA Prime is constructed on the longitudinal axis of this pool, and in a later exhibit, we'll show the pressure distribution from one end of that pool to the other on this line.

Now then, BB Prime, an axis across the pool which will also refer to that same pressure distribution and BB Prime was picked to coincide with the area of steepest pressure gradient, most severe pressure distribution.

(Whereupon, Applicant's Exhibit No. 2 was marked for identification.)

Q Mr. Haseltine, I'll refer you to a map or plat that has been identified for the record as Applicant's Exhibit No.

2 and ask that you explain that exhibit.

A Exhibit No. 2 is an isobar map showing the distribution of reservoir pressure in the Fulcher Kutz Pool in 1957. The colors on this map show the areas of certain pressure ranges. The deep red are areas in which the pressure was 500 pounds or above.

This next color, whatever that color is, orange I suppose, is the area between 400 and 500 pounds, and then there's a paler orange there that represents pressures from 300 to 400.

The yellow area covers those areas in which the pressure was 200 to 300 pounds, and the gray area shows those areas in which the pressure was less than 200 pounds.

Q You referred to this map as showing pressure contours and as showing the color coding of the various pressure zones in the reservoir. What calendar year were those pressures in existence?

A 1957.

Q What does this plat or map show generally with reference to the relative pressure distribution as between the north end of the pool and the south end of the pool?

A It bears out very graphically the history that we were talking about in that the north end was developed as much as 35 years ahead of portions of the south end and in general,

25 years ahead of the south end. So the north end was substantially more depleted than the south end.

It also shows that in the years of prorationing and in the years of production from the south end, that there was certainly no effective equalization of pressures under mechanics prorationing and as we will show on later exhibits compared to this one, there's no tendency for equalization of pressures across the reservoir.

Q Then generally, the pressures in the north end were substantially lower than the pressures existing in the south end in 1957?

A That is right.

(Whereupon, Applicant's Exhibit No. 3 was marked for identification.)

Q Mr. Haseltine, I'll refer you to the map or plat that's identified for the record as Applicant's Exhibit 3 and ask that you explain that exhibit.

A Exhibit No. 3 is the same map brought up to date as of 1960 and the same color coding applies.

You will notice that the areas in deep red and the darker orange get smaller, and the areas of yellow and gray get larger. This is just exactly what you would expect.

Again, the north end is substantially covered by the yellow and gray areas with a few undeveloped portions still

maintaining a little bit higher pressure.

The south end is still substantially higher in pressure than the north end, although the south end is lower in 1960 than it was in 1957. Again, there is no indication here that the south end pressures are effectively equalizing themselves into the north end under prorationing.

(Whereupon, Applicant's Exhibit No. 4 was marked for identification.)

Q Now, Mr. Haseltine, I will refer you to the map or plat that's identified for the record as Applicant's Exhibit No. 4, and ask that you explain that exhibit.

A Number 4 is the third in this series. It represents the pressure distribution in the pool as of 1963. Again, it shows the progress, the depletion in the north end, the gray areas beginning to get even larger and more of them.

The yellow area is extending into the flanks and toward the south. The south end is showing the effects of production and depletion in the south end.

The flanks of the south still has some areas of high pressure that are not flowing into the center part of that pressure sink, so again we don't see any evidence that the pressures are trying to equalize across the pool under prorationing.

Q Do these three exhibits, that's Exhibit 2, Exhibit 3,

and Exhibit 4, show that for the six-year period extending from 1957 to 1963, there was no tendency toward pressure equalization between the high pressure south end and the lower pressure north end?

A That is right. The maps showed that there was no tendency for these small high pressure areas, extremely high pressure areas in the south to flow out of those areas into this completed part of the pool, and in reality you wouldn't expect it since in 1960, when this stuff was drilled in here, found reservoir pressure if it hadn't equalized in the preceeding 30 years, why, six years of production wasn't going to have much affect on it either.

These high pressure areas declined due to their own production, not due to any migration into the pressure in the center of the pool.

Q On all three maps is shown an area of high pressure in the vicinity of the southwest quarter of Township 29, North Range, 10 West. Do you have any opinion as to why that pressure has continued high in that area through the period covered by these three exhibits?

A Yes. That area was not drilled until, right up in here, until the 60's, about '61 or '62; three wells were drilled in here. There's one well in there, that old Wilson well was drilled sometime before that, but it didn't substantially deplete

the reservoir pressure in that portion of the pool.

Now then, if there were the ability in this pool for gas to migrate from a high pressure area to a low pressure area, in 50 years we should have seen some equalization and some drainage across the two intervening miles to the first area that was first drilled.

The portion in the south central part of 29 North, 11 West, was the first area drilled and that's within three miles or four of this area that was drilled in '61 or '62.

'61 or '62, those pressures were virgin pressures and if there was any capability for migration in that tight sandstone, it certainly would have occurred in the 30 years that this area was being depleted, and this area wasn't even drilled.

Q Could you give us an opinion as to the characteristics of the productive reservoir that caused that situation that you have just explained?

A Well, it's just typical San Juan sandstone. It's tight. I suppose in geologic time, pressures would equalize, but not in economic times. Through matix, it probably has a permeability of half a millidarcy or less. There just isn't time in a lifetime of man for pressures to equalize through that rock.

(Whereupon, Applicant's Exhibit No. 5 was marked for identification.)

Q Now, Mr. Haseltine, I'll refer you to a chart or graph identified for the record as Applicant's Exhibit No. 5, and ask that you explain that exhibit.

A Exhibit No. 5 is a pressure profile through the longitudinal axis of the Fulcher Kutz Pool. It's the pressure distribution along this reference line AA Prime on our base map, Exhibit 1.

We have plotted on Exhibit 5, in the narrow lines, the pressure distribution for '57, '60, and '63, up and down this line through the axis of the pool. Then we have fared in smooth curves in wider lines representing that same pressure distribution for those same years.

Now, this is the sort of thing you have got to look at to talk about migration from one end of the pool to the other. It's just a physical law that there can be no migration without a pressure gradient. We are talking about reservoir pressures in place, and without a pressure gradient there could be no flow.

The dotted line which shows the pressure distribution for 1963, this is the lowest dotted line here on the extreme right, that pressure profile is flat across the line of intersection of our proposed limit line between the north and south zone.

The significance of that is this, that was flat

profile which existed in '63, there can be no migration through that area. Now, to quantitively talk about migration, we have picked the point of steepest slope of this gradient line. As a matter of fact, this point is some miles back from the intersection of this axis with our proposed boundary. It's about, roughly two miles away from that line.

The gradient there, that's the steepest gradient that occurs anywhere on this pressure profile. If you take that gradient and apply it to this width of pool and take the known thickness of the pool and the known rock data and the absolute pressure here, and here on each side of that you can calculate a theoretical migration across that pool as expressed by this pressure gradient.

Q Have you calculated any such theoretical migration?

A Yes, I have.

Q What are the results of that calculation?

A The entire migration, which could occur if this pressure, this steepest gradient existed across the boundary, would be about 90 Mcf a day.

I want to say before we get away from that, that this pressure distribution exists only along this axis. Actually, as you can see from Exhibits 2, 3, and 4, this isn't your steep slope of pressures on this axis. The steep slope is always from the flanks in.

In 1957, '60, and '63, the steep slopes are this way so if there's migration, it's to the center of the pool and it's presently existing and taking place.

For the case under consideration, there isn't any gradient across our proposed boundary. There isn't any flow across this boundary and the steepest gradient existing in this direction would allow only 90 Mcf a day of migration across a total four-mile width of the pool.

Q When you referred to the total theoretical migration or maximum theoretical migration, were you referring to the point shown or the line shown on Exhibit 1 as B and B Prime?

A Yes.

Q Where does that line lie with reference to the proposed boundary line between the north end of the pool under consideration in this case and the south end of the pool not under consideration in this case?

A It's approximately two miles from that boundary to the south.

Q Toward the south?

A Yes.

Q Now, in calculating this maximum theoretical possible migration within the pool across the line BB Prime, as shown on Exhibit 1, is that migration, or could that migration be occurring at the present time under present proration requirements?

A Well, if it can occur, if the rock is loose enough for it to occur, it's occurring, but as a practical matter, I don't think there's any migration there today. The rock is just too tight.

Q Could you give us some of the basic data on which you made this calculation of maximum theoretical migration and explain to us why in your opinion the probable actual migration would be less than that?

A We used the measured width of the pool. First let me start this way, that we apply just lineal flow according to Darcy's law. We used for flow cross section, the measured width of the pool. I think I measured 3.6 miles. We used for an average thickness 30 feet, and I believe that's on the generous side.

We've probably got some areas right in the middle that might be 40 feet, but you have a lot of stuff out here that is 10. We used 30 feet as an average thickness across the pool. We used one millidarcy permeability, and I think that's too high, but to be reasonable, we used one millidarcy as the permeability across that flow section.

We took the measured pressures. We took from the literature the viscosity of gas at the pressures and temperatures that exist in the reservoir and just made the application of Darcy's law for flow of gas through such and such permeability

across cross sections of such and such size.

Q To relate this Exhibit 5, pressure profile to the entire pool, is the line shown on Exhibit 5 marked AA Prime identical with the line marked AA Prime on Exhibit 1?

A Yes, it is. AA Prime is the line that we have drawn here, and the point at which that intersects the pool limit is represented here by the legend, "Southmost Pool Limit", and the point at which that axis intersects the pool limit right there.

GOVERNOR CAMPBELL: Will you refer a little more closely to the exhibit so that the record will show where you are pointing?

A Yes, sir. The legend which says "Southmost Pool Limit" on Exhibit 5 is identical to the intersection of line AA Prime with the pool limit on Exhibit 1.

The same thing is true of this legend, "Northmost Limit" as it applies on Exhibit 5 as it applies to this intersection of pool limit and AA Prime on Exhibit 1.

Q (By Mr. Jameson) Now, Mr. Haseltine, could you give us your opinion as to how the pressure distribution as shown on your pressure profile, Exhibit 5, would be affected by withdrawals from both the north end and the south end under conditions that would exist if your present proposal were favorably granted by the Commission?

A Yes, on Exhibit 5, let me point out that the movement of the profile in the south end in this six-year period from 1957 to 1963, is roughly 90 pounds. This is directly proportional to withdrawals from rock volume.

During the same time interval, the amount which the coring profiles dropped in the north end cored to perhaps 40 pounds. Had the withdrawals been substantially in proportion to reserves in place, a decline in pressure over this six-year period would certainly not be greater in the south end than it was in the north end.

Put it another way under this six-year history of prorationing, the north end produced less reserves from its recoverable reserves as shown by a drop in the pressure profile than the south end did. Now, under our proposal, in order for any migration to occur from the south to the north, first of all a gradient has to be established here. For a gradient --

Q When you say "here", you mean along the line designated on Exhibit 1 as the boundary between the north zone and the south zone?

A Yes, there has to be a pressure gradient across that proposed limit between north zone and south zone.

Referring now to Exhibit 5, to establish a gradient in the existing pressure distribution, either this pressure has to go up in the south zone or the pressure in the north

zone has to go down.

Now then, physically, we know it's not going to be possible for the pressure in the south zone to go up, therefore, the pressure in the north zone has to go down to establish a gradient across the proposed boundary. As a matter of fact, it would have to go down to a point expressed by the extension of some gradient back here, which would intersect this north zone limit line at around 150 psig in the reservoir. This is close to abandonment.

Further, the pressure drop here would have to occur faster than the coring pressure drop in the south end. The immediate past history has been that the south end is dropping at a faster rate in pressure than the north end. So, to establish a gradient which is necessary for flow across that boundary, the north end would have to produce faster than what it has produced in the past six years as compared to the production rate out of the south end.

As a practical matter, the capabilities of the wells to produce in the north end most likely are going to prevent the north end from being depleted at a rate that would pull these gradients down beyond the rate beyond which these gradients in the south end are being pulled down.

Q Is it your opinion that if the pending proposal were granted and the pool operated in accordance with that

proposal, that there would be no migration from the south end to the north end across the mark as the north zone limit, south zone limit, on Exhibit 1?

A Yes. Based on the existing pressure distribution and on the rock data and on the capabilities of the wells, I think it is physically impossible for the north end ever to be pulled down at a rate that would allow migration from the south end across that proposed border.

Q Is it your opinion that that lack of migration, or rather that the pressure differential across that zone boundary would never be great enough to cause migration from the south end to the north end across that line?

A Yes. It is my opinion that if any amount of migration ever occurs, it will be so small that it wouldn't affect anybody's correlative rights, it would be an insignificant amount.

Q Mr. Haseltine, could you give us, summarize for us, the characteristics from an economic standpoint or a standpoint of economically feasible operation of the north end that requires some attention to the north end at the present time?

A From a pipeliner's standpoint, we figure we've got to have about 50 to 60 Mcf per day per well to carry the fair share of costs of our direct operating costs in the San Juan Basin.

If a well will not produce 50 to 60 Mcf per day, it's not carrying it's fair share of our switcher's time and maintenance time, and so on, on the wells in the north end, pardon me, in the San Juan Basin.

The average producing rate out of the north end at the present time is well below this 50 or 60 Mcf per day economic limit. It becomes a fact of life for Southern Union Gas Company that when this gas becomes higher priced to us, substantially higher priced than other saleable gas, either, one, we do something to reduce the cost or, two, we quit gathering it.

We're faced with the, regardless of all the other things we try to accomplish, we still have to live with dollars and cents each day, and when our maintenance costs per Mcf in a given area get out of line completely, with the value to us of that gas, then we have to cross some bridge.

Q Is this basically a problem of a relatively fixed cost being borne by a small unit volume resulting in a high unit cost?

A That is correct. We can do very little to achieve any further economies in the north end under present operating conditions. We are faced with a certain amount of switching. Of course, we have to pick up charts on all the wells and do certain operating procedures that must be done, and we've

reduced our cost there to what we consider rock bottom and they're still out of line as per Mcf gathered. Therefore, the only further solution that we see is to increase the daily amount of Mcf that we can get out of that gathering system.

Q Now, do the individual producers that own these wells in the north end have a similar problem?

A Apparently they do. There are a lot of wells in the north end that have produced under 10 Mcf per day for the past two or three years, some of them are not capable of putting anything into the line. The producers have not plugged the wells, but at the same time they don't see fit to do anything on the wells to make them productive.

Actually, I don't think a producer can keep books on a well at less than our 50 Mcf per day cut-off point on gathering gas.

Q Now, as manager of gas supply for Southern Union, are you generally familiar with the terms of the various gas purchase contracts of Southern Union?

A Yes.

Q What obligation does Southern Union have as a general proposition under it's gas purchase contracts to maintain well connections to wells of very low deliverability?

A In general, if a well does not produce anything into the line for 60 days, we have the right, under our contract, to

sever the connection. Where an actual flow volume is expressed in a contract, that flow volume has never been less than 100 Mcf per day establishing a minimum amount available to the gatherer.

Q You mentioned generally that we had no obligation to maintain connections to wells that would not deliver any gas into the pipe line for a period of 60 days. Against what pipe line operating pressure?

A Against 200 pounds.

Q In other words, to summarize it, generally, where the well will deliver no gas into the pipe line against a pipe line pressure of 200 pounds for a continuous period of 60 days, Southern Union has no further obligation to continue the well connection?

A That is right.

Q What has been your general policy in committing new well connections as far as investment against deliverability?

A We have established the perameter that if a well is capable of one million feet per day into the line at 600 pounds, we will lay a mile of line to that well, make the connection.

Q How do the existing gathering lines of Southern Union in the north end and the deliverability of the wells compare with that criteria that you are using right now for new well connections?

A In 1963, under proration, we were able to get 2.7 million feet a day out of this north end. At that basis on new gas, we would lay 2.7 miles of line to gather that gas. The operator would either lay the rest or seek some other purchaser. 2.7 mile of line wouldn't extend very far into this pool.

MR. PORTER: That represented some 58 wells?

A Yes, sir.

Q (By Mr. Jameson) Did Southern Union run any kind of a test during 1964 to collect some data on what might possibly be done in this area to meet the problems that you have been talking about?

A Yes. We conducted a test over a period of about 75 days on this north end which corresponded to the way we would operate the north end if we're granted the thing we are seeking here today. During that 75 days, we kept all wells on production a hundred percent of the time. We lowered the suction pressure at the Kutz compressor station to approximately 25 pounds, maintained that low suction pressure on that system for the 75-day period to see what the wells would do.

Q In your opinion, did you collect some reliable data from that test?

A Yes. We have tabulated the results of that test --

(Whereupon, Applicant's Exhibit No. 6 was marked for identification.)

Q Well, now I refer you to a statement identified for the record as Applicant's Exhibit No. 6 and ask that you explain that exhibit.

A Exhibit No. 6 includes the 1964 production test results in the north end of the pool. It compares those results to the actual 1963 performance in the north end.

First of all, you'll notice there at the top that we say there were 58 wells in the test. Down below on the left hand margin of Exhibit 6, we have grouped those wells according to their proration status.

Group A includes those wells that went into the test as marginal and came out as marginal. Group B includes those that went in as non-marginal and came out as non-marginal. Group C includes those that went in as marginal and suffered a change in status during the test period and became non-marginal. Group D is one well that went in as non-marginal and was reclassified as marginal.

Under the heading 1963, the thing we want to notice is the fourth column which is called average Mcf per day per well. You see there that 27 wells had an average availability to us in 1963 of 7.8 Mcf per day.

The group B wells had an average availability to us in '63 of 111 Mcf per day. Group C wells had an average Mcf per day per well in 1963, 41.9 Mcf per day, and the one well

in group D produced an average of 22.5 Mcf per day in 1963.

Now then, when we produced the wells 100 percent of the time into a low pressure gathering system and conducted our operations as far as pressure and on time is concerned in the way that we would conduct them under depletion program, we got the average production as shown in the fourth column under 1964 test period.

You can see those down there. I'll not take time to read them, but the total 58 wells averaged during 1963, availability to us of approximately 45 Mcf per day, under our proposed completion program they were available to us at the rate of 77 Mcf per day. First of all, it's apparent that we're talking about a lot of real poor wells, and secondly, average production during 1963 is below what we consider cut-off point in the San Juan Basin.

It's below the 50 to 60 Mcf per day range. Therefore, this gas cost us too much in 1963. Under test conditions where we do everything that we can to keep our cost down, where we cut the switching to an absolute minimum, where we're not bothered with keeping over and under and balances nd carry forwards on the wells, and where we can dedicate a certain group of compressors to suction service on this system, and operate those compressors a hundred percent of the time, and where we can go to 16-day or 32-day charts, we could get

70 Mcf per day out of this system and it would be economic for us to continue our gathering operation.

Q What does this chart show with reference to expected increase, we'll say on a total annual basis of production out of the north end, from what it would be under existing proration requirements and what it would be under the proposed operating conditions that you have just described?

A We would increase our take annually out of the north end under our proposal by 1,140,914 Mcf.

Q In order to do that, to get that increase, or for that increase to take place, would it be necessary to leave every one of the wells on Southern Union's lines in the north end of the pool on the line the entire three hundred sixty-five days of the year?

A Yes, it would.

Q Wouldn't there be a tendency for that annual volume to decline over a period of time as the reservoir is further depleted?

A Yes, I think that this test volume was a maximum, we could expect nothing but that test volume under existing conditions to continue to get smaller. There might be times when there would be a little more available for one reason or another, but in general, the thing would decline.

Q Now, Mr. Haseltine, I'll refer you to a map that

has been identified for the record as Applicant's Exhibit No. 7. Not a map, excuse me, a set of charts identified for the record as Applicant's Exhibit No. 7. I will ask you to explain that exhibit.

(Whereupon, Applicant's Exhibit No. 7 was marked for identification.)

A Exhibit No. 7 is a set of graphs which shows the performance of each individual well under that 1964 test that we summarized in Exhibit 6; there are three papers to this exhibit.

The wells are grouped on pages according to the range of their ability to produce. On this graph, you see some lines shown as 50 percent, 90 percent, 100 percent, and so on up to 200 percent. This shows the area of those points which under test produced that corresponding percentage of their 1963 availability.

If, as for instance on page 1 of 3, you looked at the line marked 100 percent, you will notice that there is one well that falls directly on that line. That means that that well under test produced exactly 100 percent of what it made available to us during 1963.

You'll notice that two wells fell below the 100 percent line, therefore they were not able to, in the 1964 test, to produce as much as they had given up in '63, but most

of the wells fell above the 100 percent line.

As you go on to page 2 of 3, you find wells of little greater capability shown there, and again, one or two of them fell below the hundred percent line; most of them gave up more gas on the 1964 test than they did during 1963.

The same thing is true on page 3 of 3. Now, you'll notice that if you look at the bottom scale of each one of these graphs, you'll see an average Mcf per day plotted there. Page 1 has a number up to 7, this is the actual productivity of that well into the line.

A point occurring on the graph, drawing a line directly downward from that point, shows the Mcf per day available to us during 1963. All the wells on page 1 gave up less than 7 Mcf per day. All the wells on page 2 gave up 70 or less Mcf per day, and all the wells on page 3 were in the 70 to 300 Mcf per day range in 1963.

The point of this is that there are no big wells in the area and there are a lot of real puny wells that are on their last legs and they are definitely in a pre-abandonment phase.

(Whereupon, Applicant's Exhibit 8 was marked for identification.)

Q Now, Mr. Haseltine, I'll refer you to the map identified for the record as Applicant's Exhibit 8, and ask you

to explain that exhibit.

A Exhibit 8 is a schematic drawing of our gathering system in the north end of the Fulcher Kutz Pool. It's just approximately to scale, but it shows a general configuration. This portion of the system drawn down in the left-hand corner of this Exhibit 8 actually should be an extension of the top left-hand corner of the other portion of the map. It was just drawn there for convenience.

On this map, you see the well name in each box and it's production position on the gathering system. You will see in the upper left-hand corner of the four figures in each box a figure which is the normal volume available to us under the methods of prorationing from that well, Mcf per day.

Below that figure in the lower left-hand corner of the box, you'll see the test volume or the Mcf per day we actually obtained on test.

In the right-hand corner, upper right-hand corner of the box is the normal pressure gathering system and below that is the test pressure of the gathering system. So, the four figures under each well name refer to the normal volumes available at the normal operating pressure and the test volumes that were available and the test pressures existing at that time.

Now, on the lines which represent the pipe lines,

you'll see in boxes numbers starting down at the lower right-hand corner of a circle there labeled "Kutz". This is our Kutz compressor station going northward on that pipe line. The first box you come to has a number 17 in it; this means that in that section of pipe line, in the past three years we have experienced 17 leaks.

Anyplace you see a box on a pipe line on this exhibit, the number within that little box represents the number of leaks we have experienced and had to repair in the past three-year period.

Actually, since this exhibit was prepared, another leak survey was run and there were 39 leaks, I believe, at least in the 30's, additional leaks found and repaired in this system.

MR. PORTER: How old is this line?

A Portions of this line were laid in 1927 to the first well.

MR. PORTER: Thank you.

A You'll notice some sections of line that are blacked in and have a little "R" in a little box; that means they were recently replaced in the past three-year period. This is merely a leak history map to show that leaks are occurring as you would expect them to in a 30-year old bare line.

Actually, the line has outlived it's expected life.

Engineers today wouldn't predict a 30-year life for bare line laid for gathering purposes. We are suffering a continuing number of leaks there as would be expected, and this is just some of the economic facts of life.

Again, for new gas, we would only lay 2.7 miles for this amount of deliverability. We can't afford to replace much line for the amount of gas we're getting out of here.

I might point out further on this map, if you'll look at the upper left-hand corner, there's a lateral there from that line that carries five wells, the Delhi-Taylor-Hudson; the Aztec-Walker, two; the Union National Greer, one; the Aztec-Walker, one; the Aztec-Cornell, seven, five wells on that lateral line.

If you'll notice the availability to us under that test period from all five wells was 3 Mcf per day. Anybody knows that we can't wind clocks for three Mcf a day on five wells, therefore, without some change in our method of operating, there are five wells that we would immediately program for discount.

GOVERNOR CAMPBELL: What happens to those wells under your proposal?

A We would attempt to operate this thing, the gathering system, with 25 pounds suction pressure at the south end. There may be individual wells that we may disconnect even under our

proposal, but by giving these wells an opportunity to produce 30 days a month, we will take what gas we can get until such time as a section of line on a given well or some specific repair needs to be done, and then we'll look at that precise case and decide on that one case whether it justifies the repair or not.

We don't mean to say that if we get our proposal we'll continue to maintain all these connections even though these have no capability at all. What we will do is reduce gathering system pressure, turn all wells on, reduce our cost and then selectively take a long hard look before we disconnect any one well.

Q (By Mr. Jameson) Now, Mr. Haseltine, based upon the information reflected by this Exhibit 8, in your opinion is some increase in the rate of takes from the north end necessary in order to prevent waste because of abandonment, or I'll say early abandonment, of gathering lines and individual wells?

A Yes. Again, the entire system is capable of well under the 60 Mcf per day average without a change in our operating procedures, which would be afforded by change in rules.

We certainly won't attempt to maintain several of these connections. As a matter of count, there are 15 to 20

that probably would be subject to disconnection immediately. The operator would have no choice but then to proceed to plug and abandon.

We would not abandon the entire system to them if our petition is denied. We would take a selective look at the wells up through there and if they were capable and would justify the normal switching operation, they would be kept on the line. Certainly we wouldn't operate a 25 pound compressor station for that kind of an operation.

Q Is it, in your opinion, necessary to set up some kind of a depletion type program insofar as production of the area is concerned in order to get the maximum amount of gas out of the reservoir considering the present condition of the wells, the well casings and the gathering lines?

A Yes, it is. The wells in some instances are 30 plus years old. The gathering lines are as old, and the reservoir is essentially depleted, it is nearly depleted and all we are asking for is a pre-abandonment program, and it's our opinion that without the pre-abandonment program, there would be a certain number of disconnections immediately, and progressively more over the short term ahead, which would result in the abandonment of recoverable reserves.

Q Now, are the individual producers in the north end of this field experiencing any difficulties with the condition

of the casing and tubing in their wells?

A Yes. Several of them have had water problems on their wells. They have had corrosion problems on their casing strings and tubing strings. I think some of that enters into this low productivity we're seeing up there.

Q In your opinion, would the proposed depletion program that Southern Union is proposing in this hearing be of benefit to the producers in achieving a maximum recovery of gas from this reservoir?

A Yes. We look at the immediate past history and the producers have not rushed in in wholesale numbers to plug out these wells that aren't making any gas. They must have some hopes that they can sometime recover that gas.

I think a depletion program would encourage them to clean up a well and get that thing on the line at a low pressure and see if they can't make some. They're not seeking those answers very rapidly so far.

Q Now, Mr. Haseltine, I'll refer you to an exhibit identified for the record as Petitioner's Exhibit No. 9, and ask you to explain that exhibit.

(Whereupon, Applicant's Exhibit No. 9 was marked for identification.)

A Exhibit 9 is a tabulation showing some reserve figures applicable to this north end. Again we group the

wells, this time according to their capability.

Group 1 are those wells capable of 50 Mcf per day or more. We expect without this program we would still maintain a connection to those wells. We see 15 billion feet of reserves underlying group 1 wells. At the present rate of depletion, 1300 Mcf per day under prorationing, the projected life would be 30 years.

We know that without any doubt that the casings and the gathering system will not last another 30 years. We'll get some portion of that 15 billion feet because we would maintain those connections a while longer.

Group 1 and 2 include those wells capable of 10 Mcf, but not capable of 50. Under the depletion program, we could probably maintain a connection to 10 Mcf per day. I believe the operator could maintain books on a well for 10 Mcf per day.

There's an additional 2,800,000,000 feet of recoverable reserves underlying group 2 wells. Those wells that are not capable of 50 Mcf per day. That is 2,800,000,000 feet of gas that we propose would be available to us under depletion program that's not economically available to us under the present operating conditions.

With a depletion program, we could get all of the group 2 gas and the group 1 gas in about 10 to 12 years based on present rate of production. It's a lot easier to imagine

that gathering system and those casing strings lasting another 10 years than it is to think they would last another 30.

In groups 1, 2, and 3, that includes everything, group 3 being those wells that are not capable of 10 Mcf per day, there is approximately an additional 3,000,000,000 feet under group 3. You'll note that the exhibit states that those are wells not capable of 10 Mcf a day, but they are suspected of being able to recover additional gas reserve under proper mechanical conditions, which this is something that nobody knows at the present time.

With opportunity to produce that gas, a producer might be willing to gamble that he would get his money back if he wanted to go in and replace a siphon string and replace some bad casing. That would be up to him, but at least he would, I think, be encouraged to try it, and there's three billion feet of gas in that category that without depletion program, there's no doubt about it, it would not be recovered.

Q On what basis did you estimate these remaining recoverable reserves?

A These are based on the decline of shut-in pressures on these wells, these wells have been connected to Southern Union's system for many years and we keep continual records of the production from a given well, and it's shut-in pressures reported to the Commission, and by keeping a plot down through

the years of the decline in pressure in the reservoir as expressed as wellhead shut-in pressure, and the productivity, you continually come closer and closer to an exact determination of what that well is finally going to give up.

It's the best dog-goned way of calculating reserves in the San Juan Basin.

Q What abandonment pressure did you assume in making that computation?

A One hundred pounds gauge pressure in the reservoir.

Q In your opinion, is that a realistic abandonment pressure under the proposed program that Southern Union has under consideration?

A Yes, I think that's reasonable to talk about.

Q Now, Mr. Haseltine, you mentioned before that was with 58 wells in the north end of the Fulcher Kutz Pool that were connected to Southern Union Gas Company's gathering system. Are there other wells that are in the area that would be affected by the proposal now under consideration?

A Yes. There are somewhere in the range of 15 to 20 wells, 10 to 20 wells, let's put it that way, connected to El Paso in that area.

Q Has there been any discussion with representatives of El Paso as to how those could be handled and fit into the program that is being proposed by Southern Union?

A Yes. Before we got very far into this study, we knew there would have to be consideration given to that point and we examined the gathering systems of both companies and where they lie, and we have verbally agreed that we would work out some way of connecting those wells to Southern Union low pressure system.

That's not formalized and we wouldn't certainly represent that it's binding on us or El Paso, but this is the way we have talked and at the present time it's the way we intend to go.

Q Is it reasonable to expect that those 15 wells that are now connected to El Paso could, through arrangements between Southern Union and El Paso, participate in this depletion program and be accorded any benefits of this proposed depletion program well insofar as being able to recover their recoverable reserves along with the other 58 wells?

A Yes, I think it's probable this is what would happen.

Q Now, Mr. Haseltine, you have testified that under the proposed depletion program, as Southern Union envisions it, to achieve maximum depletion at the north end of the Fulcher Kutz Pool, the rate of withdrawal at the north end would be increased substantially over what it could be expected to be under present proration requirements, is that correct?

A Yes. That's correct.

Q What effect would that have on Southern Union's nominations and withdrawals from their areas in the basin?

A Well, first of all, with respect to the Fulcher Kutz Pool itself, which I think is the main concern here this morning, we intend to take the same amount out of the south end that we've taken in the past.

Now, this increase that we are talking about is really a small amount. It would represent something around one percent, or at least less than two of our total market. We don't have --

GOVERNOR CAMPBELL: Total market out of what?

A San Juan Basin. We don't intend at all to subtract the increase that we get in the north end from the amount we take out of the south end. In the first place, we don't have that much control over the total allowables in the south end.

There's another pipeliner in there who is entitled to nominate and take, and our allowables are subject to his operations as well as our own. Our actual intention is to maintain the rate of take-out of the south end at the same rate we are taking right now. Our growth rate will more than absorb this small increase that we're talking about here today.

As a matter of fact, we, as most of you are aware, are connecting some towns north of Santa Fe right now that

will use up more gas by far than what we are talking about as an increase out of this north end. So, in all fairness, we don't expect to burden that south end by charging the increase in the north end to their account. That's not what our intention is at all and we plan to nominate in general in the south end just as we have in the past.

Q (By Mr. Jameson) Would there, in your opinion, be any substantial effect of the increase in withdrawals from the north end of the Fulcher Kutz on the other prorated pools in the San Juan Basin that Southern Union is now taking gas from?

A No. Even if our growth rate were zero and if we had no increase in our total market, the increase we're talking about here of 1,700 Mcf per day as divided by our 1100 connections up in the basin is 1.5 Mcf per day per well.

Now, any of the producers can find that on their monthly statements, why, they're keeping good control on them.

Q How many average Dakota wells in the San Juan Basin, Dakota Pool wells, would under normal operating conditions and prorationing give you the same volumes of gas that we're talking about in the north end of the Fulcher Kutz Pool under the proposed method of operation?

A There are a lot of wells, lot of Dakota wells up there that just one of them would give us this increase.

Certainly you could easily pick the 10 closest to the Kutz operating plant and tell them to keep those on one day a month extra and they could more than make up that 1.7 increase.

We are not talking about much gas. The point here is that we can get the gas from Dakota wells at an incremental cost of fourteen cents. All we have to do is keep a Dakota well on one day longer. This gas is certainly going to cost us more than fourteen O/A. We will kick it through two stages that will raise it at least four cents.

This gas wouldn't be cheap to us. It will be probably the highest priced gas in the Basin to Southern Union. In the long haul, we feel this is our stock in trade and shouldn't be wasted. We recognize there are other matters of conserving natural resources that needs to be considered by the Commission as well.

Under the long haul, this gas is not cheap to us. As a matter of fact, of day to day dollars, we could get it cheaper other places; as a matter of fact, we could take it out of some Southern Union non-prorated wells if it was just day to day dollars.

Q Now, Mr. Haseltine, one of the definitions of waste in the basic statute that we all have to operate under here in this proposal defines waste as "operating or producing any well or wells in a manner that would tend to reduce the quantity

of natural gas ultimately recovered from the pool".

Now, in your opinion, is the method of operation that you have outlined as proposed by Southern Union and the proposed handling of the north end of the Fulcher Kutz Pool necessary in order to prevent waste under that concept?

A Yes, it is. A continuation of the present program would lead to abandonment of otherwise recoverable reserves.

Q In your opinion, based on the various facts that you have testified to, would correlative rights of the various parties that are interested in the entire Fulcher Kutz Pool be protected while Southern Union was operating it's gathering system in the north end of the pool as you have just testified to?

A Yes. Their rights would be protected. Correlative rights does not mean that they have the right to adhere religiously to some program that denies another man his right.

Correlative rights doesn't mean that they're entitled to some month to month operating program that works to the detriment of another person in the same pool.

MR. BUELL: May it please the Commission, I must not have heard it, but was this witness qualified as a lawyer?

GOVERNOR CAMPBELL: No, he wasn't.

MR. BUELL: He's getting out of the engineering

field into the legal field with these questions.

GOVERNOR CAMPBELL: I think you are right.

MR. JAMESON: Let me rephrase the question.

GOVERNOR CAMPBELL: I think the witness has already testified on most of this in any event.

MR. JAMESON: Just one last question on that.

Q (By Mr. Jameson) In your opinion, would the proposed method of operation in this area afford each producer a reasonable opportunity to produce his proportionate part of the reserves that you have found to exist in the pool?

A Yes, it would.

MR. JAMESON: I believe that concludes our examination of this witness.

CROSS EXAMINATION

BY MR. PORTER:

Q Mr. Haseltine, I believe you testified that there are 58 wells connected to Southern Union and some 15 to El Paso. On your line you testified that the gathering system pressure would be lowered to 25 pounds if this exemption were granted. What is it now?

A It would be lowered to 25 at the suction of the compressors.

Q Yes, sir.

A Referring you back to Exhibit 8, you'll find --

Q Well, is it substantially above 25 now?

A Yes. The nearest well to the Kutz compressor station under normal conditions operated against 81 pounds.

Q Now, out of these 58 wells, how many would actually be affected; your marginal wells now are producing at capacity.

A Well, the marginal wells and all others would be affected because under this program we could afford to put these compressors in service at 25 pounds a hundred percent of the time.

Q They would ultimately be affected, but what I'm trying to get at is, how many wells right now would have the limitation, the maximum limitation removed?

A There are about 25 non-marginal wells.

Q About 25 non-marginal.

A Yes.

Q That's what I wanted to know. I believe you further testified that under this exemption that you would expect to operate about another 12 years before all the reserves were recovered?

A No, sir, I didn't predict that as a length of operating time. That was a comparative figure. The comparison was this, that at the present rate of production, the available reserves would last 30 years, and under the depletion program, there would be more reserves available at a faster rate which

would arithmetically give 12 years.

Q Which would be approximately 12 years?

A Yes.

Q Do you think there would be any migration of gas from the north to south under this 12-year period?

A I don't think that there would be enough to be significant. Certainly, anytime you've got a pressure gradient even with one millidarcy of permeability, there is some flow along that gradient.

Q You would have to, of course, to answer that question, assume that the present conditions continue to exist in the other end of the pool?

A Yes, sir.

MR. PORTER: The present rates of taking and so forth. Does anyone else have a question? Mr. Buell.

CROSS EXAMINATION

BY MR. BUELL:

Q Mr. Haseltine, let's get one or two little things out of the way here. You talked about well switching and items of that nature as being a problem and being involved in prorating a gas field, did you not?

A Yes, sir.

Q That is a problem that exists in every gas field that is prorated in the State of New Mexico?

A Yes, sir.

Q So, if that is a valid reason for doing away with prorationing of gas, we would eliminate prorationing of every gas pool in the state, is that not correct?

A No, sir.

Q Oh, you weren't citing that problem as a valid reason for doing away with gas prorationing in this north area of the Fulcher Kutz Pool?

A What are you asking?

Q You testified relating to the switching problems, and that you had to go out to the well to pick up, what is it, cards, measurement sheets, and that was a problem under gas prorationing. Did you not so testify?

A Well, I think that what I said was that we have to switch wells and pick up charts, those are cost items.

Q And then you talked about tests that the Commission required to aid the Commission in their prorating of the field being a problem?

A Yes.

Q But, you have that problem in every prorated pool?

A Yes.

Q Making the Commission test. So, if that is a valid reason for doing away with gas prorationing, you have that in every prorated pool in the state?

A I believe the testimony in the record will show that we don't conclude our testimony at that point.

Q You weren't citing that as a reason it was part of the problem you are faced with here?

A As a matter of fact, we took those cost items, or those problems were talked about, and divided them into Mcf per day available and came up with the high cost of gathering per Mcf; there is the problem.

Q So we can keep our Cross Examination in proper perspective, would it be an over-simplification of your problem to say that Southern Union just simply needs more gas out of their system in the northern portion of this pool? In essense, that is the problem?

A That is an over-simplification and I wouldn't say yes, that's the problem, at all. That's too much over-simplified.

Q All right, just what is your problem?

A We need to reduce our average Mcf cost of gathering that gas if we are to continue to gather it.

Q You testified that you have exhausted all of the means under your control?

A Yes, sir.

Q What do you have left?

A Increase the Mcf of gas coming out of that system.

Q So that is your problem right now?

A No.

Q You have done everything else you could?

A No, the problem is the cost of gas.

Q The only way you can decrease it is to increase your takes from that system?

A That's the solution of that problem.

Q That's what I say.

A Yes, sir.

Q So, that would solve your problem?

A Yes.

Q I believe you also testified that this line up here, the Southern Union line, or the line of demarkation, or however we want to characterize, was dictated by economics?

A Yes, sir.

Q Would you state for me again, as I understood this recent test you conducted, you were operating under conditions similar to those that you will operate under if the Commission approved your request here today. Just what did you do then, how did you produce your gathering system?

A Put it on a 25-pound suction and operated 100 percent of the time.

Q Would it be proper in laymens' terms to say that you just put the wells on your system, reduced the suction and let them produce whatever they would produce into that

system?

A Yes.

Q Under that method of operation, Mr. Haseltine how are you going to protect the correlative rights of the owners of interest even in the northern area?

A Well now, would you first tell me what the correlative rights are, please?

Q I'm talking about migration of gas within the northern area itself.

A From well to well?

Q Yes, sir, or as I understood it, you are just producing them at capacity, or could you say at 100 percent of deliverability?

A Yes.

Q Would that be an accurate statement?

A A hundred percent of their capability, not statutory deliverability.

Q Has Southern Union changed it's engineering judgment with regard to what is a proper allocation formula?

A For the pool?

Q Well, for this section of the pool. You are isolating it from the southern portion?

A We have asked for a change in rules, certainly.

Q Are you here today advocating 100 percent deliverability?

or capacity as the allocation formula that you will apply to the wells connected to your system in the northern end of the pool?

A No, sir. We haven't asked for 100 percent deliverability being cranked into the formula.

Q That's the way you are going to produce them? That's the way Southern Union will allocate in the northern portion of the pool?

A It wouldn't be a matter of allocation. It will be a matter of taking what gas is available.

Q Do you see the opportunity for the violation of correlative rights among the interest owners in the northern portion of this pool under those conditions?

A Not in a sandstone that's down to 250 pounds pressure in the San Juan Basin.

Q You don't think there will be any uncompensated migration of gas in the northern portion of this pool producing in that manner?

A No, sir.

Q Then explain to the Commission why you need to connect the El Paso wells.

A As a matter of fact, I'm sure if El Paso's producers were not allowed to produce into the same type of system that the other producers are, they'd think that something was a

little haywire.

Q But, under your engineering concept of this reservoir, would anything be haywire?

A No. I don't think there would be any migration of gas from those wells connected to El Paso to ours.

Q You think that you could produce your connections at capacity, leave El Paso's prorated, and not have any migration?

A Now, I didn't say that.

Q Well, what did you say?

A About what?

Q Say it again, I must have misunderstood you.

A We're talking about gathering system pressures.

Q Yes, sir.

A We would make our low pressure available to El Paso's producers.

Q Why?

A Well, not because there would be any migration, it would just be a matter, I am sure that the El Paso producers would want the same kind of treatment --

Q Would you also suspect that probably the producers in the southern end of the field might want that same type treatment?

A I think it's apparent some of them do.

Q Why would you discriminate against us southerners and give just the northerners preferential treatment?

A We're not attempting to discriminate against the pool on the south end. What we're attempting to do is to give the people in the north end the right to produce the rest of their gas in place.

Q Well now, El Paso, with their system, doesn't have all these corrosion problems and leak problems that you are having, do they?

A I don't know.

Q You don't know that they do?

A I don't know that they do or don't.

Q So why would you have to connect them? Why would you have to take over their connections?

A Well, as a matter of fact, I don't suppose I would have to.

Q Do you see any necessity at all for doing it from the standpoint of correlative rights or waste prevention?

A I don't see any possibility that with or without cross sections between ourselves and their system that there would be any violation of correlative rights or flow from adjacent wells to the other. I don't think that would be violated without our cross ties.

Q It was your testimony in response to a question

from your counsel that you knew something would have to be done about the El Paso connections and all I want you to tell this Commission, if it's not necessary to connect them to protect correlative rights or prevent waste, why isn't it?

A I'm sure that Pan American as well as Southern Union and El Paso do a lot of things in operating and conducting our business that are not required from an engineering standpoint. Now then, we could have come in here and asked for an exemption on those wells underlying our system.

This would only have been part of the answer. The other part of the answer is to recognize that the entire north end is in it's last stages of depletion and give every producer the same opportunity there to get his wells off. If he sees fit, to get his wells on full time producing one into a 25 pound system.

On the other hand, he is given some exempt status, by producing into a 250 pound. Personally, I don't think he's going to suffer any loss; if he were going to, it would have occurred long ago.

Q Are you saying that you recognize some correlative rights that need to be protected, or any migration of gas from one owner to another? The opportunity to produce at the same rate, that's a correlative right, isn't it?

A Well, I don't think so.

Q Isn't that just what you said?

A No, sir.

MR. JAMESON: Mr. Chairman, if we are going to talk about correlative rights, I think we ought to get down and talk about the statutory definition of correlative rights, which I would like to read a portion. It defines correlative rights, sub-section H of Section 65-3-29, as "the opportunity afforded so far as is practicable to do so, to the owner of each property in a pool, to produce without waste 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."

MR. BUELL: Would you read the rest of it or I'll have to.

MR. JAMESON: I'll read the rest of it. "Substantially in the proportion that the quantity of recoverable oil or gas, or both, under such property bears to the total recoverable oil or gas, or both, in the pool, and for such purpose to use his just and equitable share of the reservoir energy."

GOVERNOR CAMPBELL: Are you objecting to a question here or are you arguing a point or what?

MR. JAMESON: Yes, I'm objecting to the fairness of the question presented to the witness not considering in the basic assumption that there is an element of prevention of

waste in the correlative rights. He's talking about nothing but migration and waste.

GOVERNOR CAMPBELL: The question has been asked, the witness has answered it. If you wish to argue the matter, I think we should do it at the time for argument. If you have objections to these particular questions, you should make them at the time that they're asked. Go ahead, Mr. Buell, the question was answered.

MR. BUELL: I might state that I certainly endorse this definition of correlative rights in the New Mexico Statutes.

GOVERNOR CAMPBELL: The Commission has it committed to memory from many references.

Q (By Mr. Buell) Mr. Haseltine, your testimony was generally permeated with the trend of the thought of the tightness of this reservoir; you mentioned numerous times one millidarcy, you mentioned pressures were not equalizing, that this was an extremely tight reservoir. Is that generally, the best I can, a fair summary of some of your testimony?

A Yes.

Q You got me to wondering where the gas was coming from that we're producing from this reservoir.

A Well, it's not impermeable; it is tight.

Q Would you explain to me how gas can migrate to a

well bore and be produced, but yet what causes it to migrate to the well bore in the first place?

A Pressure gradient.

Q Will gas in this reservoir migrate to a lower pressure area in the well bore but won't migrate to another low pressure area further removed?

A Gas will always tend to move from areas of high pressure to areas of low pressure.

Q Although this is a tight reservoir, we do have migration of gas and movement of gas in this reservoir?

A I'm sure gas moves in this reservoir.

Q Let me direct your attention now to your three exhibits, I believe it's 2, 3, and 4, if my memory serves me correctly, your isobaric maps. Mr. Haseltine, when was gas prorationing first initiated in this pool?

A I don't really know, mid 50's sometime.

Q It was shortly before 1954, isn't that about right?

A I'll just guess.

Q Before 1957?

A I think so.

Q Your first picture of pressure distribution is 1957?

A Yes.

Q Pressure gradients had built up in this field under more or less competitive operations without prorationing, is

that correct?

A Yes.

Q Would you agree with me that in looking at your subsequent pressure distribution maps and comparing them with your original, would you agree with me that it looks like the Commission has done a pretty good job of prorating gas in this pool?

A Well, I think they've done a wonderful job. It depends on what the objective of prorationing is.

Q I'll get to that. Does it appear that the proration system that has been used and applied to this field has maintained to a degree the equities that were established at the time prorationing took over?

A Well, I don't think these exhibits show that one way or the other.

Q It appeared to my untrained eye, just looking at your sequence of exhibits, that the equities in this field from the standpoint of pressure had been maintained by the prorationing system, and you would disagree with that observation of mine?

A No. If we talked just about the pressure distribution, I would say that in general the same configuration has been maintained since at least through the period covered by those exhibits.

Q Do you feel that that's the proper purpose of prorationing, to protect the equities and to continue the equities that are established at the time that prorationing took over?

A Well, I sure wouldn't offer an opinion as to whether prorationing ought to consider equities at the time it's established or whether it ought to take a backward look at what had happened before.

Q I think you drew the conclusion from these series of exhibits that migration was not occurring.

A No, I did not say that.

Q You left that impression with me; perhaps you did with others. Would you repeat again the conclusion you drew from your pressure maps?

A First of all, molecules of gas will always move when there's more pressure on one side than there is on the other side.

As a practical matter, those molecules of gas are not moving fast enough to establish any significant amount of migration as apparent by the virgin reservoir pressures drilled into in 1962, existing within three miles of areas that had been produced 30 years prior.

Q Mr. Haseltine, as a matter of fact, is this not the type of pressure distribution you would expect to see in a

reservoir where migration is occurring?

A No.

Q Where you have your pressure differentials and pressure gradients throughout the field?

A No. If migration were occurring, you would take the three maps and see that pressures are distributing themselves into other areas. You couldn't take one map and say migration is or is not occurring. The three constitute a series of signs that the pressure is not localizing; you can say that migration is not significantly occurring.

Q Were conditions static in this reservoir during the period of time these pressure observations were made that are reflected on your exhibits?

A No.

Q What were conditions in the reservoir?

A Each well was on production.

Q They were dynamic conditions existing, were they not?

A Yes.

Q Wouldn't that make a difference as to whether or not pressure would completely equalize over that short period of time, whether conditions were static or dynamic?

A If they were static, they couldn't equalize.

Q What if the same forces that created the original

pressure differentials were still at work in the same magnitude, could you ever have equalization of pressure in the reservoir?

A How's that again?

Q If the same forces that created the original pressure differentials, such as reflected on your 1957 pressure exhibit, if those same forces continued at work during this period of time in the same magnitude that had originally established these differentials, you would never eliminate them, would you?

A I need to understand what you are asking. I assume by the "same forces" you mean if an inequitable amount of gas was being considerably drawn from the big sink as compared to the high pressure sources, you would never get your hills and valleys leveled out, you would always have a hill and valley.

Q Yes, sir. You simplified it, I was referring to your exhibit, but generally that's the gist of the question I intended to ask you.

A If your sink continued to be operated as a sink, all things being equal, and the source was continually a source, you would never level out your hills and valleys.

Q Give the Commission your opinion as to whether or not that has happened here.

A Yes, sir, you will see that the completion of pressure in this end --

Q Excuse me, Mr. Haseltine, I am referring to your

pressure distribution exhibits. We are going to come to the profile in a minute.

A In order to answer your question, I have to go to Exhibit 5 if I may.

Q As I recall, in your original testimony you said this was only one line of sight through this reservoir?

A Yes, that's correct.

Q If you could possibly answer it looking at your exhibits, we are looking at the entire reservoir and not one narrow little line through the reservoir?

A That is correct, and what I have to say about this right here would not --

GOVERNOR CAMPBELL: Go ahead and answer the question; refer to whatever you need to to answer it.

A Thank you. As I understand the question, you are asking if these same forces in this sink were not at work to maintain this thing as a sink and this thing as a source as far as pressure distribution is concerned to the extent that the sources had no opportunity to equalize in pressure with the sinks. Now, as I understand it, that is your question.

First of all, I answered your question about a hypothetical case, could this not occur. Yes, the answer is it could occur if you had a sink in some position in the pool that was continually operated in excess of the rate at which

the sources were being operated, you would never have an opportunity to equalize these pressures. Now then, you asked me, I believe, if this were not occurring or if we had some evidence that it had not occurred. I have to go to Exhibit 5 to answer your question.

Exhibit 5 shows that the south end experienced substantially more depletion in it's total reservoir pressure; this is the same as saying it produced more gas from it's reserves than the north end, therefore, this hypothetical condition that you are talking about, which would serve to perpetuate sources in sinks was not occurring in this pool.

Q Mr. Haseltine, keeping in mind that -- on what exhibit, is that 5 that you are referring to, your profile?

A Yes.

Q Keep in mind that we're just looking at one path through this reservoir. Is that not correct?

A The pressures drawn on that map are, yes, sir.

Q I wonder, keeping in mind that there are other paths that migrating fluids could take other than the one line you have, if you couldn't account for the 90 pound drawdown in the south compared with a 40 drawdown in the north, to migration of gas right now from the south to the north?

A No, sir.

Q Sir?

A No, sir.

Q Your answer is no?

A If I understood your question properly, the answer is no.

Q Would you care to elaborate on it?

A I would, so we will all agree on what I am talking about. There's a flat gradient here and no flow.

Q Yes, sir, but this is just on your one line of sight. I don't want to accuse you of using selectified data because I know you well enough to know that you haven't. If you had prepared a profile through another area of the field, it could be different than the one you have there?

A Yes, sir, and we can see from these pressure maps, Exhibits 2, 3, and 4, what that profile would be.

For instance, across this proposed limit or any point in here, the flow would be from the flanks into the center of the pool. This is what the profile would show.

You can see that because the high pressure areas are in these outer areas, therefore, this gas wouldn't flow that way, it would flow into the low pressure areas which generally occupy the center of the south end of the pool. I am talking about the south end.

Q Mr. Haseltine, would it be a fair summary of your testimony with relation to migration, that you feel under

current conditions as reflected by these exhibits, that some migration is occurring, but that you think it's a very small amount?

A Very good. Yes.

GOVERNOR CAMPBELL: Let's stop at that point right now.

MR. PORTER: Mr. Buell, we'll interrupt your questioning at this point and recess until 1:30.

(Whereupon, a recess was taken.)

* * *

(Whereupon, the hearing was resumed at 1:30 P.M. on Wednesday, December 16, 1964.)

MR. PORTER: The hearing will come to order, please. Mr. Haseltine, would you take the stand, please. Mr. Buell.

MR. BUELL: May it please the Commission, I have just a few more questions.

ORAN HASELTINE

called as a witness, having been first duly sworn, was examined and testified further as follows:

CROSS EXAMINATION (Continued)

BY MR. BUELL:

Q Mr. Haseltine, I hand you now a copy of your Exhibit 5

which you were courteous enough to furnish me, and on that exhibit I have colored two areas in red. One area in red is to the right of the Southern Union division line for the north area as opposed to the south area; the other colored area is to the left, or to the north of that line.

Exhibit 5, I believe you have referred to it as your pressure profile down one axis of the field, is that correct?

A Yes, sir.

Q Would you look first to the area shaded in red on the right side of the dividing line and see whether or not you agree with me that that shaded area represents a pressure increase from 1960 to 1963?

A Based on my profile it does, yes.

Q Would you look now at the colored area north of your dividing line and state whether or not you agree with me that that represents a pressure increase for the period of time 1957 to 1960?

A Yes again, based on the profile test.

Q How, other than migration, could you account for these pressure increases reflected on your Exhibit 5?

A The only other way, and I wouldn't say that this is right, or that I wouldn't say that the gas didn't flow into that area to equalize those pressure troughs there.

This entire thing is based on 7-day shut-in which allows a little discrepancy and the curves are fared in on the basis of zig-zaggy lines based on those plotted 7 days.

If the profiles are precisely right, and they're as right as I know how to make them, then you are right, when a pressure increases in an area, it had to flow into that area from somewhere else.

Q That pressure increase, particularly the one to the north that we observed there, is in a pretty critical area, is it not, with respect to your application here today?

A It's across the boundary, if that's what you mean.

Q Yes, sir.

A It lies astraddle of the boundary, yes.

Q And if it was caused by migration, we do have gas migrating from the south to the north across your dividing line?

A Oh, not necessarily. You see, the area to the north is of higher pressure than that particular red area also. It could have come from farther north. I don't know whether it migrated from north to south or south to north.

In the first place, I don't know if my profile is precise, but if it is right, it could have come from either direction.

Q Would you get out your Exhibit No. 6? I think I

have found an area, I think it's an inadvertent error, if I have in truth and in fact found an error.

Referring to the central portion of your exhibit where you show the total yearly increase under the Southern Union proposal --

A Yes.

Q -- I believe, of 1,907,114 Mcf, would you divide that by 365, please? There are 365 days in the year.

GOVERNOR CAMPBELL: Usually.

Q (By Mr. Buell) Will you agree with me that 365 days is a good average year?

A Now, if you won't tell me, I'm not qualified to express an opinion.

Q You are a calendar expert right now.

A All right. That comes out 313 which would be 3,130 Mcf per day.

Q Increase?

A Yes.

Q What do you show for a daily increase on this exhibit?

A Daily availability 1,757.

Q Have I found an inadvertent error or is there a difference here?

A No, it's a point in there that possibly I didn't make clear. Availability of that gas to us under the 1963

operation was 44.9 Mcf per day but the prorated non-marginal wells can't be left on 365 days, so the actual availability is less than 365 times what you would get in one day.

Q One thing is wrong and one thing is right. If your yearly increase on here is accurate, then your daily increase is wrong?

A The increase there daily is the daily availability. Now then, under the program you would have two factors working. First of all, you would have an increase in daily availability due to lower pressure; second, you would have an increase in the days that those non-marginal wells are available to produce, which increases further.

Q Maybe we can save time. You show on here a yearly increase of 1.1 million that I have read into the record a moment ago?

A Yes.

Q You divided that by 365?

A Yes.

Q You came up with a daily average of 3130?

A Yes.

Q What percentage increase is that over the daily average production for 1963?

A Oh, that would be 140, 120 percent.

Q About 120 percent increase?

A Something like that.

Q Over the observed producing rates in 1963?

A Yes.

Q Would you call -- no, I won't ask you that. Would you agree with me that that is a substantial change in the producing rate for the north area as compared to years past?

A Yes, sir. We're looking for substantial change. We can't work with insignificant change.

Q Would you feel, Mr. Haseltine, that some of the predictions you have made with regard to migration, with particular reference to your 90 Mcf per day, under current conditions, don't you visualize as a reservoir engineer the opportunity for a dramatic change --

A No, not a dramatic --

Q -- with regard to the north area as opposed to the south?

A No, sir. Not a dramatic change.

Q Don't you think increasing the producing rate from the north end will tremendously increase the pressure draw-down in that area?

A Not tremendously increase it, no.

Q Do you think it will continue to decline at the same rate it is now?

A No.

Q Sir?

A No. It will decline at a faster rate than it is now.

Q Such that some of the trends you have depicted on your exhibit, particularly Exhibit 5, could change quite a bit within the near future under your proposal?

A Well, we are speaking qualitatively, Ithink I admitted they would change. If they didn't change, we wouldn't be getting any more gas out. If we get more gas out, they will change.

Q Do you think that might increase the opportunity for migration to occur from the south to the north?

A If and when we establish a gradient across that boundary line, then we would increase the opportunity for migration from the south to the north.

Q Mr. Haseltine, I believe you agreed with me that the solution to your problem is to increase the rates of gas production from the wells connected to your system?

A Yes.

Q Can you, with all your vast experience in proration, visualize the way that could be done without exempting the wells from proration?

A Yes.

Q What would that way be?

A To give them treatment analogous to what the marginal

or low acreage well gets today.

Q Is there any other way that you can think of?

A I'm sure there are other ways, those are the only two that come to mind.

Q Could you increase the takes from the entire pool sufficiently to produce the wells on your system at the rates you need to produce them to make a profit?

A Possibly, but I'm not at all sure. We are limited with such things as pipe line capacity, you are limited to such things as compressor capacity. After all, all of this Fulcher goes through one stage of compression. You are limited with things such as gasoline plant operations, you are limited with other things.

I'm not prepared to say that we couldn't positively increase the entire Fulcher Kutz Pool by this 100 percent or whatever we are talking about, or that we could.

Q You certainly do recognize and will agree with me that within the present method of prorationing in this pool, allowables could be increased sufficiently that your wells would get sufficient allowable to make your line a profitable operation?

A No, I can't say yes to that because that presumes that I would agree that these physical factors would allow that, and I don't know whether they would or not.

MR. BUELL: I think that's all, thank you.

MR. PORTER: Anyone else have a question of the witness? Mr. Utz.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Haseltine, in putting your plan into effect, you would increase the takes from this particular area here, would you not?

A Yes, sir.

Q San Juan Basin just has so much market demand each year, is that correct?

A Yes, it's a finite quantity.

Q When you increase your takes in this particular area here, than that is going to decrease the market demand from some other wells in the Basin, is it not, by some amount?

A All other things being equal, that's right.

Q If you don't get your plan and then you have to abandon this area up here, is there anybody else that would connect to these wells?

A I can't imagine so. I certainly don't think so.

Q If you abandoned this area here, then that would decrease your market demand in this area here, would it not, to zero?

A Yes, it would decrease the amount of the market that we have allowed to be served out of this area.

Q If you do plug out this area here, then that market demand that you would have taken from this area would have to come from other wells in the Basin, would it not?

A Yes.

Q And that would increase their takes to some extent?

A Yes.

Q So, people who don't have an interest in this area here could gain by you just plugging the wells out and letting this gas stay in the ground?

A That is right.

MR. PORTER: Anyone else have a question? The witness may be excused.

(Witness excused.)

MR. PORTER: Does that conclude Southern Union's testimony?

MR. JAMESON: We have one other witness, Mr. Chairman.

MR. PORTER: Would you have your witness stand and be sworn, please?

(Witness sworn.)

MURRAY STEVENS

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. JAMESON:

Q State your name, please?

A My name is Murray Stevens. I am employed by the Aztec Oil and Gas Company as a petroleum engineer.

Q Have you ever testified before this Commission?

A Yes, sir, I have.

MR. PORTER: Is the witness familiar with this particular area?

A Yes, sir.

MR. PORTER: His qualifications are accepted.

Q (By Mr. Jameson) Mr. Stevens, could you briefly summarize for us the interest of Aztec in the north end of the Fulcher Kutz-Picture Cliff Pool that is under consideration in this case?

A Yes, Aztec Oil and Gas owns and operates 35 wells connected to Southern Union pipe line in this north Fulcher area.

As to the status of these wells, 11 of them are non-marginal, two are lower acreage non-marginal with 1500 Mcf per month allowable assigned to each, one is a minimum allowable well which receives a thousand Mcf per month allowable, and 21 of the wells are classified as X/M which is marginal and exempt from deliverability testing.

Five of the marginal wells are dead and two of the dead wells are disconnected from the pipe line. The current deliverability of our wells in this area averages about 60 Mcf

per day per well. I would like to point out that over half of our wells have a deliverability below 50 Mcf per day.

Q Have you made any study or evaluation of the remaining recoverable reserves that are attributable to Aztec wells?

A Yes, sir. We estimate that all of our wells together have a remaining recoverable reserve of about eleven billion cubic feet, and that would be as of October 1st, 1964.

Q At the present time, do you foresee any condition that would prevent recovery of an appreciable amount of those reserves?

A Yes, sir, I do. Mr. Haseltine has already testified that if we must continue to operate under the present conditions that it might become necessary for Southern Union to abandon some gathering line laterals.

We have already been advised that in the event this becomes necessary, that 12 of our wells will be affected in the first go-round of this abandonment of gathering lines.

We estimate these 12 wells to have a remaining recoverable reserve of about two billion cubic feet. If the gathering lines are abandoned, it will then, of course, be necessary for us to plug out the wells and abandon them.

We feel that this would be premature abandonment because there is in these wells about a billion and a half

cubic feet of gas that could be economically and very easily recovered through the existing facilities if we are allowed to operate them in a correct way.

Q Based upon the facts that you have just testified to, does Aztec have any recommendation they want to make to the Commission?

A Yes, sir. I would like to say that we support Southern Union's application, and in view of the fact that this north area is operating in a near depletion rate, we feel that everything that is possible to do to streamline these operations and to make them as economical as possible and thereby allow everybody to recover the greatest amount of gas out of this area.

Aztec is just like every other operator, they don't want to abandon any recoverable reserves. We urge the Commission to approve this application for Southern Union.

MR. JAMESON: I believe that concludes our examination of this witness.

MR. PORTER: Any questions of the witness?

MR. BUELL: I have one, Mr. Porter.

CROSS EXAMINATION

BY MR. BUELL:

Q Would you tell me whether you have made a study in the north area, or pool-wide, as to any migration that might result under the Southern Union proposal?

A No, sir, I haven't made a study.

MR. BUELL: That's all.

GOVERNOR CAMPBELL: Does your company own properties in the south end of the pool?

A Yes. We own 30 wells in the south end.

MR. PORTER: Any further questions? Do you have another question?

MR. JAMESON: No, sir.

MR. PORTER: The witness may be excused.

(Witness excused.)

MR. JAMESON: I have one question I would like to ask Mr. Haseltine.

MR. PORTER: Mr. Haseltine, would you return to the stand, please?

O R A N H A S E L T I N E, called as a witness, having been first duly sworn, was examined and testified further as follows:

RE-DIRECT EXAMINATION

BY MR. JAMESON:

Q Mr. Haseltine, during the course of your testimony you have referred to Petitioner's Exhibits 1 through 9 as identified for the record. Were all of those exhibits either prepared by you or under your supervision?

A Yes, sir.

MR. JAMESON: We would like to offer all the exhibits into evidence.

MR. PORTER: Any objections? The exhibits will be

admitted.

(Whereupon, Applicant's Exhibits 1 through 9 were offered and admitted into evidence.)

MR. BUELL: Could I clear up an oversight of mine before Mr. Haseltine leaves?

MR. BUELL: Mr. Haseltine, is this a copy of your Exhibit 5 which I questioned you about a moment earlier in the record, the exhibit that I referred to that I had colored in red two portions of that exhibit?

A Yes, it is.

MR. BUELL: I would like to have this identified for the record as Pan American's Exhibit No. 1.

MR. PORTER: The exhibit will be offered into evidence at this time.

MR. BUELL: I thought I would wait and offer all of ours at the same time.

MR. PORTER: Does that conclude the questions of the witness? You may be excused again.

(Witness excused.)

(Whereupon, Pan American's Exhibit No. 1 was marked for identification.)

MR. PORTER: Does this conclude your testimony?

MR. JAMESON: Yes, sir.

MR. PORTER: Mr. Buell.

MR.BUELL: We have one witness. We have some exhibits to put on the wall, so can we take a short recess?

MR. PORTER: We'll take a short recess.

(Whereupon, a recess was taken.)

MR. PORTER: The hearing will come to order, please. Mr. Buell.

MR. BUELL: May it please the Commission, I would like at the outset to state, and perhaps I should have stated this at the beginning of the hearing, I would like to have the Commission and Southern Union to know that we are not completely insensitive to their position. Certainly we recognize that a corporation of Southern Union's type, as a corporation of Pan American's type, has to make money to stay in business.

We are in sympathy with their profit on their system in the northern portion of this field. We would hope, however, with the minds that we have in the industry, both with Southern Union, on the Commission staff, and perhaps even Pan American, could arrive at a solution that would, in my opinion, be not the beginning of the end to gas prorationing as we have known it in northwest New Mexico.

I would want to make a statement of our position

clear. We are not insensitive to their profit and loss situation with this particular gathering line.

(Witness sworn.)

GEORGE W. EATON

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. BUELL:

Q Mr. Eaton, would you state your complete name, by whom you are employed, and what capacity and what location?

A George W. Eaton, Junior, senior engineer for Pan American Petroleum Corporation, Farmington, New Mexico.

Q Mr. Eaton, you testified at many previous Commission hearings in the past and your qualifications as a petroleum engineer are a matter of public record, are they not?

A Yes, sir. I have testified previously and my qualifications are a matter of record.

Q With respect to this particular area, you have not only in this pool, but in other pools in the San Juan Basin, you have done extensive engineering work for Pan American?

A Yes, sir, I have.

MR. PORTER: The Commission considers the witness qualified.

Q (By Mr. Buell) For the purpose of Pan American's

testimony, I wish you would look first at what has been marked as Exhibit No. 2, what is that exhibit?

(Whereupon, Pan American's Exhibit No. 2 was marked for identification.)

A Exhibit No. 2, which you will find at the extreme left-hand side of the board, is a map of a portion of the San Juan Basin in San Juan County, New Mexico, showing thereon the Commission's designated pool limits of the Fulcher Kutz-Pictured Cliff gas pool.

The designated pool limits are identified with the red border. Also shown on Exhibit No. 1 with the green border, is the area which is the subject of the present application which seeks to have that portion of the pool exempted from proration.

Q What is the significance of a line that appears from here to be a red line that goes down the center portion of the field on that exhibit?

A The red line running essentially on a diagonal from northwest to southeast, through the central portion of the pool and labeled A-A is the trace of a cross section through the area which will be identified as Pan American's Exhibit No. 2.

Q Before we go to that exhibit, it will be 3, before we go to that exhibit, Mr. Eton, it might be well to point out

so that the record will show that that appears to be a dis-orientation of this pool on our exhibit as compared with the maps of Southern Union. Point out for the record what causes this apparent disorientation.

A In the case of our exhibit, north is straight up on our exhibit. On the Southern Union exhibit, north is to a diagonal, up and to the left.

Q But this pool is actually a northwest-southeast trending pool?

A Yes, sir, it is.

(Whereupon, Pan American's Exhibit No. 3 was marked for identification.)

Q Look now at Exhibit 3; what does it reflect Mr. Eaton?

A Exhibit 3 is what I call a correlative cross section through the central portion of the Fulcher Kutz-Picture Cliff gas pool. The reason that I designate it as a correlative cross section is that I have made no attempt to designate structure with this cross section.

The entire purpose is to show that the Picture Cliffs' sand zone can be readily identified and it can be readily correlated from well to well and thereby through this cross section, show it to be a continuous body throughout the area covered by the cross section.

Q It might be of interest Mr. Eaton, point out on that exhibit where the Southern Union dividing line falls.

A The Southern Union dividing line lies between the fourth well on the left end and the fifth well, again reading from the left end of the cross section.

Q So that those of us out here can see it, let me ask you to make a green line vertically on that section at the approximate limit, or the approximate location of the Southern Union dividing line?

A I have done so.

Q Now, Mr.Eaton, with respect to that line, I wish you would examine that section and state whether or not you find any separation or any geological impediment to the movement of gas across that line?

A The only separation is the line that you just had me draw.

Q In other words, in the reservoir, geologically, there is no impediment to communication?

A No, sir. The Picture Cliff sand is continuous between these two wells. I might also point out that these two particular wells are on adjacent quarter quarter sections, so they are unusually close together for a Picture Cliffs' gas pool which is developed on essentially 160-acre spacing.

Q The Southern Union dividing line comes between these two 40 offsets?

A This is correct.

Q Have you made a critical examination of pressures in the area of the Southern Union dividing line to see whether or not there is any engineering evidence that any type of separation exists?

A I have taken the pressures obtained from deliverability tests run during the 1963 deliverability testing period on a group of wells in the vicinity of the Southern Union dividing line, some on the north side of the line, some on the south side of the line. I have posted those pressures; these are 7-day shut-in surface pressures.

The P/C of the deliverability test, I have posted these pressures adjacent to the well from which they were taken on Exhibit No. 2.

Examining the pressures, you will note that there is a considerable variation, perhaps, percentage-wise, between some of the pressures. As an example, in Section 13, Township 28 North, Range 11 West, there are three wells, one of which has a pressure of 188 Psi, and another 243 Psi. These are wells on the south side of the Southern Union dividing line.

Moving to the north side of the dividing line and again looking at wells in the same section, or nearby sections, in Section 34, Township 29 North, Range 11 West, there is, there are two wells, one having a pressure of 174 Psi, the other, 191.

Immediately adjacent to those two wells in Section 11 of Township 28 North, Range 11 West, there are two wells, one having 200 Psi, the other, 240. Individual well pressures perhaps don't quite mean as much as what is the average pressure that seems to exist immediately south of the line and immediately north of the line.

I averaged the pressure on this exhibit and found that the average of this group of pressures south of the line was 225 Psi, the average of the group of pressures just north of the line was 206 Psi.

In my opinion, this is so close as to be identical. I assume, therefore, or I presume therefore, that proration had been effective in establishing essentially the same stage of depletion on the north side of the line and the south side of the line.

Again, there's no engineering evidence to indicate an impediment to complete migration across this Southern Union dividing line.

Q And these data do show then, from an engineering standpoint, from a geological study of the reservoir, that in the area of this dividing line the Commission is looking at a common source of supply of gas?

A In my opinion there is a common source of supply.

Q Mr.Eaton, if we did not have migration and movement

of gas in this reservoir, would it have been possible for the wells in this pool to have produced for the extreme lengths of time that some of them have been producing?

A No, sir, it would not.

Q Do you feel that even though this is a tight reservoir that we do have communication, we do have migration and movement of gas through this reservoir?

A I feel confident that all of the gas that has been produced from some of these wells over the past 30 years didn't exist in the well bore at the time of the well completion. It came from the reservoir.

Q Would you explain to the Commission why in your opinion we have effective communication even though we do have this low order of permeability?

A The effective communication is demonstrated by movement of gas over wide areas over a long period of time. Now, migration is not complete, we know that. Mr. Haseltine made that amply clear and I certainly agree with it.

You don't have complete migration in these tight gas reservoirs. As a matter of fact, you don't have complete migration even in a good gas reservoir, but there is migration from one area to another.

The extreme cross sectional area over which gas can move permits this migration over wide areas when compared to

the small restricted area that the gas must move to get into a well bore. If gas can move into this extremely restricted area into a well bore, then it certainly can move through this big rock area out in the reservoir.

Q Vertically, what are we looking at here in this Pictured Cliffs reservoir?

A The average thickness probably, as Mr. Haseltine has pointed out, is approximately 30 feet in thickness. In the center of the pool, the thickness may increase up to 50 to 60 feet of effective sand; near the edges it's a lot less.

Q In your opinion, if the producing rate of the northern or favored area is exempted from proration and the producing rate is increased 120 percent, do you feel that the result of that will be migration of gas from the southern area to the favored area?

A Yes, sir, I do.

Q I wish you would look now at Applicant's, Southern Union's Exhibits 2, 3, and 4, their pressure distribution maps.

A Yes.

Q I would like to have your engineering opinion, Mr. Eton, as with respect to the conditions we see on each of these three maps, if these are not ideal pressure distribution conditions for the migration of gas?

A Yes, sir. Without pressure distribution such as is

depicted on these three exhibits, there can be no migration.

If all the pressures in the entire pool were equal, there would be no flow from one area to another area; it's only with the pressure differentials that there can be migration.

The fact that the pressure is higher in the southern end of the pool than it is in the northern end of the pool, this fact states the direction that that migration will occur. Certainly migration will not occur from a low pressure area into a high pressure area.

The sequence of exhibits again illustrates that the conditions that are conducive to migration have continued to exist. I don't believe that they have been aggravated by proration itself. They existed at the time.

Q Does it appear to you that proration has done a pretty good job of maintaining the equities that existed at the time it was applied?

A In my opinion, proration has permitted the relative depletion rates of this entire pool on an equitable basis.

Q Mr.Eaton, let me direct your attention now to Applicant's, Southern Union, Exhibit 5. That is the exhibit, the pressure profile that is along one narrow band of the reservoir.

Do you agree with Mr. Haseltine that the pressure

profile as depicted here could be completely different two locations away in the reservoir?

A I don't know if it would be completely different. I'd be very much surprised if you got exactly the same pressure profile through two different locations in the reservoir.

Q When we look at that pressure profile along one narrow axis of the reservoir and then we look at Exhibits 2, 3, and 4, do they show the same picture taking the reservoir as a whole?

Let me withdraw that question and ask it this way. Does this pressure profile along a narrow axis of a reservoir show the same pressure distribution that we see on Exhibits 2, 3, and 4?

A No, sir. It is not possible to take a single row of wells and get the same perspective of reservoir conditions as looking at the entire group. I don't know if this is very clear or not, but it seems to me that if we were to compute the average reservoir pressure, the mean pressure that exists in the southern area, and compare it to the mean pressure which exists in this northern area, and do it for the years 1957 and 1960 and 1963, it's quite conceivable that an entirely different picture of reservoir conditions would be attained than is obtained by looking at a single line of wells taken at the same three specific periods of time.

Q In your opinion, looking at Exhibits 2, 3, and 4, which show progressively conditions up to current, does the pressure distribution as reflected by Exhibit 4 show that conditions exist now for the migration of gas from the south to the north?

A Yes, sir.

Q Do you feel that this will be compounded by the increasing of the producing rate in the north area by 120 percent?

A It certainly will be. Under no circumstances I don't think anybody could possibly take a different position. There never will be migration from this area; I'm pointing to the north area into the south area, and there will be less, or there will be more tendency for migration from south to north if the pressure differential between the two areas is increased.

Now, this will occur if the producing rates increase. In that light, yes, increasing the producing rate from the north end without a compensating increase in the south end means that the north end will be depleted at a faster rate, the pressure will be drawn down in a more rapid rate.

The pressure differential between the two areas will increase, the tendency for migration will increase.

Q In your opinion, will the approval of the Southern

Union application by this Commission cause uncompensated drainage from the south area to the north area?

A I see no benefit to the south area that can occur from this, so I would have to answer your question, yes.

Q Mr. Eaton, you are generally familiar with the current proration system that exists, not only in this pool but in other prorated pools in the State of New Mexico?

A Yes. I believe I'm familiar with the system.

Q You also recall Mr. Haseltine's testimony to the effect that their problem would be solved by increased gas rates in the northern portion of the pool?

A Under the present proration system.

Q No, he just said his problems would be solved by more gas from the northern portion of the pool.

A Yes, sir, any way that that could be accomplished.

Q Do you see how that could be accomplished within the framework of the present proration system?

A This could be accomplished within the framework of the present proration system.

Q How?

A It would only be necessary for the purchasing companies to nominate more gas and to produce more gas and to have higher allowables in the Fulcher Kutz Pool. This would permit the maximum production from the north end as

well as the south end, and also protect correlative rights in the meantime.

Q Mr. Eaton, under the Southern Union proposal, the only area of this pool whose depletion will be accelerated other than by migration is the northern portion?

A That is correct.

Q Do not some of the same conditions exist in the southern portion with regard to old casing and the various mechanical problems that Southern Union mentioned other than their gathering system? Do not these conditions exist in the south?

A There are a number of fairly old wells in the southern portion. I'm not familiar with the condition of the casing in all of the wells in either portion. I feel sure there's some bad casing in the southern portion's wells as well as in the northern portion.

Q There are many old wells in the southern portion?

A There's certainly some very poor wells in the southern portion.

Q In your opinion, the handling of this problem within the framework of existing proration will serve conservation surely, and protect correlative rights?

A Yes, sir.

Q Mr. Eaton, I wish you'd look now at what I will ask

to be identified as Pan American Exhibit 4.

(Whereupon, Pan American Exhibit No. 4 was marked for identification.)

Q What does this exhibit reflect, Mr. Eton?

A This exhibit reflects the comparison of the respective portions of the Fulcher Kutz-Picture Cliff production, which would occur from the northern end and the southern end as the two areas exist under proration and as the conditions would exist should this application be granted.

Q In making your calculations, with regard to the conditions that would exist under the adoption of the Southern Union proposal, did you use data that Mr. Haseltine used on his Exhibit No. 6?

A I did.

Q It might be well if you would state for the record what exists now under current conditions and then we can perhaps have a before and after comparison.

A All right. The first number on this exhibit is the total 1963 production from the Fulcher Kutz-Pictured Cliffs Pool. In 1963, the pool produced 3,782,498 Mcf. The northern area, which I've called the exempt area, in 1963 produced 799,479 Mcf. This is 21.1 percent of the total pool production.

The southern area, or as I've called it, the prorated area, in 1963 produced 78.9 percent of the pool production.

If the production is increased from the northern area by an amount of 3120 Mcf per day, the production from the northern area on an annual basis would amount to 2,538,645 Mcf.

If there is no increase in total pool production, this amount would then represent 67 percent of the total pool production. This is more than three times the proportion that it received under proration.

Q Twenty-eight percent now, under this assumes 67 percent?

A That is correct.

Q What happens to the southern area under these conditions?

A The southern area would then produce 33 percent of the total pool production.

Q So, you would have to compare 33 with 78.9. What fold of reduction is that?

A That's more than 50 percent reduction and proportion that is allocated to the southern portion.

Q What other condition do you have calculated on this exhibit?

A The other condition, which was presented by Mr. Haseltine, is that the entire pool would be increased in production by an amount equal to the increased takes in the northern portion. Under those conditions, the total pool

production would amount to 5,521,664 Mcf.

The proportion which the exempt area would be allocated would be 45.8 percent, and the percent which would be produced by the area continuing under proration would be 54.2 percent.

Q So, Mr. Eton, looking at your last condition, there is still a significant rearrangement of the relative percentages of gas produced from this pool by the northern and southern areas?

A That is correct.

Q And, even if you will assume along with me that no migration would occur under the Southern Union proposal, you would still have a significant reduction in current income and current share from this pool from the southern operators that would be given to the northern operators, looking at the total share of the production from the pool?

A If the total pool production is not increased.

Q And under your last condition there that I was questioning you about, you assume there that the south would continue to produce as it has been, the additional or increased production would come from somewhere to go to the northern wells?

A That is correct.

Q Even under that condition, the percent that the

southern operators would get to produce from this pool would be significantly decreased?

A That is correct. The percent of the total pool production would be significantly decreased, but there would be no change in current income to the operators in the south end of the pool.

Q That's right, I see that now. Even assuming there is no migration, which I asked you to assume with me for this question, there would still be reduction in the share of the pool's production for the southern operators?

A Yes, sir. The purpose in my presenting this last set of conditions is to illustrate the changes that will occur should this application be granted. I've already stated that I think proration has done an excellent job in distributing the production from the pool.

If that is true, then the equities that have been established under proration undergo a severe violation, should this application be granted, because the proportion that's allocated to the southern portion of the pool is severely reduced.

Q Do you have anything else you would care to add at this time, Mr.Eaton, with regard any of your exhibits or any of the Southern Union exhibits?

A No, sir, I don't believe so.

MR. BUELL: That's all we have by way of Direct and I would like to formally offer Pan American's Exhibits 1 through 4 inclusive.

MR. PORTER: Are there objections to counsel's motion? The exhibits will be admitted.

(Whereupon, Pan American Exhibits Nos. 1 through 4 were offered and admitted into evidence.)

MR. PORTER: Does anyone have a question?

MR. JAMESON: Yes.

MR. PORTER: Mr. Jameson.

CROSS EXAMINATION

BY MR. JAMESON:

Q Mr. Eaton, one of the wells that is shown on your Pan American Exhibit No. 3, I believe, is the Angel Peak No. 7, located on northwest quarter of Section 13, Township 18 North, Range 11 West.

A You mean 17.

Q Yes, sir. Are you aware that that well has been plugged and abandoned?

A My information was that it was recompleted in the Fruitland. If it has been recompleted --

Q In the Picture Cliffs formation?

A Yes, sir.

Q Referring to Pan American Exhibit No. 2, and to

Township 28 North, Range 11 West, that specific well, is it shown on your line designated A-A'?

A You mean this Angel Peak No. 17?

Q Yes, sir.

A Yes, sir.

Q On which side of the divisional line between the north and south side areas is it located?

A It is on the south side.

Q As you have plotted the pressures on this map, what have you shown for the wells immediately north of that Angel Peak 17 well?

A The well immediately north of it is Angel's Peak No. 18. That pressure is 160 Psi.

Q And there were three others to the northwest of it?

A Yes, sir.

Q What were the pressures on those?

A The most northerly of that group is 200 Psi, the middle one is 240, and the southern one is 215. Now, that goes with the well in Section 14.

Q Yes, sir, but offsetting the Angel Peak's 17?

A Yes, sir.

Q Coming back to the southeast of the Angel Peak 17, what were the pressures at the closest wells in that direction from the Angel Peak 17?

A Two hundred forty-three Psi, 195 Psi and 188 Psi.

Q What does that condition indicate, that is the Angel

Peak 17, having been abandoned in the Picture Cliffs because of lack of production and the surrounding pressures as you have plotted them here? What does that indicate to you?

A It doesn't indicate anything to me. I don't know whether the well had a casing failure or whether the formation caved in or whether the cement job failed. I have no idea.

Q Well, assuming the well would produce in commercial quantities sufficient to keep operating it in the Pictured Cliff formation, what would it signify to you?

A It might indicate that it needs a stimulation.

Q Wouldn't it indicate to you the possibility of a tight zone in that area?

A No.

Q Possible impediment to drainage across that line?

A Not without having more information than I have on it. No, sir, not at all.

Q And assume that the well would not produce in the Picture Cliff, it still would not tell you anything without additional information?

A That's right. I don't know why it wouldn't produce.

Q I said, assuming that to be the correct fact, that it would not produce --

A Assuming that it's depleted in the Picture Cliffs, that would be correct, yes, sir.

Q So that there is some possibility along this line of, we'll say variation in the tightness of the formation, that could be an impediment toward restriction to the drainage or possible drainage that you have just testified to?

A In my opinion, the Pictured Cliffs is continuous through this area and it is continuous in it's continuous sand and no impediment to migration.

Q And 100 percent uniform as far as the relative tightness or permeability of the sand?

A No, sir, I didn't say that.

Q There is some variation from area to area?

A In my opinion, you will find that there is a variation in every vertical foot of the Picture Cliff sand as you move from the top to the bottom and as you move from well to well, but it's continuous.

Q In your opinion, is there any possibility that the variation from 100 percent uniformity could have some effect on the existence of the various pressure areas as they're shown on exhibits in evidence?

A It is not the variation that has the effect on the pressure distribution, it's the average nature of the sand being tight, and knowing that there's communication and migration is not 100 percent complete.

It is 100 percent complete. I think, over geologic

time, but in the time element that we're talking about, no.

There are transients that occur and exist in every reservoir. This is just evidence of those transient conditions, it takes time.

MR. JAMESON: That's all.

MR. PORTER: Does anyone else have a question of Mr. Elton?

GOVERNOR CAMPBELL: I would like to ask Mr. Elton a question or two.

MR. PORTER: Governor Campbell.

BY GOVERNOR CAMPBELL:

Q Mr. Elton, your testimony indicates that your averaging of pressures on the wells on both sides adjacent to this proposed north zone, south zone limit, indicates a relatively small variation, average-wise, almost no variation?

A Yes, sir, that is correct.

Q And that both of those areas, the pressures are low. Does that indicate considerable degree of depletion on both sides of the line?

A Yes, sir, it does.

Q Now, referring to the isobaric maps that were prepared and comparing the 1957, the 1960, and the 1963, isobaric map of the shut-in pressures, does that indicate to you that by 1963 almost the entire reservoir is at a shut-in

pressure that is quite low?

A Yes, sir, it does. I might point out in that regard, however, that the original reservoir pressure was never high and where we're talking about, the average reservoir pressure is low because essentially all between 300 and 400 Psi. But, when this is taken --

Q Between zero and 400, all of it?

A Yes, sir. But, I was thinking of the big orange splash there, is between 300 and 400 Psi. When this is compared to the initial reservoir pressure of approximately a little over 600, then it doesn't indicate an extreme degree of depletion.

The pressures are low, a lot of gas has been taken out, but the degree of depletion is not as advanced, say, as it might be following a normal gas reservoir where the original pressure might have been 1500 Psi.

Q You stated that in order to accomplish the profit and loss, I think it was referred to results that the applicant seeks here in the northern portion of the reservoir, there were two courses available, either the course they're requesting here to divide the reservoir and treat the two zones separately, or to arrange for an increase in total takes that would result in the maximum takes from the north end of the reservoir, is that correct?

A That is correct. Yes, sir.

Q Do you know of any other ways this could be accomplished?

A There's one other way --

Q What's that?

A -- that could be done that would still tend to provide protection to correlative rights and that would be to exempt the entire pool from the proration and let again every well be treated as an equal. I'm not recommending this and I don't mind telling you why.

This is no slam to the purchasing companies, either Southern Union or to El Paso, but once the proration is removed from the pool, then it's between the purchasers and the operators to get together and provide these ratable takes, and in my opinion, the Conservation Commission is in a much better position and much better equipped to provide ratable takes between wells and protect correlative rights than either the operators of wells or the purchaser of gas, but this is one thing I think might be done that would provide a method that would also permit ratable takes and protection of correlative rights.

GOVERNOR CAMPBELL: That's all.

MR. PORTER: Any further questions? Mr. Utz.

BY MR. UTZ:

Q In your opinion, Mr.Eaton, if we unprorated the entire pool, would this increase or decrease the total pool takes?

A I just don't believe I'm qualified to answer that, Mr. Utz.

Q Well, if we didn't prorate it, then it would fall back on contractual obligations, would it not?

A Yes, sir.

Q Since you are a producer, I thought you might have a pretty good idea what those contractual obligations were?

A Well, I can only speak of the ones that I know of and those are the ones that Pan American has, and I haven't made a full investigation of this, but I feel like that it would probably be less under the contracts that we have than it is under proration.

I'm not positive of this. The reason I feel this way is these are the very oldest gas contracts that we have in the San Juan Basin and they were written far before the advent of proration and before the advent of much market, and the minimum take requirements are pretty low in these particular contracts.

Q Pan American does have producing properties in the south end of the pool then?

A Yes, sir.

Q One of your suggestions as to solving this problem was to increase the total takes out of the pool. Do you know of any way the Commission can force the pipe lines to increase their takes out of any pool?

A No, sir, I sure don't.

Q Well, that wouldn't be a very practical solution then, would it, as far as the Commission is concerned?

A I don't believe the Commission can accomplish that. I think the purchasers can, though.

Q Another way to solve this problem would be minimum allowables at a high enough figure, would it not, if allowables could prevent premature abandonment such as we are looking at right here?

A To accomplish what Southern Union seeks, the minimum allowables would have to be different for each well.

GOVERNOR CAMPBELL: Or equal to the highest one.

A Yes, sir, or equal to the highest.

Q (By Mr. Utz) There is such a thing that they wouldn't necessarily need their highest takes that they're proposing here in order to completely --

A I misunderstood part of that.

Q It is true that they might not need as high takes, as their tests show they must take, on some of these wells in order to deplete the pool in a manner that would be satisfactory

to them and to the interest owners in the area?

A Well, the takes can be ratably, I mean can be regulated to any level. As I understand Southern Union's position, it's that they want to deplete the pool, at least this north end, in as fast a time as possible.

Now, the rates can be held down below the maximum, that will just tend to extend the life of the pool somewhere between what it will be under the present practice and what they're seeking. Does this answer your question, Mr. Uts?

Q I think so, on those few wells that they are capable of producing there?

A Yes.

Q Mr. Eaton, if we go ahead prorating this pool just as we are now, in your opinion will gas be produced out of this area in question here?

A Yes, sir.

Q How will it be produced?

A Through the wells in that area.

Q Who is going to take the gas?

A Well, Southern Union is going to take it for a while.

Q They have stated they are going to have to abandon their line very soon?

A Well, they will take the gas until they abandon the line and there's another gas purchaser in the northern portion

that I have no idea what their plans are, but it is possible that there's another market in that northern area.

Q But, you don't know whether they would spend the money to build pipe lines to take the gas?

A No, sir.

Q If the area is abandoned such as you suggested it might be here, is that going to constitute waste of gas in this area?

A In some cases there will be wells that will be abandoned that are still capable of producing at an economic rate. In other cases, it's quite evident from Mr. Haseltine's testimony that there are some wells that nothing is going to make those wells produce at an economic rate.

The wells that fell on this curve where the maximum ordinate was 7 Mcf, there's nothing that's going to help a well like that. That well probably should be abandoned.

In the case of other gas that might be left, eventually, over a period of time, this pressure differential situation that exists now between the southern area and the northern area will be reversed and some of the gas will go down to the southern area if it's continued on production long enough.

Q How long a period?

A Well, the projected life of this pool according to Mr. Haseltine's exhibit, at the present rate of depletion,

about 30 years. There's a good chance that the rate of depletion will be less in the future than it is now. So, perhaps in the range of 40 to 45 years, gas doesn't have to migrate at a very fast daily rate to amount to a good deal in a 45-year period.

Q Would that method protect the correlative rights of the people in the north end of the pool?

A It will be the people in the north end of the pool who are abandoning their wells. They are not, I'm sure, at the entire mercy of the purchasing company. There's other things that can be done.

Q In other words, I gather then that your opinion is that if we go along just like we are now, we'll be doing fine and there will be no gas wasted down in the north end of the pool?

A My position is that there are other ways to accomplish this faster rate of depletion than to arbitrarily separate the pool into a prorated portion and non-prorated portion.

MR. UTZ: That's all.

MR. PORTER: Anyone else have a question? The witness may be excused.

(Witness excused.)

MR. PORTER: Does that conclude Pan American's testimony?

MR. BUELL: Yes, sir, it does.

MR. PORTER: Does anyone else desire to present testimony?

MR. KELLAHIN: I would like to enter a belated appearance for Producing Royalties of Lubbock, Texas. Jason Kellahin, Kellahin and Fox, Santa Fe. We would like to offer the testimony of one witness who I think will take a very brief time.

I will call Mr. Tom L. Payne, Junior.

(Witness sworn.)

TOM L. PAYNE, JR.

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

(Whereupon, Producing Royalties Exhibit No. 3 was marked for identification.)

MR. KELLAHIN: If the Commission please, I would like to apologize for the fact that we have only one copy of each exhibit. We seek the indulgence of the Commission and the parties; we would like to pass those around and let one exhibit suffice since they were prepared last night since 4:00 o'clock and 4:00 o'clock this morning.

Q Would you state your name, please?

A Tom Payne, Junior.

Q What is your business, Mr. Payne?

A We have a little royalty company called Producing Royalties, Incorporated, and I am Secretary-Treasurer of this company.

Q Where is that located?

A It's located in Lubbock. It's a Texas corporation.

Q Are you employed by the company?

A Yes, sir, I am.

Q In connection with your duties as Secretary-Treasurer of the company, do you have anything to do with the books and records pertaining to gas production in the Fulcher Kutz-Pictured Cliffs Pool?

A Yes, sir. In this capacity, we have to try to keep a pretty current set of records and it entails going up to the field and trying to work on wells and trying to learn a little bit about the gas business, and anything that is company business is my business to try to take care of.

Q Are you familiar with the property owned by Producing Royalties, Incorporated?

A Yes, sir. I am familiar with each of the properties owned by the company; as a matter of fact, I participated in purchasing most of these properties.

Q Directing your attention to what has been marked as Exhibit No. 1 of this witness, would you identify that exhibit,

please?

A This is a reproduction of a map which has outlined on it, I believe this is Exhibit 1, has outlined on it in yellow most of the field in question of this case.

Also, it has, located in red in the center of this yellow portion, a part of this area fell off this map, but in the center of this yellow portion is a property located, colored in red, upon which are located six Pictured Cliff gas wells. These properties are owned, the working interest, by Producing Royalties, Incorporated.

GOVERNOR CAMPBELL: What is their location?

A All of the properties are located in Township 29 North, Range 12 West, Sections 11, 12, and 13. Not all of those tracts, but a portion of each tract.

GOVERNOR CAMPBELL: You are in the so-called north zone of the --

A Of the questioned area.

Q (By Mr. Kellahin) As a matter of fact, you are approximately in the center of that zone, is that correct?

A I think the map will indicate that we are almost in the center of the zone. I would like to say that I am very apologetic to the Commissioners and to their staff for not having better information to present to this Commission today. We were not informed of any of these plans and we were

not informed directly of this hearing except through the advertising channels in this manner. We subscribe to a little oil and gas, Reinhart Oil and Gas Report, of the Four Corners area and in the December 9th report we happened to notice Saturday afternoon that this hearing was taking place.

Monday morning, as soon as the office was opened, I called Mr. Haseltine at Southern Union office and he was in conference and I was unable to talk with him to learn more about this hearing. So, Monday afternoon, we decided we had better come up and talk with some of the members of the Commission and learn a little bit about what was advertised in this Reinhart report, because we're extremely concerned on these little wells.

They're very small in comparison with the 50 or 70 wells involved, but to us they are very important because we paid a lot of cash, hard money, for them and we are going to be a long time getting that money back out of them.

Q Again, referring to Exhibit No. 1, how many wells do you have on the properties operated by Producing Royalties, Incorporated?

A Producing Royalties, Incorporated, has six Picture Cliff gas wells. We haven't heard any conversation about deeper zones, so I'll just talk about Picture Cliff the rest of the afternoon.

Two of those wells are tied into El Paso's gathering system and four of those wells are tied into Southern Union's system. Later on I will present some graphs, if I may, referring to only five of these wells. One of the wells at this time is not producing and I do not include it in the graphs.

Q Have you made a study of the production figures from the wells operated by your company?

A I have not made a study of all of the field, but we're very, very concerned about how our particular wells are producing.

Q My question was, have you made a study of your wells?

A Yes, sir.

Q What information was available to you for the basis of this study?

A Well, we receive every report that we can from the Conservation Commission and New Mexico Oil and Gas Committee down at Hobbs of which we're members. We receive from Southern Union each month a statement of the gas produced from the four wells; we also receive run tickets from El Paso Natural Gas Company of the wells that they produce, the Oil Conservation Commission, well, where we took this information from is the New Mexico Proration Schedule and the New Mexico Oil and Gas Committee, Engineering Committee reports out of Hobbs.

We have been members of that committee for about seven years and we have a lot of data from these different reports that are public information.

Q On the basis of that information, have you prepared a tabulation showing the production from the individual wells over a period of time?

A From our wells I have, yes, sir, Mr. Kellahin.

(Whereupon, Producing Royalties Exhibit No. 2 was marked for identification.)

Q Referring to what has been marked as Exhibit No. 2, is that the tabulation?

A Yes, sir. This morning my brother and I took from these sources that I have just mentioned that was available to us here in Santa Fe, and we tried to bring everything we could. We left some things at home, but because of the short period of time we had to try to prepare something, I would like to present this group of figures.

This group of figures is the actual production from each of those five wells previously identified. Each month for the years 1959, '60, '61, '62, '63, '64, to the later months of '64. We're real concerned about those wells because of that production history. We get to produce these wells as Southern Union wishes them to be tied into their system. As far as I know, we are not to turn on our wells into their line

until they request we do so or turn them on themselves.

I know they can't turn them on until they have allocation from the Commission to permit those wells to produce. The thing that concerns us so about these wells is the very erratic way in which the wells are produced.

I would like to point out in a little while to the Commissioners that to produce these wells three or four months of the year and then the rest of the months of the year, why, the wells are usually cut off. It makes it pretty hard to pay the bills with that kind of operation.

We just prefer as you'll see in two columns there that El Paso takes the gas from two wells, that they take a little gas each month, and I don't know about the other operators, but small operators, it sure does help for a little bit of gas to be taken each month instead of erratically.

Q Does that have any effect on the operating condition of the well, Mr. Payne?

A We have had a rather unusual experience in the Farmington area with these little gas wells. Our ignorance of the wells has caused us to be very alert and learn things the hardest way, it seems. For example, in 1960, about sometime, I went up to Farmington, my brother had been operating the wells as far as work over jobs and so forth were concerned, and I was completely inexperienced with the wells.

My little switcher up there wanted to impress me with how much gas one of these wells would produce, so what we call our Carol Cornell No. 2 Well, he turned it on to the atmosphere and the well whistled and blew. If any of you have been out to a gas failure, you know how it sounded, and I was impressed.

I was more impressed a little bit later when I found we had killed that well. We sucked all of the gas out of the well and we brought liquids in and no more gas could come to the well bore. We didn't know what to do with that well.

GOVERNOR CAMPBELL: You fired the switcher, didn't you?

A That's a very good question. No, we didn't, Commissioner, to answer your question, but I would like to state that this has been a long hearing and so many facts are presented are boring to some people who are not so interested as we and haven't an interest up here.

When you appear at a Commission hearing and find out that you can't appear without an attorney, you don't go to sleep during the lunch hour in Santa Fe. I'll just mention that for another little laugh.

It seems that we learn everything the hard way. However, to get back to the experience we had up at Farmington,

for a little over a year and a half, we didn't do anything with that well because we had just been out about two or three thousand dollars on two or three of the wells a few years before, and we didn't want to do that again with the takes we were getting up there. So, we finally decided to try re-pressuring the well and blowing some of the liquid out. That, we did.

I would like to say here, also, that Southern Union and our relationship has been very cordial and we appreciate the relationship we have had with Southern Union because we are appearing against them today because we are not enemies in any way as far as we are concerned, but we were able to pressure the liquids off of this well and the little old well started coming back in June of 1962, and as you can see by those figures, they started out very slowly, 380,000 cubic feet per month. 845, 1119, 1006, 1721, and we were very concerned. That little switcher was called very often to see what the reaction of that well was. He was very concerned too, needless to say, with reason.

In November and December, someone cut our wells off and, man, we got real concerned about it because we knew that water was just getting off of there good and we didn't want that water to stop up the formation again, we we acquired permission to produce this well on a work-over basis and in

January, the well came back slowly, 346,000 cubic feet for January, 331,000 for February, then 2712 for March, 3834 for April, and then they cut the well down to 13 days for May, but it still produced 1830. This is a million, eight hundred thirty thousand.

June, they let it produce 4,697,892, and then it continued in 4,000,000 until they started reducing the well again because of allowables. This proved, this error that we made proved to us in our own candid opinion, and we are not engineers, proved to us that if you will take care of those wells up there and produce them, or attempt to produce them, as regularly as possible, that that field is a long way from depleted, that there is a lot of gas up there, but we have been mismanaging our wells. It isn't the formation well, it isn't the little well's fault as much as our mismanagement.

Our mismanagement is combined with a number of things such as -- Mr. Utz, if I might, may I borrow that and let Mr. Porter see that again a moment? What's of real concern to us, and I don't think the answer is here today quite frankly. The Commission and their staff do everything they can to help us people and they are doing a wonderful job for us little people because without them we couldn't survive in a great big gas field. I'm not sure we can with their help.

These wells, I would like to point out No. 5 and No. 6;

this is nobody's fault, this is because we got more darn gas than we have market to sell it in, and none of us can help that right now except keep fighting Tenneco and that West Coast line.

In 1962, you'll notice that No. 5 well didn't get to produce for a number of months. Then in 1961, No. 5 well continued to get to produce very little. About 14 months there, it only got to produce two months out of the 14. Now, before it produced and afterward it produced. I would like to also point out that No. 5 well is a 50 percent acreage factor well, it only gets a half of an allowable. But if there was some way that the gathering systems could do more like El Paso has done on the two wells over on the right, the two columns on the right-hand side of this exhibit, take this gas a little bit per month.

Now, I don't know for sure how El Paso does this, but I think that they have a pretty high-line pressure on this line into which these two wells are producing.

I don't think that El Paso has to even go out to these wells. As far as I know, we haven't cut these wells on or off the line for a number of months and we don't get much production from them because these little Picture Cliffs wells are back under the restriction of some Dakota wells into that line. I think. I'm not sure of that.

If Southern Union could take their gas in a more

regular fashion of that nature, I believe that all of that field would be much better off.

Now, there's another thing I would like to mention while we are looking at this chart. We have prepared little arrows, little red arrows, pointing to certain figures, at the bottom of those figures usually, and those are the periods in which the measurement -- that is the date that the measurement was taken for calculating the deliverabilities.

Now, on these '63 and '64 years, for example, on wells 5 and 6, you'll notice that these wells were permitted to produce, in No. 5 for instance, in both those years for four consecutive months prior to the test date.

Now, I don't mean the test date, I mean the measurement date that the test was taken. Then immediately, those wells were cut off and the wells were cut off and remained off for a number of months.

Now, we feel like that when you lower the line pressure on these gas wells to 25 pounds, that you create a situation where the water and liquids will come to the well bore and will have a real marked effect on destroying these wells.

We feel like that if there was some way to maintain a pressure on that line, a little bit more than that, and those people whose wells will not go into that line, let them proceed

to buy the compressors or whatever is necessary to boost their gas so it will go into the line, but not to reduce the pressure to 25 pounds.

We also feel that because these wells worked so hard the two or three months into a low line pressure before the date of measurement for those deliverability calculation tests, we feel like that it is a distorted picture of the true facts of what these wells might do over a period of time of regular production.

We are not engineers. All we have done is go up there and work a little bit trying to save this investment.

By the way, I would like to mention, the information that we could gather from just talking to this person and that person in the last two or three days was that, and we weren't consulting with Southern Union, so we didn't know any different from this, was the fact that Southern Union was going to go in and produce all of this gas out in two or three years, and it frightened us because if they turn that No. 5 and No. 6 well on and let it produce as much as it will, which we feel will be like five and ten million dollars, dollars, no, five and ten million cubic feet of gas per month, that in three or four years our gas will all be gone, that we will have recovered say, 45 to 50 thousand dollars in this two or three years.

We need the money and we are not griping that we

want money faster, but we feel like if we nurse these wells along and that's what I mean, nurse them along, that we'll be able to get one hundred twenty or one hundred forty thousand dollars that remains invested out there, cash dollars, and we don't want to lose the difference in those two figures if we have to wait 15 or 20 years to recover it.

Now, there's another thing about that field that we kind of feel that may not have much bearing, but a few years ago, before we were blessed with some Dakota Mesaverde wells in the Basin, these Pictured Cliffs wells were pretty well respected, I know, because we bought these properties on some of the reports that came out.

One or two of the reports that came out were reported to us by people that we had a lot of confidence in and those, this particular individual is very conscientious and he went to some of the larger, major companies operating in the Basin and he got all the data that he could get to make this report to us about these properties, and that was only about seven or eight years ago, and at that time the reserve picture was a whole lot more than what I hear right now.

I feel like we might be guilty of this, we might be running over nickels trying to pick up dollars, because of the fact of all the gas supply we have all of a sudden. Whereas, really, I don't believe that the conservation is best looked upon

from that point of view.

I believe that the gas in place, until we can afford to get it out, is best for all the people and the best conservation method.

I don't have any plan, Mr. Utz, as to how the best method is to do this, because it is a real sizable job. As I said a while ago, you fellows are doing a wonderful job at your job, but I don't know what this answer is and I don't think it can be settled here today. I surely hope it can't because we are not in favor of the program as proposed by Southern Union at this time.

Q Mr. Payne, have you made a graphic depiction of the information contained on Exhibit No. 3?

A This is Exhibit No. 3, and we did try last night. There may be some discrepancies in this, but on the time element that we were working, and with the information that we had at hand in the motel room, this is the best that we could do and we feel like it's a pretty fair story.

With this graph, I think that you'll find we tried to outline one well in one color, another well in another color, until we had the five wells on this graph.

I think you'll notice that the wells numbered red and green, it will be real difficult to show a decline curve on those wells from that production.

Now, there's different pressures on those lines over those five years indicated on that graph, but six or seven years ago I know that some of those wells were produced ten or thirteen million cubic feet with a 25 pound line pressure also, because that little fellow that we have employed up there has been reading those charts for a long time.

This is real terrible business of having this kind of picture on production of gas wells and we're not proud of it at all, but the deliverability on these wells, and we didn't go by the pressure route, we went by the deliverability route, is pretty well constant except for the changes that were made in calculating the deliverability over the past two years, which you are all familiar with.

Did I explain that pretty well?

Q I think that covers it. Were Exhibits 1, 2, and 3 prepared by you or under your supervision?

A My brother and I together last night prepared each of these exhibits.

I would like to say this, that Southern Union shouldn't be penalized on that, on having to take that gas at an expensive cost, and I certainly haven't talked with El Paso. I haven't talked with anybody about what they might be willing to do.

I know that El Paso, and this can be checked, has a

line almost parallel in this particular area that's shaded in yellow, to that line of Southern Union, and I know that Southern Union line is giving them some trouble on re-working because of the age, but I feel like there could be some deal made with El Paso to let these wells all be tied on to their line if it was agreeable.

I know that five or six years ago, I went to Southern Union's office and I tried to get them to let me change my contract with them and tie all of our wells into El Paso's line because of the regular test and not for any reason.

Southern Union is a good operator, but we needed to take more regular. They wouldn't discuss those contracts at all or talk about releasing them.

Q Referring to the contracts, do they have a minimum take provision in them?

A I'm sorry, I do not have those contracts with me. We have them in the office. Some of those contracts were the first made in the field. One of our wells, the one we have to re-work is one of the first of the three wells drilled in the Basin. That contract has been revised about six times, but it sure is binding.

Q At this time, you couldn't say whether it has a minimum take provision in it or not?

A I could not, but to the best of my memory, I don't

believe any of our contracts have a minimum take, but I can't remember the details of those contracts.

MR. KELLAHIN: At this time, I would like to offer Exhibits 1, 2, and 3, of Producing Royalties.

MR. PORTER: Any objection to these exhibits? They will be admitted into the record.

(Whereupon, Producing Royalties Exhibits 1, 2, and 3, were offered and admitted into evidence.)

MR. KELLAHIN: That completes our questions of this witness.

MR. PORTER: Does anyone have a question of Mr. Payne?

MR. PAYNE: Thank you very much for hearing us today. I am sorry, and I never again will come up as unprepared to a Commission meeting.

GOVERNOR CAMPBELL: That's all.

MR. PORTER: If there's no further questions, the witness may be excused.

(Witness excused.)

MR. PORTER: Anyone else desire to present testimony in this case? Any statements at this time? Mr. Morris.

MR. MORRIS: Without attempting to review the evidence that has been presented here today, I would like to state as clearly as I can Southern Union's position in this

case and why we feel that some relief such as we have suggested to the Commission is absolutely necessary.

In any oil or gas pool, the oil or gas will be produced and saved only if the gathering of those products can be done in a manner that's economic and feasible; this is just an economic fact of life.

There has been a great deal said here today about the economics of gathering, and we don't want to place any undue emphasis upon our own problems here.

What we do want to place emphasis on before this Commission are the things that the Commission has a duty to take into account, and the number one item there is the prevention of waste.

Now, in the north end of the Fulcher Kutz Pool, it stands undisputed here in the record today that the economics of gathering are fast approaching the economics limit.

The cost per Mcf to Southern Union Gas Company is becoming prohibitive. If the gathering of gas is going to continue in this area, somehow we must reduce the cost per Mcf for gathering that gas.

Now our costs are relatively fixed. Mr. Haseltine's testimony was that we have done everything we can to reduce those costs, so the only other variable in the cost per Mcf

analysis that will decrease our cost per Mcf is to increase the volumes that we can produce in a given time period.

Now, we propose here that the wells in the north end of the Fulcher Kutz Pool be given some form of special treatment, that some form of a completion program be established by this Commission to the end that the volumes we are allowed to produce and gather can be increased so that our cost per Mcf be reduced.

This could take a number of forms. The wells could all be treated in a manner similar to the way marginal wells are treated at the present time, but I think to be fair with the Commission, that just about any analysis of time we are talking about exempting these wells from some form of proration.

It could be handled, however, so that the wells be left in the proration schedule if that be the Commission's desire, or the alternative would be to just face the music, take the well out of the proration schedule. Either way would be all right with us, however, but we must relieve in some form to prevent the premature abandonment of these wells because if no relief is afforded, gas will be left in the ground, which would be recoverable if the economic conditions could be corrected.

Now, in this regard, I would call again to the Commission's attention that there is a statutory definition

of waste, 65-3-3A, where underground waste is defined in a number of ways including the operating or producing of any well or wells in a manner to reduce or tend to reduce the total quantity of natural gas ultimately recovered from any pool. That's the type of waste that we're talking about here today.

The Oil Commission has a duty to prevent that type of waste. Now, it also has a duty to protect correlative rights and to afford to each owner the opportunity to produce his share in the pool, but that duty, the duty to protect correlative rights, is a conditional duty and it's dependent upon the production being accomplished without waste.

So, as we have learned from the Jalmat Case, and as we can see by the statutes, the Oil Commission has both duties, the prevention of waste, the protection of correlative rights, but the prevention of waste is the paramount of those two duties.

Also, I would like to point out that there's Sections 65-3-14A, and 65-3-29H, which concern the definition of correlative rights. The Commission's obligation to protect correlative rights is not absolute, but is required only insofar as it is practicable for this Commission to do so.

I think there again, the legislature is talking about, or considering that prevention of waste is the dominant factor.

Now, there has been a great deal said here today about whether correlative rights are going to be protected, whether they are not. I would just remind the Commission that it was Mr. Haseltine's unequivocal testimony that there would be no migration of gas across this north-south dividing line, that we have proposed, and that if there could be some migration of gas across there under the proposal that Southern Union is making here, that the amount of gas that would migrate would be so small as to be insignificant.

Clearly, it seems that the Commission's function and duty of preventing waste would be the paramount consideration in considering the granting of Southern Union's application.

To point out that we certainly believe that this Commission has jurisdiction to grant the application that Southern Union is presenting here, to grant the type of relief that we're seeking, and that this type of relief is not a great deal different from other forms of special treatment that the Commission is giving to some gas wells at the present time.

You have your procedures for handling marginal wells, you have your procedures for giving special minimum allowables and these constitute exceptions from the general rule, and we submit that under the Commission's overall and general duty to prevent waste where it can see that it is occurring or would occur if the Commission did not give relief, that this Commission has the authority and the duty to act.

This will be a continuing problem with this Commission, this is not the only pool that will face a depletion status. We suggest to the Commission that it face up to this problem at this time and in this pool, and we earnestly ask that the Commission give favorable consideration to the form of relief that Southern Union has proposed to alleviate this problem and to prevent waste. Thank you.

MR. PORTER: Mr. Buell.

MR. BUELL: May it please the Commission, I feel like I have already made several closing statements, but I will be as brief as possible if you will indulge in one more.

I would like to say this, that in my opinion, regardless of the high motive and the high ideals of Southern Union in this particular case, that if the Commission approves this application it will be the death necessarily, of gas prorationing as we have had it in the past in the Basin.

Southern Union has even been honest and frank enough to tell the Commission that if you approve this one, there are going to be others.

Completely aside from the legal standpoint of whether or not the Commission under the statute has the authority to prorate a geographic portion of a reservoir and not prorate another, completely aside from that, I think that this record justifies the Commission denying this application on it's merits,

I disagree with Mr. Morris; I think that the duties of the Commission and the prevention of waste and the protection of correlative rights are co-equal duties and obligations.

I would also like to point out to this Commission that in the past it has not turned it's back on correlative rights. I think one outstanding example would be the many associated gas reservoirs we have where the testimony of witnesses for both parties, the gas operators and the oil operators, agree that the most efficient way, from the standpoint of conservation ignoring correlative rights is to produce none of the gas wells and only the low structure oil wells until the pool is depleted.

The Commission, in those cases, never turns it's back on correlative rights although admittedly more oil and more gas would have been recovered in the pool by ignoring correlative rights.

I sincerely feel that those duties are co-equal. There is not a gas pool, as a matter of fact, an oil pool, in the State of New Mexico where you could not search and find a certain area of the pool where if you would ignore correlative rights you could make a case for increasing the production of oil or the production of gas from that particular pool.

The approval of this application is going to be a Pandora's box to this Commission, and if it is approved, it

will come back not only to haunt you but to haunt the industry.

I would like to point out for the record that I think the most probative evidence in this record shows that if this is granted, there will be a gross violation of correlative rights, and I would also ask the Commission that before such an unprecedented step is taken such as approving this, that other avenues of relief for Southern Union be investigated.

Several of those have been pointed out in this hearing. Mr. Haseltine didn't know whether some of these other solutions would work or not, but this is so unusual and would be such a dramatic change and a significant change in gas prorationing, that I think this application should be denied until at least these other avenues of relief are fully investigated.

Pan American respectfully requests that their application be denied.

MR. PORTER: Does anyone else have a statement to make in the case? Mr. Howell.

MR. HOWELL: If it please the Commission, Ben Howell for El Paso Natural Gas Company.

We are a little bit like Julius Caesar or Mark Anthony when he went to Egypt, we didn't come here to fight today and our only feeling in this is a recognition of the

problem that exists, and it does seem to us that this is somewhat unique because of the age of the gathering system in this portion of the pool which Southern Union has testified about so fully, and I have some question in my mind that any similar discrepancies in age exist in other areas of the Basin.

All that we're asking is that if the Commission sees fit to grant this application, that the privileges be made also applicable to the wells connected to that portion of our gathering system which lies in the same area.

We have gathering systems in both the south and the north. There are presently 15 wells connected in the north section and some four or five which have been disconnected that we might expect to be reconnected in the event that this application is granted.

We would expect that we'll be able to work out satisfactory arrangements with Southern Union for handling this portion should the Commission see fit to grant this application.

GOVERNOR CAMPBELL: Mr. Howell, has your company had any discussions with Southern Union with regard to any way in which the purchasing companies together could help resolve this problem without this step?

MR. HOWELL: None other than on this particular matter. I might call to the Commission's attention that, of

course, again we get the shadow of the Federal Power Commission, we can start talking about an inter-state line installing compression, that's a matter that gets over into a complicated field there. We have not, to my knowledge, had any discussions other than on this particular proposal which I have outlined to you.

MR. PORTER: Does anyone else have a statement or anything to say?

MR. HOUGER: I would like to make a statement on the behalf of USGS.

MR. PORTER: What's your name?

MR. HOUGER: My name is H-o-u-g-e-r, Billy J. I am supervising petroleum regulatory engineer in the Roswell, New Mexico regional office of the branch of the Oil and Gas Operations, United States Geological Survey.

The USGS, from the standpoint of conservation, supports Southern Union Gas Company's application listed as Case No. 3185 before the Commission today.

The premature abandonment of wells whereby there is a resulting decrease in ultimate recovery of this nation's natural resources, in our opinion is not in the best interest of conservation.

The above statement is, number one, not intended to reflect any opinion on our part as to whether the authority

to approve Southern Union's application -- where it starts number one, I would like to repeat that.

This statement is number one, not intended to reflect any opinion on our part as to whether the Commission is or is not invested with the legal authority to approve Southern Union's application, and number two, is made subject to a finding by the Commission that the correlative rights of the operators in the south part of the field would not be adversely affected by granting Southern Union's request.

Thank you.

MR. PORTER: Thank you. Anyone else have a statement to make?

MR. BUELL: May I please add a short recommendation to our further closing statement, that it would be our poor second choice, recommend to the Commission that in the event the Southern Union application is approved, that the entire pool be exempt from prorationing.

MR. KELLAHIN: I would just like to state, in case there remains any doubt, Producing Royalties is opposed to Southern Union's proposal.

MR. PORTER: Off the record.

(Whereupon, a discussion was held off the record.

MR. PORTER: Gentlemen, if there's nothing further to offer, we'll take the case under advisement.

INDEX

EXHIBITS

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Witness my Hand and Seal this 6th day of January, 1965.

NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

[illegible]
San Juan County, N.M.

Total 1965 Pool production, 1965, MCF [illegible]
Production from Exempt Area, 1965, MCF [illegible]
Percent, exempt area to total pool 21.1%
Percent, Prorated area to total pool 7[illegible]%

Production from Exempt Area if its production is increased by 5120 MCFPD [illegible]

Percent, Exempt area to pool total, with no increase in total pool production 61.0%

Percent, Prorated area to pool total 35.0%

Percent, Exempt area to pool total if total pool production increased 5120 MCFPD and all produced from exempt area (5,521, 664) 45.8%

Percent, prorated area to pool total 54.2%

Wells Owned By Prc.

Amount of Gas Produced in MCF

Southern Union Connection

Years Months	Carroll Cornell #2	Days		Carroll Cornell #5	Days		Carroll Cornell
1959							
Jan.	2913			0			50
Feb.	2616	27		0	0		32
Mar.	3947	30		5387	18		61
Ap.	0	0		2544	?		24
May	272	5		0	0		62
June	1670	19		3305	10		16
July	1364	24		0	0		7
Aug	2977			6598			89
Sept.	1721		9-15-59	2382			23
Oct.	2046			0			
Nov.	1147			0			66
Dec.	2330	30		841	?		50
1960							
Jan.	539			7223			8
Feb.	1161			7769			7
Mar.	1743			9357			6
Ap	1367			1833			15
May	1515			0			
June	489			0			
July	0			0			
Aug	264			0			
Sept.	0			2935			26
Oct.	0		10-24-60	6151			41
Nov.	3			0			49
Dec.	34			0			8
1961							
Jan.	82			0			6
Feb.	0			0			
Mar.	12	5		0			
Ap.	32	8		0			
May	0			0			
June	0			0			
July	0			0			
Aug	0			0			1
Sept	10			2352	16		21
Oct.	5		10-24-61	3901	5		4
Nov.	22			2619			
Dec.	11			0			3
1962							

...UCING ROYALTIES, INC.
EACH MONTH AND NUMBER OF DAYS ALLOWED TO PRODUCE

← EL PASO GAS CONNECTIONS →

> = [illegible]

★ = After system for Calculating deliverability was changed.

#6	DAYS	CARROLL CORNELL #11	DAYS	CARROLL CORNELL #12	DAYS
30		2053		1683	
73	15	2595		1559	
79	13	1378	< 3-22-59 >	1356	
27	3	1748		811	
32	24	2468		2032	
91	4	1543		1162	
9	4	2139		1482	
0		1590		1314	
47		1363		1200	
0		1460		1194	
5		1624		1633	
34	7	3232		2531	
033		1501		1398	
017		1456		1063	
99		820	1st Econ [illegible]	730	
29		1212		1139	
0		1283		1381	
0		1349		1289	
0		1069		1160	
0		881		850	
79		1540		1559	
74		2092		2153	
26		1103		937	
00		1590		1075	
765		1190		1094	
0	0	1060		1096	
0	0	660	< 3-22-61 >	647	
0	0	978		1331	
0	0	742		1393	
0	0	909		1822	
30	0	630		1399	
315	16	627		1105	
581	15	1451		1436	
0	0	521		1150	
331	11	996		1217	
		1103		1833	

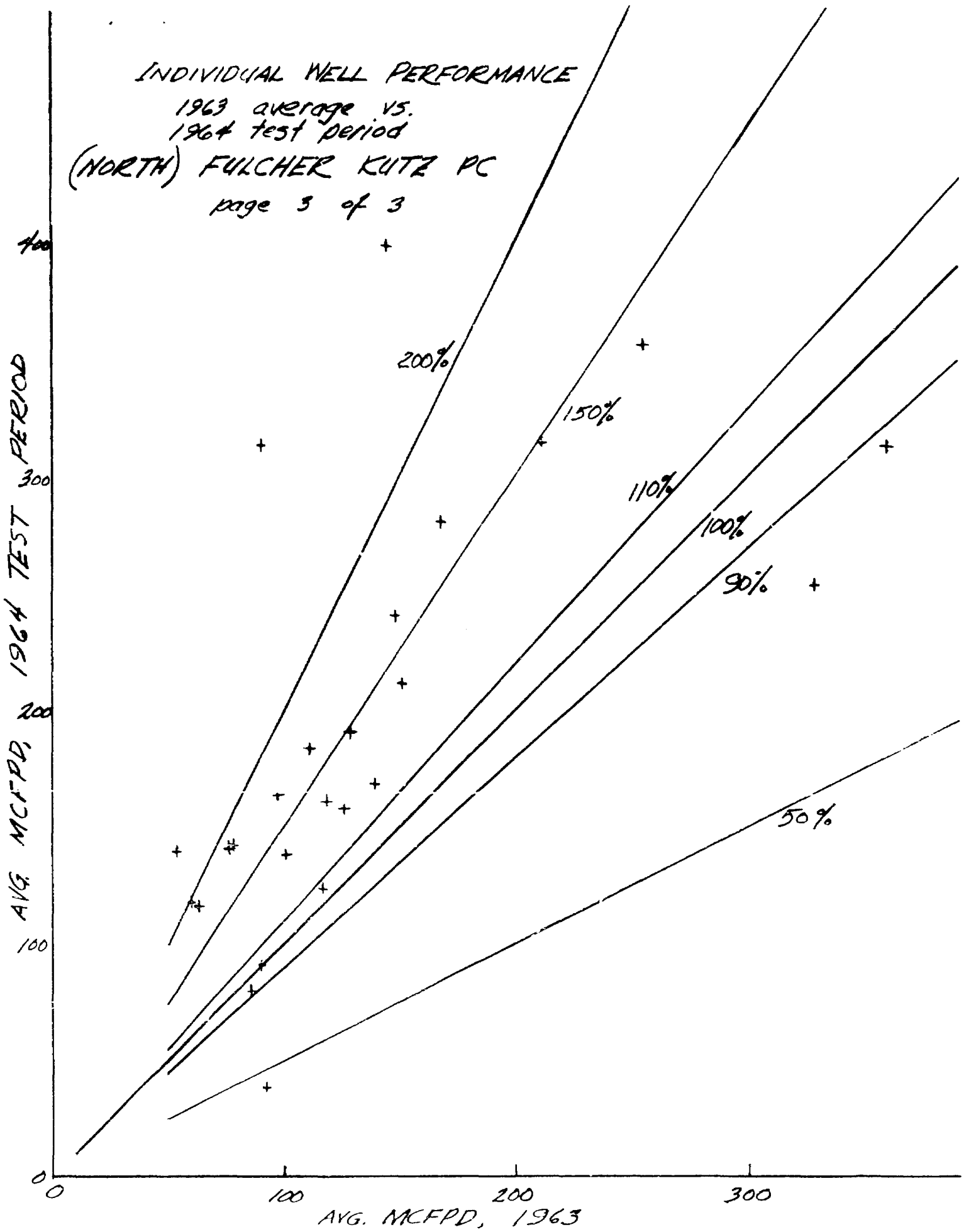
NVC

JAN							
FEB		5			0		
MAR.		152			4569		11
AP.		159			4215		4
MAY		112			0		
JUNE		380			0		81
JULY		545			0		67
AUG		1119			0		42
SEPT.		1062			0		0
OCT	Exmts	1721		10-21-62 >	8314		> 94
NOV.		0			0		
DEC.		0			0		
1963							
JAN		346			5598		42
FEB		331			3251		
MAR		2712			7500		
AP.	Exmt 7	3884		5-6-63 * >	9651		* > 105
MAY		1830			0		
JUNE		4692			0		
JULY		4415			0		
AUG		4387			0		
SEPT		1185			0		
OCT		1867			0		
NOV		279			0		0
DEC.		3690			0		0
1964							
JAN		0			0		70
FEB		0			0		98
MAR		3402			10074		100
AP		4453			* 8512		71
MAY		4934		6-1-64	> 10290		* > 85
JUNE		0			0		
JULY		0			0		
AUG		0			0		
SEPT		0			0		
OCT		0			0		
NOV.		0			0		
DEC.					OVER PRODUCED 15,768		UNDER 19,01

945		[illegible]		[illegible]
47	[illegible]	1807		1415
47	27	1868		1203
40	[illegible]	788	< 4-26-62 >	651
[illegible]	0	2083		1648
[illegible]	[illegible]	1740		1455
[illegible]	30	1393		1119
[illegible]	17	1380		1311
[illegible]	0	1294		1515
16	[illegible]	996		1316
[illegible]	0	976		1362
[illegible]	0	584		855
18		530		526
?	[illegible]	1025		1295
?		715		1069
26	27	1219	< 4-22-63 * >	778
[illegible]	0	649		247
[illegible]	0	425		347
[illegible]	0	816		1231
[illegible]	0	631		1260
[illegible]	0	486		942
[illegible]	0	1632		1241
[illegible]	0	873		677
[illegible]	0	795		729
39	20	1615		927
16	30	1125		1589
14	30	2206		1477
28	26	1205		953
00	39	2173		1297
[illegible]	0	1541	< 6-21-63 * >	352
[illegible]	[illegible]	Figures Not Available in Santa Fe		
[illegible]	[illegible]			
[illegible]	[illegible]			
[illegible]	[illegible]	1344		1418
[illegible]	[illegible]			
PRODUCED				
20				

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Exhibit No. 2
Case No. 2185

INDIVIDUAL WELL PERFORMANCE
1963 average vs.
1964 test period
(NORTH) FULCHER KUTZ PC
page 3 of 3



SOUTHERN UNION GAS COMPANY
HEARING BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION
CASE
EXHIBIT IX
FULCHER KUTZ PICTURED CLIFF POOL

NORTH END REMAINING LIFE

GROUP	REMAINING RESERVES*	NO EXEMPTIONS AVAILABILITY	NO EXEMPTIONS LIFE**	WITH EXEMPTIONS AVAILABILITY	WITH EXEMPTIONS LIFE**
I	15,011,000 MCF	1,400 M/D	29.8 yrs.		
I + II	17,886,000 MCF			4,400 M/D	11.2 yrs.
I + II + III	20,848,000 MCF			4,400 M/D	13.0 yrs.

Group I = Wells capable of 50 M/D or more.
Group II = Wells capable of 10 M/D, but not capable of 50 M/D.
Group III = Wells not capable of 10 M/D, but suspected of recovering additional gas under proper mechanical conditions.

* Above reserves calculated from pressure-production history. Adequate mechanical condition of the well is assumed.

** Life as indicated by reserves divided by present rate.

OLH:cm

SOUTHERN UNION GAS COMPANY
HEARING BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION
CASE
EXHIBIT VI .
FULCHER KUTZ PICTURED CLIFF POOL

1964 PRODUCTION TEST RESULTS - NORTH END

Number of Wells in Test: 58
Length of Production Test: Three Months

	1963				1964 TEST PERIOD				
	NEW ALLOCATION	PRODUCTION	DAYS	AVERAGE M/D PER WELL	NEW ALLOCATION	PRODUCTION	DAYS	AVERAGE M/D PER WELL	PROJECTED ANNUAL PRODUCTION
Group A (M/M) (27 Wells)	58,207	58,207	7,500	7.8	44,351	44,351	3,478	12.8	109,923
Group B (N/N) (25 Wells)	426,709	478,961	4,315	111.0	136,475	397,851	2,167	183.5	1,527,933
Group C (M/N) (5 Wells)	59,422	59,422	1,419	41.9	46,923	45,286	718	63.1	101,310
Group D (N/M) (1 Well)	18,000	1,662	74	22.5	1,500	---	---	---	---
TOTAL - (58 Wells)	562,338	598,252	13,308	44.9	229,249	487,488	6,363	76.5	1,739,166

Annual Availability: 1963 Prorations 598,252 MCF
Annual Availability: Proposed Exemption 1,739,166 MCF
Increase = 1,140,914 MCF

Daily Availability: 1963 Prorations & Operating Practices 58 X 44.9 = 2,604 MCF/D
Daily Availability: 1964 Proposed Exemption & Proposed Operating Practices 57 X 76.5 = 4,361 MCF/D
Increase = 1,757 MCF/D

Group A: Wells Marginal at start of test, Marginal at end of test.
Group B: Wells Non-Marginal at start of test, Non-Marginal at end of test.
Group C: Wells Marginal at start of test, Non-Marginal at end of test.
Group D: Wells Non-Marginal at start of test, Marginal at end of test.

OLH:cm

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Exhibit No. 6
Case No. 3185

SOUTHERN UNION GAS COMPANY
HEARING BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION
CASE
EXHIBIT VII
FULCHER KUTZ PICTURED CLIFF POOL

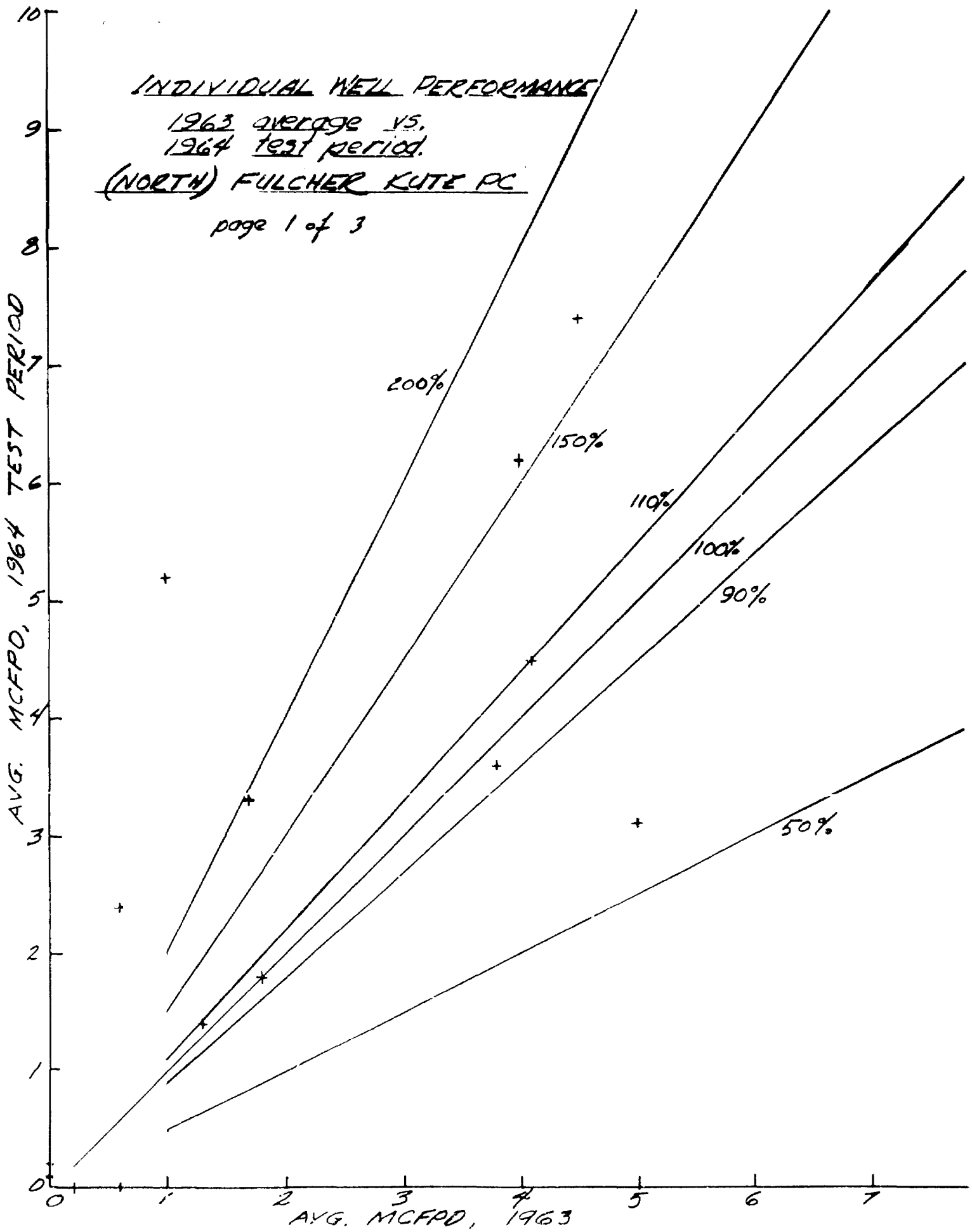
INDIVIDUAL WELL PERFORMANCE GRAPHS
COMPARISON OF 1963 PERFORMANCE WITH 1964 TEST

OLH:cm

INDIVIDUAL WELL PERFORMANCE

1963 average vs.
1964 test period.

(NORTH) FULCHER KUTZ PC



INDIVIDUAL WELL PERFORMANCE

1963 average vs.
1964 test period.

(NORTH) FULCHER KUTZ PC