BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO
January 27, 1972

SPECIAL HEARING

IN THE MATTER OF:

Application of Continental Oil Company for an order to ensure ratable taking of gas and an exception to Order No. R-1670, Rio Arriba County, New Mexico.

Case No. 4628

BEFORE:

State Geologist A. L. Porter, Jr.,
Secretary-Director

TRANSCRIPT OF HEARING

Volume I

MR. PORTER: Good morning, gentlemen. The Hearing will come to order.

This is a Special Hearing by a quorum of the Commission to hear an application of Continental Oil Company, Case 4628.

Mr. Hatch, would you read the description of the application.

MR. HATCH: Case 4628, Application of Continental Oil Company for an order or orders to ensure ratable taxing of gas and an exception to Order No. R-1670, Rio Arriba County, New Mexico.

MR. PORTER: Before getting on the way with any testimony, may we have identification of parties for the record.

MR. KELLAHIN: Jason W. Kellahin, Kellahin & Fox, Santa Fe.

I have appearing with me Mr. Jim Bowdin, a member of the Texas Bar from Houston, Texas, appearing for Continental Oil Co.

MR. PORTER: Mr. Morris.

MR. MORRIS: If the Commission please, I am Richard Morris of Montgomery, Federici, Andrews, Hannahs & Morris, Santa Fe, appearing for Southern Union Gas Company.

Appearing with me is Mr. William S. Jameson of the Texas Bar, who will participate with me in the presentation of the case for Southern Union Gas.

Mr. Porter, while I am on my feet, could I request permission of the Commission to make a very brief opening

statement on behalf of Southern Union before the presentation of any of the evidence?

MR. PORTER: Yes. The Commission will allow you to make a statement, Mr. Morris.

However, I would like to continue at this time with the appearances.

MR. MORRIS: Yes, sir.

MR. PORTER: Does anyone else desire to make an appearance?

The Commission recognizes Mr. Morris.

MR. MORRIS: If the Commission please, in a case of this sort, which is not exactly an ordinary type case for the Commission, we thought it might be advisable before any of the evidence is presented to present a brief statement in an attempt to focus on the issue that is before the Commission in this hearing.

I don't intend by this opening statement to review the evidence we would intend to present, or try to anticipate the evidence that Continental may present, but from the petition, the application that has been filed by Continental in this case, it, of course, is obvious that Continental is contending that there has been a violation of the Common Purchaser Act, the ratable take provision of that act, and I am referring to Section 65-3-15, New Mexico Statutes Annotated.

Now, that Act, that Statute is quite explicit as to the

duties of a common purchaser of gas in a Field. What it's obligations are to the purchaser, I mean the producers that are connected to its system, and what would constitute a violation of its duties as a common purchaser.

I would like to just outline, without reading the Statute, I would like to outline the provisions of it.

The Common Purchaser Act requires a Common Purchaser, that is, a company such as Southern Union Gas Company, who holds itself out as a purchaser of gas in the pool--the Statute requires the Common Purchaser to purchase without unreasonable discrimination, and that is the key phrase that you will be hearing again and again in this proceeding, "Without unreasonable discrimination" between producers that are connected to its facilities.

This is not a requirement that all producers in the pool be treated the same way.

It is a requirement that all of the producers connected to the gathering system of that particular purchaser be treated without unreasonable discrimination.

It is not even a requirement that all of the producers connected to one system be treated identically.

I think the Statute by using the term, "Without unreasonable discrimination" recognizes that there will be differences in the treatment of various producers, and as long as that variation in treatment as a pattern does not amount to

unreasonable discrimination, there is no violation of the common purchaser's duty.

Now, specifically the Statute goes on, it doesn't just say, "Without unreasonable discrimination." They leave it up to the Commission to determine, without any further standards to go by, what constitutes unreasonable discrimination.

The Statute specifically goes on, and it recognizes that unreasonable discrimination does not exist, does not result even if there are differences in the prices paid or the facilities afforded, or both.

If such differences bear a fair relationship to the differences in quality, quantity, or pressure of the gas or to the relative lengths of time the gas will be available to the purchaser.

The Statute also specifically recognizes that no purchaser is required, either directly or indirectly, to purchase gas that cannot be economically and satisfactorily used by the gas transportation facilities then in service.

I think that it is important at the outset of this hearing to focus on the real issue in the case. That is, what is the real issue and what are red herring issues in this kind of proceeding.

The issue is not simply whether the facilities afforded by Southern Union Gas Company, in this case to Continental, are equivalent to those afforded to other producers in the South

Blanco-Pictured Cliffs Pool.

Now, we will explain, when it comes time for us to present our part of the case, the exact nature of the differences that do exist as to the facilities afforded to the various producers in this Pool.

The issue in this case is whether in consideration of pressure prices paid for gas, quantity of gas available and the quality of gas available, and the relative length of time that this gas will be available to Southern Union, whether in consideration of all of those factors, there is unreasonable discrimination, and it is not simply a question of whether this is a difference between the facilities afforded to one producer or to another, and even more specifically, we would represent to the Commission that we believe our evidence and all of the evidence in this case will show that where there are differences in pressure, where there are differences in facilities afforded, there are counter-balancing considerations in terms of price, in terms of gas available, in terms of the gas purchase contracts, the period of time that these contracts extend over, that all considered together will show that there is no unreasonable discrimination practiced in this Field.

With that, we would ask that the Commission bear in mind when it hears the Continental portion of this case, please to remember that Southern Union has, as in any case, has its side of the case to present, and we believe when all of the evidence

is considered the Commission will deny the application in this case. Thank you.

MR. PORTER: Mr. Kellahin?

MR. KELLAHIN: If the Commission please, basically, of course, I would have to agree with Mr. Morris on his interpretation of the Common Purchaser Act, up to the point of his conclusions, rather than go into that right at the moment--

MR. PORTER: I think that is very often the case, Mr. Kellahin.

MR. KELLAHIN: It is a normal situation when you have two opposing attorneys.

This case has been brought on before the Commission on the application of Continental Oil Company, and its application for an order of this Commission to ensure ratable taking of gas by Southern Union's Gas Company from gas wells in the South Blanco-Pictured Cliffs Pool, Rio Arriba County, New Mexico.

We further seek the reclassification of our wells, Continental Oil wells from marginal to non-marginal status with the authority to carry underproduction from such wells forward without cancellation as long as these wells are being classified non-marginal.

Now, our situation is simply this: The South Blanco-Pictured Cliffs Pool, all of our testimony and all of our argument in all of our case is based on gas takes in the South Blanco-Pictured Cliffs Gas Pool, and all of our argument and all

of our case is based on connection to Southern Union's Gas system.

We are not talking about any other operator, any other pool, or any other gas.

Now, South Blanco-Pictured Cliffs Pool was created in May of 1952, and proration was instituted March 1st, 1955.

At the present time the allocation of production is under the provision of Order No. R-1670, which was adopted in May, 1956 and merely carries forward the prior proration orders which were in effect in this Pool.

As far as I know, and I am sure this is correct, this is the first time in the history of the Oil Conservation Commission that it has been asked to pass on a question involving the Common Purchaser Act.

Now, all of the proration orders of the Commission which are entered under other statutes, which are really not in question here, but have been in effect for many, many years, without any dispute, these proration orders are designed in effect to accomplish a ratable take and to a considerable extent they have accomplished exactly that.

The Oil Conservation Commission has determined that the allowable formula in effect in this Pool protects correlative rights under this allowable assigned to the non-marginal wells.

This is where we come to the crux of the matter.

If the allowable is produced by those wells, but if the

wells are prevented from producing their assigned allowable--let's take a non-marginal well, and it has an allowable, but because of the excessive line pressures maintained by the gas purchaser against that well, the well is unable to produce its allowable. It automatically becomes a marginal well.

The inequity is then carried forward for the reason that it has no allowable assigned to it and there is no under production carried forward for that well, so the Commission from its own records can determine the extent of this inequity.

Now, the Commission is obligated to assign allowables. We feel it has done so in regard to the non-marginal wells, but there the Commission is prevented from accomplishing the designed purpose of keeping it in equity because of the high line pressures which are not under their control, but are in fact under the control of the gas purchaser.

Therefore, the gas purchaser has in effect usurped the authority of the Commission, has subverted the Commission system of prorating equities, prorating to protect equipment, and has instituted a system of their own which obviously differs from that of the Commission.

Now, we have brought this case before the Commission, as Mr. Morris said, under the provisions of Section 65-3-15, which is the Common Purchaser Act.

Now, this Act vests in the Oil Conservation Commission the duty of promulgating rules, regulations, and orders to ensure

ratable taking of gas, and it requires any common purchaser to take ratables under such rules, regulations, or orders.

I don't think there is any question but that Southern Union Gas Company is a common purchaser, a common purchaser being defined as "any person now or hereafter engaged in purchasing from one or more producers gas produced from the gas wells in a common source of supply."

Now, Mr. Morris was stating that under the provisions of this Act the Commission must take into consideration in regard to facilities--and perhaps I misunderstood his argument--but this is the way I understood it--must take into consideration the facilities that are afforded along with differences in the price, quality, quantity, etc.

Now, the Common Purchaser Act, subsection d, provides that such purchases shall be made without unreasonable discrimination in favor of one producer against others in the price paid.

We are not talking about the price paid for the quantity purchased.

We are talking about--and our testimony will so show--the basis of measurement. We are not arguing about the basis of measurement. I think that is uniform throughout the Pool, or the gas transportation facilities afforded for gas of like quantity, quality, and pressure available from such wells.

We are talking primarily about the gas transportation facilities that are being enforced.

The Act further states that the Commission can take into consideration, and it shall not constitute unreasonable discrimination, if the differences bear a fair relationship--and I emphasize "fair" because I think our testimony will show there is no fair relationship involved in this gas system--if they bear a fair relationship to the differences in quality, quantity or pressure of the gas available or the relative lengths of time during which the gas will be available to the purchaser.

We don't know anything about Southern Union contracts or how long the gas will be available. We only know we have a contract with Southern Union Gas, and we feel we are being discriminated against in the South Blanco-Pictured Cliffs Gas Pool.

Now, Rule 902 of the Commission Rules and Regulations paraphrases the Statute which we just quoted.

It makes essentially the same provisions.

The evidence that we will offer will show that the Continental Oil Company has in the past been forced to produce against line pressures that have ranged from 498 pounds to 511 pounds, while during the same period other wells connected with the same system producing from the same common source of supply were bucking line pressures of 322 pounds.

We will also show that Southern Union subsequent to the filing of this application has reduced the line pressures.

We won't say it was done because of the application because

part of this work was commenced prior to our filing the application, but in response, we feel, to demands which had been made by Continental Oil Company in the past.

We will show, our evidence will show that the high pressures have resulted in curtailed production in Continental Oil Company's wells causing these wells to be classified as marginal wells, when in fact producing against pressures that were available to other operators.

If these wells would have been non-marginal, they would have been assigned allowables, would have carried forward any underproduction assigned to them.

As a matter of fact, when in October Southern Union Gas Company did reduce the pressures against Continental Oil Company, twelve of our wells were able to produce volumes of gas equal to an assigned allowable, and in fact these wells are non-marginal wells.

MR. PORTER: That is October, 1971?

MR. KELLAHIN: Yes. So, at least twelve wells in this system right now which are non-marginal, although they are carried on the schedule as marginal because of their past history.

It is relief from this situation that we are asking in this proceeding. We have made considerable studies and we will try to hold our testimony down to some reasonable length for that purpose.

Our present plan is to only call one witness. Mr. Earl Mattes, an engineer from Houston, Texas.

MR. PORTER: Mr. Kellahin, how many witnesses do you intend to present?

MR. KELLAHIN: I would say at the present time we only intend to call one. We may have a rebuttal witness, depending on what develops during the course of the testimony.

MR. PORTER: Mr. Morris, how many witnesses do you have?

MR. MORRIS: We probably will have three witnesses.

MR. PORTER: Are they all present?

Let's have all of the witnesses sworn.

We might as well have your rebuttal witness sworn.

We won't require him to rescind his oath if he doesn't testify.

(Whereupon the witnesses were sworn.)

MR. PORTER: Would you have your witness take the stand?

EARL MATTES

a witness, having been first duly sworn according to law, upon his oath, testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN

Q Will you state your name, please?

A My name is Earl Mattes.

Q All right. By whom are you employed and in what position, Mr. Mattes?

A I am employed by Continental Oil Company as a Senior Staff Engineer in the Production Headquarters, Production Engineering Services Staff.

Q Where are you located?

A Houston, Texas.

Q How long have you had that position, Mr. Mattes?

A Since March of 1971.

Q Now, have you ever testified before the Oil Conservation Commission in New Mexico?

A No.

Q For the benefit of the Commission would you please outline your education and your work experience as a petroleum engineer?

A Yes. I was graduated in June, 1950, from the University of Pittsburgh with a Bachelor of Science degree in Petroleum Engineering.

Upon graduation I went to work for Continental and worked for four years in various engineering assignments in the Texas Gulf Coast and Louisiana Gulf Coast areas, and from 1955 to 1964 I was employed in various district engineering capacities in four of the district offices in the Texas-Louisiana coast area.

Q What districts were those?

A They were the McAllen, Texas, Ville Platte, Louisiana; Saint Landry, Louisiana, and Corpus Christi, Texas.

1964 to 1966 I was District Superintendent for Continental at Pampa, Texas district.

From 1965 to 1967 I was employed as District Manager of the Lake Charles,District Office of Continental's CAGC operations.

In 1967 I was Assistant to the Vice-President of Production, Exploration Group of Continental Western Hemisphere Petroleum Division in Houston; and in 1968 I was Assistant Division Manager of the Oklahoma City Division in Oklahoma City.

In 1968 to 1971 I was manager of the New Project Development Group that was a part of the Continental Headquarters Natural Gas and Gas Products Department in Houston; and since March, I have been employed in my present job.

Q In connection with your work for Continental Oil Company did you have any experience in the production and operation of gas pools?

A Yes, I did.

Q Did you have an occasion to observe the manner of production of pipelines connected to gas wells operated by Continental Oil Company?

A Yes, sir.

Q Have you been associated with the problems Continental feels it has in the South Blanco-Pictured Cliffs Gas Pool?

A Yes, I have.

Q What was your association with that problem?

A Well, in March I first became acquainted with the problem we were having or we felt we had in the South Blanco-Pictured Cliffs Pool.

I was asked to help our Casper Division see if there wasn't a way that we could find to help Continental achieve higher rates of production from this area.

Q Did you become familiar with the wells operated by Continental Oil Company in that area?

A Yes, sir, I did.

Q Did you become familiar with the wells operated by other operators in that area?

A Yes, sir, I did that, too.

Q When I say "area," I am referring to the South Blanco-Pictured Cliffs Pool area.

A Yes.

Q Is all your testimony confined to that Pool?

A Yes.

Q Is all of your testimony directed to the operation of the Southern Union Gas Company Gathering System?

A Yes, in the production of Continental wells.

Q Now, would you identify that area that Continental is

concerned with in this Pool?

A Yes, sir. The area that we are concerned with in the Pool that we are talking about is shown on the map on the extreme left.

Q Can you get up there and talk?

A Yes, sir. This area is in Township 25 North and Township 26 North, and Ranges 4 West and 5 West in Rio Arriba County, New Mexico.

The Continental leases that we are referring to are colored yellow on this map.

They include the Axi-Apache J lease which is Section 5, Section 7, and 8, Township 24 North, Range 4 West, the Axi-Apache-K lease, which is in Section 3, Section 4, Section 9, and Section 10 of 26-5 and the Axi-Apache-L, M, N, and O lease(s) which are comprised out of 16 sections of Township 25 North, Range 4 West.

The wells that we have been talking about are those wells in the South Blanco-Pictured Cliffs Pool, and each of the 31 wells that Continental operates in this pool are shown on this map with a red dot.

Q Some of the wells are marked with an arrow. Will you come to those later in your testimony?

A Yes, sir, I will.

Q Mr. Mattes, do you have a typed log showing the South Blanco-Pictured Cliffs Formation?

A Yes, sir, but I forgot to bring it.

(Whereupon a brief off the record discussion ensued.)

THE WITNESS: This is the log of the Axi Apache J-1. It is Exhibit 2.

This log shows the top of the Pictured Cliffs Formation at about 2,900 feet with the base of the Formation at about 2,917 feet.

The interval that has been perforated in this well is also shown as being from 2,900 to 2,918 feet.

You will notice in the Typical Log at the bottom, that this well is shown as Humble Oil & Refining Company Jicarilla-J-1.

This well was drilled by Humble, and subsequently acquired by Continental Oil Company.

Current records of the Commission reflect that this well is Continental A-xi-Apache-J-1.

Q Is this the same zone you have marked that is producing from all of the Continental wells shown on Exhibit 1?

A Yes, it is.

Q And it is typical of the South Blanco-Pictured Cliffs Formation?

A There are variations in character of the sand, but it is the same interval.

Q In connection with the South Blanco-Pictured Cliffs Pool, do you know what the vertical horizon involved in this is as defined by the Commission?

A It is defined as the interval that I have described, between 2,900 and 2,917 on this log, but not--

Q In the Commission Order it is only described as the Pictured Cliffs Formation?

A That is true.

Q There is no order setting a vertical limit by footage?

A That is right.

Q To your knowledge?

A Yes.

Q Now, would you refer to Exhibit No. 3, Mr. Mattes, and tell us the information that is shown on that exhibit?

A Exhibit 3 is simply a reproduction of the Commission's allowable schedule for the wells in the South Blanco-Pictured Cliffs Pool that are connected to Southern Union Gas Company.

All we did was take those pages out of the January Allowable Schedule, and have them reproduced on a single sheet of paper.

Q This is a reproduction of an official schedule prepared by the Oil Conservation Commission?

A That is right.

Q For what month?

A For the month of January, 1972.

Q Now, does this show all of the South Blanco-Pictured Cliffs wells prorated as of that date?

A Yes, that is right.

Q Does it also show all of the Continental wells shown on Exhibit 1?

A Yes, it does.

You will notice all of the Continental wells, all thirty-one are carried as marginal or exempt-marginal wells on this schedule.

Q In your opinion, are these in fact marginal wells?

A It depends on the pressure that they have to produce against.

Q Now, the work that you have done and the investigation that you have made will be related to only these wells shown on this exhibit; is that correct?

A That is right.

Q Now, Mr. Mattes, of course the Commission if familiar with its own calculation formula for the allocation of production and the determination of the deliverability, which is a factor in production, have you prepared an exhibit which shows this formula?

A Yes, I have.

Q Would you say that is marked as Exhibit No. 3?

A Yes, that is Exhibit No. 3. This is simply a--

Q Four?

A Excuse me, four. That is right.

This is Exhibit 4, and it just is a recreation of the Commission's only deliverability formula, and you can see

it is shown at the very top of the exhibit, tabulated beneath the formula, are the critical elements that go to make up the factors in the formula.

The D is calculated deliverability, and Mcf per day. This is the integrated volume in Mcf's per day obtained from the 7-day flow period pp's of c is the 7-day shut-in wellhead pressure and pound per square inch.

B-C-D is equal to deliverability pressure at point A in PSI. P-C-W is the static wellhead working pressure in psi absolute, and the point .85 eight five is the pool slope for the South Blanco-Pictured Cliffs Pool.

Q These are approximations to which your testimony will refer during the rest of this presentation, is it not?

A That is true.

Q That is the reason you offer the exhibit, to explain what we are talking about?

A That is right.

Q Mr. Mattes, can you tell us how long you have been associated with this problem that is involved in the Continental Application in this case?

A Yes, I have been associated with this problem since about March, 1971.

Q What have you done?

A Well, one of the things that I have done, and I made a field trip in late May and early June to observe the

physical facilities and the wells that we are going to talk about here today, and in this trip I went to the wells that are in this pool, and what I have done is I have taken the wells that are in this map and plotted them on this map with the remainder of the wells that are connected to Southern Union's Dogie Compressor Gathering System.

Q You said, "This map," are you referring to what has been marked Exhibit No. 5?

A Yes, this is Exhibit No. 5. The base for this map is the pipeline map of the area that has been provided to Continental by Southern Union.

Q There have been some changes in their facilities subsequent to that map, have there not?

A That is right. This map was current at the time I made this trip I have described to you.

Q Now, you said you inspected the facilities. What did you inspect at that time?

A What I did was I went and looked at the meter, L-10 meter chart reading on the wells where a green block is shown, and the pressure that is shown in the green block is the pressure conversion that I made from the L-10 reading of the meter chart at the well where I made the reading.

Q Now, what is an L-10 meter reading?

A An L-10 is simply a chart that records the square root of the pressures and the differential pressures that the meter

orifice meter is recording.

Q What is the purpose of this chart? What is it used for?

A It is used to transfer title of the gas.

Q Are you saying that that is the measure upon which Southern Union Gas Company pays Continental for its production?

A Yes, sir.

Q That is the measure of the gas produced.

A That is true.

Q Does it also show working pressures?

A Yes, it shows the pressure that exists in the meter at any specific time.

Q Now, does this pressure in the meter in any way reflect the pressure in the line to which the meter is connected?

A Yes, it does. It is that pressure, the pressure to the meter, the pressure in the line at that point.

Q You started to describe the pressures you found. Would you discuss the differences you found within their system?

A Yes, sir, I will. You will notice that the Continental Axi Apache L-3 had a pressure of 440 psi. It also had a pressure of 415. This hydraulic gradient continues all of the way over to the Axi Apache--I believe it is Y-3, and where it was 397 pounds.

In looking through the Field I noted that some of the other wells had substantially different pressures, which I did not record, and in trying to ascertain the reason for

this difference I went into Southern Union's DogieCompressor Station.

Q You say you noticed a substantially different pressure in your other wells. Where, in the same system, in the same leg of the system, or in other areas?

A In the same system and in other areas, too.

Q So then you went to the DogieCanyon Station?

A That is right.

Q What is located there?

A Well, at the time I went there were four compressors in the DogieCanyon Station.

One was an Ingersol-Rand SVG-A-3 with two Solar Saturn 1,100 hp centrifugal units, and on the compressor site, but not connected up, was a Solar Saturn 3,300 hp compressor.

I noticed that the SVG-A-3 had a gage on the suction side that showed the 225 psi that I have shown here in 26,6.

Q That is the location of the compressor station right there?

A That is the location of the compressor station there.

Q You labeled branches from that northwest and west?

A Yes, that is right.

Q They are all connected to the same station?

A Yes, all of the three charts that I have shown, or the four, have been labeled northwest and west to define that direction from DogieCanyon Station, which they serve.

Q Now what did you do in connection with the system pressures

in these different legs or segments of the gathering system?

A At the time that I was in the Field I didn't recognize the significance of the differences that I have observed when I was at the Station, but when I was there the two Solar Saturn 1,100 hp units obviously were installed, and only one was working, and it had a section pressure of 360 pounds, and the SVG-8 was working, and it had a discharge pressure of 440 pounds, and the Saturn had a discharge pattern of 440 pounds, and it wasn't until I got back to the office and looked at this map that I concluded that since all of these lines came into the same compressor station, and we had 397 pounds on our J lease, that the Saturn unit was serving the east trunk and the SVG-8 was serving the north trunk.

Q Would you repeat the location of each of the wells you gave the pressure on and the point at which you took the Compressor Station pressures?

A Yes, I will. Axi Apache L-3 in 35-25-4 had a pressure of 440 psi, and Axi Apache N-7 in 12-20-25-4 had a pressure of 410 psi; Axi Apache N-A-N-225-4 had a pressure of 403 psi.

I can't read this number, but the well is in 6-25-5, and it had a pressure of 397 psi.

Q Axi J-3?

A That would be Axi J-3, that is right.

Q In the other pressures you took only at the Compressor

Station; is that correct?

A That is right.

Q Based on this information, was it your opinion that Continental Oil well company was in fact being discriminated against at that time?

A Yes.

Q What led you to that conclusion?

A Well, what led me to that conclusion was the fact that our wells were in an all marginal and other wells in the same common source of supply with reasonable comparable producing characteristics had allowable proratable allowable assigned to them.

Q Now, is it the first evidence that you had that led you to believe Continental wells were being discriminated against by the Gathering System pressures?

A Yes, sir, it was. We had the standard evidence that is available from reviewing the individual well deliverability test summary that is compiled in the engineering report of the Commission, but the fact of the difference in the pressure of the suction pressure of the compressor serving the various trunks was the first evidence we had of the real reason for the differences in the pressures that these wells were afforded to produce against.

Q Well, now approximately what was the difference in pressures on the two systems, the east portion of the system and the

north portion of the system?

A Well, the east trunk had a Gathering System pressure that was about 50 percent higher than the north trunk.

Q Now, you said the pressures were evident at the time of your field trip. Are they representative of today's conditions in this pipeline system?

A No, sir, they are not. During the summer Southern Union installed the 3,300 Solar Centaur centrifugal compressor and connected it up, and they also installed a 12-inch loop on the east trunk, and I have shown this loop in red on Exhibit 6.

It extends from the DogieCompressor Station to about the west line of Continental Axi Apache J lease.

Q Would you point out the location of that on the map, the Axi Apache J lease?

A Yes, the Axi Apache J lease is in 25-5.

Q That would be the first group of wells to the east of the compressor station?

A That is right.

Q Approximately what is that distance?

A I would say it is about four miles.

Q And approximately what is the distance north of the compressor station to the first group of wells?

A It is about three miles.

Q Now, has this looping an additional compressor facility

made any difference in the operation of Continental wells?

A Yes, sir, it has. The wells are producing at substantially higher rates than they were producing at the time the pressures of Exhibit 5 were in evidence.

Q Now, when did the facilities go into operation, according to your experience?

A Well, according to our records, our individual well records, sometime in early October. I'm not sure exactly because you can't see, you know, there was up and downs, but early in October they had the system connected up and operative.

Q You did notice?

A And we first began to see the increase in production in our wells.

Q Did you make a second pressure survey?

A Yes, sir.

Q When was that made?

A On January 18, 1972. Continental field personnel went out and took the pressures at the meter charts on the wells that are shown on Exhibit 6.

You can see from these pressure observations that the east trunk had a pressure of 250 psi at the western edge of the Axi Apache J lease in 25-5, and this pressure was increased through the hydraulic radiant to a pressure of 292 pounds at the south end of Continental leases at L-1 Axi-Apache in 25-4.

On the North system, the pressure ranged from 189 lbs. in 16 of 26-6 to 235 lbs. in section [illegible]14 of 26-7, and to 250 lbs. in 19 of 27-8.

Q Whose wells were those?

A These are Southern Union Production Company's.

Q There is a change not only in the pressures but in the producing rates between the east leg of the system and the north portion of the system; is that correct?

A That is correct. The pressures in this area are down about 30-35 pounds, and the pressures in this segment are down 130 pounds.

Q Now, what is the pressure at the present time?

A Just based on the geographic distance from the Compressor Station to the closest point on the line that we can compare, it is about 60 pounds.

Q And that has gone a long way toward solving Continental's problem, has it not?

A Yes, it has.

Q But has it solved Continental's problems?

A No, it hasn't.

Q Was the percentage of differential related to the system of pressure in both trunks?

A Well, if you consider the 189 pounds that is in evidence at the south end of the wells in 26-6, and compared to the pressure at the west end of the Y lease well in 25-25.

They enjoy a gathering system pressure which is about one-third higher than the wells in Townships 26-6, Range 6 West.

Q Now, do you feel that this is still a substantial difference?

A Yes, I do.

Q Do you feel that it is an unreasonable discrimination?

A Yes, it is unreasonable.

Q Now, can you tell us why this difference exists today?

A Well, it is my opinion, based on conversations with field personnel, that the SJJ-8 is still connected at the north and west trunks, which serves the wells in 26-6 and 26-7, and 27-8.

The east trunk is connected to one or more of the centrifugals. I don't know which one. And the various compressors have different suction pressures, and these, the suction pressures of these compressors are reflected in the differential in the different pressures that exist in the trunks, as I have shown on Exhibit 6.

MR. PORTER: Mr. Mattes, Commissioner Armecho has a question as to why you didn't use the same wells on Exhibit 5 and 6 to show the pressures?

THE WITNESS: The reason we didn't use the same wells is, I guess, mostly through oversight, but we were really trying in Exhibit 6 to establish hydraulic gradients across Southern

Union's system, but when I made my Field trip I had no such objective.

I was trying to survey as many wells as I could to see what the size of our problem was, and the wells that I have surveyed at that time didn't totally reflect the hydraulic gradients that I thought were of essence to our testimony here today.

Q (By Mr. Kellahin) And along that line, would there be any substantial difference in the pipeline pressures on wells located in the same areas as shown on Exhibit 6?

A Would you repeat that question?

Q Would there be any substantial difference in the pipeline pressures between wells located in the same area?

A No, not much difference, no.

Q It would be substantially the same?

A Yes.

Q So, the fact that you did not use the same wells, would that be a significant factor in interpreting Exhibits 5 and 6?

A No, it would not.

Q Now, have you discussed this differential with Southern Union Gas Company?

A Yes, we did.

Q Before and at the time they installed the compressor equipment, subsequent to that?

A I talked to them before they installed the compression

equipment.

Q And before they looped the line in?

A Yes.

Q Have they been contacted since then in regard to this 60 pound differential that we are talking about now?

A I didn't talk to them about it.

Q You did not?

A No, sir.

Q Do you know whether anyone has in your company?

A Not in Continental. I thought you talked to them, Jason?

Q I only talked to their attorney.

A Oh.

Q Now, did the Continental Oil Company run any Field tests to determine whether the differentials in pressures was a significant thing or not?

A Yes, we did. What we did was we ran six special deliverability tests using a portable compressor.

The wells we selected for these tests are those that are shown by the area on Exhibit 1.

Q Why were those particular wells selected?

A They were just--they showed, they covered the range of leases that we were concerned with.

Q Do you feel they are representative of Continental's problem in connection with these line pressures?

A Yes, sir, they are fairly so.

Q Would they be representative of all of the Continental wells in this Pool?

A Yes, sir.

Q Referring to what has been marked Continental Exhibit No. 7, would you identify that exhibit?

A Yes. Exhibit 7 summarizes the results of the special compressor deliverability tests we ran on the six wells.

Also shown on Exhibit 7 are the tests that we filed for these same wells to the Commission for their use in calculating 1971 allowables.

You will note from comparing the stabilized flow rates for these wells on Exhibit 7 that the quantity of gas produced, which is shown on under the column headed Q, the stabilized flow volume for these tests shows a dramatic increase for those times when the well was on our compressor test.

You will note, for instance, that L-1 enjoyed a stabilized production increase in excess of five times the 1970 rate.

Of course, the reduction in pressure was of the order of 300 pounds. The pressure reduction on this well is shown under the column headed P's of W, which is the static well back pressure.

Q That would indicate then that the well when tested in 1970 for proration purposes was producing against 478 pounds

back pressure, and when tested with your testing equipment it was producing against 177 pounds; is that correct?

A That is correct.

Q Now, did you conduct these tests, Mr. Mattes?

A Well, these tests were all run according to Commission rules for taking the deliverability tests, which are required by them for allowable purposes.

The compressor arrangement and the free-flow portion of the test of the L-1 well I have cited was witnessed by a Commission representative.

We contacted Southern Union in early August and invited them to witness them, too, but as far as I know they never advised us of any appearance they would make.

The results of these tests have been recorded on Commission Form C-122-A, which is the form that is used for reporting the Annual Deliverability test.

Q They have not been filed with the Commission for allowable purposes?

A No, sir, they have not.

Q This is the first time they have ever been exhibited to the Commission?

A That is true. And I guess we can file them as Exhibits 8 through 13.

Q Yes.

MR. PORTER: Let's identify those, please.

MR. KELLAHIN: They are Exhibits 8 through 13 inclusive.

Do you want to identify them one by one?

MR. PORTER: Well, yes, sir.

Q (By Mr. Kellahin) Would you go through those, Mr. Mattes, starting with Exhibit 8, and identify each one of the exhibits by exhibit number and well tested. We have the number on the Commission copy but I don't have them on-- Thank you.

A Exhibit 8 is the Form C-122-A for the special deliverability test run on Conoco Axi Apache J-1.

Exhibit 9 is a special deliverability test report on Form C-122-A for Conoco Axi Apache 0-1.

Exhibit 10 is the special deliverability test reported on Form C-122-A for Conoco Axi Apache J-2.

Exhibit 11 is a special deliverability test reported on Form C-122-A for Axi Apache L-1.

Exhibit 12 is a special deliverability test reported on Form C-122-A for the Axi Apache L-3, and Exhibit 13 is a special deliverability test for the Axi Apache M-1, reported on Form C-122-A.

MR. PORTER: Thank you.

Q (By Mr. Kellahin) Mr. Mattes, do these well tests conducted in anyway indicate that the 60 pounds difference in pressure at various points in the line would make a difference in

the ability of these wells to produce?

A Yes, they do.

Q Is that difference, in your opinion, based upon any reasonable operation of the line?

A No, sir, it is not.

Q So, on the basis of these tests, is it your opinion that Continental Oil Company, even though Southern Union Gas Company has taken steps to correct the situation, has not fully done so?

A They haven't fully resolved our problem for us, that is right.

Q And the pressure differential you are now suffering constitutes discrimination?

A Yes, that is my opinion.

Q Is there any other data gathered which leads to this same conclusion, Mr. Mattes?

A Yes, sir. The special compressor test data was used at some point in some graphs I have prepared for the six wells we ran the special deliverability tests on.

These graphs are shown as Exhibits 14 through 19.

The graphs are a plot of well production rate against the system pressure.

The special tests that we ran are represented by that point on each graph, with the highest producing rate. That is, they are one point on these graphs, and the point

representing the special deliverability tests is the highest point, highest gas rate on each of these six exhibits.

Q These are the same wells you tested and the wells shown by arrows on Exhibit 1?

A That is right.

(Whereupon a brief off the record discussion ensued.)

Q (By Mr. Kellahin) Go ahead with your discussion of the exhibits.

A What these graphs are is a plot of the quantities of gas produced in Mcf's per day versus the gathering pressure in evidence at the well.

The data that they plot was obtained during the period August 1, 1971 through December 31, 1971.

It was during this period that we ran the six special deliverability tests, and as a result, these tests and the higher rates which they represent sometimes overlapped a month, and the data from these months was not plotted.

Rather what we did was take a month where there was stabilized flow in evidence, and used the volumes provided by Southern Union, and the pressures--the average pressures provided by Southern Union, to find these other two points.

Q You say volumes in pressure. Are those their reports to you on the basis of which they purchased your gas?

A That is right.

Q Now, are all these pressure points reasonably close in time?

What period of time is covered by these?

A Yes, sir. The time that is covered by these points is the last five months of 1971.

You can see from these graphs that as you lower the gathering system pressure--and this is zero pressure--and you are on this last line out here it is the 500 pound system pressure at the well, why the quality of gas in all cases generally increases, and you will notice for some of the wells that the increase that this graph reflects is very large for small reduction, is relatively small reduction in system pressure. This is L-1.

Q What exhibit number is that?

A Oh, this is fourteen, produced 58 Mcf's. This is an average for a monthly flow period against an average system pressure of 273 pounds, but on our special compressor's '70 test when we had 177 pounds, it produced 167 Mcf, nearly triple the rate for a hundred pound reduction in system pressure.

The reductions are of the same order of magnitude as shown in J-2, which increased its production 46 Mcf for a pressure reduction of 20 pounds.

That is Exhibit 18.

These are substantial differences percentage-wise for not so substantial differences in the production system pressure.

Q Now, just talking about Exhibit 14, would you tell us where you got the information for each of the three points on there, so the Commission can understand what we are talking about, actual operating pressures in two points?

A Yes, sir. This point came--this is the rate reported on the Form C-122-A that we have filed for the Axi Apache L-1.

Q That is the test?

A That is the test.

Q And the exhibit's here?

A That is right. That is the seven-day stabilized average flow rate test.

Q Which was witnessed by the Commission?

A Part of it was, that is right, and these two points came from production and pressure data provided by Southern Union to Continental on a monthly basis.

The rate shown is the average production for the well per day for those days it was produced.

Q Now, the point which is 58 Mcf at 273 psi or 70---

A 273.

Q 273. Was that after Southern Union installed and put into operation their additional compressor facility and looping?

A Yes, sir. That is why we selected the period August 1st to December 31, 1971 as the points we should plot to illustrate this point.

The 356 reflects the system pressure that was in

evidence before the compressor and pipeline looping were installed in October.

This reflects the character of the well at some time after the looping and compression revisions were installed.

Q Now, that is true of all of the other exhibits on the board?

A Yes, except the--

Q Except what?

A The L-3.

Q L-3, exhibit number what is that?

A 17.

Q 17, and why did you not use the 2,3 point rather than--

A I felt there was something the matter with one of the points. It didn't fit reasonably on the graph.

Q So, the pressures shown on there are the pressures subsequent to--

A Subsequent to the compressor installation.

Q And your test?

A And my--the special test, that is right.

Q Now, these graphs would certainly indicate that Continental Oil Company can produce more gas against lower line pressures, would they not?

A That is true, in my opinion.

Q Now, Mr. Mattes, whether Continental produces more gas or less is not really the point of this hearing.

Does this indicate that anybody else can and probably is producing more gas against lower line pressures elsewhere in the system?

A Yes, it does, in my opinion.

Q Where?

A The where is in the system, in the wells connected to the north trunk and west trunk Exhibit 5 and 6.

Q Where you have shown lower pressures?

A That is right.

Q And this difference is demonstrated by these exhibits: is this correct?

A Yes, sir, in my opinion that is true.

Q Now, you have got a line on there marked "theoretical allowable rate." What is the significance of that?

A Well, the theoretical allowable rate was coined to describe the allowable that we calculated for each of these wells, using the Commission acreage and deliverability factors for the month of November, 1971, assuming that in fact these wells were proratable.

I might also add that the change that would be caused by going through the allowable calculation and readjusting the whole thing by not including these wells as non-marginal would be infinitesimal. We didn't go through and make these theoretical allowables. It does not reflect the total allowables as the Commission would do. It just took the

Commission acreage and deliverability factors and applied them to the deliverability and acreage factors for these wells.

I guess the best way to say that is that any difference between the theoretical allowable, as we have calculated it, and the allowable that would be assigned these wells after modifying the entire allowable calculation by including Continental's wells as non-marginal, would be infinitesimal.

Q Now, assuming then that your theoretical allowable is an allowable that would have been assigned to these wells, had they been proratable wells, how many of the non-marginal wells under the present existing system are there?

A Five of them.

Q Now, your Exhibit No. 19 showing the 0-1 well shows actual reduction in pressures against--I mean actual reduction in production against lower pressure; is that right?

A That is right.

Q Can you explain that?

A No, sir, I can't, but the points were so reasonably close together that I couldn't reasonably exclude one without excluding the other, so I plotted them both.

Q You wanted to show the effect on all six of the wells you had tested?

A Yes.

Q So you included them?

A That is exactly right.

Q You have shown graphically the result of the reduced pressures on six wells. How many wells does Continental own in that Pool?

A Thirty-one.

Q What would be the effect of reducing pressures on the other wells?

A The effect of reducing pressures on all of the other wells is to increase their producing rate.

Q Producing rate. The actual reduction that has been made by Southern Union Gas Company has resulted in increased production, has it not?

A Yes, it has.

Q Of the 31 wells, how many would have produced the allowable had they been assigned after this reduction in pressures? They were classified as marginal, were they not?

A That is right.

Q You have calculated what an allowable should be for these wells?

A Yes.

Q Of the 31 wells, how many actually produced that volume after Southern Union Gas Company reduced its line pressures?

A I have forgotten the exact number, but it is twelve or thirteen.

Q And those wells then properly on commission records should

today be classified as non-marginal proratable wells, should they not?

A That is right.

MR. PORTER: In other words, those 12 or 13 wells actually produced above these theoretical allowable lines, had that calculation been made.

MR. KELLAHIN: That is correct.

MR. PORTER: Since reductions in line pressure--

THE WITNESS: Yes, sir, that is right, if you calculate the theoretical allowable for these 12 or 13 wells and compared its production since the line pressures have been reduced to that theoretical allowable line, that production would have been higher than the theoretical allowable line.

Q (By Mr. Kellahin) If the line pressures were further reduced to equalize pressures with the north segment of the system, is it reasonable to believe that other wells would be proratable wells?

A Yes, sir, it would.

Q Do you have any idea how many?

A No, sir, I haven't, I have not.

Q That would have to be on the basis of experience?

A Yes, sir, that is right.

MR. PORTER: Let me ask this question at this point: Would it have allowed an increase in production of some of the wells which would not have become non-marginal?

THE WITNESS: Yes, sir. You will notice in reply to your question, if I may, please, that our one well that never got to the theoretical allowable rate is Exhibit 16, marginal allowable by any standards, it is M-1.

We had 424 pounds. It produced 20 Mcf a day. When we reduced the system pressure to 273 pounds, the production rate is down to 38 Mcf a day. A couple of days we reduced it to 70 pounds. It went from 38 to 56. So, what can you say, that is if you reduce it in--this is the actual pressures that is in evidence at this well today--if you reduced it 60 pounds, this well would probably have a marginal allowable somewhere between 38 and 56, and it would be higher than the 38, but less than the 56. That is the marginal well.

Q (By Mr. Kellahin) Would you say that a marginal well is being discriminated against by high line pressure in this system?

A Yes.

Q Mr. Mattes, you have discussed increases in production that resulted from reduction in pressures in Southern Union's system.

Have you prepared another exhibit to show this?

A Yes, sir, I have.

Q Would you identify Exhibit No. 20 and discuss the information shown on it?

A Exhibit No. 20 is a plot of the production by month for the years 1970, and eleven months of 1971 for all of the wells

that we have discussed, the 119 of the allowables schedule that we filed as Exhibit 3, and their total production, as reported in the Commission reports is shown on this draft by the dashed line, connected with circles.

You can see on this plot the reduction and increases in the system volumes that are caused by seasonable variations.

You will notice the low producing rates are in the warm months of the year.

The high production rates are in the cold months of the year.

Now, as part of this total production I have also plotted that tract that is represented by the Continental Axi J, C, L, M, N, and in the O leases.

They are shown by the solid line at the bottom.

You will notice that in October and November of 1971 the rate tolerated for Continental wells is higher than it has ever been for the nearly two year period that this graph covers.

Now, because of the system volume is so large, even though we try to compress this calculation by leaving out a piece of it here, why the effect of this large scale is to kind of mask, I think, the magnitude of the effect of the change that the pressure reduction we have experienced has indicated, because September's actual production before the change was made totals 38,007 Mcf's; October's production is

58,606 Mcf's, and 71,963 Mcf's in December, and to more clearly reflect the magnitude of this change, I replotted the same data on different scales. They are Exhibit 21.

The point I have made about the production increase is more dramatically illustrated by these graphs. The numbers that were used to plot this graph have the same identical numerals on Exhibit 20.

They just show more clearly how much higher the total production rate for Continental's wells was in November than it was at any other time in this two-year period.

Q Now, your Exhibit No. 21, to which you were just referring, is a little bit confusing.

Would you explain the difference between those two lines? They are not based on the same scale?

A No, they are not based on the same scale, you are right. The dash line which is the same line as the dash line over here, that reflects the total production of the South Blanco-Pictured Cliffs Pool wells connected to the Dogie Canyon Compressor Station against the production volume shown by this axis.

The Continental volumes, which are again the solid lines connected by the triangle, are measured by the progress volume shown on this line.

Q Now, those exhibits would seem to indicate that Continental has done better than the other wells in the system; is this

true?

A Yes, that is true, in my opinion.

Q They have done better since they reduced the line pressure?

A Yes, that is right.

Q How can you account for that?

A How can I?

Q Was there a greater degree of discrimination against Continental?

A Yes, the reduction we enjoyed was greater than the reduction that was enjoyed by the other wells that are producing into the same pool.

Q Does that account for the reason?

A Yes, sir, it would.

Q The difference?

A Yes, sir, it would.

Q To what extent does this reflect seasonal changes, Mr. Matt-es?

A Well, it just shows the seasonable variation in systems are evident. They produce less than the wells, the wells produce less, the system takes less gas in the system than it does in the cold months of the year.

Q This was designed to show the picture for the entire system?

A The picture for the entire system and before the change was instituted, we had the same seasonal swing in 1970 that we had in 1971, but with the 400 pound plus system pressure in

evidence, Continental's wells did not enjoy the same production increase that they enjoyed after the line pressures were reduced in October.

Q And subsequent to October has Continental enjoyed the largest production it has ever had in this pool?

A I do not know that to be a fact.

Q It has certainly enjoyed the largest production it has had in 1970; is that correct?

A Right.

Q And '71?

A Right.

Q Now, on the basis of these two exhibits, what conclusion do you reach, Mr. Mattes?

A On the basis of these two exhibits, I'd say that prior to September and going back through the month of December, 1971, Continental wells have been certainly unreasonably discriminated against.

Q Does that exhibit indicate that Continental wells are in fact capable of producing against the same pressures and on the same basis as other wells in the system?

A Yes, this is a fair reflection.

Q Now, in your opinion, are the transportation facilities furnished Continental Oil Company substantially the same or equal to the facilities afforded other operators in the pool?

A No, sir, they are not.

Q And does the quality, the quantity and pressure of the gas available have any relationship to this discrimination you say exists?

A No, sir, it does not.

Q Is there any difference in quality of the gas pools, to your knowledge?

A No, sir, there is no big difference in the quality of the gas in the pool. In my opinion, it is a common source of supply, and while there may be some infinitesimal small variation from place to place in the reservoir, it is nearly identical gas.

Q Now, return to what has been marked as Continental Exhibit No. 22. Would you identify that exhibit?

A Yes, sir, Exhibit 22 is a comparison of theoretical allowable and actual production by operators of the various operators in the pool and system we are discussing here.

The first column shows the theoretical allowable for all of the operators for the period of February through November, 1971.

Q Now, how did you arrive at this theoretical allowable?

A We did the same way for this calculation that we did in Exhibits 14 through 19.

Q And did you treat all of the wells in the pool then as being non-marginal wells?

A That is true.

Q You assigned an allowable to every well in the Pool?

A That is correct.

Q On the basis of this comparison?

A That is right.

Q Would you go ahead with your discussion?

MR. PORTER: Were you using the nominations as stated to the Commission by the purchasers to make these theoretical calculations?

THE WITNESS: That is exactly right.

MR. PORTER: Did you use factors which were used by the Commission in assigning allowables?

THE WITNESS: Yes, sir, I did. The acreage and deliverability factors, and then the acreage and deliverability from the 1970 Annual Engineering Reports for the wells that each operator had.

MR. PORTER: Did you use the factors which the Commission utilized?

THE WITNESS: Yes.

Q (By Mr. Kellahin) Would you go ahead with your discussion of the Exhibit?

A O.K. And the second column shows the actual production for the same months. That is the total production for each of the six operators in this Pool for the period February through November, 1971.

The numbers shown represent the total production from

the Commission's own records of each of these operators.

The third column is that percentage of the first column or the theoretical allowable that the actual production or the second column represents.

For example, the 89.43 percent shown in the third column for Caulkinswells is the ratio, the percentage ratio of 1.209 billion to 1.352 billion.

It is the percentage of actual production expressed as a percentage of theoretical allowable, and we have done this for each of the six operators in the Pool and pooling system.

Q Now, the fourth column indicates what?

A The fourth column denotes which trunk system, as we have identified on Exhibits 5 and 6, these operators produce into, and you will notice that the highest percentage of production is the percent of theoretical allowable attributable to these wells in the north and west pipeline trunk systems.

The guys at the bottom of the list, including Continental Oil Company, all produce into the east trunk system where the gathering system pressure is higher, and the plain fact is that the differencesbetween these wells are simply not as great as this percentage production of theoretical allowable would indicate. They just aren't that different, in my opinion.

I am certain, based on the things that I have done here, that substantially the same gathering facilities were provided to all six of these operators, including Continental Oil Company, that the wells in this common source of supply would not show the percentage difference that is evident on this exhibit.

Q Well, is there a substantial difference or even a difference justifying the difference in pressures based on quality, quantity, and pressure of the wellsin the South Blanco-Pictured Cliffs Pool in the various trunks of this system?

A Would you repeat that again?

Q Is there a difference in the quality, quantity, and pressure of the gas in the South Blanco-Pictured Cliffs Pool that would justify a difference in the gathering facilities afforded?

A No, sir, there is not, in my opinion.

Q How long will Continental Oil Company's gas be available to Southern Union?

A Under the present contract, I think it has a termination expiration date of 12-31-75, or 1-1-76.

Q The quantity of the gas available for sale indicated by the deliverability is calculated by the Commission formula, is it not?

A Yes.

Q Are there substantial differences in deliverability in

wells in this Pool?

A No, sir, they are not.

Q There are differences, of course?

A There are differences, of course.

Q Mr. Mattes, you understand that Continental cannot demand this Commission or ask this Commission to set any given line pressure, do you not?

A Yes, that is right.

Q You are not asking them to do that?

A No, sir, I am not.

Q You have indicated that Continental Oil Company could produce greater quantities of gas against lower pressures?

A Yes, sir.

Q What is the real purpose of showing this increase in production that could have made the difference in production?

A The point is that if the facilities that were afforded our wells were substantially the same as those afforded other operators, our wells would produce substantially more gas.

Q Now, if on the other hand line pressures were increased or other segments of the system through it to the same as those against which Continental Oil Company is producing, would that accomplish the purpose we are seeking here?

A Yes, sir, it would.

Q That would give us substantially the same opportunity?

A Precisely.

Q In your opinion, if the line pressures are not adjusted to a substantially equal basis, will there be premature abandonment of Continental's wells?

A Yes, if the 60 psi differential that I have testified is in evidence today is allowed to exist to abandonment of the well, then certainly some of the Continental Axi Apache wells and those of some other operators in the area will certainly be prematurely abandoned.

Q Would that constitute waste in your opinion?

A Yes.

Q Will the correlative rights of Continental Oil Company be adequately protected by the Commission proration system as operated by Southern Union Gas Company?

A No, sir, they would not, in my opinion.

Q Is the basis of this difference substantially the difference in line pressures?

A The basis of the difference is substantially in the line pressures that are in evidence at our wells.

Q Now, we have talked about substantially equal line pressures. Is it possible to obtain equal pressures throughout the entire system?

A No, sir, and I think I recognize that.

Q Now, you have testified that the nearest wells from the compressor station to the wells to the north is approximately

three miles, and to the wells on the east Continental wells, is approximately four miles?

Q What kind of pressure differential would you consider to be reasonable and proper on that basis?

A Off the record, should I get our Exhibit 5?

MR. PORTER: Mr. Kellahin, how much longer do you anticipate you will take with your direct examination?

MR. KELLAHIN: Very short, about five or ten minutes.

MR. PORTER: I want to give the reporter a break as well as the Commissioners.

MR. KELLAHIN: We can finish with this witness in about five minutes.

MR. PORTER: Let's proceed then.

MR. KELLAHIN: If you want to take a break, we will be happy to.

MR. PORTER: I think we can conclude and then make the witness available for cross examination.

Go ahead.

Q (By Mr. Kellahin) Would you go ahead and refer to the exhibits? Discuss the question I have asked.

A May I have the question repeated, please?

Q What pressure differential would you consider reasonable to the wells in the north segment of the system as compared to those to the east, the closest well I am talking about?

A Well, for the facilities to be substantially the same, the

pressure at a point three miles from the Compressor Station ought to be in evidence at a point three miles from the Compressor Station on the east trunk.

There might be a pound or two difference to go the other mile, but there are no intervening wells in either of these systems, so in order for the east trunk to be provided facilities which are substantially the same as those available to the well connected to the north trunk, we would like to have the pressure here, it ought to be at the order of 189 pounds. I recognize it might vary five to 10 pounds, and in fact does on this system.

Q You would not anticipate that same pressure to be available to you at the end of your system on the east side, would you?

A No, sir. In order for gas to flow into this system you have got to have a hydraulic gradient. The pressure that is available here would be increased to the end of the system by the hydraulic gradient that is in evidence here.

Q That would still constitute ratable taking, in your opinion?

A Yes. The facilities then would be substantially the same. There is a hydraulic gradient from here around to here.

There is a hydraulic gradient from here around to here, and the wells that would produce into these comparable systems then would be producing ratably.

Q There is a hydraulic gradient to the Southern Union wells

on the west portion of the system?

A That is true, sir, there is.

Q Would the gradient be approximately the same as to your easternmost well?

A Let me check. Yes, the gradient is about the same. It is further, but there is more pressure, sir.

Q So, properly Southern Union well could be producing against about the same pressure as your easternmost wells?

A Southernmost wells, yes.

Q Are they in fact doing so today?

A No, sir.

Q What is the approximate difference?

A The approximate difference is 42 pounds. The northernmost well of Southern Union Production Company in 27-8, which is the Nafajo Indian 2-P had a pressure of, on January 18, of 250.

Conoco's Axi Apache L-1 had a pressure on that same date in Section 36 of 25-4 of 292 psi.

Those pressures, by the way, are absolute.

Q Mr. Mattes, were Exhibits 1 through 22 prepared by you or under your supervision?

A Yes, sir, they were.

MR. KELLAHIN: That completes the direct examination.

(After recess.)

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

Are there any questions of the witness?

Mr. Morris?

CROSS-EXAMINATION

BY MR. MORRIS

Q When did you first become acquainted with the production in the San Juan Basin? Well, in your work?

A In my work, in March of 1971.

Q March of 1971?

A That is right.

Q What has your work in the San Juan Basin consisted of since that time?

A My work in the San Juan Basin has been related to the Apache J, K, L, M, N, and O leases and their relationship to the Southern Union gas system which serves them.

Q Are you familiar with any other producing horizons, namely the Dakota, Mesa Verde, or any other formation?

A I know of them, but I am not familiar with them.

Q Are you familiar with Pictured Cliffs production in any other Pool other than the South Blanco?

A No, sir, I am not.

Q How much time have you spent in the field in the San Juan Basin since March of '71?

A I made two trips to these leases, that I can recall. I have made numerous trips to Casper, where the Continental office is that supervises production of these wells.

Q Does Continental have an office in New Mexico in the San Juan Basin?

A Yes, sir. They don't have an office. They have a field production superintendent.

Q Do you have any engineer or geologist actually located in the San Juan Basin or the Rio Arriba Basin?

A They only come to the Basin on an intermittent schedule.

Q In connection with the work that you have done on this particular matter, how many well logs have you personally examined?

A Oh, about eight or ten.

Q Eight or ten?

A Yes.

Q Are those all on Continental's wells?

A Yes.

Q Have you examined any logs at all from any of these other producers in the South Blanco-Pictured Cliffs Pool?

A No, sir, I have not.

Q Have any of the wells been cored on the wells that you have examined the logs on?

A Yes, sir.

Q Have you examined the cores?

A I have looked at them briefly, yes, sir.

Q How many of them were cored?

A There was five wells that were cored.

Q Five of the six wells that you have, you are talking about?
A No, sir, five--some of the wells that were cored may be the wells that we are talking about that are reflected in Exhibits 14 through 19, but the five wells that were cored, I do not remember exactly, but I do not think they are represented totally in this six wells.
Q Were those wells that were cored, were those wells drilled by Continental or by Humble?
A I really can't tell you. I don't remember.
Q How did you happen to pick the six wells that you did the log examination on, just at random?
A Just at random, yes, sir.
Q You did not examine the logs on the six wells that you have used in your comparison of production rate versus pressure?
A No, sir.
Q Now, when you were in the field, did you, when did you say you were in the field?
A I testified that I was in the field in late May and early June on one trip, and then I made another trip out some time during that time when we were running these special deliverability tests to observe how the wells were connecting up and to see how the compressor and the wells were relating to Southern Union's line.
Q Are you familiar with the background of this area, and particularly the tract that the Continental acreage that

you have shown on your Exhibit No. 1 formerly was owned by Humble?

A I know vaguely of it in general terms, but as to the specifics of how and when it became Continental acreage from Humble acreage, I do not know the exact answer.

Q Do you know when Humble first drilled its wells in this acreage?

A No, sir, I do not.

Q Do you know how many wells Humble drilled?

A I don't believe I know that number.

Q You testified there are now 31 wells operated by Continental on these leases in the South Blanco-Pictured Cliffs Pool?

A Yes.

Q You don't know how many of those Continental drilled?

A No, sir.

Q When was the first well drilled on this acreage?

A I don't know that.

Q Do you know whether any initial pressures were taken when that first well was drilled?

A Initial pressures?

Q Initial reservoir pressures?

A Do I know if any ones were taken?

Q Yes, on the first wells drilled by Humble, your predecessor in interest in these wells, were any pressures taken?

A I am sure there were some taken, yes.

Q Do you know what they were?
A Do I know what the original pressures were on the original Humble? I do not know precisely.
Q What ever studies you have done on this area you have not seen fit to go back and look up that original pressure information; is that correct?
A We looked at the original pressure information, but I do not remember precisely what those pressures were.
Q Do you know what the original line pressures were on Southern Union's system at the time that Humble connected to this system?
A No, sir, I do not.
Q Have you made any attempt to investigate the working pressures, working line pressures of the wells that were connected to the various trunks of Southern Union's Gathering System in this field, going back to the time when the wells were first connected, and down through the years, have you made any study of that?
A No, sir, I did not. The only studies I have made of the pressures that were evident in the Southern Union's lines are reflected on the pipeline map exhibits, and I believe their number is 5 and 6, that I presented in evidence here today.
Q You are familiar, aren't you, Mr. Mattes, that Continental did take over these wells from Humble; the acreage was

Humble's acreage, and that Continental has acquired these lands that used to be Humble lands, some of these wells used to be Humble wells?

A Yes, my understanding, although I did not testify to this, is that the wells passed from Humble to Arizona Exploration, and we acquired the properties from Arizona Exploration.

Q Approximately when was that?

A I can't tell you.

Q You don't know?

A I don't know.

Q You don't know what the working pressures in the Gathering System line was at the time you acquired it from Arizona Exploration?

A No, I do not.

Q Mr. Mattes, are you familiar with the gas pressure agreement that covers this acreage?

MR. KELLAHIN: We object to any question on the purchase contract. It has no bearing on this case.

The Commission can't pass on the terms of the contract.

We are here under the Statutes and Rules and Regulations of the Commission, which we are asking be enforced. The contract has nothing to do with this.

MR. MORRIS: If the Commission please, I think that Mr. Kellahin has raised an objection which was not wholely unanticipated here, but it is one that is without merit in this

case.

We are not, of course, asking this Commission to pass on any contract.

What we intend to do when it comes to our part of the case is to present that contract to get all of the information concerning this field out on the table for the Commission to see, but we are not asking you to rule upon whether, on what some particular contractual provision means or whether there has been a compliance with the contract, or anything of that sort.

What we intend to go into, both in our case and here on cross-examination, is the proposition that the prices paid under the contract, and I am talking about the original contract with Humble to which Continental has now succeeded, is a factor that this Commission should take into consideration, because it will show that the prices that are being paid to Humble--prices being paid to Continental are above the prices that are being paid to other producers in the field, and that this price is related to the pressure differential that exists.

We feel that this is a very important consideration to place before the Commission, and we believe that Continental's case is fatally deficient here for not having recognized this price pressure differential. We want to explore that on cross-examination of this witness.

MR. PORTER: Mr. Morris, the witness, I believe, only testified to what he thought was the duration of time for this

contract. As I recall, he thought it would go through 1975. He didn't testify to other aspects of the contract, so the Commission will sustain Mr. Kellahin's objection unless you develop this testimony, this testimony through your own witness.

MR. JASON: At which time we will renew our objection. You are not ruling on the admissability, I take it?

MR. PORTER: No. No. If he wants to go into that, he can present it at that time for the Commission's consideration.

Q (By Mr. Morris) Aside from the contract, Mr. Mattes, are you familiar with the prices that Continental has actually been paid for its gas as being purchased by Southern Union?

MR. KELLAHIN: There again, we would object to this line of questioning. We are here under the provisions of the Common Purchaser Act. Price--the only thing that price has to do with this is an operator is forbidden to discriminate on the basis of price.

We are not arguing they discriminated on the basis of price. We say they have discriminated on the basis of the facilities afforded, and the Statute says that it shall not constitute unreasonable discrimination if such differences bear a fair relationship to different qualities, quantities or pressure of gas available, or the length of time during which it will be available to the purchaser.

Those are the factors the Commission can consider, and price hasn't anything to do with it.

MR. MORRIS: Mr. Porter, I think that Mr. Kellahin skipped over a couple of words when he just read the Statute to the Commission. It says, "For the purpose of this Act, reasonable differences in prices paid or facilities afforded or both shall not constitute unreasonable discrimination if such differences bear a fair relationship to the differences in quality, quantity, or pressures of gas," etc.

It is our position that differences in pressure, differences in price, differences in quality, although I don't think that is a very important feature here--differences in quantity of gas available, and differences in the relative length of time the gas is available, are factors which must be considered by this Commission in determining on balance whether there has been any unreasonable discrimination. Our point here is the price that it is common practice, at least in this field, and we would submit in gas purchase contracts just generally, for price and pressure to be interrelated, and to come in here and talk about, want to talk about pressure but not want to talk about price is asking a man to fight with one hand tied behind his back, because the two are interrelated.

MR. PORTER: Mr. Morris, of course you made that clear in your opening statement as to the factors that should be considered, and it is there in the law.

However, I think the Commission will sustain the objection on the same grounds that we sustained the first objection, that

is that the witness has not testified to price.

I realize that there is a fine line of differentiation here, but the fact remains that he has not testified as to price.

MR. MORRIS: All right, Mr. Porter. I understand your ruling that we simply are precluded from asking questions about price because this witness has not testified to it, and not on the grounds that it is not relevant to the proceeding?

MR. PORTER: Well, at this point in the hearing, relevancy may be argued to a greater length at some later point in the hearing. I am satisfied it will be.

Q (By Mr. Morris) What is Continental actually seeking by this Application; what kind of an order is that you are asking the Commission to order specifically?

A The language, I guess, can best be summarized by the words "substantially the same," as we are seeking substantially the same Gathering System pressures to be in evidence at our wells as are in evidence at other wells on other trunks.

Q Are you asking the Commission to enter an order that would require Southern Union to establish, to change its system to make expenditures so that its pressure at your wells would be substantially similar to the pressure at a given point on another trunk line?

A Mr. Morris, I haven't testified on a specific order that we would suggest to this Commission, but the language it would contain if we were to draw up such a recommended order

would contain the words substantially the same facilities as I have described them to you.

Q And you would ask the Commission to provide substantially the same facilities without regard to consideration of price, quantity of gas, length of time that this gas is available to the purchaser; is that correct?

A I would ask the Commission for substantially the same facilities for gas of like quality, quantity, and the pressure at which it was available, and the length of time.

Q That is to all producers in the Pool?

A To all producers in the Pool.

Q This is also as to all producers in pools connected with the Southern Union system?

A All producers in the pool and system that I have testified to in my testimony here today.

MR. PORTER: Are there any other purchasers in the pool?

MR. MORRIS: Yes, Mr. Porter. The El Paso Natural Gas operates a gathering system in this same area.

MR. PORTER: That is just for my information. Thank you.

Q (By Mr. Morris) Do you know how many wells are connected to the Southern Union Gathering System, total number of wells in this pool?

A In the South Blanco-Pictured Cliffs Pool?

Q Yes, Exhibit 3 shows 119.

A That is right.
Q How many of those wells are classified as non-marginal wells?
A All of Continental's 31 wells. All of Mr. J. R. Abraham's too, and all of Aztec's that are in--
Q I think your answer was the number of the wells that were marginal; is that right?
A Pardon?
Q I asked the question how many were non-marginal?
A How many were non-marginal I do not know. We have no non-marginal wells. Mr. Abraham has no non-marginal wells.

In those sections wherein we have a common interest with Aztec Oil & Gas, all those wells are--don't have a proratable allowable assigned. Beyond that, I can't tell you. I can look at Exhibit 3 and summarize it for you, if you would like.

Q Of these 110 wells, did you say?
A Yes, sir.
Q Are any of these wells presently shut-in?
A I don't know that.
Q Has Continental ever considered installation of compression facilities on its properties to boost its gas into the gathering system of Southern Union?
A I haven't so testified.
Q I am asking you now if you know has Continental ever

considered this, to your knowledge?

A Why certainly we have, but I had not testified to that, except on cross-examination.

Q Does Continental have any plans at this time for installing its own compression facilities?

A None that I am aware of.

Q If Continental installed its own compression facilities, would this afford it the opportunity of producing gas into the Southern Union line at whatever working pressure you choose to create?

A Yes, if it lowered the wellhead back pressures, if a compressor installation would lower the wellhead pressures, yes, sir. Such a compressor, if installed by Continental would increase their production rate.

Q It is a function of cost to Continental, is it not, as to whether you would do that?

A No, sir, it is not a function of cost totally whether we do this or not. I take that back. Yes, it is a function of cost totally, but to install such a compressor on our leases to service our own wells would require substantial looping of facilities already in place that are in fact the property of Southern Union Gas Company.

Q The cost of installing facilities, compression facilities could be directly related to and amoritzed over a period of time and be expressed as a reduction, if you will, in price

received for your gas, could it not?

A Yes, that is just simple arithmetic.

Q Are you aware of any studies that have been made by your company as to what that price reduction would be?

A I have looked at the studies, but I am not aware of the price reduction, as you have put it, what that number would be.

Q You testified as to the term of your contract with Southern Union as expiring, that the contract will expire on December 31, 1975, I believe.

A I believe what I said exactly is December 31, '75, January 1st, '76, that is right.

Q Have you investigated the terms of the contract that Southern Union has with any other producers in this field?

A No, sir, I didn't. I didn't feel--no, I did not. I was not privy to the information.

Q You did not seek that information out?

A I did not seek it out.

Q You are not then able to testify as to the relative length of time during which gas from this Pool would be available to Southern Union Gas Company through this system?

A Beyond the statement that I have made, no, I am not.

Q Mr. Mattes, let me turn to your testimony concerning the production tests that were taken using your own compression facility.

When were these tests taken?

A These tests were taken in September, October, and November of 1971.

Q How many wells were tested?

A Six.

Q How were these wells selected?

A Randomly.

Q Who were they selected by?

A Our Casper office, who also supervises the direct running of the tests.

Q What type of compression facilities did you install for these tests?

A Single stage compressors, skid-mounted, portable.

Q Portable units?

A Right.

Q What horsepower rating?

A I think when we started we had a 35 and a 50, and one of them didn't perform very well, and we got rid of it. We only used one of the compressors for most of the tests.

MR. PORTER: Gentlemen, let's break the cross-examination at this point and recess the hearing until 1:15.

The Legislature is in town, and they are usually hungry. Let's try to beat them to the restaurants.

(Whereupon the hearing was recessed.)

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

MR. MATTES: Mr. Porter, if I may, I would like to correct the record of some testimony that I gave this morning. I believe I testified that, in answer to a question, horsepower of the compressors that were used in the special deliverability tests as shown in Exhibits 8 through 13 was 35 and 50 pounds, and I have looked at my notes and they reflect that the compressor I actually saw in the Field was Minneapolis-Moline with a nominal 60 horsepower rating derated to a 35 horsepower for this application.

MR. PORTER: The record will reflect the correction in the witness' testimony.

MR. MORRIS: Before we continue with our cross-examination, I see we have a visitor who once was a very frequent participant in our hearings up here, and I have been wondering since he came in what interest a potash company attorney had in a ratable take case on gas. Anyway, Roy, we are all glad to have you here.

MR. ROY BLACKBURN: I was just wasting a

little time.

MR. PORTER: Mr. Morris, you may proceed with your cross-examination.

CROSS-EXAMINATION
(CONTINUED)

BY MR. MORRIS

Q Mr. Mattes, you have testified over the three month period during which these special tests were taken. Can you tell me the dates on which the tests were taken for each of those wells?

A Sure, I can. They are shown on the exhibits, if I may have them, please.

The date of the flow test for Apache J-1 was October 18 to October 26, 1971, and the shut-in pressure for this well was measured on November the 1st.

Q Excuse me, Mr. Mattes. I didn't realize that you had that shown on the exhibits. I won't ask you to read those off.

Let me ask you this.

Are you familiar with the provisions of the New Mexico Oil Conservation Commission Order 333-F which sets up the procedure for taking the deliverability tests in the San Juan Basin and in particular for this Pool?

A Yes, sir, I am.

Q Are you familiar with the provisions of that order which requires that a conditioning period of 14 consecutive days of production precede the taking of the deliverability tests?

A Yes, I am.
Q Now, were these wells conditioned in that manner? Were the compressors installed before the test was taken?
A Yes, sir, they were, to the best of my knowledge.
Q In other words, counting the 14 day preconditioning period and the 7-day test you would have a three-week period there?
A Of flow, that is right.
Q Of flow. Were the compressors installed?
A Installed, that is right.
Q Now, do those dates reflect on your exhibit that you have submitted to the Commission?
A Not only those dates that the flow test was actually in progress--they are reflected on our exhibits, and the dates of the shut-in are reflected, and the date of the flow period for the test is shown on the form.

The date of the shut-in pressure, as measured, is also shown on the form, and the two week pre-flow periods, or the two weeks preceding those dates that the flow tests are shown on these exhibits.

Q Do you have the production rates that were experienced by these wells during the pre-flow period?
A No, sir, I don't.
Q Do you know how they compare to the flow rate that was shown on the seven day test?
A Yes, I do. I have a general idea.

That general idea is that at the start of these pre-flow periods the rates at which these wells produced were substantially higher than the stabilized flow rates that are reflected in the Q's of Exhibits 8 through 13.

Q Now, you have referred several times to the flow rate as being a stabilized rate, but I think that your testimony with respect to this matter was that you used an average flow rate for the seven day test; is that correct?

A That is right.

Q Do you have the beginning and ending of the flow rate for these wells for that seven day test?

A No, sir, I do not have them here.

Q You don't have them available?

A Not with me, no, I don't.

Q Would it be a fair statement, Mr. Mattes, to say that the rate of flow at the beginning of the seven day test was substantially higher than the flow rate at the conclusion of that seven day test?

A The perspective I would put on that question that you have asked me is this: It is indeed a fact in all wells when we run a deliverability test that the rate at which the well produces does decline during the stabilized flow period because, in fact, the pressure is going down in the reser-voir, and the difference between the pressure on the first day of the stabilized flow test and the difference in the

pressure on the last day of the stabilized flow test is, in some cases, could be very small, but the difference still exists.

As far as the substantially higher language that you have asked me about, I do not think that these rates were substantially different between the beginning and the end of the flow periods that are recorded on these exhibits.

There were some differences and I would admit that to you handily.

Q Have you examined the charts taken from these wells during the seven day flow test?

A No, sir, I haven't.

Q You haven't?

A No, sir.

Q Were they available to you?

A Yes, they were.

Q On the last day of the test was the flow rate still declining compared to the rate that the wells had experienced during the preceding six days of the test?

A I can't tell you positively. I would suppose that they were, yes.

Q In the language that I just--if they were, you can't very well say that is a stabilized flow rate, can you?

A I neither said it was a stabilized flow rate or not a stabilized flow rate.

The stabilization I have used in describing these tests as we have run them are the descriptions the Commission describes to the method of running these tests.

The method that we use is clearly defined by the Commission.

These tests were run by the same people who run the annual deliveraability tests that Continental Oil Company submits to the New Mexico Oil Conservation Commission for allowable purchasers, and the definition of these flow rates in these tests is, as we have introduced them here in evidence, are stable within the context of the way the test was run and the definition of the Commission.

Q Were you present during the time any of these tests were run?

A Yes, I was. As a matter of fact, the day I was there was November 2, 1971.

Q Which well--never mind.

Was any water being produced in connection with these tests?

A I really don't know.

Q Are you familiar with the fact that many of these wells do produce water?

A Yes, sir, I am. Many, in that context, I know there are some wells that produce water, yes.

Q You have a water problem in connection with your production on some of these wells?

A On some of these wells?

Q Well, some of your 31 wells?

A O.K. Can you define "water problems" for me so that I can answer your question?

Q Yes. Do you have the situation in this pool with your wells, or some of your wells, that the well will load up with water to the point that production, or the production rate is impaired?

A Oh, yes, we do.

Q How do you remedy that situation; how do you handle it?

A We blow them down.

Q You blow them down. You blow them down annually?

A I really don't know. I would suspect so.

Q Do you have intermitters on a great many of these wells?

A I am trying to remember, but I don't remember exactly, no, sir. I couldn't attest to the intermitters.

Q Do you know what size tucks you have in your wells?

A Yes, sir, in the--the tuck sizes are all shown on your C-122-A's.

Q Were any of these tests, deliverability tests, interrupted due to water problems?

A I can't testify to whether they were or were not.

Q Could you agree with me, Mr. Mattes, that if a well was having water problems during a period of ordinary production that the producing rate for that well would not

be comparable to a producing rate, let's say during a period of high flow such as you have presented here for these special tests?

A You are talking about a general well; is that right?

Q Yes. Just in general. I am not relating this to a specific well right now.

A If a water well gets water, its flow rate will be--yes.

Q In comparing the results of your special tests here, at a high rate of production you would necessarily need to know, would you not, whether the well was the rate, the previous rate against which you are comparing it, was whether the well had been properly blown down, was free of water--

A Precondition?

Q At that time?

A Yes, I think I would agree with that.

Q In other words, you would have to look back at a time when the well had been preconditioned in approximately the same manner?

A Let me see if I understand the context of the question. What you have asked me is if a well loads up with water, its production rate will be reduced, and I have answered generally that is true.

Now you have asked me what precisely in addition to that--

Q What I am saying is you have made a comparison of a flow

rate on a production test back against a flow rate taken at some other time, and my question of you is: In order to make that comparison meaningful, don't you have to know the condition of that well at the time the previous flow rate was tested?

A Yes, sir, and the way I would have to put the time frame respective to this reply is that all of the production data that I have testified to about the six wells that we ran our special deliverability test on was over the minimum period wherein we could reasonably extract what I considered to be stabilized flow rates, and the data that is on our Exhibits 13, 14, through 19--excuse me--all of that data was acquired during the period August 1 through December 31, 1971, and it was for the reason your question suggests, that we prepared these exhibits in this way, in addition to being current data, and to present them in a gross context of section tests over a three month period.

Another way to have accomplished the same thing would be to have set these rental compressors out there and let them run on a sustained basis until a stabilized flow rate was achieved, but the fact that this problem has carried on for so long that Continental was eager to get the results of these tests as quickly as possible.

We used the deliverability formula and the flow procedures of the Commission to arrive at data which we felt

was reasonable.

Q Mr. Mattes, this compressor that you used, which had a rated capacity, I understand, of 35 hp?

A Yes.

Q Now, that was really more compression than you needed to perform these tests on the rates of your production; is that correct?

A Mr. Morris, the number of factors that go into the proper sizing of compression for a given application are many.

Q Let me just ask this, Mr. Mattes.

A Yes.

Q During these tests you actually had an, you had an excess capacity, so that some of the gas being produced had to be recycled back down your casing, did it not? In wells from which your test was being run?

A It wasn't on the well I looked at.

Q Was this the situation with respect to any of the wells on which these tests were run?

A Mr. Morris, I did not witness every one of these tests, and I would certainly think it would have been advantageous for me to have been there during the total time that they all were run.

Continental field personnel have been in the Basin for a number of years and are familiar with the procedures required for running deliverability tests.

I would hope that they did not do what you suggested, but because I was not there and did not question them specifically about it, I cannot reply negatively. I can only reply negatively with regard to the wells that I witnessed.

If I may be permitted a parenthetical addition to my reply to your question, Southern Union was invited to witness these tests, and so far as I know, they never advised us whether they were coming or not coming, and the advice and invitation was sent in time for them to have someone present to witness the tests.

Q Do you know who changed the charts at the well during the period of time that these were run?

A No, I do not.

Q Were they changed by Southern Union personnel?

A Mr. Morris, I haven't the slightest idea, but I would just imagine that eventually Southern Union wound up with possession of the charts, because they were on their meters and the volumes therefrom were used to reimburse Continental for the gas that was sold to Southern Union through them.

Q All right. Let me refer you to your Exhibits 5 and 6 now for a moment.

A We have Exhibit 5 up here. I only have Exhibit 6 on the board.

Q I would like to ask you the questions without actual

reference to the exhibits.

What wells were used for comparison on your Exhibit No. 5?

A The wells on the north trunk were Caulkins State A295 in 16-26-6; Caulkins Breach C-328 in 13-26-6.

The Caulkins Breach A179 in 19-26-6; the Caulkins Breach B281 in 14-26-7, and the Caulkins Breach A135 in 10-26-6.

On the west trunk the wells were Southern Union Production Company, Navajo 1C and 31-27-8.

The Navajo 4B in 30-27-8; Navajo 2B in 19-27-8.

On the East trunk the wells were Conoco Axi J5 in 7-25-5; the J2 N5 in 25-5

The N-8 in 2-25-4. The L5 in 26-25-4.

The L1 in 36-25-4 and Southern Union Production Jicarilla F2 in 33-26-4.

The pressures for these wells were plotted on our Exhibit 6.

Q Now, these wells that you have just referred to, these were the wells used in Exhibit 5 for the purpose of comparison?

A No, these are the wells that are used in Exhibit 6 for the purpose of comparison. Exhibit 6.

Q That is Exhibit 6?

A That is correct.

Q Are any of those wells among the six wells on which you have

made your study?

A Yes, sir, there are some of the wells that are, yes, there sure are. I noticed L1, S1, and let me get my list of the wells again.

L1 on J2. J2 is another one, and so we had those two wells, and I might add that the pressures of this exhibit are instantaneous. They were that pressure which was in evidence on the chart at the minute the guy opened the door and read it. It could have changed.

Q Are just those two wells that you have referred to among the group that were analyzed on Exhibit 6, just J2 and L1?

A The J2 and the L1, yes, sir.

Q Now, on Exhibit 5?

A O.K.

Q Which was my original question.

A Yes.

Q But that is all right.

On Exhibit 5 what wells were used for the purpose of comparison?

A I need to get the exhibit because I have all of the wells whose pressures I observed. We didn't put them all on.

The reason we only reported the pressures for selected wells--if I can have some masking tape, please.

Let me stick this up. Can you see the side over here, Mr. Morris?

Q That is fine. I don't need to see it. I just need the information.

A We were more interested in the general hydraulic gradients than in the specific pressures on a specific well or on all of the wells all of the time.

Let's see. Let's see. Axi Apache L3 and 7 and 8 and J3.

Q Just those wells?

A Those are the only ones that are shown on our exhibit.

Q All right.

A I took other pressures. I probably took fifty the day I was there, but these are the ones that were put on the exhibit.

Q Are those wells among the wells that you made your comparison on Exhibit 6?

A Yes, one well is.

Q One well?

A Yes.

Q That is the--

A J3 Apache.

Q Pardon me.

A The Continental Axi Apache J3.

Q J3 is on both exhibits?

A Yes.

Q All right. Now, is the J3 among these shown on your

pressure performance?

A No, sir, it is not.

Q Mr. Mattes, do you know the line pressure on the various trunks of the Southern Union gathering system's present operating pressure?

A I am only aware of those pressures which I reported in Exhibit 6, and in a check-run that we had taken at a date since the 18th of January, that in general verified them.

There were some difference between the individual wells, but the differences were very small.

Q I believe it was your testimony that pressures on the east trunk were running fifty percent higher than the pressures in the north trunk; is that correct, was that your testimony?

A Yes, it was. On my field trip, that is correct.

Q Now, you are talking about the actual operating line pressures there, and I believe that you were using that fifty percent figure to talk then in terms of discriminatory treatment?

A Yes, sir, that is right.

Q My question to you is: Rather than talking about operating pressures, would it not be more meaningful to the Commission to talk in terms of the draw-down; that is, the difference between the reservoir pressure and the operating line pressure in terms of percentage rather than in terms

of comparing the line pressures themselves? Don't you have to know the reservoir pressures to make a meaningful comparison?

A Don't you have to know the reservoir pressures to make a meaningful comparison on line pressures, is that the question?

Q My question to you is: Shouldn't we be talking about the draw-down, shouldn't we be comparing the difference in draw-down, that is the draw-down between reservoir pressure and line pressure, rather than just talking about differences in line pressure?

A Mr. Morris, I truly think not.

I think the analogy that you have tried to draw is spoken to in the differences, the draw-down differences, if you will, from the deliverability tests.

Q Let me put it another way, Mr. Mattes: Assume with me, and let me ask the question: Do you know what the reservoir pressure is?

A Today?

Q Yes, or at some time in the reasonable, recent past?

A I have a reasonable idea, yes.

Q What is it, approximately?

A Depending on where you go, reasonable average pressure, order of 700 pounds for all of it.

Q It varies from place to place?

A True, right.
Q Over what kind of a range does it vary?
A Oh, it probably varies a hundred pounds on either side of 700, within reason.
Q You are talking about the reservoir pressure?
A Yes.
Q Don't you have to compare your operating line pressure to find the difference between your operating line pressure and the reservoir pressure, and use that difference on a particular well, and compare that difference to the same information taken from another well that you want to compare it to?
A Our basis of comparison in the South Blanco-Pictured Cliffs Pool is the quality of the wells and the capability of them to produce, as described by the term in the Commission Deliverability Formula, and it was on this basis that we approached the total problem.
Q You stated several times during your direct examination your opinion that discrimination was occurring in this field when you compared one well to another well of reasonable producing character. I believe that was your statement, that is the basis of your comparison?
A No, sir. The basis of the unreasonable discrimination statements that I made related to the gathering facilities that Southern Union provided for gas of like quality,

quantity, and pressure, and the length of time available.

Q Have you made a study, Mr. Mattes, other than that you have presented to the Commission here today, upon which you base that opinion, or are you basing that opinion on the testimony and the exhibits that you have presented here?

A I am basing the statement of unreasonable discrimination totally on the exhibits and the testimony that I have presented here today.

Q One of your exhibits, Mr. Mattes, was a log, let's see if I can find the exhibit number.

A It is No. 2.

Q No. 2?

A Right.

Q All right. Now, I believe it was your testimony that that was a typical log in the Pictured Cliffs Pool; is that correct?

A It shows the Pictured Cliffs interval.

Q It shows the Pictured Cliffs interval?

A Right.

Q Was it your testimony, or is it your testimony that that is a typical log in this pool?

A I said it is a representative log of the Pictured Cliffs interval. It shows that interval that is called the Pictured Cliffs in the wells on the Continental Axi leases that are shown on Exhibit 1.

Q Is the interval shown on that log continuous throughout this field?

A I have not made a definitive study that confirms or denies the definitiveness of the zone shown as South Blanco-Pictured Cliffs on the Axi Apache J1 log shown in Exhibit 2 as being continuous throughout the leases shown in Exhibit 1.

The testimony that I have given here relates only to the fact that it is this zone that is called the South Blanco-Pictured Cliffs in J1 and in the same zone in other wells of this area, have also been assigned to South Blanco-Pictured Cliffs Pool.

If I made such a study, all it would have done would have been to verify the ability of the Commission to classify a well and its production horizon in a given pool.

I did not feel it was necessary.

Q I believe you testified previously on cross-examination that you had examined logs of--I forget how many--a dozen or so?

A Eight or ten.

Q Eight or ten?

A Yes.

Q Continental wells?

A Right.

Q You are not able to testify, are you, Mr. Mattes, as to

whether the sand development as shown by the log on Exhibit 2 is characteristic of a typical well in the pool, or is it typical of the quality of any other well?

A I would answer your question this way, Mr. Morris: No, I am not, but the Commission has provided us a vehicle by which we can in fact measure the capability of wells to produce.

This capability is described in the deliverability formula, and the D that is calculated from this formula, providing the test is properly run, is a fair measure of the capability of all of the wells in the pool, in my opinion, to produce, and if the truth be known, it is my personal opinion that the logs of this area are pretty old, and some of them, especially in this South Blanco-Pictured Cliffs, the only conclusion that you can draw from them about the quality of the sand and its variations from well to well would be limited.

Q Your permeability data is likewise limited; is that correct?

A No, sir, I didn't say that. I didn't say that, but I would reflect as far as permeability that the permeability in general is one measure of capacity.

Another measure of capacity, and the specific measure of capacity that the Commission uses to relate ratability between wells of the South Blanco-Pictured Cliffs Pools, is the deliverability formula that I have submitted in

evidence here today as Exhibit 4, and this relates ratability, regardless, and includes, as a practical matter, the permeability pressure of relationships for all of the wells.

Q On your Exhibit 22 you made a comparison of theoretical allowable. How did you compute the allowable, the theoretical allowable wells that did not have deliverability tests?

A We just assumed, we used a deliverability test that we had.

Q On your own well?

A No, on everybody's wells.

Q In the pool where you have marginal wells that are exempt from deliverability, what did you use?

A Do we have that piece of paper? We had deliverability tests on all of them.

Q You have deliverability tests on all wells, whether they are marginal or not?

A Yes, there are deliverability tests on all of the wells that are available, yes, sir.

Q Some of them are pretty old?

A Yes, sir, they are.

Q Is that what you used?

A Yes, sir.

Q Let me refer you to your Exhibit 20.

A O.K. That is the one right there, yes.

Q Now, that is a plot of your monthly production against time.

I think the last data that you have shown on that exhibit is production for the month of November?

A That is true.

Q Do you have reported to you the production figures for the month of December?

A We did on the Continental wells. We did not get the time to include it on this exhibit. We do not have the Southern Union total system. We got those numbers from Commission published reports.

Q All right. Do you have the total for the month of December on the Continental wells?

A Yes, I have got it somewhere.

Q Would it be about 55.6 million?

A I do not know that to be a fact. Yes, I will verify that for you, be produced to.

Mr. Morris, I was in error. We do not have the total production for December for all of the wells on the Continental.

Q Mr. Mattes, let me just ask you, do you know from that that the production for the month of December was substantially less than the figures you have shown on your exhibit for the month of November?

A I do not know that to be a fact. I do know for the six wells the information which we ran on the special deliverability test, I have the data right here.

Q I am more interested, Mr. Mattes, in your total production, but I will take whatever you have.

A I have the December production for the six wells of Exhibits 14 through 19.

Q Excuse me. I didn't get the answer.

A I have the production data for the period we have described, for the wells in Exhibits 14 through 19.

Q Well, that is fine, however, can you testify that that is typical of the production for all of your wells?

A I couldn't do that, Mr. Morris, no, sir.
Q Let me ask you this, does it show a significant decline during the month of December from the month of November?
A Does it show a significant decline?
Q What decline does it show?
A O.K. Can I read you the numbers for November and December?
Q Would you give it to me for October, November, and December, if you have those three there?
A Sure.
Q O.K.
A I will recite these by well for the months of October, November, December.

You are just interested in the production rates only; is that right, for these months for these six wells?

Q I was asking you for actual production.
A Yes, the actual production for these six wells, that is the only number you want; is that true?
Q Yes, in answer to this question.
A O.K. J-1 98, 8835536, 5995

J-2, 2986, 2893, 3098

L-1, 1367, 1754

L-3, 226, 2790, 1447;

M-1, 350--no, that is the wrong number, 85485678;

O-1, 3311, 2263, 1468

Q All right, sir. Now, were these wells on the line

continuously during this three month period?

A Well, the record I have shows the number of days produced.

Q Does it show they have produced every day?

A No, it doesn't.

Q All right. Looking at any paragraph showing monthly production versus time you have to know how many days out of that month that well or that group of wells were on the line, don't you?

A I had answered your question. Was this about something else? Would you repeat it for me, please, sir?

Q I am asking, in trying to make sense out of an exhibit that shows monthly production against time, you either have to know that the wells were on all of the time or else you have to know how many days, how many production days you are talking about?

A Yes, that is right, to apply some significance to the number I have recited that would relate the well capability to production you would have to know how many days they were on the line.

Q Do we have that information? Have you presented that information with respect to your Exhibit No. 20?

A Have I presented the number of days the wells were on the line with Exhibit No. 20?

Q Yes.

A No, sir. Exhibit 20 only reflects total volume from the

Commission records they report, in a statistics report.

Q If in a given month a well or group of wells was not producing, your production for that month would show less than it would if the well had been producing for the entire month?

A I agree, when we look at this Exhibit No. 20 without knowing the producing days, we don't know what the fluctuation was.

Q What the fluctuation was?

A In the number of days each of the individual wells produced, that is right.

Q Let me ask you this: You may have already said that you didn't know the answer to this, Mr. Mattes, but on your Exhibit 20, could you agree with me that production for the month of December would be substantially less than the production shown for the month of November?

A No, sir, I do not--

Q For Continental?

A I do not have that data. I only have data for the six wells that we have, in answer to your question.

Q In other words, you are saying that you don't know that Continental wells have declined in production since their peak there in November; is that what you are testifying to?

A I do not know what the December production is, that is right, except as related to these six wells.

Q May I have just a moment? We are almost through.

MR. MORRIS: That is all we have on cross-examination.

MR. PORTER: Does anyone else have a question of the witness?

CROSS-EXAMINATION

BY MR. UTZ

Q Mr. Mattes, Mr. Nutter gave away our Exhibits 5 and 6, so I will try to ask these questions from memory.

A You may have the exhibits if you wish. I have them memorized.

Q Let me try it first without the exhibit.

I believe on Exhibit 5 and Exhibit 6 you had a compressor station marked Jicarilla compressor?

A No, Dogie Canyon. It is Dogie Canyon compressor.

Q Well, didn't you have another one marked Jicarilla compressor that serves the east system as you mark them, east, north, and west?

A No, all I have is the Dogie compressor. You may be referring to the Ingersol Rand SDGA. Is that the one you are talking about?

Q I don't know. It is over on Section 7 on the east system, Section 7 on the east system.

A I only testified about the Dogie compressor.

Q Well, then tell me what compressor serves the east system that you have described?

A In Southern Union?

Q In the Dogie Station.

A Elvis, I do not know the answer to that one, what specific compressor, I do not.

Q It is a compressor there at the Dogie Station?

A Yes.

Q And another compressor in the Dogie Station serves the north system?

A Elvis, in my testimony I have concluded this, just based on the compressors that I observed, and the map as provided by Southern Union.

These inferences are based on the circumstance that these two, to me independent pieces of data, got reasonably married together; as far as the actuality of which specific compressor is hooked up to which specific trunk, I cannot state positively.

Q Well, let me ask you this then: Is it my understanding that you are asking the Commission to stabilize or equalize these line pressures between your eastern system and your northern system and the western system to provide substantially--

A At what point?

Q At what point?

A At what point?

Q Would it be in the vicinity of the Dogie Station?

A Yes, in the vicinity of the Dogie Station would be just fine.

Q Well, then the Dogie Station does serve all three of these?

A All three of the trunks that are shown on my Exhibit 5, that is right.

Q Now, what else are you asking the Commission to do?

A Well, we have asked that all our wells are assigned non-marginal allowable and that the under production of them not be subject to cancellation.

Q For what period of time?

A Until they become truly marginal wells in our opinion.

Q If they are non-marginal wells, they will accrue under-production providing they don't take the entire allowable?

A That is correct.

Q Are you asking this underage not be cancelled at the end of the balancing period, carried on maybe two, three, four, five balancing periods?

A Yes, that is right.

MR. UTZ: That is all I have.

MR. PORTER: Mr. Kendrick.

CROSS-EXAMINATION

BY MR. KENDRICK

Q You have six exhibits on the board there with well tests of production rates and pressures.

You testified that the high production rates on the

four on the top row were taken from the deliverability test taken with a compressor in service?

A Right.

Q Were the other volumes and pressures taken from similar conditions of flow, third week charts average pressures for those same flow charts?

A No, sir. The other two points were average flow rates for the month divided by the number of differences that that well produced during the month and the pressures, the average pressure at the well from the meter charts as provided to Continental Oil Company by the purchaser, Southern Union off of the meter charts from which the gas is sold.

Q Then, on the four charts exhibited on the board there?

A O.K.

Q The two points, the central point and the lower point, the flow rates, their average in such time as the well had been shut in for a period of time during the month and the high rate of production after turning those wells back on is included in the average daily rate?

Let me re-word the question.

A O.K. I am trying to follow you.

Q I understood your answer to my previous question was that was an average daily rate for a month in each casing?

A Yes, sir, that is right.

Q Which includes high rates of production or higher rates of producing after the well had been possibly shut in sometime during those months, which your records do not reflect on the graphs?

A Yes, sir, I said, that is a fair statement, but I also did not include as average thirty days production on this chart those months in which the wells produced substantially more gas when the compressor was operative and we were running the deliverability tests, which gas used the high rate ?

Q You high rate volumes you testified as being the average daily rate during this week?

A That is right.

Q Of deliverability type tests where there was uninterrupted flow?

A That is true.

Q Thank you.

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

MR. KELLAHIN: May I have a couple?

MR. PORTER: You can. Are you going to cross-examine him?

MR. KELLAHIN: Yes.

RE-DIRECT EXAMINATION

BY MR. KELLAHIN

Q Mr. Mattes, you just testified that during those

deliverability tests there was uninterrupted flow. Had you had a water problem, those would not have been uninterrupted, would they?

A Well, that is true.

Q So that would be evident that you had no water problem?

A Yes, I would say that is right.

Q Now, the wells you have chosen to test, the six wells, did you have cores on those wells?

A Cores on those wells?

Q On the six wells you tested?

A Not on all of them.

Q Not on all of them. You did on part of them?

A On part of them, yes, sir.

Q If a well is producing against higher pressure rates, assume for a moment that there is a water problem in the South Blanco-Pictured Cliffs Pool. If the well is producing against higher pressures, is it more likely to have problems with water than one producing against lower pressures?

A A well that is producing against the higher gathering system pressure is more likely to have a water problem than a well producing against a lower system back pressure.

That is why we have the pits by the wells, because of the back pressure at which we produce them when we unload the water is at atmospheric.

MR. KELLAHIN: That is all of the questions I have, Mr. Porter.

MR. PORTER: Any further questions of the witness? The witness may be excused.

MR. KELLAHIN: That, Mr. Porter, completes our direct testimony on this case.

MR. PORTER: Mr. Morris, would you like to call your first witness?

MR. MORRIS: Can we have a recess?

MR. PORTER: We will have a short recess to give the attorney time to mark his exhibits and post them.

(After recess.)

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

MR. JAMESON: We would like to call as the first witness, please, Mr. Oren Haseltine.

OREN HASELTINE

a witness, having been first duly sworn according to law, upon his oath, testified as follows:

DIRECT EXAMINATION

BY MR. JAMESON

Q Please state your name.

A Oren Haseltine.

Q By whom are you employed?

A Southern Union Gas Company.

Q In what capacity?

A As manager of Gas Supply.

Q Mr. Haseltin, would you give us a brief resumé of your educational experience in the oil and gas industry?

A I have a degree in mechanical engineering from the University of California.

I worked for eight years for Signal Oil and Gas Company on the West Coast, and in the Mid-Continent area as an engineer.

My last position there was as a senior production engineer.

Since that, I have worked for Southern Union Gas Production Company.

Again in 1958 as a drilling superintendent, and since that time as the production superintendent, and at a later time since about 1962 or thereabouts as manager of gas supply for Southern Union Gas Company.

Q Would you briefly describe your duties as manager of Gas Supply for Southern Union?

A My duties are the procurement of gas for our system on long-term contracts or through exchange agreements, or on short-term contracts.

My duties also relate to the servicing of those contracts as they age and as conditions change, and to make sure that Southern Union performs in accordance with the contracts, renders payments in accordance with the terms,

and properly keeps the books and records on these matters.

Also I have a duty regarding records of reserves for Southern Union Gas Company, since gas is its stock in trade.

Q Mr. Haseltine, during the course of your employment with Southern Union have you had occasion to become familiar with the San Juan basin production area and specifically the South Blanco-Pictured Cliffs Pool?

A Yes.

Q Have you become familiar with the facilities operated by Southern Union in those areas?

A Yes, sir.

Q Directing your attention to a map identified as Southern Union's Exhibit No. 1, I will ask you to give us an explanation on that map.

A This is a map of Southern Union Gas Company flow pressure system serving the South Blanco-Pictured Cliffs Pool and some other areas adjacent to that pool.

You will have noticed the similarity between this map and some of the preceding exhibits, so I will point some of the things out that have not been explained, and then some of the differences.

First of all, we have, of course, on this map the wells located and identified by operator name, well name and number.

We have the limits of the South Blanco-Pictured Cliffs

Pool shown on the map, insofar as this map covers that pool.

You will see generally trending northwest southeast two roughly parallel lines that are shaded on the map, and these are the limits of the South Blanco-Pictured Cliffs Pool, the pool extends off the map in both directions.

Now, also on this map, if you look at the bottom of Township 26 and the top of Township 25-6 you will see three check meters identified there, check meter number 9631, check meter 9630, check meter 9639.

I will be talking about those check meters further a little later.

Generally, you will notice, of course, as has been pointed out on previous exhibits, that the Continental wells are located in Townships 25-4, 25-5 and up at the top of 26-5.

Some of the wells in that South Blanco-Pictured Cliffs Pool connected to Southern Union that are not Continental's are located in 26-6 General Lowerie system serving the Caulkins wells, and then we have a connection to some other Southern Union Production Company wells in this pool at the extreme corner of Township 27-8.

You probably have inferred already from past testimony, but just to make sure, let me describe the flow of gas, the flow of gas is inward from all the outlying areas to the Dogie Canyon Compressor Station and then south from that

point through that pipeline system that runs to our Lybrook gasline plant and then on to the market.

This map also shows the twelve-inch loop line which was not on the previous exhibit.

This twelve-inch loop line extends from roughly the common boundaries of 25-5 and 25-6 westward to the Dogie Canyon Compressor Station.

There are now two parallel twelve-inch lines in that same pipe right-of-way.

Also there where we have designated the Dogie Canyon Compressor Station at the north end of 25-6 we have there now in operation a 3,000 hp that was not in operation prior to September, October of 1971.

Q Mr. Haseltin, you mentioned a ten-inch loop line and a 3,300 hp compressor unit installed in 1971. The suggestion has been previously made in the testimony that Southern Union installed those facilities only pursuant to a Continental complaint; is that correct?

A No. As a matter of fact, those additional facilities were approved in the budget meetings held in the fall of 1970.

All of the planning and the necessity for that work had to be made and proven for budget committee work prior to the end of calendar '70 to get it into operation in '71.

I believe our first conference with Continental regarding this problem occurred in the spring of '71, probably

around May, which was several months subsequent to the time this additional loop line, this additional hp installation had been approved, and of course, these things were pointed out as plans that were then under way and concretely to be achieved during that summer construction period, in our conferences with Continental.

Q When were these new facilities--by that I mean the loop line and additional compressor unit--installed, and when did they go in service?

A The construction work went through the middle and late summer of '71, probably beginning in July, and then most of it was finished up around the end of September, you know, there was some up and down time at the end of September and the early part of October when those facilities were being tested and put on the line, the bugs chased out of the compressor, this sort of thing. Basically they went into service mid-October.

Q Does this map show all the Pictured Cliffs wells in the South Blanco-Cliffs Pool that are connected to Southern Union's facilities?

A It shows all of them connected to the facility on this map.

Q Right.

A There is one stray that is not on this map.

Q All right. You mentioned three check meters. What are those check meters capable of measuring?

A They measure and record contractually the pressure and flow rate from the three trunk systems shown on this map into the Dogie Canyon Compressor Station.

One thing I should have pointed out a minute ago, and I failed to, there is a substantial difference in our Exhibit here as related to the system into the Caulkins area and the exhibit you have already seen.

We have in that Caulkins area two systems, a high pressure and low pressure system.

We deleted the high pressure system from this map and the high pressure trunk line that comes into the Dogie location, and we deleted all of these wells that were tied to that high pressure system for the purpose of clarity, because when you have two gathering systems that actually overly each other geographically, to depict those two on the maps leads to a good deal of confusion as to which is which.

Q Was your reason for omitting the gathering system the fact that the wells connected to that system are producing from the Dakota Formation?

A That is basically a Mesa Verde-Dakota system, that is correct.

Q Mr. Haseltine, I direct your attention to a schematic drawing identified for the record as Southern Union's Exhibit No. 2 and ask you to explain what is shown by that exhibit?

A Exhibit No. 2 is a schematic of the Dogie Canyon Compressor Station, and it shows the normal flow pattern typical pressures and volumes as that station operates.

Now, each compressor unit there is designated as a square. Each one of them are identified by number, as we identify them on our records, and they are identified by either nameplate capacity or D-rated nameplate capacity.

You will see we have there the 550 hp Ingersol Rand reciprocating unit.

Then next to the No. 2 and No. 3 are 1,100 hp Solar Centrifugals, the final compression there is 3,300 nameplate or the 3,000 D-rated capacity Solar Centrifugal. The Ballard system, that system extends westward from the station and the Lowerie system that is a low pressure system going to the north, both feed into the Ingersol Rand recip.

The Jicarilla system, which is the system extending westward through the Continental area, then on up into another productive area, the Jicarilla system feeds the No. 2 and No. 3 1,100 hp Solars, which operate in parallel, all three of those compressors take first stage compression on the three low pressure systems in the area.

Now, the Largo system, that is the one that we deleted from the map which overlies low pressure, the Lowerie, the Largo system, bypasses that first stage of compression and

feeds into the suction of the 3,000 hp Solar, so that we have two stages of compression on all of the low pressure systems and one stage on the high pressure.

You will notice there that the typical volumes as measured through the check meters we described a minute ago are three million from the Ballard; six million a day from the Lowerie, for a total of nine million going through that small Ingersol Rand recip.

We have on a typical day about forty-eight million a day coming out from the Jicarilla system going into the two parallel Solars.

The suction pressure there for the Ballard and the Lowerie typically is 165 psig, and for the Jicarilla system is 215 psig.

The discharge, of course, is common manifolding together for all three of those low-stage compressor units, and that first stage discharge pressure is 320, and then the high pressure machine boosts it on up to 520, to get it on the mark.

Q Now, Mr. Haseltine, the witness for Continental has testified that in this proceeding Continental is seeking one of two things as related to this exhibit.

One, an increase in the inlet pressure to a 550 hp compressor unit to equal 215 inlet pressure on or about two Solar units or a reduction on the 215 pound pressure at the

inlet to the two Solar units to 265 inlet pressure on the Ballard-Lowerie.

Could you outline for us the difficulties that would be encountered and what would be required to accommodate either or both of those, one or the other of those alternatives?

A Well, the superficial view of this thing would be to simply manifold those three low pressure systems together and the three compressors together on the suction side, but that is physically not possible with the machines that are there.

First of all, the Solar's centrifugal design limits the ratio of limit from suction to discharge on these Solar machines to one point seven five .

A recip is designed and used for a higher ratio of lift than this.

By "ratio of lift" I am talking about an absolute pressure out divided by the absolute pressure in, so you can't stretch the ratio on the Solars. They simply won't operate that way.

On the other hand, you can stretch the ratio on the recip. Another of the reasons, of course, is that the recip is working at a fairly close ratio, the reciprocating machines have such flexibility in the cylinder size--to adjust a given machine for different conditions, but there is a limit to that flexibility.

The third thing is that these centrifugal compressors have certain operating conditions that lead to instability, that we refer to as surge in the machines, and when they begin to surge a high speed centrifugal compressor can destroy itself, so it is physically not possible to manifold these three together, on the suction and on the discharge side.

Q In your opinion, would it require a substantial expense on the part of Southern Union for either new machines or a modification of the existing machines to manifold all three units together on the suction side?

A I really doubt that the Ingersol could be modified to serve that way. It would probably have to be changed out and either one would represent a very substantial expense.

Q Then, in your opinion,thisis the method that they are operating at at the present time with regard to the suction patterns the only practical, feasible **way for Southern Union to continue to operate those machines?**

A Yes, that is my opinion.

Q I direct your attention to a table entitled "1971 Average Production Pressure" that has been identified for the record as Southern Union Gas Company Exhibit No. 3, it is a tabulation of every South Blanco-P.C. well that we have been talking about connected to Southern Union Gas Company.

The wells are listed by operator, number, well name

and well number. The location is shown.

And then for each separate month of 1971, the average production pressure is listed there.

Now, at this point I might mention that we have got several of these tabular exhibits.

They look like a tremendous amount of data that is hard to assimilate.

We will talk about specific wells that will represent what is on the total exhibit, but the reason we put all of this data down is because we don't think that the Commission can fairly be expected to understand the total matter by a spotty presentation of just a well here and a well there, so we have gone full bore and put the whole picture down so that you can see everything that is involved on this.

Now, let me point out, first of all, going down the list there, the first two Caulkins wells, the Breach 221 and the Breach 224.

If you look at the January pressures for 1971, you see 208 and 214 respectively.

Now then looking at August pressures you see 289 and 282 for those two Breach wells.

This ties back to what I was saying earlier about the construction period during the summer and early fall of 1971.

We had to have the Dogie Canyon Station off the line either partially or at times in total during the summer.

All of these weeks during which construction was going on this was necessary because of necessary revamping and moving machines in and out, manifolding in, piping, cutting in, etc., plus the tie-in of the major loop line that was going into service at the same time, so during that August-September period there are some high pressures that you will notice there on this exhibit.

Then, still referring to those first two Caulkins Breach wells, look over at December and you will see those average pressures there are about the same or maybe down a little bit, probably if you took the average of all of the Caulkins wells, January, '71 and compared them with the average pressure on all of the same wells in December, '71, there is some reduction in pressure.

Of course, this came about through use of this new 3,000 hp station, a second stage machine for all of the Dogie Canyon through-put.

Let's take a look now at a couple of Continental wells. The Axi Apache J1, which in January of '71 was operating at 344 pounds.

During the period of down time or when they, the compressor station was partially out of service, those pressures got up to 421.

Now, then that station or that system received the benefit of the new facility beginning in October, and you

will see the pressures starting to go down and very substantially further down in November, and still further down in December.

Let's read those numbers, because they are important.

You have got 273 pounds showing on Apache J1 in November and 254 pounds on the same well in December.

Now, skip down to J7 as another example here.

If it was operating at 337 a year ago in the winter time

Typically in August and September it went over 400 during that construction period that the well then operated in November 257 pounds, and fell off to 244 pounds in December.

So pressures were still coming down for several weeks after that station was in operation.

The station and the facilities were in full operation by mid-October, but, see that through the last half of October through all of November and all of December pressures were still declining.

Now, as a matter of fact the average Continental pressure--it is not on this exhibit--but the averages of the Continental pressure for November comes out to be 282 pounds, the average Continental pressure in December comes out to be 273 pounds, still a nine pound decline during the thirty months after those compressors and new facilities

were in operation.

Q Mr. Haseltine, I call your attention to the exhibit tabulation entitled "1972 Average Producing Pressures," identified for the record as Southern Union Exhibit No. 4, and ask that you explain that exhibit.

A Exhibit No. 4 is an extension of the preceding exhibit right up through to the very latest information that as a practical matter we could count on getting in the record here.

This takes us through the first two chart periods of 1972.

The dates of the two right hand columns, January 1 and January 9, refer to the chart of dates.

I might mention here, because again this question will come up later if we don't cover it now, the Commission some years ago allowed gas purchasers to operate on a fiscal month in order to meet certain problems in getting data into the Commission and to the production or time, so we as any other gas buyer in the area, circle charts of on days other than the 30th or 31st, and so this first chart here, which is what is a full seven day chart, came from January 1, which reflects a December chart period, the full December month ended some time like around the 24th of December, some date like that, so January 1 chart of data is the full seven day chart, and January 9 is a full eight day chart.

This cycle on and off of eight day charts also will lead to some months actually consisting of 23 days to 32 days.

I think 23 is probably, we have some as low as that, but again, this is a Commission-approved procedure, and it is a procedure that all gas companies use.

It is simply a means that once or twice a year a particular month is going to have three chart periods, whereas as a general rule the month will have four chart periods.

Q Does this Exhibit 4 and the data shown on it reflect a continuation of the lowered pressures that were shown in the preceding Exhibit 3?

A Yes, it is not as striking because we are talking about shorter intervals here, and of course, there is some leveling out as the system goes off the rate of decline of production.

Now, again let's talk about the same well we talked about before, the first two Caulkins-Breach wells, and in the January 1 chart, or the average chart period, it showed a 210 pound pressure, which was the same as for the full month of December.

As a matter of fact, the next chart period for that same well shows a nine pound increase, but you look down at the next well down and there was a real high pressure

recorded on that chart, the first chart period of January.

We are talking about the Breach 2-24 well. It shows 280 pounds of, which fell to 200 on the second chart period.

Now, from one chart period to the next there will be some bobbling around and fluctuation of these pressures. It depends on a lot of things, upon who is buying drilling gas in the field, depends on who is using gas in the field to blow wells down and rework wells with gas as drilling fluid.

It depends on line freeze or dehydrater problems.

It depends on whether a producer at that time is keeping his well clean or not.

It depends on a lot of things when you are looking at one small chart period to the next, but even dealing with chart periods, the short interval of the chart period on an average you will find that the decline in pressure continues, and if we take the average of the Continental wells, the pressure recorded on the January 1 charts, they show a 272 pound pressure, and the average for the January 9 charts shows a 261 pound pressure.

Now, that is a nine pound drop in seven or eight days.

It is still a substantial drop in pressure.

It doesn't necessarily mean that they will drop nine pounds every chart period, but it does continue the trend of declined pressures that began in mid-October, which now

has been some three months prior to the time we are looking at right here on Exhibit 4.

Q Do you have any reason to believe that trend will or will not continue?

A It will continue. We haven't seen it bottom out, as a practical matter, yet.

We are not surprised.

We expected these things to continue to pull down for some months.

It is indicative and typical of the San Juan Basin rock and reservoirs that a substantial change of whatever kind in the operating condition at a well don't fully reflect themselves for several weeks. They simply respond slowly, and we will see these pressures continue to decline.

Now, we want to talk in a minute about volumes, but I want to tie the two things together while I am talking about pressures.

The reason the pressures are coming down in this system is because the volumes are coming down. The coupling operation is simply the pipe in the ground, we stuck the coupling in the pipe in the ground in mid-1971, put them in operation full time in mid-October and they have been operating since then at relatively one set of conditions, but the gas output of this system is continuing to fall. Therefore the pressures are continuing to fall.

Normally you would expect wells to produce more gas as pressure falls, but the opposite is appearing here. The declining volume is allowing the pressures in the gathering system to fall.

Q I direct your attention to the tabular exhibit entitled "Production 1971", identified for the record as Southern Union Gas Company Exhibit No. 5, and ask that you explain that exhibit.

A This is a comparable exhibit to the last two we have been looking at, the two previous exhibits dealt with pressures over a period of time for every well we are discussing here today.

The exhibit that we are looking at now is Exhibit No. 5, and deals with production from those wells.

The order of tabulation is still the same. It has the individual well volumes for every month, and we need to look at some specific operator wells here in order to keep this thing in context with the problem we are dealing with.

Let's turn to the second page there and look at the operator total for Continental Oil.

January of '71 all of the Continental wells produced 44.5 million for that month, and as nearly as I can tell, this is the same number that went into one of the previous exhibits where this data was plotted on a graph.

August and September we are talking about the time the

facilities were down for construction production was off.

July was approximately 22 million feet from Continental.

August was 34 million, or as it is listed here, 34,000 Mcf, and then in October the last half of October the compressor and all of the facilities went into full time operation.

Continental's volume climbed to 58,546 Mcf.

It continued up in November with a full month of operation being reflected at 71,963 Mcf.

Then this thing that we are talking about of a decline in gas availability, even with the compressors sucking as hard as they can suck on that system, the old wells are getting tired and the volume is off very substantially from 71,968 Mcf to 55,644 Mcf.

Again, this is no surprise, and this kind of decline is not necessarily limited to the Continental wells.

It is reflected anywhere you have thin type sand for reservoir rock, and you pull on them hard you get a little bit of flush production that comes out to you for a few weeks, but eventually you get back on down to where you were to start with.

Q Directing your attention to the tabulation entitled "Production, 1972," entitled for the record as Southern Union Gas Company Exhibit No. 6, I will ask you to explain that exhibit.

A This , again, is an extension into the first two chart periods of 1972 of the data we were just looking at on Exhibit No. 5.

In order to meaningfully relate chart period volumes to monthly volumes that we were just looking at, we need to translate it to Mcf's per day.

The Continental wells in total for the first chart period, seven day chart period, produced 1,957 Mcf per day.

The second chart period, they produced 1,954 Mcf per day.

Now, 3 Mcf out of 2,000 is not much of a decline, but it was a 9 pound drop in pressure during that time.

The pressure drops immediately reflected in increased production should have caused the January 9th production data to be higher, but it simply was not the case. It is still continuing to fall downward.

Q What, in your opinion, will be the trend beyond the period shown by Exhibit 5 and Exhibit 6 with reference to Continental production up against the pressures that have been lowered in their portion of the gathering system?

A There is no doubt in my mind but that they will continue to decline.

Now, how fast, I don't know.

Certainly they are not declining as far now as they were say in the month of December when they fell off to--

very,very greatly from the month of November, but they will continue to decline and the pressures and volumes alike will come down. I don't know where it will bottom out.

Q In your opinion is it a probability that they will bottom out at say in January of 1971 when they were producing against 100 pound's higher line pressure--

A They are going to approach that. They will be close to it when they get fully pulled down.

Q What is the reason for the longer period that it takes for wells to level out in the production rate?

A This is a function if extremely low permeability reservoir rock that exists not only in the South Blanco-Pictured Cliffs Pool but particularly in the San Juan Basin reservoirs.

It is not only reflected in production operations as such but the Commission has recognized this. In fact, they have assigned a seven day build-up to the San Juan Basin and no other area of the state.

Also, the Commission requires for deliverability testing a longer preconditioning and flow period than for other areas. This is simply a reflection of the fact. It has been recognized for years, and everyone knows this, and it is continuing to be recognized and dealt with, and that is that the San Juan reservoirs are tight, typically low permeability. They require a lot of treatment in order to make them commercially productive and they simply do not

respond as quickly as a lot of other reservoirs in New Mexico do.

Q Mr. Haseltin, I direct your attention to an exhibit tabulation entitled "Production Days, 1971." Southern Union Gas Company Exhibit No. 7. Would you please explain that exhibit?

A Again, this is the same list of wells we have been working with. It shows the production days for every month during 1971, days on against, as for instance, for February shows 31 days on for many wells, and although there aren't 31 days in February, but there were 31 days in the chart month, and those wells have, show they were on production 31 days in February, meaning that they were on line full time.

Now, we log these days on in this way, that if we have our valve open and the well is exposed to the line, that is a well-on day.

Now, if that well is logged off and doesn't produce, it is still a well-on day. It is what is called on to produce. It may not have made anything, but that is a day on.

Now, then if we shut the valve for test purposes for pipeline repair or whatever, that is a day off.

If you look down there at the bottom of the page, the Continental wells, and just glance through there, you will see almost totally that those wells were on just almost 100

percent of the time. The wells have to go off the line occasionally. We have to close the valve. Now and then we might have a dehydrater to change out or the line to repair or the operator may want to do his state-required testing, but whatever reason, but when wells show 350 plus days per year total as days on, that means they have been off the line all there is. That is all there is for them.

Q Does this chart reflect that no discrimination has been practiced against Continental in favor of anybody else, as far as the production days made available to Continental wells?

A Yes, it does.

Q Mr. Haseltin, referring you to the exhibit entitled "1972 Producing Days," identified for the record as Southern Union Gas Company No. 8, I will ask that you explain that exhibit, Exhibit 8.

A Exhibit 8 is our continuation into the first two chart period of 1972 of Exhibit 7, listing the production days for every well for those first two chart periods.

Again, let's glance at the bottom of the page 1 and you will see that all of the Continental wells during that time on page 1 were open to the line the full period of time.

On page 2 you will see that they were on almost all of the time.

Now, notice the Apache L4.

It was off the full chart period for the chart that came off January 9. That well was shut-in for a test. Notice that the Apache N6 was only on the line four days for the first chart period there.

That was to accommodate rework and pressure buildup work by the operator.

Q Now, relating Exhibit 8 and 9 to Exhibit 6 and 7, can the decline in production rate from Continental's wells during that--that occurred in December and in January be explained by any denial of access to the gathering facilities?

A You mentioned the wrong numbers.

Q Seven and eight relate that to five and six?

A All right. No, seven and eight simply support the fact that these wells were on the line, we will just say all of the time, and the pressure and volumes have continued to decline.

Q Those declines then can't be explained on the basis of Continental wells, for part of the Continental wells were shut-in during the period of the decline.

A No.

Q Your attention was directed to an exhibit entitled "Day's Average Pressure and Production," identified for the record as Southern Union Gas Company Exhibit 9.

Please explain that exhibit.

A Exhibit 9 is a lease summary of the performance of the Continental wells that we have talked about in the preceding six exhibits.

Now, Exhibit 9 is confined to the last four months of 1971, and the first two chart periods of 1972.

Now, the thing that we really need to be looking at here is the Mcf per well day column.

The one of significance is the Mcf per well day.

I think everyone has got in mind the pressure performance and the timing of the compressor installation, and so on, so notice the, for instance, J-lease there. 1971, September, that lease averaged against the existing pressures then, which were at a maximum due to construction, 43 Mcf's per well day.

It hit a peak in October during which the compressors were only in operation about half of the month, but it pulled the head off of those wells in October in half a month and peaked out with an 83 M per day average.

Now, November with 30 days of operation, those wells could not even sustain what they had accomplished in 15 days of low pressure operation and 15 days of high pressure operation due to the declining head as it comes off the well, so they were down to 82 M's per day.

Now, you glance on across there through the remaining periods, you see that that J lease fairly well sustained

that rate, although it is coming down some, it hasn't dropped extremely from its high of 33 M's per day.

We are showing 70 minimum as the last measured rate on that J lease, but now you look at the K lease. That is the next one.

During the period of high pressure operation in September that thing made 33 M's per day per well.

Look at the last number over here. It is down to 35. There is a 2 Mcf per day difference, and we have got a 150 pound difference in the line pressure.

The L lease was going 44 M's against the high September pressure.

It will do 46.

The M lease did 39, and it will do now 43.

The N lease, this one, has shown some resistance. It may be able to sustain it. It was 57 during the period of high pressure operation.

It peaked out in November at 113 Mcf per day.

It has since fallen with lower line pressure to 94 Mcf per day. It is not falling as rapidly as the three leases immediately preceding. Look at the O lease. It looks as if we did the wrong thing in reducing pressure on that one.

It went from 89 M's to 49 M's per well day.

First of all, in total, these leases are not sustaining any kind of a marked improvement, even though pressure

has been substantially reduced, and the second thing, and this bears out what we are talking about, the quality of the reservoir rock, these wells are poor by any standards. They wouldn't make 50 M's per day generally as an average per well, and so we are talking about wells that a prudent operator would not hope to achieve with any well to drill to 3,000, 4,000 foot depth.

Q Mr. Haseltine, in your opinion would you conclude that the substantial reduction in line pressure in the gathering line connected to Continental wells hasn't substantially helped their production rate and wouldn't substantially help their future production rates?

A That is exactly my conclusion.

Q Mr. Haseltin, I direct your attention to a graph identified for the record as Southern Union Company Exhibit 10, entitled "Wells of Production Rate Line Pressures versus Time." Would you please explain that paragraph?

A This paragraph is a plot of daily information taken from the check meters that serve the Jicarilla gathering system.

Now, you will recall on Exhibit 1 we pointed to three check meter locations where those gathering systems and pipelines gather together there at the Dogie Canyon Compressor Station.

The check meters were located there at the compressor station.

This is one of those check meters. It reports the volume-throughput on a daily basis, and the pounds of pressure existing at that check meter.

There is some other information, and that is the well-- this is information that we receive daily from the field which shows the number of wells of the line feeding a particular system.

Now, let's take a look at that top curve, that is a plot of wells off it.

You notice in January and February very few wells are off.

This is because we are serving a high demand heating load at that time.

Then again in April and on through the summer you will see a period every month there where there is a large number of wells off.

This correlates with the testing schedule for Commission purposes.

The wells that are there off are being shut-in for their eight-day buildup test.

Prior to that time they had been on flow for their preconditioning and flow test.

Now then you look on over in August and September, the charts become a little erratic there for wells off.

This was during that construction period.

Then beginning in November the number of wells off has been dropped down again to a low level.

There are two or three periods there in December and January when the wells off ran from 10 back up to about 20 for a few days.

This was a changing out of some equipment, some wells actually in the system, this Jicarilla system were over produced and shut back for over production, a few things like that.

Now, the next line down is the volume through put, plotted on each day, and what we want to look at here is the volume through say as a January-February average, and I would say just draw a line there at about 44 million per day as probably an average number through January and February.

Now then, since the installation and operation of the new facility, you look over in December and January and you see a volume through put there that is around 48 million per day, so we have picked up about 4 million per day from that area by the installation facilities.

Now, the third line, look at your pressures again, as recorded, January and February, probably an average would be 280,293 hundred, something like that. Those pressures now over in December are running about 220. They have dropped off a little bit in January.

They bobble back up right there at the very last of the data, we have got it plotted. It looks as if the trend is still slowly downward, certainly not coming down as far as it did in October and November, but I believe there is a trend continuing downward even on the pressure there at exhibited.

Q Does this plot reflect totals for all wells connected to the east leg of the gathering system that is shown on Exhibit 1 as the Jicarilla line?

A Yes, that check meter serves all gas coming into the Dogie Canyon Station from the Jicarilla line.

Q It is not necessarily related only to Continental wells?

A No, it is the total gathering operation in that area.

Q But Continental wells would certainly affect the totals?

A Yes.

Q Mr. Haseltine, I direct your attention to the graph identified for the record as Southern Union Gas Company Exhibit No. 11, and ask you to explain that graph.

A Exhibit No. 11 is the same information for the Lowerie check meter that we had exhibited on Exhibit No. 11 for the Jicarilla check meter, the Lowerie meter is located at the Dogie Canyon Compressor Station and measures the flow from that system that runs northward out of the Dogie Canyon to the Caulkins producing area.

I think that system on the map is on Exhibit 1.

It extends up through Township 26-6 and gathers gas in that township and some adjoining townships that is called the Lowerie system and performance of that system in total, as reflected by the Lowerie check meter in this Exhibit No. 11.

Without going into all of the explanation, you will notice again the wells plotted on the first curve, the million feet per day through put.

Notice January and February showing about 6 million per day as a good sustained rate.

That volume available to us out of that system has dropped off, it looks now as if five and a half is probably about as good as we could average out of that area.

The pressure as recorded at the Lowerie check meter January and February was running about 175, maybe 180 on an average, and is now down to about 160, something like that for an average pressure.

Q Mr. Haseltine, before we get to the next exhibit, what conclusions do you draw from all of the preceding exhibits about which you have testified with regard to responsiveness of Continental wells to line pressure?

A The exhibits very clearly show, in my mind, that the wells responded in some measure initially as you would expect them to and we knew they would, but that response is not sustained again; as a San Juan Basin operator would know normally, that changes in line pressure are not going to result in sustained

long-term increases in output from given wells, and I think that the exhibits and the numbers that we have shown here clearly point out that the Continental wells did show a response at first, and fell off, and they are still falling.

Q All right. I direct your attention to a tabulation identified for the record as Southern Union Gas Company Exhibit 12, and ask you to explain that exhibit.

A Exhibit 12 is a display of the ratability performance of Southern Union Gas Company in the South Blanco-Pictured Cliffs Pool.

Now, we have here three columns.

The first one is entitled "Market Requirements Mcf and Market Requirement Percentage," and the third one is actual producing percentage.

We have got detailed here by operator totals for the years dating back to 1967.

What we have tabulated here is the share of the market to which each operator was entitled, and compared that with the share of the market he actually got in terms of production.

Now, here is the way we come at these numbers.

Allowables are one thing, but the market is what gets served by gas production. The market is great, then all of the wells stay on the line all of the time.

If the market gets limited, something gets cut back in

accordance with the Commission proration formula and what we do is estimate our shares at the beginning of the year for all of the Northwest New Mexico area, and then we break it down by pools so that the South Blanco-Pictured Cliffs gets a share of our total Northwest New Mexico market.

We further break it down to operators, and to see that each operator gets his fair share out of our market, out of that pool. The way we prorate that is using the A and A days in exactly the same way that the Commission prorates its gas for allowable purposes. As to marginal wells, we use the last deliverability on record.

If it is an exempt marginal well where we simply don't have a deliverability of record to use, we use an Mcf-D factor that represents its ability to produce to the line to the end that these weaker wells get a market share equal to a hundred percent of what they are able to do, anyway, but the basic method on which we prorate the market to the wells is the same system that the Commission uses for distributing total pool allowable.

I think this is the philosophy upon which this whole business is supposed to work.

Let's look at the specific number. We are talking about Continental, so in '67 our number shows that Continental should have 18 plus percent of our market.

They only got 15 plus percent.

In 1968 our numbers showed they should have approximately 14 percent.

They got just under 13 percent of the market.

In '69 our numbers would have given them 10.83 percent.

They got 13 percent.

On the next page, 1970, they should have 10.83. They got nearly 13, and in '71 they should have 14.34 percent.

They got about 14.6 percent, so you can't dispatch perfectly in accordance with your market schedule.

Everybody, I think, would realize that and not argue about it, so all you can do is come close, and if you run a producer a year or two under his fair share, you catch him up the next year. You try to keep everybody pretty closely in balance.

Some of those operators--you might point there to Operator Abraham.

He has got two real small wells. It is just almost impossible to keep him down to a hundredth of a share of a market.

You put him on a line. He stays on the line. You take what you can get.

You hope that volume comes to you from those small wells enough to justify changing the charts.

Q Now, over the period shown by this exhibit, in your

opinion, were Southern Union's takes from Continental's wells in the South Blanco-Pictured Cliffs Pool ratable with its takes from other producers in the Pool?

A Yes. As I pointed out, they ran a little under their share in '67 and '68, but in '69-'70 and '71 they overran their share, so I think they have been treated fairly.

Q They were still getting their share of the market, notwithstanding the difference in line pressures from the various periods about which they have complained?

A As a matter of fact, they got more than their share of the market, if you really get down to a fine pencil on it.

Q Then is it your conclusion that line pressures maintained did not cause a non-ratable take insofar as Continental wells are concerned?

A Line pressures maintained did not alter their ratable treatment and ratable share of the market, and they got everything they were entitled to.

Q I refer you to a graph identified for the record as Southern Union Exhibit No. 13, and ask you that you explain that graph.

A This is the pressure profile or hydraulic gradient, as it has been referred to earlier today, existing in the Jicarilla Gathering System, with the pressure at Dogie Canyon indicated on the extreme left of the plot, and the pressure at some point distant in miles, as indicated on

the bottom of the graph plotted so that we have here a picture of the hydraulic gradient or the pressure profile throughout that system.

Now, you notice this thing extends out, oh, 22 miles, 23 miles, maybe, and the pressure at the extreme end looks like it is about 200 and, oh, 75, to 285 pounds, something like that.

The pressure at Dogie Canyon is 200 pounds.

These pressures were taken at 12:00 noon December 20, 1971 of the meter charts with the single exception that Dogie Canyon pressure was read at 8:00 o'clock. That is when we get the pressure report in off of that station.

You will notice that over 22 miles we have got about 80 pounds differential. This calculates something in the neighborhood of four pounds of per mile pressure drop in the gathering system.

This is a very conservative number for gathering system design.

Q When you say "very conservative" how does that compare with the usual and customary gathering system as far as pressure gradients?

A Well, it is not unusual to have ten pounds per mile or more, maybe 20 to 30 pounds in the gathering systems.

Q In your opinion, is Continental suffering any discrimination because of the high pressure gradients between the Dogie

Canyon Compressor Station and Continental Wells?

A No, they are not.

Q The pressure gradient then in your opinion is about what they could expect from a normal gathering system?

A If you get the gradients much closer, why the gas wouldn't flow.

Q Calling your attention to a graph identified for the record as Southern Union Gas Company Exhibit No. 14, I will ask you if you will explain that graph.

A Exhibit No. 14 is for the Lowerie Gathering System, the same data that was on Exhibit No. 13 for the Jicarilla Gathering System, it is a pressure profile.

See, the distance is a good deal shorter.

Our extreme well there, as far as this data is concerned, serves the Lowerie area, the Caulkins area is 16 miles.

We have got a 150, probably 165 pounds at the Dogie Canyon and about 200 pounds in the field's extreme end, say a 40 pound difference in pressure over 16 miles, a gradient of two and a half pounds here per mile.

The one we looked at on Exhibit 13 had four pounds per mile.

These are very, very conservative gradients, and it is hard to fuss about either one.

I think we might point out here, too, that these

systems date back to the original development in the area, of course, and as time goes by, additional development takes place or it doesn't, and wells sustain their deliverability or they don't.

So you might go in with a rule of thumb of designing for five pounds per mile and by the time we get down here on a Commission case, ten or twenty years later, the gradient is not that; it is something different.

It doesn't mean that we deliberately design to give the Lowerie area a two and a half pound gradient and to enforce a four pound gradient on the Continental.

It reflects, as much as anything else, the decline in flow or the sustained development, or something else. These things all enter into what determines the pressure gradient at any point in time.

I might mention also that if we equalized pressures, as has been suggested at Dogie Canyon, and say we went to the well, just for example, say we went to a 200 pound suction across the board there on the flow pressure systems at Dogie, we still have got a 40 pound drop or an 80 pound drop back to the extreme Continental well.

On the other hand, if we were at 200 at the suction there for the Lowerie System we would only have about a 40 pound increase in that pressure at the same Caulkins well, so simply equalizing pressures would not achieve an

equalization of pressures in the field.

There is a geographical distance that can't be over come.

Q Mr. Haseltine, I direct your attention to a document entitled "Natural Gas Purchase Contract," a Southern Union Gas Company numbered 15, and ask you whether that is a true and correct copy of the Natural Gas Purchase Contract originally executed by Humble Oil & Refining Company as the seller and Southern Union Gas Company as the buyer, covering the acreage that is now owned by Continental in the South Blanco-Pictured Cliffs Pool.

MR. KELLAHIN: If the Commission please, we object to any attempt to introduce the gas purchase contract in this proceeding as being immaterial to any issue that has been presented in this case or is capable of being presented in this case.

It is well settled that the New Mexico Oil Conservation Commission can act to prevent waste and in doing so it must protect correlative rights.

The extent of the Commission's authority cannot in any sense of the word pass on the provisions of the gas purchase contract.

If it attempts to examine the prices, pressures, other matters related in that contract, it is going beyond the scope of its authority, and we object to any question along this line.

MR. MORRIS: He will respond to that argument.

MR. JAMESON: First of all, it is customary in the natural gas industry to write contracts with very strict pressure provisions.

Producers are interested in the pressures, maximum pressures that are going to be imposed upon him and his wells.

Those provisions are customarily introduced in contracts.

If Mr. Kellahin has his way, those pressure provisions in this contract are meaningless. They have no force and effect.

There is no reason to put them in a contract.

Secondly, gathering systems are built on the basis of, they are designed engineeringwise on the basis of pressure provisions that you are going to be required to meet under your applicable gas purchase.

That makes it relevant to this gathering system and the way it is operated.

Thirdly, the pricing and pressure provisions in this contract which are interrelated have a bearing upon whether any discrimination in pressures that might exist is unreasonable.

In other words, what we are saying here is that the pressure provision and pricing provisions that are interrelated in this contract have a bearing upon whether the design and operation of these gathering systems has been reasonable or unreasonable.

The issue of reasonableness or unreasonableness as to facilities afforded by Southern Union is the ultimate issue in

this case.

We submit the provisions of this contract bear on that issue and are a hundred percent material thereto.

MR. PORTER: The objection is overruled.

MR. KELLAHIN: Rather than making continual objections, I would like the record to show that we do object to this line of questioning regarding this contract or any of its provisions.

MR. PORTER: Mr. Kellahin, the Commission will note your objection to any references to the contract.

DIRECT EXAMINATION
(CONTINUED)

BY MR. MORRIS

Q Mr. Haseltine, I direct your attention to Article 8, Section 1, 2, and 3 of this Natural Gas Purchase Contract, and ask that you just read those provisions.

Article 7, excuse me, not Article 8.

A Article 7?

Q Article 7, Section 1, 2, and 3.

A Since I didn't get to answer your first question, this is a true and correct copy of the contract you talked about.

Q Thank you for straightening me out.

A Article 7, delivery pressure, Section 1, except as hereinafter in this Article 7 provided buyer shall take gas hereunder at natural wellhead pressures, and shall have the right to operate its gathering system to which seller's

wells on the subject lands are connected on such a basis as will produce a working pressure at each point of delivery up to but not exceeding 600 pounds per square inch gauge.

Section 2, as to each of the gathering systems by means of which buyer may from time to time be purchasing gas produced from any portion of the subject lands, buyer represents that it contemplates a gradual reduction in the pressure in such gathering system consistent with the decline in pressure in the reservoir from which the gas covered hereby is being produced, and agrees from time to time to lower the working pressure in such gathering system consistent with such decline in reservoir pressure to such a pressure (herein referred to as the "maximum gathering pressure") as is necessary to permit at least 80 per cent of all wells producing from such reservoir at the time and connected to buyer's said gathering system to deliver gas into such gathering system. Provided, however, that buyer shall never in any event be obligated to reduce such maximum gathering pressure to less than 200 pounds per square inch gauge or be required to take or pay for gas not deliverable into buyer's gathering system against the maximum gathering pressure maintained therein from time to time in accordance with the provisions of this Article, and provided further that seller at its option and

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expense may at any time increase by compression the pressure of gas from any well or wells covered by this agreement so as to make same deliverable into buyer's gathering system.

"Section 3, it is further recognized by the parties heretc that when there has been a sufficient decline in the pressure of the wells connected to any gathering system of buyer, it may be necessary for buyer to install and operate compression facilities to increase the pressure of the gas delivered to buyer from the wells of seller covered hereby and from the wells of other producers connected to the same gathering system.

In the event compression facilities are so installed and operated by the buyer, the price to be paid by buyer for the gas delivered hereunder shall be adjusted as provided in Section 2 of Article 8 hereof."

Q All right. Now, at this point I will ask you whether within your knowledge has Southern Union ever operated its gathering system in the Cliffs at a gathering system that denied or rather that did not permit a minimum of 80 percent of the wells connected with the gathering system to produce gas?

A We have always operated at such a pressure, at least 80 percent of the wells will produce.

Q The fact is the figure probably always has been higher than that 80 percent?

A The figure has been almost 100 percent.

Q Now, as to the general matter of economics, what is the relative difference in value to a gas buyer of high pressure gas and low pressure gas?

A The difference in value is the cost of the compression.

MR. KELLAHIN: There is no testimony about any high pressure gas being involved in this hearing. We are talking about the South Blanco-Pictured Cliffs Pool.

The only pressures we have been shown here today are all on the order of an equal, substantially equal pressure.

There is no basis for any question about high pressure versus low pressure gas involved in this proceeding.

MR. MORRIS: I will just withdraw that question, to save a ruling on it.

Q (By Mr. Morris) Mr. Haseltine, I direct your attention to the provisions of Article 8 of Section 1, entitled "Price" Schedule in the Contract, and ask you whether that price schedule is the one that customarily Southern Union has paid for the Pictured Cliff gas in the San Juan Basin?

A No, this price schedule is 2¢ higher in all its brackets than the prices in the prices paid for Pictured Cliff gas in the San Juan Basin.

Q What is the difference for that two cents difference?

A The difference is the right that Southern Union has, in terms of the contract provisions we just read, which allowed

Southern Union to gather the gas at pressures up to 600 pounds.

MR. KELLAHIN: Mr. Commissioner, we object to this line of questioning because the other contracts are not before the Commission. We don't know what price we are paying. There has been no price given the Commission, what prices are being paid under any contract under this one--

MR. MORRIS: Mr. Haseltine has already testified and qualified himself as manager of gas supplies, with complete jurisdiction over payment to all producers in the San Juan Basin. That is his job, to see that everyone gets paid the proper rate for his gas. He is well qualified to testify on gas prices being paid.

MR.KELLAHIN: It is a fundamental rule of evidence that a contract itself is the best evidence. If he has a contract, he should produce it and let us see what the prices and what the other provisions are.

MR. PORTER: Mr. Kellahin, the Commission will overrule your objection.

Q (By Mr. Morris) Now, Mr. Haseltine, I ask you to read the provisions of Section 2 of Article 8 of the contract.

A Article 8 is entitled "Price." Section 2 reads this way:

"In the event, as contemplated by Section 3 of Article 7 hereof, buyer installs compression facilities to increase the pressure of gas deliverable hereunder from one or more

of seller's wells located on the subject lands described in Exhibit A hereto, the price of all gas thereafter delivered hereunder and compressed in such facilities by buyer shall be reduced as follows."

There are two columns there that follow.

The first one is entitled "Maximum Gathering Pressure in Pounds per square inch gauge," and the second one is entitled "Reduction in Price per Mcf, 500 or over, non--- What I am reading here, the maximum gathering pressure first, and then reduction in price allowed. "At least 400 but less than 500, three-fourths cents; at least 300, but less than 400 and one-fourths cents. At least 200, but less than 300, one and three-fourths cents.

Q From the provisions that you have just read in this contract, Mr. Haseltine, are the prices to be paid to be varied depending upon the pressure that your Southern Union maintains or is entitled to maintain in its gathering systems?

A Yes, the prices paid are directly tied to the pressure at which we operate the gathering system.

Q All right now, Mr. Haseltine, I call your attention to Article 21 of this contract entitled "Material," and ask you to read that.

A That is at the top of page 17, Article 21 of the agreement.

"This agreement shall be effective from and after the

date hereof and unless sooner terminated as hereinabove provided shall remain in effect until December 31, 1975, and thereafter from year to year until terminated as of the end of any calendar year by written notice given by either party hereto to the other at least sixty days prior to the termination fixed in such notice."

Q Under this provision does Southern Union have any assurance that Continental gas will be available to it after December 31, 1975?

A No assurance whatever that Continental gas will be available to it after December 31, 1975.

You asked me a question a few minutes ago. I would like to reply to that a little more fully.

You asked why this contract contains a Pictured Cliffs base price schedule that is two cents higher than we normally offer in the Basin.

What I said was correct, but I want to go a little farther than that.

We have the right under this agreement to gather gas at pressures up to 600 pounds.

Most of our contracts provide that we have no right to gather at pressures above 250 pounds.

This is the essential difference in the pricing provisions.

Q Mr. Haseltine, I direct your attention to a tabulation

entitled "1971 Average Price," identified for the record as Southern Union Gas Company Exhibit No. 16, and ask that you explain what that exhibit is.

A That is a tabulation by month of the price paid for the gas received from each of the wells shown on the tabulation, this being the South Blanco-Pictured Cliffs group of wells. You will notice that the Caulkins there is one of the groups we want to look at.

The Caulkins wells have received prices of 13.0 cents per Mcf. There is a single exception to that. A well that didn't quite receive that much, and that relates to the fact that we do not have all of that particular well under a contract, but basically the Caulkins wells are all receiving 13.0 cents per Mcf.

Skip on over to the last page, and the last five wells on the last page, these are Southern Union Production Company South Blanco-P.C. wells connected to the Ballard system. That is the system that runs directly west of Dogie Canyon and goes all of the way up to the Township 27-6, I believe that is.

Those are under a similar contract, similar pricing provisions to the Caulkins contract.

They received a 13.0 price also.

You will notice the production company wells above, those bottom five, receive prices that vary from time to

time and are in excess of 13 cents.

Now, turn to the Continental wells, some on page 1 and some on page 2, and you will notice they also receive a price above 13 cents, and those prices vary from time to time on any given well.

I see prices in there ranging up to 14.3 cents.

These wells, both Southern Union Production Company Jicarilla wells and all of the Continental wells are wells subject to this high pressure Pictured Cliffs pricing provision, with the further provision in those same contracts that allows reduction in price as the gathering system pressure declines.

Q Does this exhibit reflect that although the Continental wells had been producing against a higher gathering system pressure than the Caulkins wells, Continental has in effect been paid the higher price in recognition of that pressure?

A That is right. The Caulkins wells have been paid a higher price because of those provisions in their contract because of the higher operating pressure in the gathering system.

Q Mr. Haseltine, I direct your attention to the table entitled "South Blanco-Pictured Cliffs base contracts." It is identified for the record as Southern Union Gas Company Exhibit 17. I will ask you to explain that exhibit.

A This exhibit is a comparison of the basic contracts whereunder we buy gas from the South Blanco-Pictured Cliffs Pool.

The operators of the various wells are listed there first, and then our company contract number, the date of the contract, and then the provision as to term, and the last column is the formation covered.

I would point out here that as you go down under the column called "Term," you will notice that the Abraham contract has a termination date in '84, and thereafter as long as gas is or can be produced. It is a life of lease contract, as long as gas is there, we have got a contract on it. The particular contract is extended thereafter so long as gas is producible in commercially usable volumes.

Continental does not have that provision. They can terminate it on notice, with the first termination privilege being accorded 12-31-75, the two Mead contracts have about the same kind of provision.

Mead can cancel and terminate his contracts November 1, '76, or on the anniversary dates thereafter, with notice.

This really isn't the same type of concern we're talking about with the Continental contract because the gathering system that serves the Mead wells--there are only four of those--the gathering system that serves those wells serves a great number of wells other than that.

Now, then going down into the production company contract, its life of lease provides that extends as long as

gas can be produced, and there the other production company contract is the same thing there, life of the lease.

Q Mr. Haseltine, how does the relatively short term for which the Continental contract is to continue affect the economics of the capital investment in the gathering system for taking gas from the Continental wells?

A Well, there are approximately four years left under the Continental contract, and any kind of pay-out for facilities that would be installed to serve those wells specifically would have to be amortized, any kind of investment would have to be amortized in the four years of the term remaining.

For small gathering systems, the amortization schedule respectively is ten to twenty years or more, and of course, pipeline facilities are amortized over even longer periods.

Q Mr. Haseltine, I will ask you this question: Continental made a lot of comparisons between its wells and the Caulkins wells, taking into consideration the relative remaining contract terms, the Caulkins wells contracts and the Continental well contracts, do you consider in your opinion that the pressure differentials that our previous exhibits show between those wells, are reasonable?

MR. KELLAHIN: We object to the question. We made no comparison of our wells to the Caulkins wells. Our comparison was for the purpose of showing the comparability of those wells as against the pressure, and had nothing to do with the premise

that has been laid in this question.

MR. MORRIS: I laid the premise in this question on the basis of their testimony of differences in pressure between the two wells, that are between the Caulkins group of wells and the Continental wells. That is between the Caulkins group of wells and the Continental wells, the question is whether, in light of the remaining contract terms and the two applicable contracts, that pressure differential in his opinion is reasonable. I think it is entirely a proper question in light of Continental's direct case.

MR. PORTER: The objection is overruled.

THE WITNESS: Yes, the pressure differential is totally reasonable viewing all of the facts we have talked about here today.

Q (By Mr. Morris) Now, Mr. Haseltine, in Continental's direct testimony reference was made to the Commission procedures for deliverability testing and the procedure that Continental followed in their deliverability testing, with the implication that the de facto result from the Commission deliverability formula was the deliverability of the Continental wells. Do you have any comment on that testimony?

A Yes. It seems to me that they have a quarrel with the validity of the Commission testing procedure.

I find nothing in the Commission testing procedure

that is here before us that relates to line pressure except the single requirement that the line pressure be more than 75 percent of the shut-in. If that condition is met during the pre-condition flow period, then regardless of the line pressure, the testing is to be made, and that is the test. If an operator can manipulate a test by running a compressor on a well for three weeks, jerk it out on a skid and get a deliverability that gets him allowable, as I believe I heard someone say, well, then I think their quarrel is with the application of the formula, not with our line pressure. I don't see anything in the Commission order R33F, or any of the memos that the Commission has sent out since then, applying to that, that recognizes that a manipulation of line pressure is going to give a higher or lower D.

In fact, I think it is quite to the contrary. I think the Commission established on the evidence they have heard many many times, they established the exponent of the back pressure curve. And they established the deliverability formula using that exponent, and said that as a general rule for all wells this would work, and we have no quarrel with that. I kind of feel like I am trying to defend a quarrel here that ought not to be directed at Southern Union.

Q Mr. Haseltine, were Southern Union Exhibits No. 1 through

17 inclusive, with the exception of the Gas Purchase Contract, prepared by you or under your supervision?

A Yes, they were.

MR. MORRIS: At this time we would like to offer in evidence South Union Gas Company Exhibits 1 through 17 inclusive.

MR. PORTER: Were there any objections to the admission of these exhibits?

MR. KELLAHIN: If the Commission please, we do object to the admission of Exhibit 15, the Gas Contract, for the reason we previously stated.

We also object to the admission of Exhibits 16 and 17, which purports to be excerpts from contracts which are not before the Commission, and we submit that the best evidence would be the contracts.

MR. JAMESON: Mr. Porter, in response to that objection, we did not anticipate that Continental would like to have all of our contracts in evidence. We do have a single copy of each of our contracts. It is available for their inspection. It is available to the Commission for inspection.

We will be glad to duplicate them and put them in evidence, if Mr. Kellahin wants them in evidence. We didn't feel, however, as a part of our case that it would be necessary to do so, but we have no objection to doing that.

MR. PORTER: It appears that Mr. Kellahin doesn't want the contracts you have already offered.

MR. JAMESON: I might mention one other thing with reference to Exhibits 16 and 17.

I believe under previous Commission practice it has been under--where the original document was available for inspection. That we have available for inspection.

MR. PORTER: The exhibits as offered will be admitted, and Mr. Kellahin, your objection to those specific exhibits 15 and 16--17 will be noted.

MR. JAMESON: I believe that will conclude our testimony with regard to this one witness. We are ready to call our next witness, subject to cross-examination, of course.

MR. PORTER: The witness is now available for cross-examination.

(Whereupon a brief off the record discussion was held, after which proceedings were recessed until January 27.)

I N D E X

E X H I B I T S

Exhibit 22 51

Exhibit 23 291

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, RICHARD STURGES, a Certified Shorthand Reporter, 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.

CERTIFIED SHORTHAND REPORTER