IN THE DISTRICT COURT OF EDDY COUNTY

STATE OF NEW MEXICO

MICHAEL P. GRACE II and
CORINNE GRACE,

Petitioners,

vs. No. 28181

OIL CONSERVATION COMMISSION
OF NEW MEXICO,

Respondent,

and

CITY OF CARLSBAD, NEW MEXICO,

Intervenor,

and

CITIES SERVICE OIL COMPANY,
a corporation,

Intervenor.

TRANSCRIPT OF PROCEEDINGS

MARCH 7th, 1973

CARLSBAD, NEW MEXICO

VOLUME 2

That can be accomplished by perhaps the well producing less water than the pipeline pressure is being produced, which would increase the production from the well. I can't think, offhand, of anything else that might change the election allowable nature.

THE COURT: Well, from the chart that you have here, it would appear that the Grace Gopogo is the well that is most out of balance at this time.

THE WITNESS: This is true, and I think the Phillips Drag B, 1, will become more and more out of balance, unless production is curtailed.

THE COURT: Right.

THE WITNESS: And, of course, sir, we have another thing that enters into this, too. If you may permit me to say so, we have at least two more wells, one of which I understand is a pretty good well, which it will be connected within a couple of weeks, and now future connections in this pool, can change the picture substantially. In other words, those wells can become highly over produced between now and June.

THE COURT: Of course,future production would change what, your total pool allowable?

THE WITNESS: It would change the pool allowable, and it would add one more 320 acre unit to the well, for each pool, and it would increase the pool allowable for sure, but that well, and what I am saying is, that that well could produce something like the Gopogo Number 2, and become in a highly over produced condition between now and June 30th.

THE COURT: All right. I think I understand you. Any further questions from this Witness?

MR. LOSEE: No, sir.

THE COURT: All right, that is all, sir.

(Witness excused.)

MR. LOSEE: Mr. Williams.

(Mr. Williams duly sworn by the Court.)

MR. R. M. WILLIAMS

Was called as a witness for the Oil Conservation Commission, and after having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. LOSEE:

Q State your name, please?

A R. M. Williams.

Q Where do you live, and what is your occupation, Mr. Williams?

A I live at Hobbs, New Mexico, and employed as an Engineer for Morris R. Antweil.

Q Do you have a degree in the field of petroleum engineering, and if so, where did you obtain it?

A Yes, sir, I have a degree in petroleum engineering from Pennsylvania State University, in 1953.

Q Since that time, what occupations have you been engaged in?

A Been engaged as a petroleum engineer, specializing in reservoir work, for Humble and for Mr. Morris Antweil.

Q With Mr. Antweil since what date?

A Since 1966.

Q Are you familiar with the South Carlsbad-Morrow Field?

A Yes. We actually drilled the first well that was drilled in the area, and I have been familiar with the drilling and completion production of all of the wells in the field.

Q How many wells, at this time, do you operate in the field?

A Morris Antweil operates three, Morrow wells, and we have a part interest in an additional Morrow well.

Q Would you point out on this Plaintiff's Exhibit 1, the location of the three wells that you operate, and designate them by name, please?

A Yes, sir. In Section 31, we operate the Little Jewel Well Number 1, in the west half, and the Allen Number 1, in the east half, and in Section 6, of 23-27, we operate Missouri-New Mexico Land Company Number 1, in the east half of Section 6. We have approximately 12.6% interest in the Cities Service-Spencer Well, located in the south half of Section 30, 22-27.

Q Now, this Spencer Well, that you have an interest in, is directly east of the City of Carlsbad Well, that the witnesses have been talking about, is it not?

A Yes.

Q And, your Antweil Little Jewel,is a diagnonal offset to the southeast from that well, is it not?

A That is correct.

Q What is the current daily rate of gas production from your Antweil Little Jewel?

A Let me refer to notes.

Q Yes, sir.

A The Little Jewel Well, in the four month period, from September to December, '72, averaged 5.2 million cubic feet of gas per day. I can give an average, because the production from day to day, can vary, considerably.

Q What is the maximum capacity of the Antweil Little Jewel? If you know?

A This well, approximately twenty million, when potential test was taken.

Q So, it is producing at somewhat less than its capacity at this time.

A Yes.

Q Do you have a reason why the operator is producing at less than its capacity?

A This well is produced as part of our gas contract. We have completed five wells, and our portion of the Cities Service-Spencer Well, would be 5.12 wells with a contract, with a take or pay of twenty million feet of gas a day, and this is produced as a part of that contract.

Q Now, who is the buyer, under the contract, Mr. Williams?

A Lano.

Q Would you explain what you mean by take or pay twenty million a day?

A Under the terms of the contract, they are obligated to take twenty million feet of gas a day, or if they have not taken that, on an average over a period of a year, then they will pay for the gas that has not been taken, to complete that twenty million a day, provision.

Q And, that is because you actually have about five wells under this one contract to this one purchaser.

A Yes, sir. We have 5.12 wells, committed.

Q And, by reason of that,that contractural provision with that purchaser, this Antweil Little Jewel Well is not producing to capacity.

A That is correct.

Q Now, let me ask you - - Now, that is the south diagonal offset to the City of Carlsbad. Let me ask you if you know the current rate of production on the Cities Service-Spencer Well, in which you testified you have a twelve and a half percent interest?

A Yes, sir. On the same basis, four months period September to December, '72, the Cities Service-Spencer

Well, averaged 4.57 million cubic feet of gas per day.

Q Is that the capacity for this Cities Service Well?

A No, sir.

Q Why, if you know, is this well not producing at capacity?

A The operator, Cities Service, has instructed the two purchasers from this well -- this well delivers to a split gas stream, and they have instructed the two gas purchasers to take gas at approximately five million feet of gas a day, in order to balance the withdrawals as between the two purchasers, and in view of their concern over water production at higher rates of production.

Q So that the Antweil Little Jewel is not producing at capacity, and is producing for split purchasers. Who are those purchasers?

A I was talking about the Cities Service-Spencer Well.

Q Cities Service-Spencer. Strike my reference to Little Jewel. What are the names of the two purchasers in the Cities Service-Spencer?

A Gas from that well is sold to Lano Pipeline Incorporated, and Transwestern Pipeline.

Q And, by reason of the contractural provisions with

Lano, the well is being driven from Transwestern, the well is restricted in its capacity.

A Yes, sir, the operator has instructed each of the pipelines to take approximately five million feet a day, and they split the gas between the two purchasers, to obtain a balance.

Q Now, that is one of the reasons that the operator has restricted it, and the other, you said he was concerned with water production?

A They have expressed this, yes, sir.

Q All right. What, if you know, is the current rate of production from the City of Carlsbad, Grace Well?

A For the comparable period, from September to December, the Grace-City of Carlsbad Well, averaged 9.5 million cubic feet of gas per day.

Q Now, what, if any, is the effect of the City of Carlsbad Well producing at a rate of 9½ million a day, compared to the two offset wells that are producing at 5.2, and 4½ million, or 4.5?

MR. WATKINS: Court please, we wish to object to that, because the Court has already testified that the operators have been instructed not to produce any more and --

THE COURT: I testified to what?

MR. WATKINS: No, he testified that the operator, because of the contractural relationships with Lano and Transwestern, has just instructed its people not to produce more than the five million.

THE COURT: All right. The objection is overruled. I'll hear it.

A What was the question, again?

Q What is the effect of the rates of withdrawal on the City of Carlsbad Well, almost -- being almost two times the Cities Service-Spencer and the Antweil Little Jewel, what is the effect, if any, on the offset wells?

A The area of drainage for any well, and these three in particular, that you selected, the area of the drainage is proportional to the withdrawal rate of that well, or the average withdrawal rate of that well, so the well with the higher rates of withdrawal will have a larger -- will have established a larger area of drainage than the wells with the lesser rates of production.

Q So, that it is probable that gas is coming off of those two offset tracts, or will come off, into the

City of Carlsbad Well, without a corresponding counter drainage.

A Yes.

Q And, that will be -- that will do what to the correlative rights of the owners of the Antweil Little Jewel, and the Cities Service-Spencer Wells?

A This would be in violation of the correlative rights and possibly more significant, the use of reservoir energy, the use of energy available in a reservoir is also proportional to the withdrawal rates, and the wells or this well with a higher withdrawal rate, would be using nearly twice as much of the reservoir energy, and more of its proportionate share of the reservoir energy, and the reservoir energy is always included in the definition of correlative rights.

Q Now, Mr. Williams, some point was made, or discussion raised about how did the Commission know this Morrow was the same reservoir. Would you explain, briefly, to the Court, one method of determining communication in a gas field, between tracts or wells?

A One method, of course, is to show pressure communication, or effect, pressure effect of one well on another

well, which shows communication.

Q Now, do you have some pressure data with respect to some recently -- to a recently completed well in this field, that indicates to you the communication or drainage between the tracts, and if so, what are those numbers?

A Yes. I would like to refer first, to three wells, and the pressure they encountered, initial pressure they encountered on drill stem tests. These were in a period of December, 1970, and up through July of '71, this was substantially before there was any significant withdrawals from the reservoir, the Morrow Reservoir, on the City Service-Strack Bein Well, located in Section 32, of 22-27, it encountered a a shut-in reservoir pressure of 4760 PSI. The Cities Service-Spencer Well, in Section 30, of 22-27, measured a shut-in in pressure of 4815. This is a bottom hole, 4815 PSI, and the Cities Service-Merland B, also in Section 30, of 22-27, measured a bottom hole of 48.08. So, these three wells, drilled in a period of about seven months, all of these measured relatively the same bottom hole pressures, in the neighborhood of 4400 pounds. Recently Brunson and McKnight drilled a well, called their Number 1

Hemler, located in unit one, of 29-22-27, that would close their well at this location, (Indicating), offsetting the two Cities Service Wells in Section 30, and north of the Cities Service Well in Section 2, and this well measured a reservoir pressure in February of '73, of 35.72, so it indicated withdrawal, indicated pressure depletion, since the major withdrawals in the field were done, in October of '71, of some twelve to thirteen hundred pounds, that has been reflected in this well. And, I think this type of condition shows the communication of the Morrow Formation, through the reservoir.

Q In other words, the free drainage between the tracts, between one tract and another tract, or one well and another well, are within the reservoir.

A Yes, sir, the reservoir pressure at this well, which is representative of reservoir energy, has been depleted, to some extent.

(Defendant's Exhibit Number 4 marked for identification.)

MR. LOSEE: We'll offer Defendant's Exhibit Number 4.

(Defendant's Exhibit Number 4 examined by Mr. Watkins.)

MR. WATKINS: No objection.

THE COURT: Admitted.

MR. LOSEE: I think that is all I have of Mr. Williams. At this time, at any rate.

THE COURT: Any questions, Mr. Watkins?

MR. WATKINS: Give me a little time, please.

THE COURT: All right.

(Short pause.)

CROSS EXAMINATION

BY MR. WATKINS:

Q Mr. Williams, now, I have reference to the Antweil Well. Now, was this -- how were these pressures taken, were they calculated or mechanically --

A These were measured with a bottom hole pressure instrument.

Q And, would you describe that, what it does?

A It is a tube type of pressure measuring instrument, that is -- as the pressure is applied to the tube, the tube stretches or contracts, and has been calibrated to accurately measure, and indicates the pressure that has been asserted on that tube.

Q All right. Well, now, bear with me, sir. This

test, is that -- does that definitely indicate that there is communication between these wells, or could it indicate that there wasn't communication?

A My opinion is that it indicates that there was communication.

Q Will you tell us why?

A Because this well, at this location, very adjacent to the three Cities Service Wells, has experienced a considerable depleted pressure, which I would consider was caused only by the production of surrounding wells. Actually the production of all of the wells in the field, because you have depleted energy and depleted some of the gas from the reservoir.

Q All right. Now, can you tell us, sir, from your experience or tests, or if your experience or tests indicate that this communication between the City of Carlsbad Number 1, and these wells about which you have testified?

A No, I don't, I don't have pressure dates on that one.

Q You don't know whether there is communication between that well and these other wells.

A No.

Q Very well can not be, isn't that true?

A I guess if a guy doesn't know, it could be, or it could not be, very well.

Q I understand.

MR. WATKINS: I believe that is all. Thank you, sir.

THE COURT: Redirect?

MR. LOSEE: Nothing further.

THE COURT: Step down, sir.

(Witness excused.)

MR. LOSEE: The Respondent rests, at this time.

THE COURT: All right.

MR. WATKINS: May we have a brief recess, your honor.

THE COURT: Let's take ten.

(Short recess taken at this time.)

(After short recess.)

THE COURT: Okay, Lonnie, fire away.

MR. LOSEE: Court please, Cities Service has a witness.

THE COURT: All right, fine.

MR. KELLAHIN: Please the Court, we'd like to present testimony, one Witness, which is in line with the testimony offered by the Oil Conservation Commission, which should probably precede their presentation.

THE COURT: All right.

MR. KELLAHIN: I'll call Mr. J. C. Raney.

(Mr. Raney duly sworn by the Court.)

MR. J. C. RANEY

Was called as a witness for the Cities Service Oil Company, and after having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

(Cities Service Exhibits Numbers C-2, C-3 and C-4, marked for identification.)

Q Will you state your name, please?

A J. C. Raney.

Q Where do you live, Mr. Raney?

A Midland, Texas.

Q By whom are you employed?

A Pennzoil Company.

Q What position do you hold with Pennzoil?

A I am a petroleum engineer.

Q What District are you assigned to?

A Midland District, a part of the Western Division.

Q What area does that cover?

A Covers all of West Texas, New Mexico, and Oklahoma.

Q In your duties with Pennzoil, do you have anything to do with the South Carlsbad-Morrow Gas Pool?

A Yes, sir, I do the engineering, as well as supervising of the production from this pool.

Q Does Pennzoil operate in this pool?

A Yes, sir, four wells.

Q Have you had any training as a petroleum engineer?

A Yes, sir.

Q What is your educational background?

A I have a Bachelor of Science Degree in Petroleum Engineering from Texas A and M University.

Q When did you receive that?

A I received my degree in May of 1962.

Q What employment have you had, subsequent to that date?

A I worked seven and a half years for Mobil Oil Corporation, in various phases of engineering, the last five years as a reservoir engineer.

Q Where were you located?

A I worked in Wichita Falls, Texas, Pampa, Texas, and Midland. And, after working for Mobil, I worked for eight months with the Colorado Oil Company in Big Springs, as a Petroleum Engineer, and in September of 1970, I worked for Pennzoil as an engineer.

Q Has your assignment with Pennzoil, constantly been at Midland, Texas?

A Yes, sir.

Q Had you worked, subsequent to your employment by Pennzoil, in New Mexico?

A Yes.

Q Now, referring to what has been marked, I believe, as Defendant's Exhibit Number 1, the plat on the board, (Indicating), would you identify that Exhibit, please?

A This is a base map, that is color coded to show the wells that are producing from the various formations, as defined by the New Mexico Oil Conservation Commission, as well as the proration units, as the best that I could determine.

Q Now, they have different colors on those wells. What is the significance of those colors?

A As shown in the production legend, on the bottom, the red is Morrow, the blue is Strawn, green is Atoka,

and orange is Canyon, and so on, and up in the northeast corner of the map, there is one Wolfcamp Well, and one Delaware Well. The only Canyon Well in the area is the Drag 1, B, of Phillips Petroleum. I did a poor job of selecting my colors there. This is a dual Canyon-Morrow, there. (Indicating).

Q Some of the wells show two colors on them. What is the significance of that?

A These are dual wells. I attempted to, in all cases, to put the red or the Morrow Zone on the left, where it was a dual well with another zone. The blue, as in the southwest corner of Section 6, Township 23 South, Range 27 East, that is a dual Morrow-Strawn Well.

Q Now, in each instance, where red appears, either alone or coupled with someother color, does that signify that that well is either a Morrow completion, or dual completion that produces from its Morrow, as well as some other zone?

A Yes, sir.

Q Each red well is a Morrow Well.

A Yes, sir.

Q You stated, now, that Pennzoil operates how many wells?

A Four Morrow Wells.

Q Would you point those out, and give the locations, please?

A Okay. We operate the Gulf-Federal Number 1, located in the west half of Section 1, Township 23 South, Range 26 East. The Mobil-Federal Number 1, located in the north half of Section 21, 23-26, and the Echols, located in the south half of Section 12, 23-26, and the Gulf-Federal Number 2, a dual well, in the southwest corner of Section 6, 23-27.

Q All right. Mr. Raney, have you been present here in the courtroom, during the testimony of Mr. Elvis Utz and Mr. Robert Williams?

A Yes, sir.

Q Did you hear their testimony in connection with the degree of communication between wells?

A Yes, sir.

Q Have you made any study, on your own, in connection with communication?

A Yes, sir.

Q I hand you Cities Service Exhibit Number C-2. Would you identify that Exhibit, please, sir?

(Cities Service Exhibit C-2 handed to the Witness, and examined.)

A Yes, this is a bottom hole pressure summary of Morrow. This was made in regard to this, and previous Oil Conservation Commission Hearings, as well as reservoir studies in the Morrow Zone in this area, and areas where we have undrilled locations.

Q Would you hand that to the Judge, please.

A Yes.

(Exhibit handed to the Court by the Witness.)

THE COURT: Any objection?

MR. WATKINS: (Shakes head negatively).

THE COURT: Admitted.

BY MR. KELLAHIN:

Q I believe he gave you the wrong one --?

(Short discussion off the record.)

Q Now, referring to what has been marked Cities Service Exhibit Number C-2, there are several columns there, and would you give the significance of those headings?

A Yes. As shown on the Exhibit, on the left is the well name and number, and then wells that are outside of Pennzoil Company, and it shows the operator, Phillips Petroleum, and Grace, and the second column

is the date on which these pressures were taken, and the third column or middle column is the bottom hole pressure, and the fourth column is a cumulative production at the time that the pressure was taken, and the last column is the remarks, which shows the number of hours that the well was shut in, and whether or not that it was measured or calculated. This is mainly a remarks column.

Q What is the significance of the pressures that are shown on that Exhibit?

A The one point that I have concluded, that I have drawn, is that there appears to be drainage across boundaries, further and further, as you get away from there, from the existing area of production, the initial production, as shown in the Gulf-Federal Number 1. The pressure was taken on 6-19-70, and the bottom hole pressure was 4768, with zero cumulative production, and the most significant one that I have found is in the Mobil-Federal 12, Number 1, which is also noted here as Mobil - 12, Number 1, the pressure taken on 1-20-69, bottom hole pressure of 4897, 184 hours shut in. The bottom hole pressure that was measured, going down to the next well, Echols Number 1, located approximately a half-mile south,

after a cumulative production of 1.465 billion cubic feet of gas, in Mobil -12, Number 1, in August of '71, the pressure -- I didn't have the exact date to make these correlations, but in the pressure in the Echols Number 1, a loss of 168 pounds, in one-half mile. This is not much, but it does show the drainage. Now, if you go further south on this well --

Q What well are you referring to?

A The Phillips Drag 1-A, in the northwest quarter of Section 18, 23-27, our bottom hole pressure, which was calculated from the service tubing pressure in May of 1972, of 5,018 pounds, there had been production from the Echols Number 1, in the south half of 12, but the pressure movement or waves, had not been as great in this area down here, as there had been in here. (Indicating). Plus recognizing this is a calculated bottom hole pressure. This is one of the reasons that it is hard to use bottom hole pressures. Some are measured at the bottom hole, and some are measured at the surface.

Q Well, at the present time, is that the best information that is available in this pool?

A Yes, sir, as far as the data that I have here, I

have gathered the best data possible. Phillips didn't run bottom hole pressure on these two wells. They run surface shut-in tube pressures, and what I used to calculate that, was the pressure gradients from these wells, measured gradients per foot, or thousand feet. One other point, as you go further south, going further, this Well 1, has the highest pressure in the field, furtherest away from the production. Some indication there was waves or -- pressure waves or moves when you went south, because this well had a higher pressure, but this one had a higher pressure, and this one down here had a higher.

Q You say this one and this one, and would you state the wells you are talking about?

A We start back with the Mobil 12, Number 1, the pressure on this was taken in January of '69, with zero pressure, correlating dates and pressures on this well here, Echols Number 1, which had 160 pounds less pressure, after 1.605 billion cubic feet of gas had been withdrawn from the Morrow Formation. Now, as you move on farther south and east here, Phillips Number 1 Drag, notes a greater pressure drop here, because this smaller

amount of production. If you look back in 8-1-72, there would have been a billion cubic feet of gas taken out of this well, but some pressure draw down in the Drag 1-A, but not as much in the Drag 1-B. What I am saying, is that the pressure waves move out, and you have less pressure draw down as you get further and further away, but there is a significant indication that there is drainage across these boundaries.

Q All right. Does that indicate that one well located on a 320 acre unit, can, in this pool, have an effect on an adjacent well, in an adjacent 320 acre unit?

A Yes, sir.

Q Now, Phillips Petroleum -- or, I mean Pennzoil, is the operator of Gulf-Federal Well Number 1, is that correct?

A Yes, sir.

Q Is that well offset by two wells at unorthodox well locations?

A Yes, sir.

Q Would you point those out, please?

A Pennzoil Gulf-Federal Number 1, in the west half of Section 1, 23-26, and it is located 1980 feet from the south line of Section 1, and 1980 feet from

the west line of Section 1 -- or, 660 from the side boundary, which makes it a standard location. This well is offset to the west by The Grace Grandonoco Number 1, which is located 2500 feet from the north line of Section 2, 23-26, and 330 feet from the end line, making the well located 140 feet from the side boundary, and 330 from the end boundary. Also, the Gulf Number 1, of Pennzoil, is also offset by the Grace-Humble Number 1, which is located 980 feet from the south line of Section 2, and 660 feet from the east line of Section 2, 23-26.

Q Did you hear Mr. Utz's testimony this morning, in regard to the two wells penalized?

A Yes, sir.

Q Are those the two wells that he was talking about?

A Yes, sir.

Q Do you know what the penalty against those two wells was?

A Yes, sir. The Grandonoco Well, in the north half of Section 2, has a rate back of 51%, or a penalty factor of 49%, for wells located in the north half of Section 2, unorthodox location. Humble-Grace Well, in the south half, has a rateable average of

61% or a penalty factor of 30%, because of an unorthodox location.

Q What is the effect of the unorthodox location?

A The effect we are concerned with, and were concerned with at the time of hearing of these locations, it will be draining recoverable reserves under our lease, the Gulf-Federal Number 1 Lease.

Q Have you made a study of the drainage patterns of those wells?

A Yes, sir.

Q Referring you to what has been marked as Exhibit C-3, and would you identify that Exhibit, please, sir?

(Cities Service Exhibit C-3 handed to the Witness and examined.)

A Yes, sir. There is a correction that needs to go on this, I am sorry. This should be Section 23 -- Township 23 South, and I have it on this Exhibit as 22 South.

Q Would you take a pencil or pen and mark that change, please.

(So corrected by the Witness.)

Q Did you prepare Exhibit Number C-3, Mr. Raney?

A Yes, sir, I did.

Q What does -- is this designed to show?

A This is designed to show the drilled location, of these three wells, the Gulf-Federal Number 1, the Grandonoco Number 1, and the Humble-Grace Number 1. It is designed to show the drilling location -- the drilled location recoverable reserve area that these wells are entitled to.

Q Now, what is the basis of the radius of the circles involved here?

A The radius of this circle, is an area of 320 acres, whose radius would be equal to that, and this radius, I determined this radius to be 320 acres. Now, in common --

Q Why did you use 320 acres?

A This is the standard proration unit, in the South Carlsbad-Morrow Pool.

Q Where you circle the actual unit dedicated to the well, is half of a section or 320 acres, is it not?

A Yes, sir.

Q As a reservoir engineer, you assume that you have radius flow into a well bore, and this is the reason for the circle.

A That is correct.

Q Now, you have cross-hatched portions of areas here.

What is the significance of that?

A The red cross-hatched area is the recoverable reserve area that the Gulf-Federal Number 1 is entitled to. This is a standard area, for a standard location well.

Q Now, you say the recoverable reserves they are entitled to. What is the basis of their entitlement? What do you mean by entitlement?

A You are entitled to recover the reserves from under your lease.

Q Well, you have only cross-hatched, isn't it true, only that portion of the 320 acre circle, which lies in the west half of Section 1.

A Yes, sir.

Q Is that what you mean by the area they are entitled to drain?

A Yes, sir, this is the area that the Gulf Number 1 is entitled to, in red.

Q Have you done the same thing in the Grandonoco Well and the Humble-Grace Well?

A Yes, sir.

Q All right.

A Yes, sir, the green area is for the Grandonoco, in the north half of Section 2, and the blue is

the cross-hatched area that the Humble-Grace Number 1 is entitled to.

Q Have you made any calculations of areas involved here?

A Yes, sir, with the thought -- or not thought, but the fact in mind, that the Number 1, Gulf-Federal, is at a standard location, and this is a standard area for standard location wells, and this is the basis which I used to determine what percentage of reserves that were -- that were, and that will be lost as a result of these unorthodox locations.

Q All right. Now, referring to what has been marked as Exhibit Number C-3 -- I am sorry, C-4, would you identify that Exhibit, please?

A Yes, sir. And, again, I would like to make these corrections. This should be Township 23 South.

(Exhibit corrected by the Witness.)

A This is the area, which I have determined, using as a basis for my determination, the percentage of the area lost to the Gulf -- from the Gulf-Federal Number 1, to the Grandonoco and Humble-Grace Number 1. The cross-hatched area in green, is the percentage of red cross-hatched area from the previous Exhibit, that has been lost to the Grandonoco Number 1, and

the blue area is the amount of area lost to the Humble-Grace Number 1.

Q Now, is that the same portion of circle that is shown on Exhibit Number C-3?

A The area that crosses over into the recoverable area of Gulf-Federal Number 1, is what is cross-hatched from each one of these, from the Grandonoco and Humble-Grace.

Q Now, you have only cross-hatched in green, that portion of the circle that would affect a part of the Federal Well, and the blue. How did you arrive at the difference in those areas?

A Where the two archs intersect, are the points which it was determined -- I determined it two other ways, taking all of the red area that is encircled by the Grandonoco Well, and just the remaining portion that would be encircled down to the bottom, as the Humble-Grace Number 1, recovery, and the percentages come out to be the same. And, this, for simplicity, this is the reason that I used it.

Q What is that percentage?

A The total percentage from the -- of the recoverable area lost to the Grandonoco Number 1, from the fact it is unorthodox, is 36.73% of the recoverable

area that is due to the, or entitled to the Gulf-Federal Number 1, and the area of reserve, recoverable reserve lost to the Humble-Grace Number 1, from the Gulf-Federal Number 1, is 16.93% of that area.

Q Insofar as you have been talking about just percentages or areas, have you made any calculation of reserves, Mr. Raney?

A Yes, sir, based on Pennzoil's recoverable reserves estimate of our Gulf-Federal Number 1.

Q How do you make this reserve estimate?

A By log reservation of the property, this being at a -- we have a standard location of 320 acres, and this is a recoverable area, and the second is the net feet of pay. This is determined from acoustic logs and other logs, and the second is viscosity and water situation. These are also determined from the acoustic and rejectivity logs, and the bottom hole pressures, which you determine the formation, gas formation volume factor, and these will all go into determining the gas in place for that 320 acres, for the net feet of pay, under that well, and based on your experience in the area, you assign a recovery factor. And, this is also influenced by the amount of overflow, and the

bottom hole pressure, and your well, and the area, and the type of formation.

Q Is this the type of calculation you make in the ordinary course of business for Pennzoil?

A Yes, sir, I make them for all of the wells for Pennzoil.

Q You make them for all wells that Pennzoil operates in the South Carlsbad-Morrow Pool.

A Yes, sir, and all the wells that we have an interest in, of any type.

Q Did you use the same figures, then, in making the calculations on the reserves affected by either the Grandonoco Well, and the Grace Well?

A I used the recoverable reserves that we feel we can reasonable recover, or would have been reasonably able to recover, under the Gulf-Federal Number 1, as a percentage, that we lost.

Q What figure did you come up with on this?

A The recoverable reserves that we have assigned to the Gulf Number 1, is 3,457 million cubic feet of gas that would be the recoverable gas from the Gulf Number 1. The amount of that gas which will be lost to the Grandonoco Number 1, is 1,368.8 million cubic feet of gas. The gas lost to the Humble-Grace

Number 1, is 16.993% of the recoverable gas that we would have recovered from the Gulf-Federal Number 1, had it not been for this unorthodox location. 5.3 million feet of gas, for a total lost reserve of 1,855.1 million cubic feet of gas.

Q What is that gas being sold for, do you know?

A Yes, sir, our current contract price is 17.55¢ per MCF.

Q Based on a price of 17.55¢, for an MCF, what is the monetary effect on Pennzoil by these unorthodox well locations?

A Taking into account the state and local taxes, or gas price net of those taxes, would be 16.357¢ per MCF, times the total gas which we -- the recoverable capacity which we are suppose to produce for all of our partners, as well as our royalty owners, comes to $303,439, that is being lost to these two wells.

Q Now, Mr. Raney, both of these wells were assigned a penalty by the Oil Conservation Commission, were they not?

A Yes, sir.

Q Is that penalty, in your opinion, adequate to protect Pennzoil against these drainages?

A It would be, if there was proration in effect.

Q Do you know any other way the penalty could be enforced, other than proration?

A No, sir.

Q Were Exhibits C-2, C-3 and C-4 provided by you, or under your supervision?

A Yes, sir.

MR. KELLAHIN: I'd like to offer in evidence, at this time, Cities Service Exhibits C-2, C-3 and C-4.

THE COURT: All right. Any objections, Mr. Watkins?

MR. WATKINS: No, your honor.

THE COURT: Admitted.

MR.KELLAHIN: That completes the direct examination of this Witness.

THE COURT: All right. Mr. Watkins?

MR. WATKINS: Please the Court. I am sorry for these delays, your honor, but --

THE COURT: Well, we'll learn together on it, Mr. Watkins.

MR. WATKINS: All right, sir.

CROSS EXAMINATION

BY MR. WATKINS:

Q Mr. Raney, I am looking now at, I believe, C-2.

A Yes, sir.

Q Now, I notice bottom hold pressure on June of 1970, of Gulf-Federal Number 1, was 4768, am I correct?

A Yes, sir.

Q And, down here, I see a bottom hole pressure of 5171. (Indicating).

A Yes, sir.

Q Can you give me an explanation why?

A Yes, sir, there are two. As I stated awhile ago, the pressure that you are talking about in August of 72, this well right here (Indicating), the Phillips 1-B Drag, that was surface tubing pressure.

Q Okay.

A All right. You are referring to the Gulf-Federal Number 1, in June of 1970. That is a bottom hole pressure. This is a better piece of data then this is, but this is all of the data that I have. But -- all right, what I am trying to do, is to show that if you go, rather than taking two points, if you go all the way through, and see at what the pressure was here, there was some decline here and some here, but not as much greater production south of here, or none to the west or east or north

here of these wells. As you go further south, you get into higher and higher pressure. Not as much drainage from that area right now. I have got a pressure on the Phillips 1-B Drag, and the Phillips 1-A Drag, yesterday, and this pressure in the offset being less which is only to the west here, in Section 13, will be greater than this 5100 pounds calculated, because of the tremendous withdrawals. This well has been drawn real hard. We are very muchly concerned for proration, for that reason. From the data that I received yesterday, there has been approximately 2700 pounds drawn down, of the shut-in tube pressure, since the well went on production, the latter part of November.

Q All right, sir. Now, are you familiar with the fact that the Humble-Grace Well has been totally shut-in since August of '72?

A Yes, sir, from -- we have an interest in this well.

Q Yes, sir.

A And, we have not received any word on it, as to why it is shut-in, or when it was shut-in. I found this out from a Production Foreman. We own this acreage in here. After payout, we would have

come back in as a working interest on it.

Q All right. Now, does the fact that that well has been shut down, since August, would that have any bearing on the testimony you have given about drainage?

A No, sir. The fact that these wells were drawn real hard initially, both of them, I was in the area working on this well, when these were -- when these were first put on the line. (Indicating). And, we were very concerned about it, what would happen to our well, the Gulf-Federal Number 1, the offset well to the east, and it is not surprising to me, that this Humble-Grace Number 1 is dead, from the way that it was produced.

Q All right, I understand. Now, I'll call your attention to another Exhibit, I don't remember the number, showing production of the Grandonoco.

(Document shown to the Witness.)

A Yes, sir.

Q To me, sir, these figures indicate that the Grandonoco is not producing too much.

A If you were to apply the penalty or rateable tax factor assigned by the New Mexico Oil Conservation Commission, which we participated in and objected very strenuously to this location, then I would

say that these wells have produced too much.

THE COURT: You say what?

A That they have produced more than they are entitled to, because of their location.

Q Do you base that just on location alone?

A Yes, sir, and the reserve area which they are entitled to, being so close to the lease line, for a standard location, which is set up by the Oil Conservation Commission, which we participate in.

Q Is this well at a place, at what is called an unorthodox location?

A Very much so.

Q And, who gives them the right to drill them in such a location?

A The New Mexico Oil Conservation Commission.

Q I see.

MR. WATKINS: I believe that is all, your honor.

THE COURT: All right. Redirect? Anything further of this Witness?

MR. KELLAHIN: This is all I have, your honor.

THE COURT: You may step down, sir.

THE WITNESS: Thank you, sir.

MR. KELLAHIN: That completes the Cities Service testimony.

THE COURT: Mr. Watkins, I guess you get to go, then, now.

MR. WATKINS: All right, sir, thank you. Mr. Baldwin.

(Mr. Baldwin duly sworn by the Court.)

MR. THOMAS A. BALDWIN

Was called as a witness for the Petitioners, and after having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. WATKINS:

Q State your name, please?

A Thomas A. Baldwin. I am a resident of Pasadena, California.

Q What is your occupation?

A I am a geologist, petroleum engineer, and I am licensed in the State of California. I work for a consulting firm, named Tetra Tech, Incorporated.

Q What has been your qualifications and experience in work?

A I am a graduate of the University of Southern California, in 1943, in Geology, with a minor of

twenty-eight units of petroleum engineering, and I have worked in both fields for thirty-five years, approximately.

Q Are you acquainted with what is known as the South Carlsbad Pool?

A Yes. I have been working intermittently for Mr. Grace's interests in this area, since April of 1972.

Q And, you have worked extensively in that field. Have you made studies of the field?

A Yes, sir, I have.

Q Will you enlighten the Court and me, as to what you have found as the basis of your studies, and tell us what they consisted of, of the characteristics of this field?

A I wonder if I might correct an error? I had some notes there I wanted to mention, in my little leather case. May I have the assistance of that memory?

Q Yes --

A No, the little brown leather thing there. (Indicating). The little note book.

Q Right here? (Indicating).

A Yes, sir.

(Small pocket notebook handed to the Witness, by Mr.Watkins.)

A Thank you, Mr. Watkins. I started, when I -- well, my first study of the field was in April of last year, at the request of Mr. Grace, who informed us that he needed technical help, as he was approaching a period of hearing before the New Mexico Oil and Gas Commission. When I got no more than started, spent perhaps a week or so in research in the area, I was in Denver at the meeting and convention of A.A.P., when Mr. Grace got in touch with our people by wire, and informed us that the hearing by the Commission, was coming up right a way, and I was not available. We replied to him, and said that our people were not available and to get a continuance. This is hearsay, but as I understand it, no continuance. Subsequently, at your request, sir, I wrote a little review of what I would have been able to testify, at that time, had I -- had we been able to get a continuance, and had I appeared. And, notes for that, that I have here, are the basis for my later testimony before the Oil and Gas Commission, in which I indicated the numbers of the various types of studies that would have to be performed in this complex reservoir,

before it would be possible, in my opinion, to equitably prorate the production. Among these, an isopressure study, isobaric study on the pressures in the field. At the hearing -- and later I studied the testimony very carefully. At the hearing it was testified there was no hole pressures across the field which were so far unexplained. An iso-pack study, in other words a study for the individual zones in the individual wells should be made, and have not been yet publically available, as I understand, to the Oil and Gas Commission. This last is pertinent because of the variation as we have been told today, based on the units of 320 acres. No one referred to the net thickness of what the porous sands might be, as I understand it, and that, of course, was quite strange to me. I made some attempt to prepare such a map, and have, as yet, not completed it.

MR. LOSEE: If the Court please, I don't really think that this testimony has any relevancy in the determination of whether a proration order, which by statute is prime facia valid, should remain in effect or should be cancelled, and a bond posted.

THE COURT: I assumed that he was laying groundwork for something that will be connected with this. I will overrule the objection, at this time, and hear it.

A Yes, sir, your honor, I'll make it more brief, your honor. I summarized these various studies that I should -- that should be performed in the field, in order to arrive -- or for the basis for equitable proration, and then by my affidavit, which was prepared at the request of Mr. Watkins, here, in which I believe went on, as a part of the record, and requesting a stay in the proration order, and therefore, it appeared to me, my understanding has been, that opportunity would be given to perform these various tests, and various maps and so forth and so on, before proration would become effective. And, they have not yet done this, and there would be a great deal of work to be done, before they could be done, a great deal of work would be necessary, as a matter of fact. I shan't go into detail on it. There is some points here, that occurred to me, that should be brought out. One is this vertical factor. I don't see that we have any measure here of what are the values underlying

the properties, if we just take 320 acres, and I thought that the proration would naturally take into account the values underlying the individual properties, not only for the producing companies, but for the owners of land. They have some value there. There is a thick zone, twenty feet on the property, and let's say the Gopogo Number 2, a very short distance to the south from Gopogo Number 1 that was drilled, and only a very few feet, -- two or three feet of zone. The values under that property are very small. I don't feel that we can equitably prorate, until we know what these values are, and where they lie, because of this, and because of these variations in porosity, to rob from one, to pay the other unit, and I testified before the Oil and Gas Commission, in all probability there was a lack of communication from one part of the field to the other, and both because of diminution of slope at various points on the zones, and some of the witnesses who have been here today, have testified there were as many as three different zones which they identified in various studies, and I do see these variations.

Q What --

A It doesn't mean they communicate.

Q Let me break in a minute. I don't understand what you mean by the variations that you're talking about?

A I gave you an example, sir, in Gopogo Number 1, one zone that was perforated not more than two or three feet of good porous sand in it, and Gopogo Number 2, is a big fat zone that made a fine well. These wells would not have communicated. Gopogo Number 2, wouldn't have drained any from Gopogo Number 1, no zone there.

MR. KELLAHIN: Court please, we also join in the objection at this time, and also that it is being directed to the merits of the New Mexico Conservation Commission Order. In other words, the Court, at this point, would be receiving testimony in regard to whether the pool should or should not be prorated, and that is a matter which this Court is prohibited by law from hearing, as stated in the Continental Oil Case, that the Court cannot receive testimony. The trial de novo is not de novo. This is an attempt to go into the merits of the case, not into the merits of whether there should or should

not be a stay of the order.

THE COURT: I am not going to make any determination about the merits of the case. Again, I assume this is leading to something that has to do with the temporary order. I'll let him go.

MR. WATKINS: Yes, sir. I am very interested in the Court's hearing about this lack of communication between them, as then there can be no drainage and no damage.

THE COURT: I see your point. I am with you, so far. Go ahead, sir.

MR. WATKINS: Thank you.

BY MR. WATKINS:

Q Go ahead, sir.

A Mr. Watkins, I'd like, at this time, with your approval -- I have this one Exhibit, that I have prepared. I would like to present it as an example, not as a detailed engineering study of an individual well, but I have taken the City of Carlsbad Well Number 1, and using it, again, as an example on the effect of water on this field, I have prepared an Exhibit here, which --

Q Let's mark this.

A I have a total of four copies. One of which is on the desk, and some of our friends have it there. (Indicating).

MR. LOSEE: I have one.

(Plaintiff's Exhibit Number 1, marked for identification.)

BY MR. WATKINS:

Q All right, Plaintiff's Exhibit Number 1, is here, and tell the Court what that contains and what it is and who prepared it.

A I prepared this with the assistance of other engineers in Tetra Tech, and with their drafting assistants, and so on. I would like to point out that this was prepared recently, and this hearing came upon me a little unexpectedly. There are two or three typographical errors that I would have to take the time to change, on Pages 1 and 2 --

THE COURT: I don't know what the report contains, at this time.

THE WITNESS: The report contains a study --

THE COURT: For what purpose is it being offered, Mr. Watkins?

THE WITNESS: I offer the report --

THE COURT: I am asking Mr.Watkins.

THE WITNESS: I am sorry.

MR. WATKINS: To show the results of his study, particularly with reference to the City of Carlsbad Well Number 1.

THE COURT: As bearing on the consequences of a shut-in, or --?

MR. WATKINS: Yes, sir.

THE COURT: Or, a cut down on production of this well?

MR. WATKINS: Yes, sir.

THE COURT: Any objections to the Exhibit being admitted?

MR. LOSEE: I have no objection.

THE COURT: It is admitted. Go ahead, sir.

A I offer the report as an example of what will occur, and what will ultimately occur in this field, as a result of the water drive coming into the various wells, and I use Carlsbad as an example, because it presented such a situation. I will go through here, very briefly, and as a former witness did, Mr. Raney, a study of drainage radius concepts, the study of the curvature, which shows the relationship of production of fluid, and the radius of drains, as you

establish those fluids, first under the section of the twenty feet of porous zone in this well is entirely saturated with water, and then I show that this cannot be the case, because gas was produced, on a flow test, a prior test, before the well was completed, so some gas there. I calculated from the log, that there is approximately ten feet of gas and ten feet of water sand, and I investigated into another curve, the results of depletion and drainage being established as water, is produced from the City of Carlsbad, from the lower ten feet, and the same ten points are exhibited in two illustrations of drainage radius, and I'd like to refer to those. I show here on this map, a double line which is a fault that I indicated, geologically, that I have previously presented to the Oil and Gas Commission, my opinion, that this fault forms a barrier in the field, of any kind of communication of several of Mr. Grace's wells, and the center of the field, and as an expert witness, I would like to qualify this, and state this is a matter of professional opinion.

Q I understand, sir. That is what we have been listening to most of the day. What effect would

these faults have on the Grace wells draining other wells in this field?

A They would form a barrier. Whether a total barrier or partial barrier, which would protect the rest of the field from drainage from the Grace area.

Q Go ahead, sir.

A I'd like to point out that I have made a correction on the contour value of these two maps, put in error by my draftsman. The second of the two maps indicates the drainage area in the year or so of their production from the City of Carlsbad if the zone was ten feet of water and ten feet of gas, and in my opinion, the drainage radius circles would terminate against the fault, and the pressure draw down would not affect the area east of the fault. And, finally, I show a blown up copy of the logs of this well, between the depths of minus 11,510 feet and minus 11,530. The two curves shown are those of the Gamma Ray on the left, and a Sonic Curve on the right. I indicate the twenty feet of zone as having been in red, and the ten feet of gas at the top, ten feet of water at the bottom. The original shut-in pressure, surface recorded, is on the left, 3150 pounds, and it is -- its effect on

depth, unknown to me and to us, and should persist equally, approximately equally, through the depth of the ten feet of the gas zone, would increase very slightly to the gravity of gas, but very very slight, but once we got in the water zone, the first foot of water zone, would have an increase in pressure of five pounds, plus or minus some decimal point. The well, in my last hearing, which was December, when this was first prepared, the questionable flowing conditions, with a short shut-in, had 4240 pounds at surface, and through the same kind of assumptions, I came out with an assumption of 3545 on the bottom of the presumed water column. This is based on the fact that the water production had declined from almost 1500 barrels a day, at initial production, to about 750 barrels a day at the present, a reduction of 50% in the water production, which indicates that the pressure driving the water would decline by 50%. The pressure gradient would be represented by these two curves. (Indicating). Now, this well, or any well, which was producing water and gas in this field, in a water drive reservoir, all of these wells, eventually, I believe, would make

water. If this well, or any well would be shut in, very very rapidly, possibly in some cases within an hour or in a few days, in most water drive wells, very rapidly the water drive would restore its original pressure, 3355 pounds, because water is not depletable, still there, but the gas has been partially depleted, so I make the assumption that the gas pressure would rise slowly to approximately 3145 pounds, but at this point there would be a ten pound differential between the gas pressure and the water pressure, and that is sufficient to raise the water twenty feet, and to drowned out the entire zone, and my belief, through my experience, is that shut-in of a well, under these conditions, and any well, under these conditions, producing both gas and water, will in all probability, drowned the well, will cause water to bypass considerable amounts of gas, and will be an unefficient draining, in that it will bypass this gas, then, that will not be recoverable, and be unfair to the operators, and the property owners, who will lose equally valuable royalty gas.

Q Well, now, would this same situation result, or a probability, from just a curtailment of production

in this well?

A It could occur under curtailment, if that curtailment was sufficient to upset these delicately balanced pressures, and none of us could tell you how much you would have to curtail, before water pressure raising, would bring water up against part of the zone, reduce the gas production, and start in, and inevitable destruction of the well.

Q Would you say that any curtailment of this well, could possibly result in its loss?

A The conclusion of my remarks in this little report, is that the only efficient production rate for a well of this sort, is that rate which clears the water out of the bore hole. The water raises to the surface, bubbling a lot of gas in it, and has life, and at that rate it clears the water out of the hole so the gas can be produced at the sufficient rate -- or the efficient rate of production for that well. In fact, the only possible rate, under that.

MR. WATKINS: All right. You may cross-examine.

THE COURT: You may cross-examine.

MR. WATKINS: Just a minute.

(Mr. Watkins confers with co-counsel.)

MR. WATKINS: All right, sir, go ahead.

CROSS EXAMINATION

BY MR. LOSEE:

Q Mr. Baldwin, I forgot the number of years you said you had had experience, but have you ever worked in any Morrow Sand gas field?

A This has been my maximum exposure to Morrow, sir. I have worked in most of the world, however, and in some other reservoirs.

Q How about New Mexico? Any other Morrow Fields in New Mexico?

A No other Morrow Fields in New Mexico, sir. When I was back there, way before the Morrow was considered to be non-economical, I --

Q The price of gas changes things.

A It does.

Q Are you aware of the fact that this City of Carlsbad Well was shut in for sixteen or seventeen hours last October?

A No, I was not.

Q What effect do you think it would have, if the well were shut in for sixteen or seventeen hours?

A It would have had the effect of destroying it, if

it were done. If it did not, then I would say that they should wipe the sweat off their brows, and hope they don't have to do it again.

Q If it didn't destroy it?

A Then, you could probably do it again, if you had not depleted the gas pressures too much.

Q Now, you talked about the conclusions in your report, which said that the efficient rate of production for the City of Carlsbad Well Number 1, coincides with the only possible economic rate of production, is that rate which results in stablized water production of about 750 barrels a day.

A Yes, sir.

Q Would it be possible to reduce that water production by 250 barrels and still produce the City of Carlsbad Well?

A Can't know that without trying it, sir. It would be a risk.

Q Well, could you reduce it by a hundred barrels a day -- hundred barrels of water per day, and see whether it would produce at that rate?

A I would say that if Mr. Grace, as operator, has such high duress, he might try it, but he would be gambling with his present production, wouldn't he.

Q If he shut it in for sixteen or seventeen hours, and nothing happened, he sure could cut it back ten percent, without any great fear, could he not?

A Eventually he has to get rid of the water that is entering that well, by producing it out with the gas lift energy, or he will drowned out. He might be able to get by for a good many days, for all I know, or it might be that sixteen hours would kill the well.

Q But, you don't know but what it could be cut back to 500 barrels of water a day, and produce.

A I do not know, sir, no.

Q How much gas production do you get with 750 barrels every day?

A In this particular case?

Q Yes? That is what you said is the efficient rate to produce that well at.

A I said the possible efficient rate, too. About 10,000 MCF a day. Let's put it in MCF.

Q Actually your number in your report, earlier, was 9,150 MCF, is that right, slightly -- between nine and ten million?

A That may be. I thought it was eleven, but I noted another correction on it, during the day.

Q All right. Now -- And, so, if the allowable in the

South Carlsbad-Morrow Field, for non-marginal wells, was ten million MCF a day, that prorationing wouldn't have any affect on the City of Carlsbad Well, would it?

A It would destroy it. That is why I stated this as an example, in the case of the wells, as they go to water.

Q Well, have you examined the Defendant's Exhibit 3, being Mr. Utz's presentation of the prorationing, the affect on the Carlsbad Well, from September through June 30th?

A I didn't examine it in detail, but I have seen it, sir.

Q Let me hand you what has been marked as Defendant's Exhibit 3, and ask you to turn to the allowable on the City of Carlsbad Well, and the allowable production estimated by Mr. Utz, for the period of January through June. The January through June estimated allowable. (Indicating).

(Defendant's Exhibit Number 3 handed to the Witness,and examined.)

A 1,832,546 MCF.

Q All right. Now, how much is that per day?

A Well, sir, have to divide that by 90, and my

mental computer is not that good.

Q Really be 180, wouldn't it?

A Sir?

Q 180 days, in six months.

A Yes, sir, right you are. So, it is going to be about ten million a day.

Q So, that if that is the allowable, there will be no effect on the City of Carlsbad Well.

A If all of these various perimeters remain the same, sir, there would be no effect.

MR. LOSEE: Thank you. I think that is all.

THE COURT: Redirect?

MR. WATKINS: I believe that is all, your honor.

THE COURT: You may step down, sir.

MR. KELLAHIN: Please the Court --

THE COURT: I forgot I let you intervene.

MR. KELLAHIN: Yes, sir. Just a few questions.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Baldwin, you have testified in regard to a

fault existing here, did you not?

A Yes, sir, I pointed a fault out on these maps, and testified that I had shown this in testimony before the Oil and Gas Commission, and I believe you have copies of those exhibits.

Q That was in an effort to have this well removed from the pool,was it not?

A Been so many hearings going, sir, I believe it was, yes, sir.

Q And, the Commission did not see fit to except that that was not a separate well, and did not remove it.

A No, sir, I don't remember, so --

Q You never saw the order?

A I never saw the order.

Q What is the influence of that fault?

A On the order of twenty feet, or so, sir. I am sorry, I don't have any exhibits with me, sir.

Q What is the depth of the Morrow Formation?

A About minus 11,500 to the top of the Morrow --

Q I am sorry, the thickness of the Morrow Formation?

A About 800 feet, I believe, in here.

Q So, the twenty foot fault would not be a ceiling fault, would it?

A Yes, sir, absolutely. Most of your zones, you see, are less than twenty feet.

Q Twenty feet --

A Less than twenty feet, yes, and a twenty foot fault through a ten foot zone, against a dense memeber, would be a ceiling fault.

Q You don't have any way of knowing it is against a dense member, do you?

A Not at all.

Q In your Exhibit -- I didn't get the number of this, but --

MR. WATKINS: Plaintiff's 1.

MR. KELLAHIN: Pardon me?

MR. WATKINS: Plaintiff's 1.

BY MR. KELLAHIN:

Q Plaintiff's Exhibit 1, all right. On this, you show a water zone below 11,520 feet, don't you?

A Yes, sir.

Q Now, did you assume that the bottom ten feet interval was entirely water saturated?

A I did for the purpose of this argument here, sir. I may not have made it clear. In the text, I state that I will try a case of ten feet of gas and ten feet of water, and the determination of the interval

that is wet, in this particular well, is difficult.

Q Did you examine the log?

A Oh, yes.

Q You did?

A Yes, and --

Q Does that ten feet gas interval, and the ten foot water interval, have any bearing between them of any kind?

A I think, myself, sir, that the perosity is decreased in the interval, as the water saturated, but the full water soil contact is really applicated by the log in this case, and I doubt approximately ten to ten.

Q That would inhibit the movement of the water, if there was one, wouldn't it?

A If there were a barrier there, it would sir, but a decrease in perosity would not. We'll have to go into the quality of relative permeability of gas to water, and so on.

Q You don't have it, in this case?

A We don't have that sort of data.

Q You don't have that data. This Grace City of Carlsbad Well, was actually perforated down into what you determine the water zone, is that correct?

A That is my opinion, yes, sir.

Q Would that account for the amount of water it's making?

A I would assume so.

Q You would assume so. But, have you assumed any difficulty in this well?

A I have nothing to indicate that there was any difficulty that would necessarily account for it. Here, I have a well that would be perforated in the water. Its higher pressure would be greater by what ever column of water there was, and it would produce preferentially water until you are past the water, and then you bring in gas, and that is the history of the well.

Q You say you assume it is perforated in water. You don't know whether this was or not?

A Well, that is because of the difficulty in inspecting the water-gas in this case, sir.

Q And, you assume the water column has to lift it, and no perforation behind the pipe.

A I know we have an entry of water that is being removed by the removal of gas.

Q Do you know if that is a remediable or not?

A I don't see anything to believe that it is.

Q Have you examined the well records, and how it was

completed?

A You know the well records in this well, are somewhat confused. I examined them, trying to determine this. I have not seen additional data, outside of the Oil and Gas Commission, now, and none have been allowed us, to give -- to allow us to give an opinion on perforation. I have done everything that an engineer could do, to get these records in the best shape, and to my best opinion, sir, I have given you my replies on this thing. I see no reason to seek for a source of water, other than the fact that the perforated interval, as I have now interpreted it, appears to be in the water.

Q That could be squeezed then, if that is the case, could it not?

A Might be a little difficult in this case.

Q At this date, it probably would.

A Yes, sir.

Q Originally it could have -- Originally, could it have been squeezed?

A Possibly.

MR. KELLAHIN: All right. Thank you.

A Possibly.

MR. KELLAHIN: Thank you.

MR. WATKINS: I believe that is all.

THE COURT: Step down, sir.

(Witness excused.)

MR. WATKINS: Call Mr. Ron Johnson.

(Witness duly sworn by the Court.)

MR. RONALD D. JOHNSON

Was called as a witness, on behalf of the Petitioners, and after having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. WATKINS:

Q State your name, please?

A Ronald D. Johnson.

Q Where do you live, Mr. Johnson?

A Jonesville, Louisiana.

Q What is your occupation?

A I am a Registered Petroleum Engineer, State of Louisiana.

Q What has been your experience and qualifications in this field?

A I worked for a major oil company for approximately ten years, and have been active as a consulting engineer for five years.

Q Now, have you examined data, such as logs and so

forth, in connection with the City of Carlsbad Number 1.

A To a very limited degree, on this particular well.

Q Well, now, from your examination and your experience and knowledge in the field, will you tell the Court what you found in connection with this Carlsbad Number 1?

A Okay, sir. As far as this particular well is concerned, and the fluid that it is producing now, combination of gas and water, and from my experience of working with gas wells that do produce this, abnormally, let's say, large volumes of water and you do run into this problem of losing the well, with restricted production, or say shut-in periods of time. Assuming that you do have a water drive, in effect here, if you shut the well in, the water could conceivably bypass the well bore, and never bring the gas back to where you can establish production.

Q From your studies, do you think that that could probably result in that situation existing in the City of Carlsbad Number 1 Well?

A I would say it is a good possibility, yes, sir.

Q And, would you give us your opinion of about what

the effect of curtailment of production in this well would have?

A Well, unless you keep the column area aerated sufficiently to keep a continuous lift of the water, and now, what this point is, there is no way to determine that, other than to say on a trial and error basis, and if you reduce the production to the point where the well does go dead, you are faced with the possibility of never re-establishing production, and I would say that there is a very real possibility on this well, with curtailed production, at what rate, it can't be determined, in my opinion, from -- you know, any type of calculations.

MR. WATKINS: You may cross-examine.

CROSS EXAMINATION

BY MR. LOSEE:

Q Mr. Johnson, I didn't -- if you stated, I did not hear your qualifications? You said you were a Registered Petroleum Engineer?

A Yes, sir, right, sir.

Q Do you have a degree in Petroleum Engineering?

A Yes, sir, from the --

Q What school?

A University of Southwestern Louisiana, Lafayette.

Q The University of Southwestern Louisiana.

A Yes, sir.

Q When did you obtain that degree?

A In 1957.

Q Now, what town in Louisiana do you live in, sir?

A Jonesville.

Q Jonesville.

A Yes, sir, correct, sir.

Q Now, are you an independent petroleum engineer, or work for a company?

A I am associated with Steinhorst Operating Systems. Dick Steinhorst.

Q Dick Steinhorst?

A Yes, sir.

Q Now, where is he located? Is he the missing affiant?

A Yes, sir.

Q Is that the same man, Richard Steinhorst?

A Yes, sir. We have our headquarters in Lafayette.

Q Okay. When did you first become familiar with this South Carlsbad-Morrow Field?

A Approximately six or seven weeks ago. Very recently.

Q Have you studied any wells in the field, other than the City of Carlsbad?

A When you are talking about a study, I have made no in depth study on any particular well. I am here doing some very small amounts of production work, and daily consulting, consulting engineering on a daily basis.

Q Now, do you know what volumes of water are being produced at the present, by this City of Carlsbad Well?

A Only from what I gathered from some of the existing records of approximately 900 to 1200 barrels a day.

Q Are there any other wells in the South Carlsbad Field that are producing those volumes of water?

A Not to my knowledge.

Q Are there any wells in the field here, to your knowledge, producing any appreciable volumes of water?

A Not to -- As far as I now know, not to the extent that this particular well is producing water. Other wells, as I understand it, and gathered from testimony, that are producing some amounts of water, but --

Q Well, I am going to give you a cut off on what I mean

by appreciable. Do you know of any other wells in the field that are making fifty barrels or more a day of water?

A Not any wells, specifically, at this time, no. I am not that familiar with the wells.

Q Have you looked at the logs on this City of Carlsbad Well?

A Just at a glance.

Q Do you know whether the well is perforated in a water zone?

A No, sir, I do not know that.

Q Well, would that be one possibility that they encountered the high volume, or that caused the high volumes of water, in the well bore, that it was perforated into a water zone?

A Well, we know the water is coming from somewhere. It apparently is entering the well bore through perforations.

Q Well -- And, the water zone could actually have been opposite the perforations, could it not, in the well bore?

A It could be,yes, sir.

Q Is that one possibility?

A That is a possibility, yes, sir.

Q Now, if that is a possibility, could the operator, in the initial beginning of the well, have squeezed cement into those perforations, and shut off his water?

A Well, sir, yes, sir, you can squeeze cement into the perforation. The question of shutting off the water, is speculative.

Q That is one type of remediable action that can be done.

A Yes, sir.

Q In the figures you know --

A If you feel at the time, from an engineering standpoint, if it was justified, then --

Q Also a possibility, that that well hasn't been perforated into the water zone, but there is communication behind the pipe from the water zone into the perforations, and against the well bore.

A That is always --there is always that possibility, if there is a water zone existing in some close proximity.

Q And, in the intention in drilling the well, could the operator have taken some similar remediable action with cement behind the pipe?

A If it was determined at the time, that this were

a problem, and it could have been.

Q Now, what other possibilities could exist, as far as the great -- the large volumes of water in this well?

A Of course, the possibilities that we have discussed, it is either coming out of producing horizon, or channeling through a poor cement job, from some other water producing sand, or the only other possibility, would be of a split casing, somewhere down below, or some mechanical problems.

Q But, those possibilities that you talk about, all can be remedied by the operator, or you mentioned the possibility that he can remedy them with cement.

A No, I didn't say they could be remedied. This is one procedure for remedying them. They are not always successful.

Q But, it could be attempted to shut off the water.

A Yes, sir, if it was felt that this is where the water was coming from.

Q That is what you think a prudent operator would do, try to determine where the water is coming from, and attempt to shut it off with cement?

A Well, of course, you always, from the log study, and

from a production history, or production analysis of the well, try to determine whether the -- or where the water is coming from. This is normally the case, yes, and if it is coming from some alien source that you feel would be detrimental to your producing horizon, or not coming from the producing horizon, then normally you would take steps to correct.

Q That is what a prudent operator would normally do.

A If he were to determine there were a mechanical problem, or alien water, this is probably true, yes, sir.

Q Well, maybe I didn't understand, Mr. Johnson? What other possibilities are there in this well bore?

A Possibility that the water could be coming out of the producing horizon.

Q So that the reservoir is a water drive reservoir?

A I am not that familiar with the reservoir mechanism that you normally have in these reservoirs here. Now, were I right around the base of our base operations, we have quite a number of water drive reservoirs. In fact, this is our prime reservoir force, is a water drive.

Q Well, if the water -- or the reservoir was a water

drive, isn't it unusual that this is the only well at this point in time, after two years development, that is producing over fifty barrels a day?

A Well, depending on where it is structurally located, and if there is, say, a fault in the approximate position, that was indicated by prior testimony, then your direction of -- depending on whether your direction of water could be coming from, some particular direction, and your water drive situation, you visualize an abundant source of water in some point of the reservoir, that you know that gives you this driving force.

Q Have you made a sufficient enough study to determine that there is a water -- that this is a water drive reservoir?

A No, sir, I have not.

Q Then, you really don't know whether it is or not?

A No, sir.

Q Now, you heard Mr. Baldwin's testimony on the efficient rate of the well, so it lifts 750 barrels of water a day, did you not, sir?

A Yes, sir.

Q Do you also -- or, let me stop. Do you think it

would be possible to restrict the well to some extent, and still produce it at satisfactory rates, as far as gas is concerned?

A When you restrict the rate of production, from a well of this type, you run the risk of the well going dead on its own. Now, when this occurs, and a well producing this volume of fluid, you are always uncertain, in my opinion, as to whether you will ever re-establish production from this well. Now, this shut-in time could vary. It could be several hours or maybe require several days, for instance.

Q Well, if a prudent operator were asked to shut it in, wouldn't it be feasible for him to reduce back to where it was lifting 500 barrels of water, and see how the well produced on the gas for six hours, and maybe make some experimentation on curtailment of the well?

A Okay. With close supervision, if you were to reduce production, and the well was continuing to flow, there would be a possibility of getting some indication of reduced gas flow volumes, and of course, you are reaching a point where you are leaving a greater amount of fluid in the tube

and you could reach a point to where the well would kill itself, and then the matter of getting it back, would not be opening the well up, would be by swabbing, or some other mechanical means.

Q It could be opened back up, then?

A No, sir, because you are talking about an undetermined length of time, to attempt to re-establish production. Could be talking about a time that is twelve, twenty-four or forty-eight hours or so, and during this period of time, supposing you are having water encroachment and getting some type of a coning effect from your gas, or something of that nature. The possibility exists that, in my opinion, that you may not be able to re-establish production.

Q And, if -- You don't think a prudent operator, asked to curtail it, couldn't safely shut the well back safely, 25% of its volume, and shut the water back to 500 or 600 barrels for four hours, and experiment and see how the well could carry the gas production?

A Within the limits you state here, with close supervision, you -- it could possibly be a safe range.

Q And, you have heard Mr. Baldwin's testimony that

the well was making between nine and ten million MCF of gas a day.

A I think that is correct, yes, sir.

Q And, obviously, I assume, if that is within the allowable provisions of the New Mexico proration, this is not going to have any factor on this well.

A That is what I understand, sir.

MR. LOSEE: Thank you.

THE COURT: Mr. Kellahin, any questions?

MR. KELLAHIN: No questions.

THE COURT: Redirect, sir?

MR. WATKINS: I believe that is all, Mr. Johnson.

THE COURT: Did I understand you, Mr. Johnson, along the line that Mr. Losee was questioning you, in this type of situation, you believe in trial and error, and if you have a successful formula going, stay with it, is that basically what you are saying?

THE WITNESS: What I am saying is, a well of this nature, once you establish production and the well is producing, it is a little bit ridiculous to fool with it. A possibility you will kill the well, and you may not get

it back.

THE COURT: You feel like leaving it alone, if it is like it is.

THE WITNESS: From my experience, a well that is producing a thousand barrels of water a day, a very large amount of water, and so is the nine or ten million feet -- cubic feet of gas. This is a large water and cubic feet figure. And, what you are doing, if you are not producing enough gas to get into vertical lift, the well could kill itself, and at what point this exists, I do not know.

THE COURT: With this water situation that you are facing, aren't you facing a situation where you don't know if this is going to happen, anyway?

THE WITNESS: That is right, but much more likely to happen at reduced rates.

THE COURT: All right. Anything further?

(Witness excused.)

MR. WATKINS: Mr. Carlson.

(Witness duly sworn by the Court.)

MR. DALE H. CARLSON

Was called as a witness for the Petitioners, and after having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. WATKINS:

Q State your name, please?

A Dale Carlson.

Q Where do you live, Mr. Carlson?

A Albuquerque, New Mexico.

Q What is your occupation?

A I am a geologist. I have been working with Grace since November of '71.

Q All right.

A And, what other information do you need?

Q What are your qualifications and experience in this field?

A I have a major in geology from the University of New Mexico, and also degrees -- a Master's Degree and another degree from Highlands -- New Mexico Highlands University.

Q Speak up a little, please.

A I have -- do you want me to say the whole thing over again?

Q Yes?

A All right. I have a major in geology from the

University of New Mexico, and I have other degrees, including a Master's Degree, from New Mexico Highlands University, as well.

Q You have been working out in this South Carlsbad Pool for Mr. Grace for sometime.

A Since 19 -- well, since close to the end of 1971.

Q Have there been wells completed in this field, since the hearing of the New Mexico Conservation Commission?

A Yes, sir, there have been.

Q What are they, and when were they completed?

A The ones you are speaking of, being ones particularly owned by Mr. Grace?

Q Yes, sir?

A That were completed. The Carlsbad-Grace, and the Gopogo Number 2, and now in the process of completing the third additional well.

Q Now, have you made a study, or made an investigation, concerning the structures in this field?

A Yes. This has been entirely my function, has been the determination of structure in the field, with the idea of determining where the anaclinal folds, which are the predominant structural features in the area, as far as the production of gas is

concerned, and also in any fault or fracturing in the area that would also effect production of gas in the field.

Q What kind of study or studies have you made?

A It has been a combination of surface examination, and interpretation of infra-red aerial photography.

Q And, as a result of these studies, can you tell us what you have found in this field?

A Well, it appears for one thing, that the anaclinal structures are relatively predictable by this method. We have had good luck in tracing the anaclines, and we have found a series of fractures that may or may not have displacement on them, in the areas where they outcrop, and you can see them, are either strongly solidified, or contain -- oh, moderately acidic intrusives.

Q What affect would these faults or anaclines have upon the communication between the wells in this field?

A Well, there is no exposure in the immediate field, as such. The information has to be drawn from exposures, outside of this area. Not far outside of it, but outside of it, nonetheless. In the northern part of the area, the faults and fractures

are strongly solidified, one area in particular, the limestone, on the foot wall side of the fault, is solidified for -- strongly solidified for a distance of at least fifteen feet, and moderately solidified out to a hundred feet, and on the hanging wall, it is strongly solidified for ten feet, and then moderately in its accompanying fractures, on out to about another 150 feet. This we have -- at least, I have advised Mr. Grace that I feel this is the reason for the low production from the Gopogo Number 1 Well. The fact that it is very close to one -- lies very close to one of these fractures, that appears on the surface, and probably the zone, Morrow, that should be producing the gas, is close enough to the fracture, that the rocks are solidified, and therefore the permeability and perosity are way down.

Q Well, now, does -- or did -- or has the drilling and the testing and the production from wells in this South Carlsbad area, also show the presence of faulting in this area?

A I'd like for you to clarify that question a little bit. I don't quite --?

Q Well, have you learned from testing, and the

drilling information, with your information about drilling and testing --

A Well, I would say the great disparity of production against -- well, in certain areas certainly against --

Q I guess that is what you said awhile ago.

THE COURT: Disparity of what? I didn't hear your answer? Disparity between what?

A Between the amount of production you can get from wells. The City of Carlsbad makes ten million cubic feet of gas, and you got Gopogo Number 1, with very small production, and two large wells further to the north, all the same on the anaclinal structures, and I couldn't believe it, myself, that that alone can account for it. There has to be some structure reason for it, and the structure fault is right next to this well, and certainly looks like this is a prime suspect. In fact, I have advised them, that I feel that if they would move the location, if they would drill just a short distance further to the northeast, I think they would be in a lot better perosity, and have a lot better well, simply because of the proximity of the fault.

Q You think they might get away from the water

problem, if they get --

A Not any problem in the Gopogo Number 1, they are in the City of Carlsbad.

Q Yes, I am talking about the City of Carlsbad.

A Yes.

MR. WATKINS: You may cross-examine.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Carlson, as I understand it, you are attributing the difference in the productivity of the different wells, strictly on the fault, is that what you are saying?

A No, I am saying this, in the one specific case that I have mentioned here, and I haven't gone into enough detailed work in other parts of the area to say this is true in all of the field as a whole.

Q You can't then say, that the other wells are not in communication, is that the right conclusion?

A Maybe -- let me put a map here on the board, and --

(Witness produces map.)

MR. WATKINS: Let's mark that Mr. Carlson.

THE WITNESS: All right. I'll put it

up there.

MR. WATKINS: Put it up there. That is Plaintiff's Exhibit 2, I believe.

(Plaintiff's Exhibit Number 2, marked for identification, and placed on board.)

A These are the fractures (Indicating). Now, you understand I can't call all of them faults. I am saying fractures, that do show up on this infra-red aerial photography, very predominant during the difference in soil coloration and the vegetation that you can take from this infra-red aerial photography.

Q Uh-huh.

A This one has displacement, and geological features on this, (Indicating), and incidently they are taken from some works by Vincent Kelly and others, and are published information, that is available in a publication from the New Mexico School of Mining. I have simply put this on the map, the structural contours and the anaclinal fault structures here, (Indicating), are all taken from that. And, these indicate around there, an arcuate area here, a zone of compression, which further manifests itself, in folding out in here, and a series of faults and fractures that accompany this lateral compression.

(Indicating). And, this fault, this is a strange fault, (Indicating). That has displacement with a down flow to this side, and also has some strong slip movement. In other words, this side is moving this direction, and this side is moving this direction, (Indicating), someway, and this has tended to open fractures, that drag along the fault, that tended to open fractures in here. (Indicating). Some of them have movement, but no way to tell from the aerial photography from the surface, how much displacement there might be on the fault. You can tell there is a fracture there, but you can't tell how much displacement there is.

Q All of this is based on an examination of the surface, and the aerial infra-red photos.

A Yes, sir, other than the information that has been done by the Bureau of Mines and the U. S. Geological Service, and the Roswell Geological Society.

Q Do you know any well that is cut in that fault?

A There is a suspicion, in some of these, that some of these have cut the fault.

Q Let's talk about the South Carlsbad-Morrow Field.

A Yes, sir, that is what I am talking about.

Q You are.

A Yes, sir. This is the surface impression of these

faults. Not necessarily their condition of depth.

Q Yes, sir.

A There is an indication that this fault dips this way, (Indicating), and that -- let's see, down in here, (Indicating), that it was present -- wait a minute, I don't remember which well it was. I was talking about it with Mr. Becker. Could I ask Mr. Becker, a moment?

MR. WATKINS: Step back and ask him.

A Well, Mr. Becker is not here. He and I went over this, and we went over this together, and one of the wells down --

MR. WATKINS: Move over to this side.

THE COURT: That's all right, let him go.

A It was on the fault in the area of the Panagia, and Humble-Grace, and those down in there, but I don't remember specifically which one it was.

Q Did you examine the log on that well?

A Yes, sir, I did, and there was a slight disparity in the thickness of formations on the well.

Q Now, you made an examination of the Morrow Formation and the South Pool, for Mr. Grace, is that correct?

A Not of the Morrow Formation.

Q Did you examine logs of other wells?

A Yes, sir, I have looked at logs, yes, sir, in an

effort to determine whether there is offset on these.

Q Have you looked --

A On these fractures.

Q Have you looked at logs to determine the quality of the porosity and permeability?

A Yes, sir.

Q Would the porosity and permeability of the rock, have a bearing on the productivity of the well?

A Yes,sir, of course it would.

Q That would be important in evaluating the reserves, would it not?

A Yes, sir.

Q Did you not do this?

A No, this was not part of my job. My part was the structure and the effects of faulting on the beds where they are exposed, but this is an area of very low relief in here, and outcrops as such, are very scarce and poor. You have to go alittle further to the north, or alittle further to the south, or alittle further to the west, to find good outcrops, in areas of higher relief, and because of that, I don't -- you don't actually see these, when you go out and look and walk over the ground. You can see the effects of them, on vegetation and soil colorations from the aerial

photography.

Q Let's get back to the qualities of reservoirs. Have you had any cores from any of the wells?

A No, sir, I have not.

Q Have you seen any core information, or core data?

A No.

Q Have you examined pressures throughout the reservoir?

A No, sir, I have not. This is not part of --

Q This was not part of your duties.

A No, sir.

Q So, all you have -- all you have is the information as to fractures.

A Right.

MR.KELLAHIN: Thank you, sir.

A Right.

THE COURT: Mr. Losee, any questions?

MR. LOSEE: No, your honor.

THE COURT: Redirect, Mr. Watkins?

MR. WATKINS: No redirect of Mr. Carlson.

THE COURT: That is all. Step down, sir.

(Witness excused.)

MR. WATKINS: Call Mr. Harmes.

(Mr. Harmes duly sworn by the Court.)

MR. DARRELL HARMES

Was called as a witness for the Petitioners, and after having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. WATKINS:

Q State your name, please?

A Darrell Harmes.

Q Where do you live, Mr. Harmes?

A 1809 Manzana, Carlsbad, New Mexico.

Q How long have you lived here, sir?

A Eleven years, come Labor Day.

Q What is your occupation?

A Classified as a Pressure Plant Techician for Transwestern Pipeline Company.

Q How long have you worked for Transwestern?

A Thirteen years,next month.

MR. LOSEE: If the Court please, would you ask the Witness to speak up.

THE COURT: Move that mike closer.

A Thirteen years, next month, with Transwestern.

Q Now, there has been testimony in this Court, before, that there was an extreme market demand for gas, not only here but all over the country, is that correct?

A Yes, sir, I believe that is so.

Q Now, in your occupation, with Transwestern, you are aware that they are taking gas out of the South Carlsbad Pool.

A Yes, sir, that is my district, in my district.

Q Now, what is the capacity of Transwestern to take gas out of this pool?

A Sir, I wouldn't know. I know that we have more capacity then what we have flow.

Q Could you take all the gas that was produced in this field?

A Yes, sir.

Q And,there is a market demand for it.

A Yes, sir. Well, there is at the present time.

Q Sir?

A There is at the present time, right now, as of today.

Q And, your capacity is such that you will take all that is produced.

A Yes, sir.

MR. WATKINS: You may examine.

CROSS EXAMINATION

BY MR. LOSEE:

Q I didn't get your last name.

A Harmes. H-A-R-M-E-S.

Q You have been with Transwestern thirteen years.

A Yes, sir.

Q Do you know that there are other purchasers in the South Carlsbad-Morrow Pool?

A Yes, sir, we have dual connections with Lano.

Q Did you know that El Paso Natural Gas is buying gas in the field?

A Yes, sir, I do.

Q And, do you know that Southern Union is getting ready to buy gas in the field?

A My understanding, they have already bought gas there.

Q Do you know the capacity of their gathering systems and pipelines in the field?

A Not to speak with authority. I know about how much. I have heard that they have capacity, but that would just be hearsay.

Q You don't know whether they have additional capacity or not, in their lines,do you?

A No, sir, I couldn't make a positive statement on that.

Q Now, earlier today, and I don't know really whether you were here, Mr. Williams testified in respect to the Cities Service-Spencer Well.

A Yes, sir.

Q That Transwestern is connected to, with Lano.

A Yes, sir.

Q So, there are two purchasers in that well.

A Yes, sir.

Q Now, is the amount of gas you take from that well, restricted by reason of the amount that Lano takes from that well?

A No, sir, it is my understanding that that is restricted by the producer, by Cities Service.

Q Under the balancing agreement between the various owners.

A Well, let me put it this way. We were connected to that well for quite sometime, before the Lano laid their line, and they held us to five million a day, and I understand two days ago, they raised that rate to six million a day, Cities Service has, and invited the pumper, if they can get stablization on their well head pressure, they may raise it to seven million a day.

Q You know, at this time, the well is not producing to capacity.

A Well --

Q Do you not? You may not know?

A I am reasonably sure that it is not producing to capacity.

MR. LOSEE: That is all.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q You are connected to the Grace-City of Carlsbad Well, are you not?

A Yes, sir.

Q Was that well ever shut in?

A Yes, sir.

Q When?

A It was shut-in for a period, I think for something like seventeen hours, last fall, and then shut-in -- I believe it was last month, for a period of about three or four hours.

Q Did the well expereience any difficulty in getting back to its normal production level?

A Momentarily.

Q Momentarily. How long?

A Well, sir, with a seven day clock, with a seven day clock, it went up and down the same line. A seven day clock is hard to read minutes on.

Q It was a very short time, though.

A Yes, sir, very short.

MR. KELLAHIN: That is all.

THE COURT: Redirect?

MR. WATKINS: No redirect, your honor.

THE COURT: All right, step down, sir.

(Witness excused.)

(Plaintiff's Exhibit 3, marked for identification.)

MR. WATKINS: I offer this in evidence, your honor, an Affidavit from Mayor Walter Gerrells, which actually should have been part of the Motion to Intervene.

(Exhibit handed to the Court and examined.)

THE COURT: Any objection as to this?

MR. LOSEE: Yes, sir, if the Court please. We'd object to the submission of the Affidavit, mainly on the ground that we don't agree with part of it, and we'd like to have the right to cross-examine the Mayor of the City of Carlsbad, as to how he makes those determinations.

(Exhibit further examined by the Court.)

MR. LOSEE: Paragraph 4 is in direct conflict from the testimony here today, to the effect that if prorationing takes effect, the loss to the City would be "X" dollars, and I

think the testimony shows that if prorationing takes place, there would be no effect on the City of Carlsbad.

THE COURT: The objection is sustained. Do you want that tendered?

MR. WATKINS: Yes, sir.

THE COURT: All right, it will be shown as a tender.

MR. WATKINS: At this time, we'd like to ask for adjournment,your honor, at this time, until in the morning. We have another witness that is coming. He has been testifying in front of a Legislative Committee, and could not get away, but we can have him here first thing in the morning.

THE COURT: All right. Would you mind telling me who the witness is, and the nature of his testimony?

MR. WATKINS: Just a minute.

(Mr. Watkins and Mr. Carlson confer.)

MR. WATKINS: Your honor, it is Doctor Winder of Santa Fe, and he will testify as to reservoir requirements.

THE COURT: What do you mean by reservoir requirements?

MR. WATKINS: What should be required to set up a reservoir, and to determine the boundaries, and the amounts, and we will offer this for proof of refuting the damage proposition, in connection with the bond, which is their application for a bond.

THE COURT: I am afraid you have lost me.

MR. WATKINS: Well, --

THE COURT: The reason I am asking about it, particularly, is, whether the testimony is cumulative to that of Mr. Baldwin, concerning the lack of communication in this formation, or --?

MR. WATKINS: No, I believe it would go to the damage question.

MR.LOSEE: Mr. Watkins, if you could go into a little more detail, we might --

MR. WATKINS: I don't know anymore detail. I have not talked to this witness, and I haven't been able to get ahold of him.

THE COURT: Are you talking about the probable damage, resulting to others?

MR. WATKINS: Yes, sir.

THE COURT: On other property owners in the area.

MR. WATKINS: And, in connection with the determination, if the Court requires a bond, what the amount should be on the bond.

THE COURT: Well, Mr. Watkins, I would like to complete this case today, and I will deny the motion for adjournment, and continuance in this matter.

MR. WATKINS: Would you give me a few minutes?

THE COURT: Yes, let's take a ten minute break.

(Short recess taken at approximately 4:45 o'clock, P.M.)

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(After short recess, at approximately 5:00 P.M.)

THE COURT: All right, Mr. Watkins.

MR. WATKINS: Call Mr. Grace.

(Mr. Grace duly sworn by the Court.)

MR. GRACE: I do so, your honor.

THE COURT: Have a seat.

MR. GRACE: Thank you.

MR. MICHAEL P. GRACE II

was called as a witness in his own behalf, and after having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. WATKINS:

Q State your name, please?

A My name is Michael P. Grace. I have an office in the First National Bank in Houston, Texas.

Q Are you--- Now, you are presently interested in operating gas wells here in what is known as the South Carlsbad Pool.

A Along with Colorado, Wyoming, and several other places, yes, sir.

Q Can you tell us what your production is, out of the City of Carlsbad, Number 1 Well?

A I believe it is ten million dollars a day, but I do not have the figure, sir.

Q Approximately ten million cubic feet?

A Righto.

Q And, you are operating other wells in this field?

A We are trying to, sir.

Q How much -- now, the City of Carlsbad has a royalty interest in this well, does it not?

A Yes, sir.

Q And, can you tell us approximately how much that royalty interest amounts to monthly, from this particular well?

A I am sorry, I do not -- I understand the City of Carlsbad is intervening in this case. I am sure they could tell you.

Q Now, you are aware of the prorationing order that has been proposed by the Oil Conservation Commission.

A I understand the proration order, on this basis, on a well basis, and the first time in history, instead of a field basis has been instituted, or attempted to be instituted, yes, sir.

Q How much -- can you give us, sir, approximately, how much will that cut your production from your wells, and in particular, the Carlsbad Number 1 Well?

A I don't have those figures, sir. I don't have them

on the entire field. I am not interested in my operation, I am interested in the Energy Program of America, and I understand they will take something like four million feet of -- cubic feet of gas a day, out of America's energy picture, arbitrarilly, daily.

Q I will ask you if you have a market demand for all of the gas that you are producing in this State?

A We have a market demand for this, and many markets that demand more.

Q In other words, there is a market demand for all of the gas that you can produce.

A Anybody that reads the local newspaper know that.

Q Sir?

A Anybody that reads the local newspaper, knows that.

Q Now, you are presently selling to Transwestern, is that right?

A And, El Paso Natural Gas.

Q You have just entered into another contract with El Paso Natural Gas?

A Yes.

Q And, there is a great demand for gas from this field?

A I would assume so, sir.

Q Now, Mr. Grace, anything you'd like to tell the Court about this matter?

A I think the Court has -- I hope, has read the newspapers,

about the Arab Insurrection, and capture, and whatever is happening, involving energy. I wouldn't want to insult the Court by reading to him, any of my interpretations, sir.

Q Do you have anything to say to the Court, about this matter?

A Thank you, no, sir.

MR. WATKINS: That is all.

THE COURT: Cross examine?

CROSS EXAMINATION

BY MR. LOSEE:

Q Mr. Grace, I believe you said the City of Carlsbad well produced about ten million cubic feet of gas per day?

A More or less, sir.

Q More or less?

A Yes, sir.

Q Do you know what effect prorationing of the South Carlsbad-Morrow Field, would have on that well?

A It would destroy this well, sir. It is a deliberate attempt on the part of Peter Porter, who tried to pick a peck of pickled peppers, to destroy this well, sir.

Q Have you examined Defendant's Exhibit 1 -- Exhibit 3,

which was Mr. Utz's presentation of the effect of prorationing, among other wells, the City of Carlsbad well?

A I would be very glad to, sir, I have not.

Q I have you Defendant's Exhibit 3, and ask you to refer -- can you hold it?

A No, I will not. I don't take Engineering Reports, on lands like this, I am sorry. That is -- We make gas in America, because we study things.

Q Well, I am sorry. What effect will prorationing have on the City of Carlsbad Well?

A I believe Mr. Baldwin has testified, if I am not in correctly informed, and I wasn't in the Court, and I can ask Mr. Baldwin, if he is in the Court, he's been here, that in one week it would destroy the reservoir.

Q Do you, yourself, have any figures of what --

A Sir, I am stupid, a stupid, small operator, only trying to make good. We do thirty million a day, for the State of New Mexico, for their revenue, and I have no idea, outside of my professional staff.

Q And, you don't care to examine this, from the person with the Exhibits, with Defendant's Exhibit 3, which was prepared by the person on the New Mexico Oil Conservation Commissions's Staff, who is charged

with the responsibility of affecting gas prorations?

A That is a lie, sir. I would very much like to examine it, but I think this is a very intelligent engineer, and I would like to examine it, with about twelve or twenty-four hours time, to compare it to our statements.

Q Then, you don't know whether, or really don't care to learn, whether it would -- whether prorationing would hinder or not hinder the City of Carlsbad well?

A I would like you, sir, to answer me how much production the State of New Mexico has --

Q If the prorationing schedule, Mr. Grace, submitted by Mr. Utz, said that during the six months period from January through June, the City of Carlsbad allowable was one billion, eight hundred thirty-two-- or, one million, eight hundred and thirty-two thousand -- strike that. One billion, eight hundred thirty-two million, five hundred and forty-six thousand MCF, of Gas, would that restrict the City of Carlsbad Well, in its present producing rate?

A The way you mix your statements up, I would like His Honor to give it to me written.

Q I have been trying for five minutes --

A If His Honor would give me, what he considers in six months, the City of Carlsbad has made, I'll try, and

I am not only an operator, I am only trying to make energy for New Mexico. I am not an engineer, not a geologist, I am not a lawyer, I am just a stupid son-of-a "B", sir.

Q Well, if the proration schedule --

A Would Your Honor, please give me this, sir. You are asking me a question, and I'd like to have it in front of me.

Q Mr. Grace, would you like to look at the Exhibit?

A No, sir, I would not like to look at the Exhibit. I'd just like to say what you estimate that the City of Carlsbad made, in six months, as a lawyer, or a geologist, or engineer, or whatever you are.

Q Well, the estimate of Mr. Utz, based on the January production, would be 1,647,510 MCF.

A I would like His Honor to give it to me. I have a great deal of lack of communication with you, sir. I would like his Honor to give it to me written out, and state in front of this Court, what he would state in six months, this well would have made, and why he wants to destroy it.

Q Well, Mr. Grace, the point I'd like to make, is that based upon this Exhibit, the prorationing order will have no effect on the City of Carlsbad well.

A I am sorry, we have engineers, and geologists and

lawyers here, and as I understand it, eleven million cubic feet of gas a day, so the ten million is not within the proration order. Now, if you can very happily tell me, that we can produce this well, and not destroy it, I couldn't be more friendlier to Judge Snead, or to you, or to anybody here. But I have been under the impression, that you are Ecologists.

Q Well, I think-- let me strike that. Mr. Grace, if in effect, the testimony here, has been that the proration order will have no effect, based on present conditions, on the City of Carlsbad Well, am I correct in assuming that you have no objection to the vacating of the stay order?

A No, sir, because the testimony here is meaningless. You can go before the Oil Commission, Mr. Peter Porter, in Santa Fe, New Mexico, and they have set the regulations and rules, and I'd like to put Mr. Peter Porter on the stand, and have him define exactly what he will do, if this stay is taken off. He's not been on the stand, and I see him in the courtroom, and I have been told by extremely -- I would say intelligent sources, that he is out to destroy us, and I'd like him to tell us how he will not destroy us. We are producing, as I have told you, ten million cubic feet

of gas a day, which is roughly -- when you multiply it by 300, or 30, it is three billion cubic feet of gas a day. I am not equipped, I am not in a position, I don't have any accounts here, or my business staff here, but I have been told, and I may be very prejudice, that we are under attack from Mr. Peter Porter, Peter Porter, of Kentucky, sir.

Q Two questions, Mr. Grace. How much are you selling your gas for, what is your price to Transwestern?

A Our price to Transwestern is 30¢, sir.

Q What is your price to El Paso Natural Gas Company?

A I hold that answer. I don't think you can require that. I don't think at any price, to be honest with you, and I think this Judge should learn, and the Court should know that the small producer's certificate has been abolished by the District Court in Washington, and if I tell you a price, it would be a lie. 24¢, is the price, sir, and it is not economical in Carlsbad.

Q Isn't it true, Mr. Grace, that the price with the El Paso Gas is 52¢ an MCF?

MR. WATKINS: We object. The price he is getting for this gas, has no bearing on any issues in this case.

THE COURT: For what purpose, Mr. Losee?

MR. LOSEE: Well, to substantiate Mr. Utz's

calculations, and as to the value of the overproduction. Mr. Utz's testimony was that he used 35¢ based on the recommended rates set by the Examiner in the Permian Basin Hearing. There's been testimony at 17¢, and actually I think it is 17¢ to 52¢, and I am trying to determine that -- it is not that great a point, but --

THE COURT: The objection is overruled. What is the price on the gas, as to who, El Paso?

MR. LOSEE: Yes.

THE WITNESS: I deny any attempt on the part of this Court to arrive at a negotiated contract with El Paso. The only matter under this Court's jurisdiction, is a 30¢ contract with Transwestern, and if you wish to go further, you can hold me in contempt of Court, your honor.

THE COURT: I am ready to quit, whenever Mr. Losee is.

THE WITNESS: I don't like to tell you our business, right, and I don't have to tell you our business.

(Mr. Losee sits down at Counsel Table.)

MR. WATKINS: That is all.

THE WITNESS: I don't know why we have to

tell you our whole entire operations, when you are screwing us.

THE COURT: Anything further, Mr. Watkins?

MR. WATKINS: Nothing further, your honor.

(Witness excused.)

THE COURT: Rebuttal?

MR. LOSEE: Nothing further.

THE COURT: Do you want to be heard on this matter, gentlemen? Mr. Watkins?

MR. WATKINS: I believe the Court has all of the testimony, and the evidence in his mind.

THE COURT: Mr. Losee?

MR. LOSEE: I'd like to make a short statement, if the Court please.

THE COURT: Certainly.

MR. LOSEE: In support of our motion that the stay order be vacated, or in the alternative that a bond be posted, I start with the statutory restriction that the order is prima facie valid. The purpose of our testimony, and I assume that of the Petitioners, was not to contend the validity of the order, but simply the effect of the stay order on the pool. The testimony from Mr. Utz, shows that production at 35¢ an MCF, as of June will be over produced to the

extent of $680,000. This is supported by Mr. Raney's statements that drainage occurring from the Pennzoil Well, to the Grace-Grandonoco, and Humble Wells, will be $303,000. I think the testimony of Mr. Utz, Mr. Williams, and Mr. Raney, all is to the effect that drainage occurs, almost a foregone conclusion in a gas reservoir of this kind. The pressures indicated, as submitted by Mr. Williams, and supported it, that in the absence, that is one of the foundations that the Commission has to take, before they can consider prorationing, and did take it into account. The two Grace Well, the Humble and the Grandonoco, were penalized, because of their offset locations, which we think the testimony shows the absence of proration, nothing will be done to effect that penalty in the offset drainage. We think the testimony shows that there are four purchasers in the field, and that they have different demands for this production, at varying times, and the only conceivable way each operator in the field can get its rateable share of production, is by prorationing. I think the evidence shows, and the Exhibits of Mr. Utz, that it takes a reasonable period of time for gas prorationing

to have any effect. The Commission's order provided that it would go into effect on September 1st, and run until September 1st, of -- from September 1st, 1972, and run until December 31st, of 1973. They don't shut a well in, until it is over produced in effect, six times the monthly allowable, and even the two large wells in the field, the Gopogo and the Phillips Drag A, will not be six times over produced in June. But, there will be a time in the proration period that they will be overproduced, and the operator forseeing that, will voluntarily cut back his production. Either that, or eventually the Commission will shut him in. I think based on the Exhibits, the allowables, at least for January through June, that 180 day period, is about ten million per well, or 300 MCF per day and the Phillips Drag Well is making 18 million CMF per day, or 500 million a month, based on this Exhibit. The Gopogo Number 1, is making 15 million, or about 450 million. It is obvious that sometime within the proration period, the well will be overproduced, and the purpose of -- one of the purposes of proration, is not really to shut a well in, but to have the operator restrict it

back to approximately, in this case, to 300 million. There has been a lot of testimony upon the effect of the water condition on the City of Carlsbad Well, and the prorationing, but the only evidence here is that there will be no effect, prorationing will not effect the well, because it will be classified as a non-marginal well, in the very near future. And, it is presently overproduced by about 200,000 MCF, which is overproduced status reduced from 400 down to 200, and I think, in order for the orderly development of the field, and the prevention of waste in the reservoir, from both the energy standpoint, and from the possibility that gas will not be recovered, from the production of correlative rights, it is imperative that the Court exercise its judicial discretion, and vacate the stay order, and we would ask that it be vacated as of September 1st, 1972, so that the production from these wells, and the allowable can commence taking effect on the overall development of the field. As we pointed out, the only two wells it looks like prorationing will effect at this point of time, is the Phillips and the Gopogo Number 1, and the City of Carlsbad will not be effected. In the

alternative, we ask the Court to condition the continuance of the stay order upon the posting of a bond by the Petitioners, in the amount of $750,000, which we point to as being some ten percent in excess of $680,000. Thank you.

THE COURT: All right. Mr. Kellahin?

MR. KELLAHIN: May it please the Court, I would like to very briefly comment on some of the testimony that has been offered here, in an effort to cast doubt on the ability of a well to drink in a given area in this pool. The Petitioners have offered testimony by Mr. Baldwin and Mr. Carlson, all of which was directed towards the existance of a so-called fault. Now, Mr. Carlson's testimony, clearly showed he was basing his interpretation entire on aerial photcgraphs and infra-red photographs taken of the surface. If we assume that the surface elevation here is 3500 feet, which I think is a fair assumption, you are talking about some 8,100 feet below the surface, so you are looking at back at the surface, and saying that something else exists, some 8,000 feet down.

THE COURT: Geologists do this sort of thing, and I don't understand enough to say

that they are incorrect, but I know they are prone to do it.

MR. KELLAHIN: Yes, indeed they do. Now, one of the principal tools that is used in interpreting the effect of production in an oil field, is the examination of pressures, and the information was offered by both Mr. Williams and Mr. Raney, in connection with the pressures, and Mr. Raney offered information on some seven wells, and on the basis of this information, he concluded that drainage was occurring. He was here available for cross-examination, but they didn't agree with him, didn't examine him, and I would also point out, that nothing was offered to refute that testimony on Raney. In no way was it questioned in the course of this hearing. Now, when it comes to the necessity for vacating this order, I think nothing could be more graphic then the testimony of Mr. Raney, presented as to the Gulf-Federal; Number 1, and the effect of the Grandonoco Number 1 Well, which the Commission assigned a 51% penalty to, and the Grace Humble Well, which also had a penalty of 41% on -- 41% on the Grandonoco, I think, or I forget the figures, but it is in the order. Now, the

drainage area that Mr. Raney computed, based on information from this Gulf-Federal Well, this was a reserve calculation, based on information which was outlined by Mr. Raney, during the course of his testimony. Information that is normally used by a petroleum engineer, in calculating reserves, existing in a reservoir, and on that basis, he concluded that the Pennzoil would lose approximately $303,000. Certainly, we think that the bond that has been requested by Mr. Losee, on behalf of the Oil Conservation Commission, was quite reasonable. Now, Cities Service Oil Company is one of the participants in this case, simply because they feel that they will be effected, and Mr. Raney speaking for Pennzoil, has shown that his company will be effected by the lack of proration, and we join with Mr. Losee, in requesting that the order be vacated, and the order extending proration, be granted as of September 1, 1972.

THE COURT: All right. Now, Mr. Watkins.

MR. WATKINS: May it please the Court, I want to take up first, the proposal of the Commission, and Mr. Kellahin, that if the Court does vacate the order, it should be made effective

as of September 1st, 1972. That in effect, would be what we call retroactive legislation. Perhaps in this case, retroactive judicial --

THE COURT: Legislation.

MR. WATKINS: -- Legislation. The net result would be to penalize, very severely, several operators, and Mr. Grace is not the only one that is over, who have acted in accordance with what they believed their rights to be, under the stay order, which was issued by Judge Archer. Now, passing on, to my mind, and the Court is aware, and everyone in the room is aware, that I am pretty ignorant about oil and gas law, and geology and things of like nature, which has been testified to here today, by each side. It appears to me, however, that the testimony with reference to the Carlsbad Well Number 1, gives rise to a feeling of anxiety, over the fact, and I do discount the testimony of the experts that were up here, and to me,it seemed that there is a very grave danger of a loss of the City of Carlsbad Well Number 1, if this proration order goes into effect, and their production is curtailed, because of the possible -- the probably water encroachment in that well.

Now, I don't -- I do not know the rules of the Commission, and I know that Mr. Utz's testified that -- I thought he testified it wouldn't make any order that the stay order was vacated or not until the hearing was heard on the merits. Now, maybe he didn't.

THE COURT: Unless certain things were changed.

MR. WATKINS: Now, I pose this question, and it hasn't been in evidence, and I am not acquainted with the rules. I assume that the Court takes judicial knowledge of them. Mr. Utz testified there wouldn't be anything done with any of these wells, for a period of months. I ask this question, in all ignorance. I can forsee that the Commission, if it so desired, and as the Court sees, there is a clash of personalities in this matter. The Commission, if it so desires, if the stay order is vacated, before the hearing on the merits, might close these wells down tomorrow, because they have overproduced, what the Commission believes they should produce. I wish to point this out. Actually, I suppose we had to go into the merits of this matter to some degree, in order to try

to present this case properly, but I suggest to the Court, that the one thing, the danger of the loss of this Carlsbad Well Number 1, if the stay order is vacated, and I point out to the Court, that it is only a brief period of time until this matter is heard on its merits, at a full scale hearing, and with experts, properly prepared, and I say this somewhat ruthlessly, but with attorneys that are properly prepared and properly ready to try the case. And, with that, I thank you for your courtesies today.

THE COURT: Thank you, Mr. Watkins. Gentlemen, you may have a problem in regard to this definition of what a stay is, again, because we kick around the fact that it may or may not be the same as a temporary injunction. As I interpret a stay, it is just a temporary recession in the thing, and if I set aside the stay, it goes back to the prior order. I do not know as to this. However, I'll make an order dissolving the stay order, as of today, and I believe it will have the legal effect of reinstating this matter as of the time that I enter the position by the Court. But, be that

as it may, the stay order will be dissolved. It is the Court's view from the evidence, that the likelihood of harm to Mr. Grace in the intervening time before the matter can be heard, is not of such great nature as to necessitate the continuance of so extraordinary a remedy, that is here involved. That will be all, gentlemen.

(Some discussion off the record was had at this time.)

(Court in recess as to this case.)

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INDEX TO EXHIBITS

FOR THE PETITIONER:

P-1 Study by Mr. Thomas A. Baldwin, of City of Carlsbad Well #1

P-2 Map, prepared by Mr. Dale Carlson

P-3 Affidavit, signed by Mayor Walter Gerrells

FOR THE RESPONDENT:

D-1 Map of Carlsbad, South Area, prepared by Pennzoil

D-2 Copy of Order No. R-4034, Oil Conservation Commission

D-3 Analysis prepared by Mr. Elvis Utz

D-4 Yellow sheet containing some figures prepared by Mr. Williams.

FOR THE INTERVENOR, CITIES SERVICE:

C-1 Index Map prepared by Cities Service Oil Company

C-2 B.H.P. Summary, prepared by Mr. Raney

C-3 Graph, prepared by Mr. Raney

C-4 Graph, prepared by Mr. Raney

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COURT REPORTER'S CERTIFICATE

I, Clarence G. Blair, Official Court Reporter for the Fifth Judicial District Court in and for the County of Chaves, State of New Mexico, DO HEREBY CERTIFY that the facts as stated in the caption hereto are true and correct; that I reported the captioned proceedings; that the above and foregoing pages of typewritten matter constitute and is a full, true and correct transcript of the testimony taken at said trial, together with all objections and exceptions of counsel and rulings and remarks of the Court, and the exhibits admitted and offered in evidence in said cause.

WITNESS my hand at Roswell, Chaves County, New Mexico, this 16 day of March, 1973.

Clarence G. Blair

OFFICIAL COURT REPORTER